

43

UNITED STATES
DEPARTMENT OF AGRICULTURE
LIBRARY

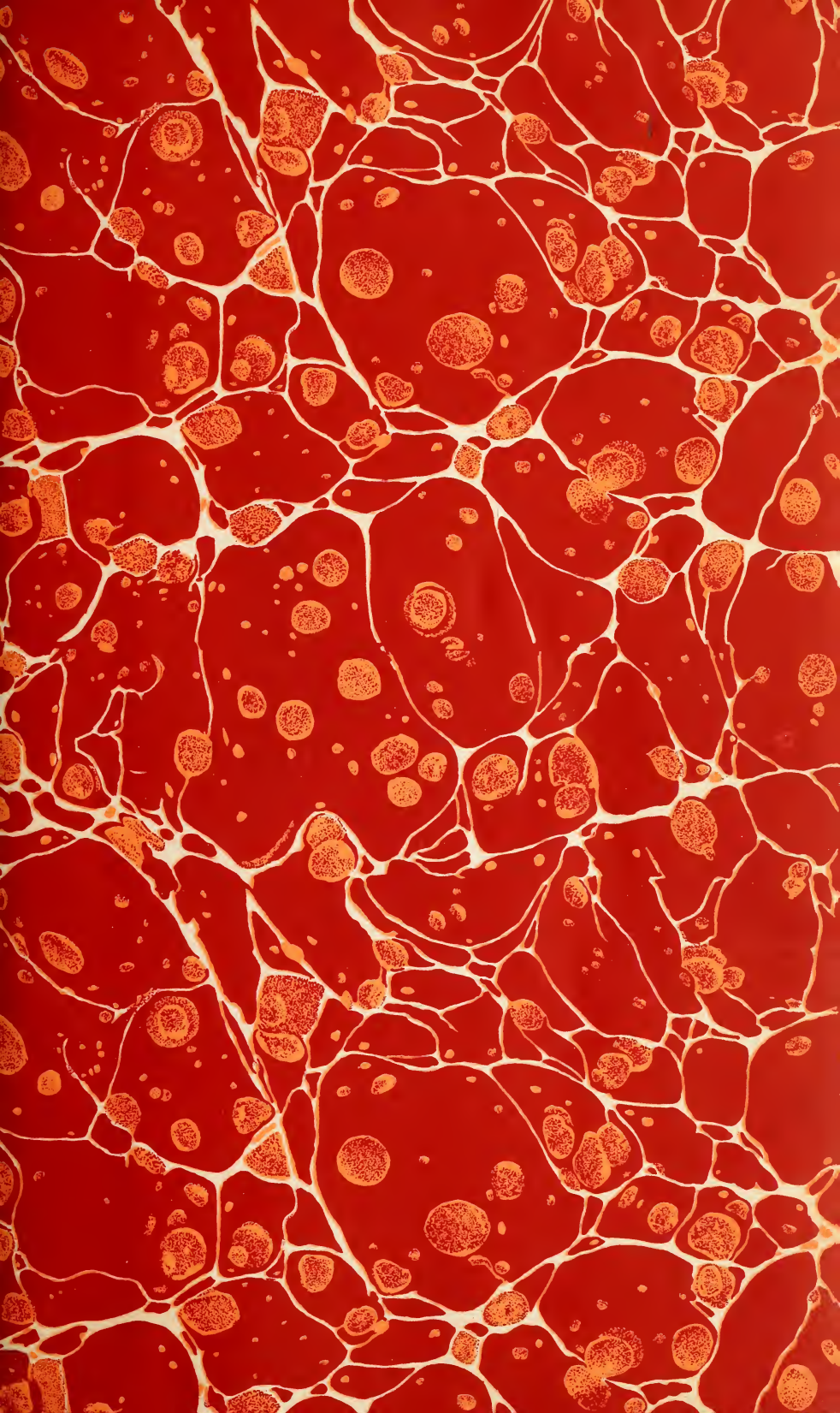


BOOK NUMBER 1
Ex6R

51-60
1924-1929

o p o 8-7671

246526

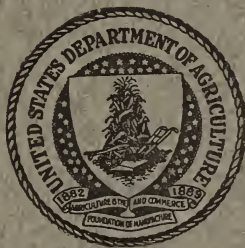


175832
17

GENERAL INDEX
TO
EXPERIMENT
STATION
RECORD

VOLUMES 51 TO 60, 1924-1929

PREPARED BY
MARTHA C. GUNDLACH



UNITED STATES DEPARTMENT OF AGRICULTURE
OFFICE OF EXPERIMENT STATIONS

1932

Issued, March, 1933

UNITED STATES DEPARTMENT OF AGRICULTURE
OFFICE OF EXPERIMENT STATIONS
JAMES T. JARDINE, CHIEF

GENERAL INDEX
TO
EXPERIMENT
STATION
RECORD

VOLUMES 51 TO 60, 1924-1929

PREPARED BY
MARTHA C. GUNDLACH



Library, U. S. Department of Agriculture,
Washington, D. C.

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1932

EXPERIMENT STATION RECORD

Editor: HOWARD LAWTON KNIGHT

EDITORIAL DEPARTMENTS

Agricultural and Biological Chemistry—H. C. WATERMAN, SYBIL L. SMITH.
Meteorology—W. H. BEAL.
Soils and Fertilizers—H. C. WATERMAN.
Agricultural Botany, Diseases of Plants—W. H. EVANS, W. E. BOYD.
Genetics—H. M. STEECE, J. W. WELLINGTON, G. HAINES.
Field Crops—H. M. STEECE.
Horticulture and Forestry—J. W. WELLINGTON.
Economic Zoology and Entomology, Veterinary Medicine—W. A. HOOKER.
Animal Husbandry, Dairying, and Dairy Farming—H. W. MARSTON.
Agricultural Engineering—R. W. TRULLINGER.
Agricultural Economics and Rural Sociology, Agricultural and Home Economics Education—F. G. HARDEN.
Foods and Human Nutrition—SYBIL L. SMITH.
Textiles and Clothing—H. M. STEECE, SYBIL L. SMITH.
Home Management and Equipment—
Indexes—MARTHA C. GUNDLACH.
Bibliographies—CORA L. FELDKAMP.

THE AGRICULTURAL EXPERIMENT STATIONS

- ALABAMA—*Auburn*: M. J. Funchess.¹
ALASKA—*College*: G. W. Gasser.¹
ARIZONA—*Tucson*: P. S. Burgess.¹
ARKANSAS—*Fayetteville*: D. T. Gray.¹
CALIFORNIA—*Berkeley*: C. B. Hutchison.¹
COLORADO—*Fort Collins*: E. P. Sandsten.¹
CONNECTICUT—
 State Station: *New Haven*: } W. L. Slate.¹
 Storrs Station: *Storrs*: }
DELAWARE—*Newark*: C. A. McCue.¹
FLORIDA—*Gainesville*: W. Newell.¹
GEORGIA—
 Experiment: H. P. Stuckey.¹
 Tifton: Coastal Plain Station: S. H. Starr.¹
HAWAII—*Honolulu*: J. M. Westgate.¹
IDAHO—*Moscow*: E. J. Iddings.¹
ILLINOIS—*Urbana*: H. W. Mumford.¹
INDIANA—*La Fayette*: J. H. Skinner.¹
IOWA—*Ames*: R. M. Hughes.²
KANSAS—*Manhattan*: L. E. Call.¹
KENTUCKY—*Lexington*: T. P. Cooper.¹
LOUISIANA—*Baton Rouge*: C. T. Dowell.¹
MAINE—*Orono*: F. Griffee.¹
MARYLAND—*College Park*: H. J. Patterson.¹
MASSACHUSETTS—*Amherst*: F. J. Sievers.¹
MICHIGAN—*East Lansing*: V. R. Gardner.¹
MINNESOTA—*University Farm, St. Paul*: W. C. Coffey.¹
MISSISSIPPI—*State College*: J. R. Ricks.¹
MISSOURI—
 College Station: *Columbia*: F. B. Mumford.¹
 Fruit Station: *Mountain Grove*: F. W. Faurot.¹
 Poultry Station: *Mountain Grove*: T. W. Noland.¹
MONTANA—*Bozeman*: F. B. Linfield.¹
NEBRASKA—*Lincoln*: W. W. Burr.¹
NEVADA—*Reno*: S. B. Doten.¹
NEW HAMPSHIRE—*Durham*: J. C. Kendall.¹
NEW JERSEY—*New Brunswick*: J. G. Lipman.¹
NEW MEXICO—*State College*: Fabian Garcia.¹
NEW YORK—
 State Station: *Geneva*: U. P. Hedrick.¹
 Cornell Station: *Ithaca*: C. E. Ladd.¹
NORTH CAROLINA—*State College Station, Raleigh*:
 R. Y. Winters.¹
NORTH DAKOTA—*State College Station, Fargo*: P. F. Trowbridge.¹
OHIO—*Wooster*: C. G. Williams.¹
OKLAHOMA—*Stillwater*: C. P. Blackwell.¹
OREGON—*Corvallis*: W. A. Schoenfeld.¹
PENNSYLVANIA—
 State College: *R. L. Watts*.¹
 State College: Institute of Animal Nutrition:
 E. B. Forbes.¹
PUERTO RICO—
 Federal Station: *Mayaguez*: T. B. McClelland.¹
 Insular Station: *Rio Piedras*: F. Lopez Dominguez.¹
RHODE ISLAND—*Kingston*: B. E. Gilbert.¹
SOUTH CAROLINA—*Clemson College*: H. W. Barre.¹
SOUTH DAKOTA—*Brookings*: J. W. Wilson.¹
TENNESSEE—*Knoxville*: C. A. Mooers.¹
TEXAS—*College Station*: A. B. Conner.¹
UTAH—*Logan*: P. V. Cardon.¹
VERMONT—*Burlington*: J. L. Hills.¹
VIRGINIA—
 Blacksburg: A. W. Drinkard, jr.¹
 Norfolk: Truck Station: H. H. Zimmerley.¹
WASHINGTON—
 College Station: *Pullman*: E. C. Johnson.³
 Western Station: *Puyallup*: J. W. Kalkus.³
WEST VIRGINIA—*Morgantown*: F. D. Fromme.¹
WISCONSIN—*Madison*: C. L. Christensen.¹
WYOMING—*Laramie*: J. A. Hill.¹

¹ Director.

² Acting Director.

³ Superintendent.

EDITORIAL NOTES

VOLUME 51

	Page
The agricultural appropriation act, 1924-25.....	1
Dr. William J. Beal and Dr. William C. Stubbs, deceased.....	101
Some openings for station research on the applications of electricity to agriculture.....	301
A food conservation conference in the Pacific.....	401
A history of the 40 years' service of the Bureau of Animal Industry..	601
Henry C. Wallace, deceased.....	701
A course on the nature and method of research.....	705
The Texas range experiment station.....	708

VOLUME 52

The thirty-eighth convention of the Association of Land-Grant Colleges..	1
Agriculture at the Washington meeting of the American Association....	101
Some recent visits by English scientists and a notable address.....	105
Passage of the Purnell Act for the more complete endowment of experiment stations.....	301
The agricultural appropriation act, 1925-26.....	302
Soils and soil fertility investigations at the experiment stations.....	401
The St. Louis conference on the Purnell Act.....	601
The promotion of agricultural education by foreign missionaries.....	701

VOLUME 53

The Purnell Act and cooperative investigations in agriculture.....	1
Advanced degrees held by agricultural economics and home economics workers.....	6
Bibliographical aid by the Federal Department of Agriculture to agricul- tural research.....	101
A visualization of the experiment station system.....	301
An important decade of agricultural college history.....	401
The semicentennial of the Connecticut State Station.....	601
The thirty-ninth convention of the Association of Land-Grant Colleges..	701

VOLUME 54

Henry Jackson Waters, deceased.....	1
Changes in the <i>Record</i>	3
Objectives and methods in research in agricultural economics and rural sociology.....	101
The work and expenditures of the experiment stations in 1924.....	301
A trio of prospective international congresses.....	401
The development of extension work in Germany.....	403
Dr. Edward R. Flint, deceased.....	406
The agricultural appropriation act, 1926-27.....	601
Are the experiment stations going to seed?.....	701

VOLUME 55

	Page
The first decade under the Smith-Lever Extension Act.....	1
The International Congress of Plant Sciences.....	101
The project outline in agricultural economics, E. England.....	301
The agricultural experiment stations in 1925.....	401
Agricultural research at the University of Minnesota.....	405
Recent progress in agricultural research in the United Kingdom.....	601
The Hitchcock lectures on plant nutrition and crop production.....	605
A catalogue of early books on agriculture.....	606
The fortieth convention of the Association of Land-Grant Colleges and Universities.....	701

VOLUME 56

Agricultural research at the 1926 convention of the Association of Land-Grant Colleges and Universities.....	1
A survey of research in mechanical farm equipment.....	101
An American survey of Persian agriculture.....	103
The agricultural appropriation act, 1927-28.....	301
The reviving interest in research.....	401
The passing of five pioneers.....	601
The first 20 years under the Adams Act.....	701

VOLUME 57

The improvement of research in rural economics and sociology.....	1
The first International Congress of Soil Science.....	101
Third World's Poultry Congress.....	301
The 1927 Country Life Week of the Michigan State College.....	401
The dedication of the Lincoln Memorial Library at the South Dakota College.....	601
Agricultural education and research at the University of Nanking.....	603
Doctor Georgeson and the Alaska Experiment Stations.....	701

VOLUME 58

The forty-first convention of the Association of Land-Grant Colleges and Universities.....	1
Research at the 1927 convention of the Association of Land-Grant Colleges and Universities.....	101
Research in agricultural economics and rural sociology as reflected in the Washington meetings.....	301
Dr. Henry Clay White, a southern educator of national vision.....	401
Doctors Whitney and Glinka, pioneers in soil science.....	405
The Giannini Foundation of Agricultural Economics.....	601
An abstract journal for the social sciences.....	605
Isaac Phillips Roberts, prophet of agriculture.....	701
Willet Martin Hays, a threefold pioneer.....	706

VOLUME 59

Semicentennial celebration of the North Carolina Station.....	1
Edwin T. Meredith, deceased.....	101
Increased Federal provision for agricultural extension.....	104
The Second National 4-H Club Camp.....	106

	Page
The agricultural appropriation act, 1928-29, and related legislation.....	301
Research at the Washington meeting of the American Society of Agricultural Engineers.....	401
Agricultural research in the Seventieth Congress.....	404
The McSweeney-McNary Act for the promotion of Federal research in forestry.....	407
The Fourth International Congress of Entomology.....	601
Changes in the <i>Record</i>	701
Experiment station projects in 1927.....	704
Edward Mason Shelton, pioneer of Kansas and Queensland.....	706

VOLUME 60

The forty-second convention of the Association of Land-Grant Colleges and Universities.....	1
Research at the 1928 convention of the Association of Land-Grant Colleges and Universities.....	101
The American Society of Animal Production.....	301
Economic and sociological research at the Chicago meetings.....	305
A handbook on Research Method and Procedure in Agricultural Economics.....	308
Agricultural extension work in the United States, 1785-1923.....	401
Appropriations to the Federal Department of Agriculture for the fiscal year 1930.....	601
Thomas Burr Osborne, a personification of research ideals.....	701
Some Pennsylvania pioneers in agricultural science.....	706

SUBJECT INDEX

NOTE.—The numbers inclosed in parentheses refer to volume numbers, the others to pages. The station publications are indicated by an abbreviation of the station immediately before the page number, except where all the references are from the same station, in which case the abbreviation precedes the volume number.

Abaca—

- bunchy top or root-rot disease, control, (59) 541.
 - bunchy top, studies, (59) 147, 844.
 - culture experiments, (58) 429; (60) 327.
 - culture in Malaya, status, (54) 234.
 - deterioration by mold action, (57) 297.
 - disease, eradication, (56) 748.
 - diseases and pests, (57) 838.
 - dyeing, (60) 97.
 - experiments in Philippines, (55) 434.
 - fermentation, effect on quality, (60) 432.
 - fiber, deterioration, (55) 244.
 - fiber deterioration by mold action, (60) 347.
 - fibers, tensile strength, relation to acidity, (60) 432.
 - fibers, tensile strength, relation to cell length, (58) 596.
 - heart rot, studies, (54) 48; (55) 244; (59) 541.
 - international trade, (53) 296.
 - plant, nomenclature, (60) 133.
 - project of La Carlota Experiment Station, (59) 826.
 - root weevil, notes, (59) 541.
 - weak fibers, relation to soil conditions, (60) 431.
- Abietineae, endodermis in, studies, (51) 519.
- Ablerus elisiocampae, notes, (52) 557.
- Ablerus mytilaspidis, notes, (52) 557.
- Abortin, purification, (57) 379.
- Abortion—*see also* Alcaligines abortus, Bacillus abortus, Bacterium abortum, and Brucella abortus.
- acriflavine treatment for, (56) Ga. 278.
 - agglutination test in, (52) 580; (55) 875; (58) 173, 273; (59) 878.
 - and colon bacillosis, (54) 171.
 - antibodies, serological tests for, (58) Mo. 479.
 - bacilli carriers and the agglutination test, (51) 281.
 - bacilli in blood of calves from infected milk, (52) 181.
 - caused by Vibrio fetus, (54) 476.
 - complement fixation test for, (51) 282.
 - control, (51) 281; (52) 676; (53) Minn. 477, Wyo. 680; (54) 173, 475, 873; (57) 279, Colo. 279, Ga. 279;

Abortion—Continued.

- control—continued.
- (58) 472; (59) Colo. 272, 674; (60) 570, West.Wash. 775.
- control, rôle of sanitation and testing, (60) Ill. 272.
- control, vaccination for, (57) 574.
- developments of research, (60) 75.
- diagnosis, (54) Del. 674; (55) 576; (57) 672; (60) 871.
- diagnosis, double intradermal test for, (60) 271.
- diagnosis in guinea pigs, agglutination curve, (51) 282.
- diagnosis, placental examination for, (56) 476; (58) 273.
- discussion, (51) 585.
- during last two decades, (58) 276.
- epizootic, of cattle, (53) 678; (57) 278.
- equine paratyphoid, serological reactions in, (51) 183.
- eradication work, (56) Conn.Storrs. 874; (58) Ill. 366; (59) N.C. 777, -Oreg. 778; (60) Conn.Storrs 576, Conn.Storrs 577, 578.
- eradication work in Pennsylvania, (58) 174.
- experimental production, (51) 781.
- formol-vaccine treatment, (59) 275.
- handling, (60) 71.
- immunity and carrier problem, Calif., (53) 180, 477.
- immunization, (51) 478; (52) 99, 383, 780; (53) 481; (55) Ark. 72; (56) Ky. 172; (58) 173, 276, Ark. 368; (59) Calif. 775.
- immunization, value of vaccines and bacterins in, (51) 783.
- in cattle, (51) 581, 781, Ind. 879; (52) 283, Wis. 283, 384; (53) Colo. 179; (54) Wash.Col. 870; (55) Ind. 69; (56) Wash.Col. 573, Wis. 773, 876; (57) 182, Ind. 182, Mo. 467; (58) U.S.D.A. 73, Mo. 478, Del. 479, S.C. 675; (59) Wash.Col. 76, 79, 275; (60) Ky. 266, Wash.Col. 866.
- in cattle and swine, (51) Mo. 782.
- in cattle, avenues of infection, (55) Conn.Storrs 175.
- in cattle, bacterin treatment, (58) Ky. 71.

Abortion—Continued.

- in cattle, economic phases, (54) Conn. Storrs 774.
- in cattle, failure of control, (60) 871.
- in cattle introduced into China, (58) 73
- in cattle, mold associated with, (53) 678; (55) 574.
- in cattle, papers on, (53) 78; (60) 867.
- in cattle, present status, (51) 783.
- in cattle, relation to public health, (60) 871.
- in cattle, relation to undulant fever, (51) 479; (57) 182; (58) 675.
- in cattle, serum diagnosis, (59) 78.
- in cattle, spirilla as cause, (51) 383.
- in cattle, summary, (51) 281; (53) 279; (59) Kans. 173.
- in cattle, tests, (53) Conn. Storrs 80, 81, 887, Conn. Storrs 887.
- in cattle, use of vaccine for, (52) Ky. 482.
- in cattle, value of proflavine and acriflavine in, (57) 873.
- in cattle without demonstrable cause, (54) 173.
- in ewes, (52) Mont. 483; (53) 887.
- in mares, (52) 484; (53) 81; (55) 876; (57) 876; (60) Ky. 266.
- in mares, etiology, (52) 181.
- in mares, use of vaccine for, (52) Ky. 482.
- in plant pathology, (57) 637.
- in sheep, (54) Mont. 379, Mont. 678; (56) 876.
- in sheep in Silesia, cause, (56) 777.
- in swine, (51) 482; (52) Ill. 483; (53) Mo. 480; (56) Ill. 276, Ill. 379, 876; (57) Mo. 467; (58) Mo. 478.
- in Switzerland, (53) 887.
- induced by *Vibrio fetus*, (58) 875.
- infection in guinea pigs, detecting, (51) 479.
- notes, (57) Ind. 670; (60) 475.
- nutritional deficiencies as factors, (57) 772.
- on island of Hokkaido, (60) 76.
- organism of animals, human infections with, (56) 876.
- papers on, (51) 180, 577; (53) 178; (57) 180, 377.
- prevention and control, (51) West. Wash. 96; (54) 173; (56) 574.
- progress of work, (60) Oreg. 773.
- remedies, composition, (55) Can. 260.
- rôle of calf in transmission, (52) Mich. 882.
- serological studies, (54) 277.
- spread, bull as factor, (54) 873.
- station work on, (53) U.S.D.A. 677.
- status of knowledge, (52) U.S.D.A. 583; (53) 381; (57) Mich. 574.
- studies, (52) Calif. 82, Mich. 382, Kans. 481, Conn. Storrs 681, Kans. 779, Wash. Col. 882; (53) 182; (54) 476, Mo. 774; (55) Colo. 271, Oreg. 677; (56) Kans. 875; (57) Tex. 181, Calif. 277; (59) Wis. 77, Mich. 470, Conn. Storrs 473, 674, 876.

Abortion—Continued.

- studies, use of rabbits in, (53) 885.
- susceptibility of calves fed infected milk, (52) 82.
- tests for, technique, (51) 783.
- tests, importance of uniform methods, (57) 772.
- tuberculous, in cattle, (56) 476.
- vaccine and bacterin, use, (59) 577.
- vaccine, use, (53) Wis. 478.
- vaccine, value, (54) Ill. 378.
- value of living vaccine for, (56) Minn. 174.
- vibronic, in sheep, (51) 785.
- Abortion-free herds, establishment, (56) Del. 377.
- Abortoscope—
- apparatus for detection of abortion, (55) 72.
- value in agglutination tests, (59) 174.
- Abortus-melitensis group—
- agglutination affinities, (54) 872.
- metabolism studies, (58) 875; (60) 267.
- Abraxas grossulariata, notes, (56) 659.
- Abscission in plant tissues, (60) 809.
- Absorption apparatus, description, (51) 524.
- Absorption in different parts of gastro-intestinal tract, (56) 192.
- Abutilon avicennae, fall seeding experiments, (52) 633.
- Acacia—
- baileyana, new disease of, (57) 652.
- farnesiana, control, (56) Guam 229.
- lack of nodule-formation in, (56) 124.
- seedlings, descriptions, (56) 646.
- spp. for planting on sand dunes, (53) 846.
- Academy of Political Science meeting, addresses, (57) 83.
- Acalla comariana injury to strawberries in Sweden, (58) 348.
- Acalypha flea beetle, notes, (56) 157.
- Acanthocephala femorata, notes, (54) Fla. 257.
- Acanthocephalid from chicken and robin, (59) 881.
- Acanthorhynchus vaccinii, notes, (56) 249.
- Acanthoscellus obtectus, *see* Bean weevil.
- Acarapis woodi eradication, experiment in, (53) 260.
- Acari associated with sandflies in India, (55) 856.
- Acarina of Ohio, (54) Ohio 159.
- Acarine disease—
- and muscles of bee, (58) 265.
- control, (51) 764.
- eradication, experiment in, (53) 260.
- in hive bees, summary, (57) 659.
- notes, (51) 663; (54) 663.
- pathological changes in bees due to, (59) 461.
- status, (54) 158.
- Accelerometers, accurate, (52) U.S.D.A. 585.
- Accidents, laws pertaining to, in France, (53) 90.

- Accipitres, synopsis, treatise, (51) 657.
- Accounting, farm, *see* Farm accounting.
- Aceratogallia sticticollis in Argentina, (60) 163.
- Acerophagus notativentris, notes, (54) 558.
- Acerophagus nubilipennis n.sp., description, (55) 858.
- Acetaldehyde in Bartlett pears, relation to scald and breakdown, (58) 751.
- Acetate silk, coloring, (54) 596.
- Acetic acid as soil disinfectant, (59) 239.
- Acetic anhydride—
 action on amino acids, (60) 203;
 determination, (51) 203.
- Acetone—
 formation from sugars by *Bacillus acetothylicum*, (54) 7.
 from bacterial fermentations, (59) Wis. 12.
 in distillates from starters and milk, (53) Iowa 782.
 manufacture from starch, fermentation processes in, (52) 315.
 yield by distillation of wood, (54) 202.
- Acetylene, effect on ripening of bananas, (60) 641.
- Achaea lienardi, notes, (54) 157; (56) 859.
- Achatina fulica, control, (60) 839.
- Achatodes zea, notes, (53) 559; (60) 850.
- Achiya abortiva n.sp., notes, (58) 208.
- Achiya subterranea n.sp., notes, (58) 208.
- Achorutes viaticus in sprinkling filters, (59) N.J. 380.
- Achres spp., notes, (56) 756.
- Achrysoophagus modestus, notes, (54) 559.
- Achrysoophagus spp., notes, (58) 864.
- Achyrodes aureum, host for many rusts, (55) 844.
- Acid—
 ammonium sulfate as preservative for liquid manure, (51) 120.
 fertilizers, effect on scab control, (55) 751.
 formation as affected by ethyl alcohol, (52) 626.
 formation in milk by heating, (57) 373.
 phosphate, *see* Superphosphate.
 preservative action in catsup, (56) N.Y.State 711.
 radicals, inorganic and organic, detection, (57) 8.
 soils, absorption reactions, (60) 505.
 soils, biochemical activities, effect of lime, (56) Conn.Storrs 624.
 solutions, changes in pH value produced by growing seedlings, (51) 125.
 solutions, volumetric, preparation, (57) 708.
- Acidia heraclei, notes, (55) 854.
- Acidity, soil, *see* Soil acidity and Soils, acid.
- Acidophilus milk, *see* Milk.
- Acidosis of pregnant ewes, (58) 878.
- Acidosis, trembles, and milk sickness, (56) 572.
- Acids—
 absorption by wool, (60) 696.
 action on clay, (53) 722.
 action on insulin, (55) 307.
 action on silk, (60) 496.
 action on wool, (59) 694.
 added to infants' milk, effect, (59) 392.
 amino, *see* Amino acids.
 binding by proteins, (54) 802.
 dilute, and soils, interaction, (54) 620.
 effect on manganese, (52) 515.
 effect on plant growth, (53) 326.
 effect on rayon, (58) 197.
 fatty, *see* Fatty acids.
 in automobile crank cases, (57) 778.
 in feces of infants, effect of feeding, (59) 489; (60) 192.
 in milk, determination, (51) 207.
 nonvolatile, of blackberry, (53) 803.
 nonvolatile, of dried apricot, (53) 105.
 nonvolatile, of fruits and berries, (54) 7.
 nonvolatile, of peach, (53) 105.
 nonvolatile organic, of alfalfa, (54) 203.
 organic, determination, (59) 805.
 organic, oxidation, effect of chloroform, (52) 517.
 organic, produced during fermentation of dough, (55) 408.
- Actinopterus, paper on, (51) 551.
- Acokanthera, poisoning by, (60) 475.
- Acremonium fuliginosum n.sp., description, (52) 747.
- Acridians in France, (51) 761.
- Acridinae, classification of males, value of supra-anal tergite in, (54) Colo. 54.
- Acridine, inhibitory effect on sporogony of a coccidium, (53) 889.
- Acridium peregrinum, *see* Locusts, migratory.
- Acriflavine—
 action in bacterial infections, (54) 675.
 therapeutic value in abortion disease, (57) 873.
 treatment for abortion, (56) Ga. 278.
- Acritochaeta excisa, life history notes, (52) 155.
- Acrobasis—
 caryae, biology, (57) Tex. 361.
 caryae, life history and control, (55) Tex. 855.
 caryivorella, life history, (53) 361.
 hebescella, studies, (53) U.S.D.A. 54.
- Acrobeles bütschlii, notes, (60) 645.
- Acrobeles spp., notes, (57) 749.
- Acrolophus sp. injury to pastures, (53) 156.
- Acrostalagmus—
 glaucus n.sp., description, (55) 248.
 sachari n.sp., description, (55) 248.
- Acrothecium sp. on sorghum, (55) 445.
- Acrydiidae of India, catalogue, (51) 54.
- Actia pilipennis, notes, (56) 361.
- Actinobacillosis in Australian cattle, (52) 780; (59) 170.

- Actinomyces—
 acidophilus n.sp. in soils, (58) 814.
 bovis culture filtrate, specific reaction to, (59) 671.
 bovis infection of swine spleen, (58) 578.
 brasiliensis n.sp., notes, (51) 156.
 cause of sweet potato pox, (56) Del. 348.
 function in soil, (51) 324.
 necrophorus cultures, failure in, (55) 371.
 necrophorus, notes, (56) Colo. 878; (58) 176.
 P, notes, (60) Del. 744.
 scabies, notes, (52) 51; (55) 546.
 scabies, papers on, (56) 339.
 scabies, pathogenicity, factors affecting, (58) 653.
 sp., notes, (53) 46.
 strains, relation to types of potato scab, (60) 447.
 viridochromogenus, decomposition of proteins by, (53) 310.
 vitamin B synthesis by, (60) 294.
- Actinomycetes—
 in frozen soil, (54) 119.
 in partially sterilized soil, (51) 18.
 in soil, effect of decomposition of organic matter, (51) 620.
- Actinomycosis—
 and public health, (53) 580.
 in bovines, (60) 574.
 in cattle, studies, (58) 176.
 in domestic animals, etiology, (60) 73.
 tropical, studies, (58) 774.
- Actinonema rosae, notes, (55) 346.
 Acyrthosiphon pisi on alfalfa, (52) 254.
 Adalia bipunctata, parasitism of pupa, (55) 857.
- Adams Act, first 20 years under, editorial, (56) 701.
- Adco experiments, (57) La. 512.
- Adelges abietis, studies, (56) N.Y.Cornell 156.
- Adenia digitata, toxicity, (52) 82.
- Adenine in alfalfa juice, (53) 712.
- Adenoids, operation for, results, (51) 366.
- Adenoma, green liver cell, in a bovine, (60) 574.
- Adenosarcomata in kidneys of chickens, (60) 874.
- Adhatoda vasica as green manure and cover crop, (52) 732.
- Adhesives—
 and furfural from corncobs, (51) 114.
 chemistry of, (54) 503.
 research committee, report, (55) 616.
- Adiposity in mice, heredity, (57) 721.
- Adirus trimaculatus as rose pest, (52) 663.
- Adisura atkinsoni, notes, (57) 655.
- Adlay—
 experiments in Philippines, (55) 434.
 feeding value, (54) 864.
 flour, baking qualities in batters, (51) 364.
 progress report, (53) 835.
- Adlay—Continued.
 variety tests, Guam, (53) 430; (55) 131.
 vitamin B in, (55) 294.
- Adobe—
 brick for farm buildings, (55) Colo. 280.
 soil, water percolation through, effects of liming, (51) 625.
 sweet potato storage house, (54) Ariz. 78.
 value as building material, (60) P.R. 779.
- Adoretus sinicus, parasites of, (55) 662.
- Adrenal glands—
 function, (51) 269.
 of pigeons, effect of inanition and vitamin B deficiency, (60) 594.
- Adrenaline—
 effect on carbon dioxide production, (52) 626.
 hydrochloride action, effect of various factors, (51) 269.
- Adrenals as affected by castration in rats, (52) 480.
- Adsorption—
 and soil acidity, (53) Mich. 798.
 and soil gels, theory, (55) 719.
 by activated sugar charcoal, (52) 110; (54) Mich. 512.
 force of soils, (54) 418.
 in cultivated soil, (54) 813.
 phenomena, studies, (51) 117.
- Advertising—
 cooperative, of farm products, (54) 883.
 farm products, (53) N.Dak. 292.
- Accidium—
 grossulariae, notes, (56) 542.
 mori, notes, (57) 639.
 solani-unguiculati, notes, (57) 444.
- Aedes—see also Mosquitoes and Yellow fever mosquito.
 albopicta, bionomics, (52) 155.
 pecuniosus, biology, (52) 557.
 spp., transmission of yellow fever by, (60) 63.
 vexans, parasite of, (52) 358.
- Aegeria—
 exitiosa, see Peach borer.
 opalescens control, (52) Calif. 57.
 tibialis, notes, (60) 651.
 tipuliformis, see Currant borer.
- Aegeriidae in Oregon, (60) 651.
- Aegerita, notes, (60) 162.
- Aegilops—
 and rye hybrids, (55) 633.
 and Triticum, comparison, (57) 633.
 and wheat crossings, chromosome behavior, (54) Me. 325.
 and wheat hybrid, new fertile, (55) 226.
 and wheat hybrids, (53) 332, 730; (55) 633; (58) 525.
 and wheat hybrids, morphology and cytology, (56) 633.
 wheat and rye hybrid, notes, (58) 320.

- Aegilops*—Continued.
wild species, hybridization with wheat, (53) 138.
- Aeginetia*—
indica, notes, (55) 244.
sp. as sugar cane root parasite, (53) 47.
- Aenoplex plesiotypus*, notes, (52) U.S.D.A. 456.
- Aeolothrips fasciatus* affecting apples, (58) 558.
- Aeolus dorsalis*, notes, (60) 654.
- Aeolus elegans*, notes, (51) 855; (53) 156.
- Aeration*—
effect on plant growth, (51) 516; (52) 512.
effect on soy bean growth, (52) 125.
in leaves, estimation, (52) 517.
of soils. *see* Soils, aeration.
- Aerobes, development, effect of sugar concentration in medium, (53) 117.
- Aerochoreutes carlinianus carlinianus*, notes, (53) 756.
- Aeroelectric plant, tests, (55) Iowa 579.
- Aerological*—
code, 1926, (56) U.S.D.A. 617.
survey of United States, (56) U.S.D.A. 507.
- Aeschynomene americana* as weed in Cuba, (54) 239.
- Afforestation, *see* Forestation.
- African coast fever—
histological studies, (60) 574.
immunity, nature of, (58) 474.
notes, (51) 781; (55) 173; (58) 474; (59) 471; (60) 475.
survey of outbreaks, (59) 672.
theory of latency, (53) 886.
- Agalaxia of sheep and goats, cause, (55) 475.
- Agallia sticticollis*, transmission of beet curly top by, (59) 850.
- Agar*—
acid, free, preparation, (54) 612.
electrodialysis, (54) 612.
hydrophilic effect of ions, (55) 627.
slants, exudate from, (56) 573.
swelling, effect of electrolytes, (54) 320.
- Agar-agar gels swelling, relation to water content, (54) 320.
- Agaricus melleus*, notes, (57) 157; (59) 537.
- Agathodes orientalis*, notes, (57) 857.
- Agaves, experiments in Philippines, (55) 434.
- Age and area theory—
critical review, (55) 629; (56) 221.
of plant distribution, (60) 809.
relation to flora of tropical America, (55) 730.
reply to criticism, (52) 219.
statistical methods, (53) 225.
treatise, (51) 821.
- Ageniaspis fuscicollis*, notes, (51) 553.
- Ageratum* cuttings, stimulation, (52) 239.
- Agglutination*—
by precipitin, (60) 665.
critical review, (57) 769.
curve in diagnosis of abortion, (51) 282.
test, abortoscope method of applying, (58) 577.
test for abortion, methods, (51) 281.
test for bacillary white diarrhea, (57) 773.
test, macroscopic, effect of fat in blood serum, (51) 384.
test, macroscopic, rapid method for, (58) 576.
- Agglutinin absorption, (56) 676.
- Aggregates, road, *see* Road materials.
- Aggrassin immunization against anthrax, (55) 173.
- Agrarian*—
crisis, international, (53) 296.
customs of Italy, national survey, (53) 596.
discontent in the South, 1880-1900, (54) 485.
laws in Ireland, (53) 596.
laws in Rumania, application, (53) 193.
movement in North Dakota, (54) 83.
problem in Poland, (57) 484.
question in Mexico, historical survey, (54) 286.
question in Russia, history, (53) 192.
reform in central Europe, (60) 684.
reform in Czechoslovakia, (52) 392.
reform in Hungary, (51) 688.
reform in Rumania, (51) 687; (52) 392; (54) 284.
revolution in Rumania, treatise, (52) 94.
revolution in Russia, (53) 192.
situation in Rumania, (55) 83.
- Agrarianism, historical survey, (57) 289.
- Agreutreta discoidalis*, parasite of, (58) 666.
- Agricultural*—
Academy in Lithuania, yearbook, (58) 687.
adjustments in northern Indiana, (57) Ind. 680.
advancement, (59) Miss. 186.
advisory committee, international, report, (52) 94.
analysis, principles and practice, treatise, (55) 110.
analysis, quantitative, treatise, (57) 504.
and business cycles, (52) 892.
and Veterinary College of Minas Geraes, Brazil, notes, (60) 797.
associations, development, (51) 687.
associations in Switzerland, (52) 790.
associations in United States, directory, (51) 895.
associations, international organization, (59) U.S.D.A. 88.
bank of South Africa, reports, (52) 192; (54) 182.
bookkeeping in different countries, (54) 586.

Agricultural—Continued.

- building materials in Germany, prices, (52) 491.
- business management, (51) 890; (53) 392.
- business organization principles, treatise, (53) 591.
- census in Finland, results, (51) 298.
- census in Norway for 1923, (53) 94.
- census, world, proposed, (54) 788; (57) 400.
- census, world, standard schedule form, (55) 787.
- chemical analysis, paper on, (54) 98.
- chemistry, *see* Chemistry.
- clubs, junior, (52) 795.
- code, Alabama, 1923, (51) 193.
- college—
 - and model farm in the Ukraine, notes, (56) 499.
 - education, (53) 494.
 - education, treatise, (52) 898.
 - in Burma, notes, (52) 800.
 - of Denmark, (57) 763.
 - student, agricultural economics for, (59) 481.
- colleges—
 - and experiment stations, early trials, (57) 660.
 - and universities, survey, (56) 198; (58) 4, 98.
 - curricula, (56) 587; (57) 83.
 - history, decade of, (53) 401.
 - home economics education in, (54) 589.
 - improvement of instruction, (58) 188.
 - opportunities for students, (59) U.S.D.A. 90.
 - organization list, U.S.D.A., (52) 95; (53) 298; (55) 288; (56) 790; (59) 90.
 - papers on, (53) 597; (55) 384.
 - statistics, (52) 195, 298; (54) 788.
- colonization—*see also* Colonization and Land settlement.
 - in New Mexico, (54) 185.
 - in South America, (54) 185.
 - in Spanish Protectorate of Morocco, (51) 393.
 - policy of Zionist Organization, (56), 790.
- commerce, textbook, (51) 299.
- community, Icelandic, economic and social developments, (54) 887.
- concessions in Russia, (51) 94.
- conditions—
 - forecasting, (52) 892.
 - in Canada, proceedings of special committee on, (53) 192.
 - in Cardiganshire, 1823–1894, (54) 185.
 - in India, (54) 185.
 - in Soviet Russia, (53) 393.
- conferences in Western States, (58) U.S.D.A. 288.

Agricultural—Continued.

- contracts ordinance, (55) 286.
- cooperation—
 - American, papers on, (60) 680.
 - development and status, (52) U.S.D.A. 592; (56) 685.
 - factor in stabilizing the market, (52) U.S.D.A. 592.
 - failure in England, (54) 285.
 - Government policy toward, (60) U.S.D.A. 486.
 - in British Empire, treatise, (57) 386.
 - in Bulgaria, (52) 790.
 - in Canadian West, (55) 83.
 - in Czechoslovakia, (53) 94.
 - in Denmark, (52) U.S.D.A. 95; (58) 890.
 - in England and Wales, (54) 81.
 - in Europe, studies, (56) 889.
 - in France and Italy, (52) 95.
 - in India, (51) 395, 596; (57) 885.
 - in India, higher finance of, (52) 691.
 - in Italy, (54) 588.
 - in Michigan, Mich., (53) 795; (60) 187.
 - in New York State, (59) 88.
 - in Poland, (55) 186.
 - in Rumania, (51) 687.
 - in Russia, (52) 95.
 - in United States, laws, (51) 193.
 - in United States, status, (53) 798.
 - in western Canada, (53) 592.
 - legal status, (58) 787.
 - papers on, (57) 87.
 - possibilities and limitations, (56) Ky. 789.
 - reading list, (56) U.S.D.A. 889.
 - supplement, (52) U.S.D.A. 297.
 - treatise, (52) 194; (60) 889.
 - under Iowa cooperative laws, (53) Iowa 94.
- cooperative—
 - associations in New Mexico, (58) N.Mex. 787.
 - associations, marketing and purchasing, (58) U.S.D.A. 787.
 - movement, English, (55) 83.
 - organizations in Denmark, (59) 285, 588.
 - organizations in Pennsylvania, (57) 482.
 - societies in England, loans to, (53) 392.
 - society of Bengal, (57) 885.
- Council of Denmark, report, (54) 885.
- credit—
 - and community settlement bill in New South Wales, (51) 91.
 - and control of land values, (55) 586.
 - cooperative associations in Philippines, (53) 894.
 - facilities of British Government, use, (59) 483.
 - in Australia, (60) 384.

Agricultural—Continued.

- credit—continued.
 in Brazil, (51) 91.
 in Chosen, (58) 188.
 in Foster Co. (51) N.Dak. 393.
 in France, (58) 685.
 in Germany, effect of depreciation of currency, (52) 691.
 in Great Britain, (57) 190.
 in Illinois community, (60) 384.
 in Jugoslavia, (56) 484.
 in New Zealand, (54) 80.
 in Philippines, (59) 587.
 in plantation and upland cotton districts, (60) Ark. 185.
 in Poland, (57) 684.
 in Rumania, (60) 886.
 in United States, (54) U.S.D.A. 80.
 in United States and Canada, treatise, (51) 689.
 in Wisconsin community, (58) 888.
 institutions, organization, (58) 785.
 international, (56) 685.
 legislation, value, (53) 895.
 principles, textbook, (58) 685.
 relation to crop insurance, (56) 686.
 report on, (52) 191.
 short-term, (57) Tex. 189.
 social aspects, (58) 785.
 studies, (58) S. C. 684.
 systems in United States, (51) 891.
 to Arkansas farmers, (55) Ark. 586.
 Credits Act, use of, (52) 393.
 credits, report of Royal Commission on, (58) 888.
 crisis and the church, (60) 590.
 crisis in Switzerland, (52) 394.
 crisis, 1920-1923, (52) 389.
 curriculum for Middle West, (51) 897.
 debt in Punjab, (54) 286.
 depression—
 and price level, (53) 493.
 and proposed relief, (55) 886.
 cause, (53) 795.
 credit aspects, (53) 692.
 nature of, (53) 594.
 official reports, (54) 186.
 periodical, and remedies, (53) 691.
 studies, (52) 896.
 development and irrigation construction, (58) Calif. 285.
 development in California, problems, (54) 286.
 development on Umatilla Project, (53) U.S.D.A. 390.
 developments in Palestine, (53) 797.
 ecology, (54) 819.
 Ecology, International Institute, organization and work, (54) 412.

Agricultural—Continued.

- economic conference of Oregon, report, (52) 490.
 economic research in United States, (60) 884.
 economics—*see also* Rural economics.
 elementary textbook, (60) 490.
 governmental activities, 1839 to 1913, (60) 677.
 in Russia, (60) 677.
 representative firm idea applied to, (60) 677.
 research, (60) 884.
 research in United States, (60) 585.
 research method and procedure, handbook, (60) 381.
 research method and procedure, handbook, editorial, (60) 308.
 survey methods of study, (60) 585.
 textbook, (60) 884.
 Thunen's theory of intensity, (60) 677.
 education—*see also* Agricultural colleges, Agricultural instruction, and Agricultural schools.
 and crisis in agriculture, (51) 100, 396.
 and improvement in China, British aid to, (56) 97.
 and research at University of Nanking, (57) 603.
 and research in Denmark, (52) 96.
 and research in Great Britain, funds for, (51) 698.
 and research in Haiti, (58) 699.
 and research in Scotland, (52) 898.
 and research in United States, (52) U.S.D.A. 596.
 Association of Great Britain, history, (57) 887.
 Association, proceedings, (51) 396.
 elementary, in the Netherlands, (51) 299.
 expenditures from development fund, (51) 194.
 for women in Belgium, (55) 99.
 higher, of future, (51) 795.
 in Australia, notes, (52) 798.
 in British universities, (53) 193.
 in Burma, (55) 100.
 in Canada, (55) 788.
 in China, history and status, (55) 289.
 in Cornwall, (52) 597.
 in Denmark, (59) 588.
 in England and Wales, (53) 298; (55) 486.
 in England and Wales, annual grants for, (59) 487.
 in France, (57) 387.
 in Great Britain, (54) 85, 487; (55) 498; (56) 187.
 in India, (53) 193; (57) 887.

Agricultural—Continued.

education—continued.

- in Ireland, (51) 492, 896; (54) 187; (57) 387; (60) 489.
 - in Porto Rico, (57) 289.
 - in Scotland, (51) 796; (52) 100, 695; (60) 388.
 - in Siam, (54) 798.
 - in South Africa, (51) 492; (56) 198.
 - in Switzerland, (54) 85.
 - in United States, (54) 487.
 - new developments in, (57) 485.
 - organization and administration, (53) 298.
 - papers on, (55) 384.
 - pioneers in, passing of, editorial, (56) 601.
 - projects and project method in, treatise, (58) 687.
 - promotion by foreign missions, (52) 701.
 - scheme, (58) 586.
 - service of Federal Board for Vocational Education, (54) 589; (56) 487.
 - State program in, organization and administration, (58) 82.
 - subsection in International Congress of Agriculture, (51) 298.
- education, vocational—
- Arkansas plan, (52) 96.
 - course for high schools, (53) 397.
 - course outlines for, (56) 488.
 - developments in, (60) 685.
 - effectiveness, (51) 693, 897; (60) 890.
 - efficiency in, treatise, (60) 685.
 - for negroes, (55) 888.
 - future of, (52) 495.
 - high school departments, (51) 195.
 - in Mississippi, minimum financial goal, (52) 96.
 - in Missouri high schools, (51) 395.
 - in Texas, (55) 888.
 - measuring results, (52) 495.
 - methods of teaching, (53) 396.
 - organization and conduct of schools and classes, (55) 486.
 - promoting, (53) 397.
 - State fair program in, (51) 196.
 - teacher training, (53) 397; (58) U. S. D. A. 789, 891.
 - teaching, (51) 897; (52) 494.
 - teaching, case method, (58) 189.
 - teaching, treatise, (57) 887.
 - training for leadership, (57) 485.
 - value, (56) 389.
 - work of Federal Board for, (52) 696.
- engineering, *see* Engineering.
- Enquiry Committee of Nova Scotia, report, (55) 887.
- Enquiry Committee of Ontario, report, (54) 587.

Agricultural—Continued.

- exhibits and fairs, (51) 494.
- experiment stations, *see* Experiment stations.
- experiments, law of diminishing returns, (59) 679.
- exports—
 - and imports, statistics of, summary, (52) U.S.D.A. 297.
 - financing, (52) 493.
 - from United States, distribution, (53) 295.
 - index numbers of volume, (52) U.S.D.A. 297.
 - value and volume, relation, (53) 491.
- extension—*see also* Extension.
 - among negroes, (54) U.S.D.A. 189.
 - and demonstration, (54) Hawaii 189.
 - courses and supervised practice, (51) 299.
 - development, (55) U.S.D.A. 86.
 - development, editorial, (55) 1.
 - increased Federal aid for, (59) 104.
 - papers on, (53) 598; (55) 384; (56) 587.
 - report, (52) Calif. 96.
 - service of New York State College of Agriculture, (51) 96.
 - use of motion pictures in, (56) U.S.D.A. 791.
 - work, (54) Mich. 689.
 - work and the resident department, (51) 493.
 - work, cooperative, U.S.D.A., (51) 196, 897; (53) 298.
 - work, cooperative, methods and results, U.S.D.A., (51) 796; (54) 290.
 - work, effectiveness, (53) 95; (56) Wis. 488.
 - work in United States, history, (60) U.S.D.A. 488.
 - work in United States, 1785–1923, history, editorial, (60) 401.
 - work in Western States, (54) U.S.D.A. 689.
 - workers' handbook, (51) 299.
- geography and dynamics, laws of (59) 383.
- Geography of Salt Lake Oasis, (54) 884.
- geology, treatise, (60) 315.
- high school in Ontario, (52) 793.
- Holdings Acts of Great Britain, (53) 794.
- holdings in India, disintegration and reunion, (51) 393.
- hydraulics laboratory in Argentina, (52) 898.
- hydraulics, studies, (55) 581.
- implements, drawbar tests, (58) 681.
- implements, markets for, in Argentina, (54) 286.

Agricultural—Continued.

- implements, modification in Bombay, (57) 879.
- income in United States, Bureau of Agricultural Economics estimates, (60) 883.
- income, research in, (58) 887.
- industries, substances important in, treatise, (55) 501.
- industry of southeastern Pennsylvania, (60) 382.
- institute, Hertfordshire, aims and work, (55) 690.
- instruction—*see also* Agricultural colleges, Agricultural education, and Agricultural schools.
 - in India, (51) 299.
 - in Ireland, (52) 396.
 - in Mauritius, (52) 397.
 - linking with community projects, (52) 495.
 - papers on, (51) 396.
- intelligence and phytopathology, (52) 746.
- journalism, textbook, (56) 390; (58) 289.
- journals, new, (51) 100; (52) 799; (53) 100, 199, 699; (54) 500, 600, 799; (55) 100, 200, 400, 500; (56) 100, 199, 500, 800; (57) 500, 700; (58) 500, 700, 799; (59) 300, 400, 699; (60) 500, 700, 800.
- labor—*see also* Labor.
 - accident insurance for, (55) 81.
 - and power studies, (58) Pa. 377.
 - and power studies in Pennsylvania, (60) 79.
 - cost, relation to total costs of production, (57) 480.
 - distribution, Mo., (53) 494; (54) 783.
 - English, history, (54) 83.
 - in lower Saxony, history, (52) 895.
 - in Massachusetts, (51) U.S.D.A. 393.
 - in Seneca Co., New York, (52) 392.
 - income, (53) Mont. 793.
 - income average, and average cost of production, (59) 586.
 - on Georgia farms, (53) U.S.D.A. 190.
 - on truck farms, (53) U.S.D.A. 291.
 - requirements at Williston Substation, (53) N.Dak. 591.
 - requirements for Arkansas crops, (51) U.S.D.A. 90.
 - requirements in orchards, (59) N.H. 283.
 - science of, (58) 187.
 - scientific management, (57) 480.
 - seasonal distribution, (53) 689.
 - supply in Scotland during the war, (53) 592.

Agricultural—Continued.

- labor—continued.
 - utilization, Mo., (51) 794; (58) 487.
 - wages and working hours in Scotland, (53) 689.
 - wages compared with cost of living, 1906 to 1925, (55) 885.
 - wages, data, (54) U.S.D.A. 184.
 - wages, fixing, (53) 392.
 - wages in Bombay Presidency, (53) 89.
 - wages in Switzerland, (52) 788.
 - wages, index numbers, Ohio, (53) 898; (54) 184, 389, 588; (55) 82, 482, 684; (56) 183, 285, 581; (57) 299, 494, 697, 883; (58) 381, 684; (59) 180, 482, 783; (60) 183, 483, 782.
- laborers, accident insurance in France, (59) 88.
- laborers, diet of, (54) 688.
- land, *see* Farm land and Land.
- law, contemporary, in Great Britain, (58) 888.
- law of Scotland, (53) 296.
- laws in Great Britain during 1925, (55) 787.
- laws of Northern Ireland, (54) 588.
- lecture train in China, (51) 193.
- lectures in Mauritius, (52) 397.
- legislation, international yearbook, (51) 794; (56) 485; (59) 482.
- legislation, 1924, summary, (56) 485.
- liens, effects on freedom of trade, (59) 587.
- loans in Ireland, (55) 381.
- machinery—*see also* Combines, Harvesting, Threshing, etc.
 - and implement studies at Pusa, (51) 389.
 - application of electricity to, (53) 389.
 - certificate of recognition, (54) 480.
 - construction, testing methods, (59) 84.
 - continuous dry dusting, for grains, (59) 538.
 - costs, (56) Ohio 285.
 - depreciation, (55) 481.
 - description, (53) 390.
 - ditch cleaning and cutting, (57) N.J. 779.
 - electrically operated, power consumption, (58) Ill. 373.
 - for corn borer control, (56) 179.
 - for deep tillage, (55) 779.
 - for dusting seed wheat, (54) Calif. 78.
 - for grape leafhopper control, (56) 179.
 - for insecticides, (57) 855, 856.
 - for threshing and separating single bundle harvests, (51) 88.
 - guide, (53) 286.

Agricultural—Continued.

- machinery—continued.
 industry, German, development, (58) 284.
 international trade, (60) 675.
 manufacture methods, (53) 891.
 markets for, in Argentina, (54) 286.
 metals used in, tests, (53) 286.
 papers on, (53) 399.
 plants, press work in, (54) 283, 480.
 press work in, (53) 790.
 purchase, care, and operation, (55) Ill. 481.
 requirements, (60) Ala. 182.
 research in, (60) 80.
 sheds for, plans and construction, (58) 183.
 standardization, (53) Iowa 788.
 standards of safety for use of, (59) 378.
 tests, (56) 80.
 textbook, (51) 389.
 treatise, (53) 84.
 use in cotton production, (58) Ark. 373.
 wider use in Spain, (51) 488.
 machines, draft measurements, value, (59) 378.
 map of Union of Socialistic Soviet Republics, (56) 790.
 mechanics, treatise, (52) 598.
 meteorology, *see* Meteorology.
 methods, eastern, (51) 193.
 movements, sociological implications, (52) 790.
 nature study, course of instruction in, (52) Calif. 597.
 occupations of college graduates of Pennsylvania, (55) 485.
 organization of Brazil, (51) 690.
 Organization Society of Ireland, report, (51) 193.
 Organization Society, report, (51) 596.
 organizations, activity in plant production in Zealand, (53) 695.
 organizations in Canada, (51) 193.
 organizations, international, of the future, (51) 100.
 outlook, (57) 83, 382; (59) S.C. 86.
 for Iowa, (55) Iowa 187.
 for 1924, (51) U.S.D.A. 297.
 for 1925, (53) U.S.D.A. 92.
 for 1926, (54) U.S.D.A. 884.
 for 1927; (56) Okla. 888, Tex. 888, U.S.D.A. 888; (57) Iowa 190.
 for 1928, (58) U.S.D.A. 782; (59) Iowa 183, Tex. 587.
 for Oklahoma, (58) Okla. 782.
 for Utah, (58) Utah 886.
 material, use of, (60) 883.
 output of England and Wales, (57) 485; (60) 586.
 parasitology, treatise, (58) 661.
 phenology, possibilities, (52) 16.

Agricultural—Continued.

- policy, American, economic factors in, (53) 796.
 population, *see* Population and Rural population.
 possibilities in Argentina, (53) 693.
 power, cost, (55) 479.
 practices of China, revolutionizing, (55) 484.
 practices of Indians in Southwest, (60) Ariz. 183.
 prices—
 and cooperative marketing, (53) 493.
 and production, relation to freight rates, (54) N.Y. Cornell 883.
 Central of Norway, report, (53) 796.
 in Canada, (52) 896.
 in Germany, (52) 789.
 in Montana, (53) 493.
 legislative interference with, (53) 493.
 stabilization, (53) 691; (54) 184.
 problem in United States, (58) 885.
 problems, (51) 196.
 problems, international, (53) 290; (56) 684; (57) 382.
 problems, regional views, (59) 483.
 produce in England, distribution and prices, (51) 394.
 producers and consumers, types of cooperative relations, (58) 787.
 producers, cooperative organizations, relation to consumers in France, (58) 685.
 production—
 adjusting to market demands, (51) Pa. 89; (53) N.H. 687.
 and commerce in Spain, (51) 692.
 and distribution, adjusting, W.Va., (52) 493; (56) 786.
 and marketing in Atlantic Co., (54) N.J. 186.
 and marketing in Lebanon Co., (54) Pa. 881.
 and marketing in Wayne Co., (54) Ind. 386.
 and prices, (57) S.Dak. 589.
 consumption, and marketing in Greenville trade area, (57) S.C. 683.
 control by governments, (58) U.S.D.A. 686.
 control in Great Britain, (53) 592.
 cooperation in, (56) 889.
 in Denmark, (52) 494.
 in Tropics, (58) 785.
 in United States, changes in, (59) 684.
 index numbers, (59) Iowa 86.
 index numbers, Ohio, (53) 898; (54) 184, 389, 588; (55) 82, 482, 684; (56) 183, 285, 581; (57) 299, 494, 697, 883; (58)

Agricultural—Continued.

- production—continued.
 - index numbers—continued.
 - 381, 684; (59) 180, 482, 783; (60) 183, 483, 782.
 - inquiry by International Labor Office, (53) 399.
 - relation to cooperative marketing, (53) 895.
 - surplus, in America and German needs, (52) U.S.D.A. 297.
- products—
 - advertising, (53) N.Dak. 292.
 - American, market in United Kingdom, (52) 594.
 - and industries of Brazil, (51) 94
 - balance of trade in, (56) 789.
 - bounties on, (57) U.S.D.A. 884.
 - comparative prices, (55) Ohio 684.
 - consumed by farm family, (55) Ohio 482.
 - cooperative advertising, (54) 883.
 - cost of labor and power, (54) 682.
 - cost of production, (51) Mo. 794; (54) 181, Mo. 782; (55) Miss. 181.
 - cost of production in South Dakota, (52) 390.
 - demand curves, determination, (54) 286.
 - elasticity of supply, (53) 294.
 - estimated gross income, monthly indexes, (59) Ohio 783.
 - exports, (57) 386.
 - Federal standards for, (58) U.S. D.A. 385.
 - in industry, (60) 586.
 - in Italy, regulation of selling price, (52) 394.
 - in Spokane Valley, (59) Wash. Col. 87.
 - index of gross income from, (57) Iowa 588.
 - movement and prices in Brazil, (54) 287.
 - new markets for, (60) Ill. 485.
 - prices, (58) Ill. 380; (59) Ind. 785.
 - prices, comparative, (57) Ohio 494.
 - prices in Germany, (52) 491.
 - prices received by producers, U.S. D.A. (56) 888; (57) 588.
 - quality, relation to climate, (52) 114.
 - selling by auction, (54) U.S.D.A. 484.
 - standardization, (59) 887.
 - transit, prices, and marketing in northern Ireland, (59) 485.
 - transportation, relation to export trade, (53) 295.
 - world production v. American production, (57) 87.
- program for Montana, (51) Mont. 688; (57) 683.

Agricultural—Continued.

- program for northwest Colorado, (60) 585.
- program, national, (51) 189.
- program of Maryland, (51) 893.
- program, State, basis, (53) 792.
- programs, long-time, (53) U.S.D.A. 493.
- progress in typical Maryland community, (56) Md. 786.
- progress, seventy-five years of, (52) 737.
- project planning, (57) 486.
- publications, changes in, (60) 799.
- purchasing power, measure, (55) 686.
- readjustment in Corn Belt, (53) 896.
- regions of Europe, (55) 83.
- regions of North America, (60) 382.
- regions of North America, classification, (59) 383.
- regions of North Dakota, (52) N.Dak. 694.
- requisites in Norway, cooperative purchase, (51) 296.
- research—
 - and education at University of Nanking, (57) 603.
 - and education, Federal aid for, (56) Kans. 584.
 - and land valuation, papers on, (53) 598.
 - as a career, (58) 497.
 - as basis for policy and program, (60) 884.
 - at convention of Land-Grant Colleges and Universities, editorial, (56) 1; (58) 101.
 - at meeting of American Society of Agricultural Engineers, editorial, (59) 401.
 - at University of Minnesota, (55) 405.
- facilities in Canada, survey, (60) 500.
- in Australia and New Zealand, (56) 97.
- in Bombay, (54) 231; (56) 135.
- in British East Africa, (55) 498.
- in Denmark, (52) 96.
- in England and Wales, (54) 85.
- in Great Britain, (54) 487; (58) 687.
- in Great Britain, grants for, (58) 288.
- in Haiti, (58) 699.
- in Scotland, (51) 796; (52) 100, 695, 898.
- in Siam, (54) 798.
- in South Australia, (58) 798.
- in United Kingdom, editorial, (55) 601.
- in United States, (52) U.S.D.A. 596.
- Institute in India, notes, (52) 798.
- Institute of East Africa, (59) 800.

Agricultural—Continued.
research—continued.

- national problems for cooperation, (56) 101, U.S.D.A. 195.
- Ohara Institute for, (56) 500.
- papers on, (55) 384; (57) 762.
- pioneers in, passing of, editorial, (56) 601.
- provision for by the Seventieth Congress, editorial, (59) 404.
- relation to cotton and linen industry, (53) 530.
- theory and methods of correlation, (57) U.S.D.A. 188.
- resources and living conditions in Texas, treatise, (51) 297.
- revolution, (60) 585.
- scholarships in Great Britain, (57) 485.
- school at Gamams, Southwest Africa, (60) 500.
- school classes, evening, in dairying, (56) 790.
- schools—*see also* Agricultural colleges, Agricultural education, and Agricultural instruction.
 - and small holdings schools of Norway, (53) 598.
 - courses in Rhine Province, (52) 597.
 - in Saxony, (51) 598.
 - Mexican, (56) 800.
 - middle, in India, (55) 788.
 - part-time, (55) 788.
- science, some Pennsylvania pioneers in, editorial, (60) 706.
- science, some Pennsylvania pioneers in, notes, (60) 795.
- self-sufficiency of Germany, (59) 285.
- settlements, Jewish, in the Soviet Union, (54) 286.
- show, educational value, (51) 694.
- shows, students' competitions at, (52) 696.
- situation—
 - in California, (59) 884.
 - in Germany, (54) 587.
 - in Idaho, (57) Idaho 683.
 - in Roanoke trade area, (53) Va. 595.
 - relation to population, (52) 694.
 - report, (58) 587.
 - treatise, (53) 795.
- societies, early development in United States, (54) 485.
- society, model rules for, (51) 895.
- statistical research, analysis, (54) 289.
- statistics, (57) Me. 289; (60) N.C. 783.
- statistics, U.S.D.A., (54) 84, 184; (55) 787; (57), 589, 686; (58) 81; (59) 486.
 - Federal, adequacy and shortcomings, (59) 383.
 - international yearbook, (52) 792; (54) 289; (56) 790; (58) 188.
 - methods of collecting, (54) 289.

Agricultural—Continued.
statistics—continued.

- of Alabama, State sources, (55) U.S.D.A. 187.
- of Algeria, (54) 588.
- of Argentina, (53) 693.
- of Australia, (51) 895; (52) 95.
- of Austria, (52) 897.
- of Bombay Presidency, (59) 626.
- of Brazil, (53) 693; (54) 887.
- of British India, (51) 692.
- of Bulgaria, (54) 85.
- of California, (53) 691.
- of Canada, (52) 95, 792; (55) 485; (57) 787.
- of Chile, (52) 95; (53) 693.
- of Colorado, (51) 94; (54) 588.
- of Denmark, (52) 395, 792.
- of Dutch Colonies, (51) 298.
- of England and Wales, (60) 589.
- of Finland, (51) 298; (52) 395.
- of France, (52) 194; (54) 887.
- of Germany, (51) 194.
- of Great Britain, (52) 792; (54) 85; (55) 787; (57) 387; (58) 891.
- of Greece, (52) 793.
- of India, (51) 395; (52) 95, 395, 396.
- of Ireland, (53) 596.
- of Japan, (52) 793.
- of Java and Madura, (51) 298; (53) 396.
- of Maryland, (51) 895.
- of Montna, (51) 194.
- of Nebraska, (55) 690.
- of Netherlands, (52) 395.
- of New Zealand, (53) 494.
- of Newlands Project, (53) U.S.D.A. 893.
- of North Platte Reclamation Project, (51) U.S.D.A. 194.
- of Northern Ireland, (56) 891.
- of Norway, (52) 194, 792.
- of Ohio, (52) 897.
- of Oklahoma, index to State official sources, (58) U.S.D.A. 385.
- of Ontario, (55) 288.
- of Pennsylvania, (54) 686.
- of Queensland, (55) 288.
- of Rumania, (53) 193.
- of Scotland, (51) 94; (53) 94; (54) 290.
- of Siam, (52) 194.
- of Spain, (51) 491.
- of Sweden, (51) 895; (52) 792; (53) 597, 898.
- of Umatilla field station, (57) U.S.D.A. 686.
- of Union of South Africa, (52) 897; (54) 85.
- of United Kingdom, (52) 395; (58) 687.
- of United States, U.S.D.A., (51) 193, 194, 394, 491, 597, 692, 795, 893, 895.
- of Virginia, (52) 897.

Agricultural—Continued.

- statistics—continued.
 - of Wisconsin, (53) 298.
 - of Wyoming, (53) 395; (55) 86.
 - storage, hydroelectric power as by-product, (53) 285.
 - surplus situation, (57) 87.
 - survey, (57) V.I. 387.
 - in Italy, (54) U.S.D.A. 885.
 - in Near East, (54) 799.
 - of Argentina and Paraguay, (55) U.S.D.A. 484.
 - of central Georgia, (53) 692.
 - of Charleston area, (60) S.C. 782.
 - of Europe, Danube Basin, (51) U.S.D.A. 490.
 - of France, (59) U.S.D.A. 285.
 - of Germany, (55) U.S.D.A. 287.
 - surveying, textbook, (56) 187.
 - syndicates in France, (54) 885.
 - teachers—
 - in Mississippi, tenure, (59) 685.
 - training, (52) 194.
 - training for evening class work, (60) 489.
 - visual education for, (55) 385.
 - teaching, papers on, (53) 598.
 - teaching, treatise, (52) 298.
 - tenancy, *see* Land tenancy and Land tenure.
 - tendencies in Kansas, (54) 583.
 - tribunal of investigation, (51) 90; (53) 93.
 - unemployment insurance, (57) 480.
 - use of sewage, (54) 815.
 - Wages—*see also* Agricultural labor wages.
 - Act, proceedings under, (57) 480; (59) 682.
 - warehouses, community, in Bavaria, (55) 783.
 - workers in central Europe, (60) 684.
 - workers, representation and organization, (59) 587.
- Agriculture—
- adjustment to climate, (52) 114.
 - administrative organization and expenditures in various countries, (54) 186.
 - American—
 - and European market, treatise, (52) 193.
 - and immigrants, (53) 894.
 - and nitrogen fixation, (51) 518.
 - outlook for, (59) 86.
 - position in postwar period, (53) 288.
 - stabilization, (57) 87.
 - and American business, (52) 693.
 - and cooperation in Denmark, (59) 285, 588.
 - and farmer, (52) 896.
 - and Fisheries, Ministry, of Great Britain, organization and work, (58) 789.
 - and foreign relations, (52) 693.

Agriculture—Continued.

- and home industries, combining, (54) 287.
- and industrialization of Great Britain, (54) 83.
- and industry in France, relative position, (54) 586.
- and industry in Russia, cyclical fluctuations in, (60) 586.
- and industry, price balance, (53) 492.
- and land in Mexico, (53) 596.
- and meteorology, papers on, (56) 113; (59) 313.
- and phenology, (51) 717.
- and population increase, (59) 386.
- and rural life in England, history, (52) 789.
- and taxation, (52) 393.
- and the guild system, treatise, (52) 94.
- and weather, (54) U.S.D.A. 13.
- and weather, treatise, (55) 715.
- application of electricity to, (53) 85.
- as affected by business, (51) 189.
- ascendency of applied science in, (60) 79.
- at Pan-Pacific Science Congress, (53) 199.
- at Washington meeting of American Association for Advancement of Science, (52) 102.
- British, effect of law of diminishing returns, (60) 382.
- British, modern methods for, treatise, (52) 193.
- British, possibilities, treatise, (52) 193.
- British, treatise, (52) 96; (60) 686.
- Canadian Council of, history and work, (55) 886.
- control of output in, (54) Mich. 588.
- cooperative organization, (55) 484.
- course for farm boys, (51) 299.
- course of study, (52) 696; (53) 95.
- courses for normal college students in Transvaal, (52) 397.
- courses in Rhine Province, (52) 597.
- courses in, types, (52) 298.
- Department of, *see* United States Department of Agriculture.
- development in Europe, treatise, (55) 786.
- diminishing returns in, (57) 679.
- dry-land, studies, U.S.D.A. (54) 132; (55) 132.
- early books on, catalogue, (55) 606, 697.
- economic future, (53) 289.
- economic lag between expenditure and receipts, (54) 78.
- economic lag in, (55) 182.
- economic position in Great Britain, (60) 677.
- economic trend in, (51) 896.
- effect of price fluctuations, (53) 895.
- electricity in, *see* Electricity.

Agriculture—Continued.

- elementary, for southern schools, (52) 899.
- elementary, in rural schools, (52) 793.
- elementary, teaching plans, (58) 687.
- elements of, textbook, (55) 888.
- evolution of, (54) 788.
- for countrywomen, day courses in, (52) 597.
- German, and scientific management, (58) 187.
- German, importance of time lease in, (53) 291.
- German, rôle of time lease in, (54) 181.
- history in northern United States, (54) 83.
- home projects in, (55) 888.
- improvement in, benefit from, (60) 883.
- in Algeria, (52) 395, 695.
- in Austria, (51) 491.
- in Big Bend Country, (54) Wash.Col. 386.
- in Canada, (51) 689.
- in Central America, (54) 687.
- in Charolais region, France, (54) 884.
- in Colorado, (54) 83.
- in Colorado, history, (58) 288.
- in Connecticut, (53) Conn.Storrs 797.
- in Connecticut, five year trends, (58) Conn.Storrs 587.
- in Connecticut. history, (55) Conn. State 186.
- in Connecticut Valley, Conn.Storrs, (54) 483; (55) 286.
- in Cyrenaica, (51) 297.
- in Denmark, (52) 790.
- in Denmark, survey, (57) 484.
- in Esthonia, (51) 297.
- in Europe and America, history, (53) 397.
- in Europe, relations of Government to, (57) 87.
- in famine area of Russia, restoration, (51) 193.
- in Finland, (56) 888.
- in France, (51) 690; (52) 494.
- in France during the war, (57) 785.
- in France, ills of, (51) 893.
- in Germany, chambers of, legislation, (51) 193.
- in Germany, organization, (57) 484.
- in Germany, postwar period, (52) 395.
- in Great Britain, (54) 787.
- in Hungary, (55) 83.
- in India, foundations, treatise, (52) 193.
- in India, report of Royal Commission, (60) 82.
- in Ireland, (57) 387.
- in Irish Free State, (51) 298.
- in Island of Fernando Po, (53) 643.
- in Italy, treatise, (51) 337.
- in Le Mellois, France, (54) 587.
- in Montana, basic facts, (57) 683.

Agriculture—Continued.

- in New Jersey, development, (58) N.J. 382.
- in New South Wales, (51) 690.
- in New Zealand, (51) 492.
- in northwestern Indiana, (59) Ind. 783.
- in Palestine, modern, (54) 787.
- in Pennsylvania, early history, source material, (54) 485.
- in Persia, survey, (56) 104.
- in Picardy, France, (54) 687.
- in Poland, (51) 297.
- in Prairie Provinces of Canada, (60) 586.
- in prairies, ecological aspects, (59) 523.
- in region west of Rouen, France, (54) 286.
- in Rhode Island, statistics, (55) R.I. 887.
- in Rumania, (51) 94; (53) 193.
- in Scotland during the war, (57) 289.
- in semiarid regions, relation to forage crops, (51) U.S.D.A. 738.
- in South Africa, geographical factors, (52) 790.
- in South Africa, history, (54) 83.
- in Southwest and Weather Bureau, (55) 616.
- in Soviet Russia, (54) 688; (59) 679.
- in Spain, changes in, (54) 687.
- in Switzerland, (51) 592; (52) 391; (53) 591.
- in United States, conditions and improvement, (58) 886.
- in United States, present status, (60) 585.
- in Uruguay, (51) 490.
- in Uruguay, relation to livestock crisis, (52) 394.
- in Virginia, program for development, (54) 83.
- in Wales, (54) 587.
- in Wales, history, (54) 185.
- in Washington State, (56) 688, 786; (57) 885.
- in wheat belt, trends, (60) 884.
- industrial problems, (60) 778.
- international organizations interested in, list, (58) U.S.D.A. 490.
- junior project work in, (52) 597.
- labor's policy on, (58) 782.
- Maori, (56) 334.
- minimum wage for, (51) 91.
- Ministry of, in Great Britain, aims and plans, (59) 382.
- needs of, papers on, (58) 887.
- new, textbook, (51) 693.
- northern limits, (56) 432.
- of Eastern Shore country, (55) 483.
- Ohio's gross cash income from, (59) Ohio 180.
- on irrigated lands, (52) 182.
- organized day courses in, (51) 598.
- organized, platform of, (53) 795.
- pageant of, (54) 588.

- Agriculture—Continued.
- physicist in, (57) 184.
 - principles and aims, treatise, (54) 181.
 - principles, treatise, (53) 792.
 - profit in, (55) Mich. 380.
 - profits and expenses, (51) 687.
 - proposed graduate school, at Harvard University, (52) 798.
 - relation to colloid chemistry, (51) 607.
 - relation to freight rates, (59) U.S.D.A. 183.
 - relation to rainfall in Transvaal, (58) 512.
 - relation to tariff, (54) 186; (57) 83; (59) 682.
 - rôle of plant physiology in, (51) 519; (55) 817.
 - share of national income received by, (57) 679; (58) 886.
 - social rôle, (51) 687.
 - socialist policy for, (53) 94.
 - success in, measurement, (57) 478.
 - supervised practice in, (55) 888.
 - taxation of profits in Belgium, (51) 891.
 - taxation problems, (56) S.Dak. 685.
 - technical, organization of researches in Czechoslovakia, (60) 513.
 - textbook, (51) 598; (57) 725.
 - tropical, proposed graduate school in Porto Rico, (58) 636.
 - tropical, textbook, (57) 89.
 - two-year higher courses in, (51) 896.
 - type for Akron, Colorado, region, (52) U.S.D.A. 828.
 - United States Chamber of Commerce committee on, report, (60) 382.
 - use of power in, (54) U.S.D.A. 685.
 - value of weather forecasts and warnings, (60) 206.
 - Welsh, economic conditions, (60) 386.
 - work of children in, (60) 889.
- Agrilus—
- anxius, *see* Birch borer, bronze.
 - arcuatus, life history, (55) 764.
 - viridis fagi, notes, (55) 554.
- Agriolimax agrestis, control, (53) 252.
- Agriotes—
- maneus, notes, (52) 852.
 - obscurus, control, (59) 357; (60) 654.
 - obscurus, sensory pits of ninth abdominal segment, (58) 560.
 - sp., life history, (59) 159.
- Agriotini species, notes, (60) 654.
- Agri-Pax, insecticidal value, (60) Wash.Col. 846.
- Agrolimax agrestis, notes, (60) West.Wash. 756.
- Agromyza—
- lantanae, economic importance, (53) 257.
 - lantanae, notes, (52) 356; (53) 654.
 - phaseoli, injury to bean roots and stems, (54) 757.
- Agromyzinae larvae, descriptions, (60) 653.
- Agronomic—
- activities, (60) Can. 636.
 - conceptions, development in, (54) 424.
 - experiments, mathematical analysis, (56) 332.
 - experiments, rôle of statistics in, (52) 731.
 - Research Institute in France, notes, (52) 800.
- Agronomy—
- economic relationships, symposium, (51) 799; (53) 632.
 - extension work in, (51) 493; (53) U.S.D.A. 695; (58) U.S.D.A. 891.
 - handbook, (54) 827.
 - relation to plant physiology, (56) 722.
- Agropyron repens, control, (54) 240.
- Agropyron repens in grain seed, (53) 36.
- Agrostemma githago—
- in grain seed, (53) 36.
 - seeds, nutrient value, (54) 160.
- Agrostis stolonifera, variability, (57) 127.
- Agrotis sp. affecting cotton seedlings, (51) 357.
- Agrotis tecta, paper on, (57) 553.
- Agrotis ypsilon, *see* Cutworm, black.
- Ailanthus trees in Pennsylvania, (55) 648.
- Ainee, notes, (53) 745.
- Air—*see also* Atmosphere.
- analysis, (51) 12.
 - bacteria in, methods of study, (57) 622.
 - cleaners, efficiency, (57) Calif. 282.
 - cleaners for internal-combustion engines, (53) 485; (59) 84.
 - cleaners, radiator fan type, efficiency test, (58) 377.
 - cleaning devices, notes, (52) 185.
 - compressed, extraction of sap from leaves by, (53) 223.
 - content of butter and margarine, (52) 775.
 - ducts and air piping, simplified Pitot tube calculations on, (60) 381.
 - in buildings, humidifying, Colo., (55) 276; (56) 881.
 - infiltration into buildings, (51) 188, 290; (53) 188; (58) 377.
 - iodine content, (53) 202.
 - ionized, effect on respiration in plants, (60) 522.
 - irradiated by quartz mercury vapor lamp, growth-promoting effect, (51) 270, 868.
 - irradiated by ultra-violet light, effect on growth in rats, criticism, (53) 264.
 - near soil, climate of, (59) 416.
- Airplane—
- dusting for grasshopper control, (56) 256.
 - dusting for gipsy moth control, (57) 856.
 - dusting for hemlock spanworm, (57) 857; (58) 664.
 - dusting for sugar cane borer control, (57) 857.

- Airplane—Continued.
 dusting for vegetable pests, (56) 57, 254.
 pest destruction by, (57) 656.
- Airplanes, first use in Russia in applying insecticides, (60) 162.
- Airway observers, instructions for, (60) U.S.D.A. 617.
- Airways, meteorological conditions along, (55) 617.
- Ajowan cake, fertilizing value, (55) 625.
- Alabama—
 agricultural statistics, State sources, (55) U.S.D.A. 187.
 College, notes, (51) 97, 300; (54) 397; (57) 797; (60) 900.
 Polytechnic Institute, notes, (58) 397, 697.
 Station, notes, (51) 97, 300; (54) 397; (57) 797; (60) 698.
 Station, report, (58) 497; (59) 98, 695; (60) 199.
- Alanine, decomposition, (53) 310.
- Alaska—
 Stations and Dr. Georgeson, editorial, (57) 701.
 Stations, notes, (54) 97; (56) 497.
 Stations, report, (52) 598; (55) 495; (57) 598; (58) 497; (60) 794.
- Alba blood as adulterant in tankage, (57) 661.
- Albanian-American School of Agriculture and Mechanic Arts, notes, (52) 798; (58) 798.
- Albert Agricultural College, notes, (57) 700.
- Alberta University, notes, (59) 200.
- Albinism—
 and brown pigmentation in mice, inheritance, (55) 732.
 human, (52) 825.
 in barley, (51) 735.
 in barley, low temperature type, (58) 26.
 in beets, inheritance, (60) 526.
 in corn, (57) 519.
- Albino mammals, eye pigmentation in, (57) 625.
- Albinos in wheat crosses, (60) 629.
- Albizia moluccana—
 as green manure and cover crop, (52) 732.
 Botryodiplodia theobromae on, (51) 46.
- Albumin—
 egg—
 agglutinins for Bacterium pullorum in, (51) 286.
 as sole source of nitrogen for rats, (51) 862.
 beaten and unbeaten, digestibility, (51) 262.
 casein as source of protein, (54) 691.
 coagulation, changes in chemical properties, (60) 501.
 digestion experiments, (51) 262.
 germicidal action, (58) 274.
- Albumin—Continued.
 egg—continued.
 heat denaturation, (58) 501.
 nutritive properties, effect of desiccation, (57) 788.
 nutritive value, (53) 162.
 vitamin B in, (56) 491.
 watery, Wash.Col., (56) 567; (59) 11; (60) 801.
 formation in animal and plant, (57) 417.
 formation in plants, rôle of chloroplasts, (56) 814.
 of locust bark proteins, composition, (54) 203.
- Albuminous substances, chemical methods, (51) 802.
- Albuminuria, relation to protein requirement in nephritis, (55) 391.
- Alcaligines abortus—
 longevity, (57) 182.
 notes, (55) 577.
- Alcohol—
 aldehyde-free, preparation, (51) 409.
 and eye defects in albino rats, (58) 629.
 and salts, antagonistic action, (53) 124.
 as fuel in Australia, (60) 279.
 as motor fuel, (55) 278.
 effect on birth weight and litter size in rats, (58) 731.
 effect on reproduction in mice, (58) 320.
 effect on sex ratio in rats, (56) 32.
 ethyl, *see* Ethyl alcohol.
 from blackstrap molasses, (51) 809.
 fumes, effect on sex ratio in mice, (56) 227.
 fumes, effects on rats, (51) 130.
 industrial, manufacture, fermentation processes in, (52) 315.
 industrial, treatise, (51) 210.
 inheritance of resistance to, (57) 28.
 injection into male mice, effect on sex ratio of offspring, (60) 812.
 light doses, effect on mice, (52) 632.
 low yield, from Indian ghour and cane molasses, (53) 811.
 methanol in, estimation, (59) 506.
 methyl, *see* Methyl alcohol.
 motor fuel from molasses, (53) 790.
 motor fuels containing dissolved acetylene, (57) 677.
 treatment, effect on mice, (57) 220.
 treatment of rats, effect on growth, (60) 221.
- Alcohol-benzol mixture v. benzol for motor plows, (56) 80.
- Alcohol-formalin treatment for fowlbrood, (54) 757; (55) Conn.State 251.
- Alcoholic fermentation, *see* Fermentation.
- Alcoholism, effect on rats, (56) 32.
- Alcoholization, effect on corpora lutea production, (54) 230.
- Alcohols—
 aliphatic, toxicity, (55) 445.

Alcohols—Continued.

- attractive to *Hylemyia* spp., (51) 162.
- effect on insulin intoxication, (53) 462.
- germicidal activity, relation to chemical constitution, (56) 572; (58) 274.

Aldehydes—

- toxicity, (55) 445.
- traces of, systematic detection, (55) 12.

Alder—

- aphid, woolly, notes, (54) Ohio 155.
- leaf beetle, biology and control, (52) Me. 661.
- red, of Pacific Northwest, (56) U.S.D.A. 46.
- tree borer, notes, (60) 651.

Aldoses, oxidation, preparation of hexonic and bionic acids by, (58) 11.

Alebra albostrigella, life history, (55) 53.

Aleochara bilineata, notes, (58) 458.

Aleurites spp., analyses of oil, (60) P.R. 742.

Aleurobius farinae in flax seed, (56) 662.

Aleurocanthus spiniferus, notes, (60) 559.

Aleurocanthus woglumi, *see* Citrus black-fly.

Aleurodes variabilis, notes, (56) 552.

Aleurolobus marlattii, notes, (60) 559.

Aleuroplatus samoanus, description, (60) 61.

Aleyrodes—

- nubifera, paper on, (53) 856.
- ricini n.sp., life history, (52) 154.
- sp., notes, (52) 853.
- vaporariorum, *see* White fly, greenhouse.

Alfalfa—

- alone and in mixtures, tests, (56) Ill. 334.
- and barley, feeding value, (52) Nev. 468.
- and barley pasture for lambs, (54) Ariz. 565.
- and clover hay, assimilation by cows, (58) 469.
- and limestone, feeding value, (51) Ohio 469.
- and rape pasture for hogs, comparison, (59) Mich. 564.
- anthracnose, notes, (55) Miss. 541; (57) 443.
- anthracnose, studies, Miss., (52) 242; (55) 649.
- artificial drying, (58) 681.
- artificially cured, feeding value, (59) N.J. 360.
- as affected by sodium chloride, (52) 723, N.J. 724.
- as affected by sulfur, (51) Wash.Col. 123.
- as cover crop, (52) Calif. 39, Wash. Col. 837.
- as feed for horses, (52) 300.
- as forage crop, (52) Utah 732.

Alfalfa—Continued.

- as green feed crop for poultry, (59) West.Wash. 433.
- as green manure, (60) Oreg. 719.
- as orchard intercrop, (58) Can. 837.
- bacterial blight, notes, (57) Mo. 442.
- bacterial disease, new, (57) 843.
- bacterial root rot, notes, (59) Mich. 445.
- bacterial wilt, (60) U.S.D.A. 50.
- bacterial wilt and root rot, studies, (56) 147.
- bacterial wilt, relation to winter injury, (60) 548.
- bacterial wilt, studies, (58) Mo. 442.
- breeding experiments, (51) Mich. 133, N.Dak. 832; (52) Mich. 334, 823; (55) N.Dak. 527; (56) Can. 432, Ariz. 730; (59) Mich. 432, Tex. 729, N.Dak. 825.
- breeding in Hungary, (57) 227.
- brown leaf spot, (58) 47.
- bud mutation, (54) 821.
- Caenurgia erectea affecting, (51) 362.
- calcium requirements, (59) 515.
- caterpillar, notes, (52) Kans. 452.
- cause of failure, (58) Okla. 429.
- controlled pollination in, (54) 433.
- cost of production, (53) N.J. 135; (59) Wis. 483.
- cost of production and profit, (58) Ill. 379.
- crop enterprise on a dairy farm, (51) N.J. 688.
- crossing, (53) Ariz. 734.
- crown wart, notes, (57) 48; (58) 146; (59) 147.
- culture, (52) U.S.D.A. 828.
- culture and management, (57) Tenn. 127.
- culture conference, proceedings, (55) 434.
- culture experiments, (51) 36, Minn. 134, Wis. 434; (52) Oreg. 436, Alaska 528; (53) Ohio 529; (54) U.S.D.A. 132; (55) Ark. 30, Miss. 228, Va. 230, Alaska 433, Oreg. 637, Minn. 734; (57) Alaska 522; (60) Minn. 132, Oreg. 731.
- culture, improved method, (51) 637.
- culture in Great Britain, (57) 728.
- culture in Manitoba, (54) 531.
- culture in New Jersey, costs and practices, (54) 285.
- culture in New Zealand, (54) 829.
- culture in Pennsylvania, (53) 232.
- culture in South Africa, (51) 638.
- culture in United States and Canada, treatise, (55) 637.
- culture under irrigation, (58) 829.
- culture with nurse crops, (55) Minn. 228.
- curing studies, (56) Nebr. 735.
- cutting experiments, (52) Kans. 433, Wash.Col. 829; (53) Kans. 531; (55) 735; (56) Kans. 822; (60) Conn.Storrs 533.

Alfalfa—Continued.

- cutting stage, (54) Ill. 330; (60) Mont. 729.
- declining yield, causes, (57) U.S.D.A. 628.
- decomposition in soils, (51) Wash.Col. 118.
- different cuttings, composition and digestibility, (58) 564.
- diseases in Manitoba, (56) 541.
- dodder, hosts of, (54) 834.
- downy mildew, notes, (55) Iowa 541
- duty-of-water experiments, (52) Wash. Col. 830; (53) U.S.D.A. 387; (54) N.Mex. 680; (55) N.Mex. 478.
- eelworm disease, notes, (52) Idaho 844
- effect of acid soil, (54) 213.
- effect of frequent cutting, (53) 232.
- effect of gypsum, (55) Idaho 825.
- effect of lime, (57) N.J. 35.
- effect of sulfur, (53) 735; (54) Minn. 30; (56) Mont. 123.
- effect of sulfur and gypsum, (54) Wash.Col. 122.
- effect on cereals following, (54) Wash. Col. 827.
- effect on crops in rotations, (55) U.S.D.A. 132.
- effect on following crop, (51) U.S.D.A. 135, Wyo. 136; (53) U.S.D.A. 335; (54) N.Y.Cornell 829; (57) U.S.D.A. 524.
- effect on milk flavor, (57) Calif. 273.
- energy value for sheep, (60) Ill. 659.
- experiments in Sweden, (59) 826.
- fall irrigation experiments, (54) Wash. Col. 875.
- feed, effect on butterfat, (59) Calif. 773.
- feeding value, (51) Mich. 576; (52) Idaho 869; (53) Ariz. 773, Ohio 879; (54) Wyo. 759; (55) 163.
- feeding value for wintering cattle, (56) Oreg. 365.
- fertilizer experiments, (51) Minn. 120; (52) Kans. 433; (53) Minn. 119; (55) U.S.D.A. 638; (56) Wis. 715, Nebr. 735, Kans. 822; (57) N.Mex. 224, Minn. 226, Mich. 614, U.S.D.A. 628; (58) Miss. 31, 224; (59) N.H. 222, 224, Conn.Storrs 431; (60) Oreg. 133, Conn.Storrs 533, 534.
- fields, registering, (55) N.Dak. 434.
- fields, soil reaction, (57) 712.
- filtrate, studies, (54) 408.
- flea, life history and bionomics, (59) 457.
- flea, notes, (60) 60.
- flowers, seasonal behavior, (59) 826.
- for poultry, (58) S.Dak. 766.
- for Vermont, (52) 831.
- forage production, (59) N.Dak. 825.
- forage value, (59) 130.
- Fusarium blight, studies, (57) Mo. 442.
- germination and growth, effect of sulfur, (52) 423.
- germination of old seeds, (56) 39.

Alfalfa—Continued.

- germination tests, (53) Ariz. 733.
- girdle, notes, (51) 150; (53) Ariz. 745.
- green, value for chicks, (53) Ind. 173.
- ground, for milk production, (55) Mich. 673.
- growth, effect of reaction of solution, (57) 328.
- growth, relation to organic food reserves in, (58) Wis. 326, 327.
- growth, relation to soil acidity, (58) 17.
- growth with various cutting treatments, (51) 34.
- hard seed in, (53) Colo. 135.
- hard-coated seed, growing experiments, (52) 831.
- Hardigan, merits, (55) Mich. 825.
- Hardigan, notes, (60) Mich. 498.
- hardiness and manuring value, (54) 31.
- hardy, for Nebraska, (54) Nebr. 32.
- hardy, hay yield, (56) Pa. 134.
- hardy, in Ontario, (55) 334.
- hardy, value, (52) Mich. 497.
- hardy varieties, (55) Mich. 32.
- hay—
- amount per day for lambs, (56) Kans. 368.
- analyses, (52) Calif. 70.
- and corn, feeding value, (60) Ill. 69.
- and meal, net energy values, (54) 758.
- as sole ration for dairy cattle and relation to sterility, (59) Nev. 871.
- as winter feed for brood sows, (52) Del. 871.
- chopped, effect, (56) Wis. 772.
- chopped, for beef cows, Wis., (56) 762; (59) 66.
- chopped v. leaf alfalfa meal for laying hens, (59) Ohio 263.
- composition, (53) Nebr. 433.
- curing, (57) 227.
- cutting experiments, (58) Del. 428.
- digestibility by steers and sheep, (60) Ill. 256.
- digestibility, effect of fiber, (56) N.Mex. 159.
- digestion experiments, (56) Ill. 368.
- drying artificially, (59) Ind. 782.
- effect of lime, (59) N.J. 318.
- energy value, Ill., (54) 361; (56) 367; (57) 68.
- feeding value, (52) Miss. 275, Mich. 570, Mich. 772; (53) Ariz. 769, Mont. 772; (55) Nebr. 60; (58) Wash.Col. 353; (59) N.Dak. 872; (60) Ariz 471.
- for brood sows, Del., (54) 665; (56) 369.

Alfalfa—Continued.

- hay—continued.
- for dairy cattle, U. S. grades, (58) Ohio 671.
 - for lambs, (58) Ill. 356.
 - for milk production, (55) Pa. 571.
 - Hungarian, composition and nutritive value, (53) 268.
 - in yellow Newtown orchard, (55) Oreg. 644.
 - net energy value, (57) 562.
 - nutritive value, effect of artificial curing, (59) N.J. 364.
 - nutritive value of different cuttings, (56) Wash.Col. 561; (57) 762.
 - preparation, (60) Wash.Col. 857.
 - production, (52) Ky. 434; (55) Iowa 529; (57) Ind. 628.
 - quality and yield from different cuttings, (60) Ark. 813.
 - stack drying, (57) Ind. 82.
 - studies, (60) Oreg. 769.
 - v. clover for milk production, (52) Pa. 275.
 - v. cottonseed cake, (51) Kans. 74.
 - v. cowpea hay for heifers, (55) Ark. 66.
 - v. mung bean hay, feeding value, (58) Ark. 362.
 - v. oat hay, (57) 67.
 - v. Rhodes grass hay for cattle, (56) Ariz. 762.
 - v. soy bean hay, feeding value, (54) S.Dak. 67; (56) Wis. 772.
 - v. soy bean hay for wintering sheep, (59) N.C. 764.
 - v. soy beans for dairy cows, (53) Wis. 473.
 - v. Sudan hay, feeding value, (54) 267.
 - v. tankage as protein supplement, (53) U.S.D.A. 373.
 - v. timothy hay for heifers, (55) 68.
 - v. timothy hay for horses, (52) N.Y.Cornell 772.
 - worm in Kansas, (53) 361.
 - yield and quality, factors affecting, (56) Nebr. 734.
 - importance to State, (53) Wis. 232.
 - in grain stubble on sandy soils, (60) Mich. 431.
 - in Nebraska, (58) Nebr. 132.
 - in rotation, effects, (57) Colo. 113.
 - in western Washington, (51) West. Wash. 96.
 - inoculated with soil, notes, (55) N.H. 826.
 - inoculation experiments in Great Britain, (60) 636.
 - inoculation on lime-deficient sandy soils, (57) Minn. 629.
 - insects affecting, (52) Kans. 452; (54) 257; (56) Nev. 259, Kans. 856; (59) Nev. 855.

Alfalfa—Continued.

- irrigated, nutritive value, relation to maturity, (58) 266.
- irrigated, variety tests, (56) Wash.Col. 528.
- irrigated, water requirements, (55) Calif. 332.
- irrigation experiments, (51) N.Mex. 483; (52) Calif. 33, Kans. 433, Utah 733; (55) 582; (56) 35, Utah 525, Kans. 823; (59) Calif. 176; (60) Oreg. 132.
- late summer seeding, (53) U.S.D.A. 335.
- leaf anomalies, studies, (56) 629.
- leaf beetle, black, studies, (57) 63.
- leaf spot, notes, (54) 448.
- leaves, protein from, (52) 802.
- liming experiments, (55) Minn. 735.
- manuring experiments, (51) N.Dak. 832; (53) U.S.D.A. 334.
- meal—
 - composition and digestibility, (51) Tex. 467.
 - decomposition in soils, (51) 415.
 - effect on garget in cows, (55) N.J. 67.
 - feeding value, (52) Tex. 573; (54) Can. 862.
 - leaf, v. alfalfa hay chopped for laying hens, (59) Ohio 263.
 - v. beet pulp, feeding value, (55) Fla. 870.
 - v. bran, feeding value, (54) Can. 472.
 - v. Crotalaria meal for dairy cows, (60) Fla. 174.
 - vitamin A in, (52) Calif. 875.
- molasses meal, feeding value, (60) Ariz. 471.
- nematode and crown wart, notes, (52) Utah 745.
- nematode disease, notes, (57) 51, 642.
- nematode, notes, (53) Colo. 154.
- nematode, paper on, (55) 455.
- nitrates in soil following, (51) 724.
- nitrogen content, (55) Mich. 32.
- nitrogen content, effect of sulfur, (54) 829.
- nitrogen fertilization experiments, (52) 123.
- nitrogenous fertilizers for, (57) 227.
- nodule bacteria in, (54) 419.
- nodule bacteria, inoculating power, (60) Wash.Col. 814.
- nodule development and nitrogen fixation in, (55) N.J. 812.
- nonvolatile organic acids of, (54) 203.
- northern and southern types, (58) Ark. 322.
- optimum soil reaction for, (53) 320.
- origin, (52) 737.
- paper on, (55) Mich. 395.
- pasture and peas for pigs, (52) Wash.Col. 872.
- pasture for ewes and lambs, (53) U.S.D.A. 370.

Alfalfa—Continued.

- pasture for pigs, (51) U.S.D.A. 175, Mich 573; (53) U.S.D.A. 371; (54) U.S.D.A. 162; (55) U.S.D.A. 161; (56) Iowa 266; (57) U.S.D.A. 566; (58) U.S.D.A. 569, 868; (59) Kans. 766; (60) Mont. 763.
- pasture for sheep, (57) U.S.D.A. 565.
- pasture studies, (52) Kans. 433.
- pasture v. Sudan grass pasture for pigs, (56) Nebr. 564.
- pests in Argentina, (56) 659.
- plant juice, nitrogenous constituents, (52) 610; (54) 498, 804.
- plant juice, proteins in, (53) 712.
- planting dates and cutting stages, (59) Conn.Storrs 431.
- planting during grasshopper infestation, (57) U.S.D.A. 524.
- planting tests, (59) Idaho 728.
- plants, blighting, cause, (54) Mo. 744.
- plants, salt requirements, (55) N.J. 22.
- plusia, notes, (52) Kans. 452.
- problems, (51) 34; (54) 732; (59) Calif. 727.
- production—
- and seeding tests, (51) Ohio 434.
 - in Kansas, (58) Kans. 429.
 - in New York, (52) 134.
 - on irrigation projects, (54) Wash.Col. 434.
 - tests, (59) Guam 523.
- proteins as affected by nitrogenous fertilizers, (52) 530.
- proteins, studies, (53) 364; (56) 708.
- racess, differentiation, (58) 429.
- relation to bees in California, (59) 461.
- removal of nutrients from subsoil, (57) 712.
- residual effect of fertilizers on, (51) Minn. 133.
- residual effect on soil, (56) Kans. 811.
- Rhizoctonia affecting, (53) 44.
- root behavior and yield under irrigation, (54) 130.
- root development, (51) 233; (52) Mich. 317.
- root development, effect of soil types and thickness of stand, (59) Mich. 17.
- root rot, studies, (54) 449; (55) N.Mex. 444; (56) Kans. 842; (58) Mo. 442.
- root studies, (53) Iowa 734.
- root systems, effect of soil structure, (54) 32.
- root systems, nodule production on different parts, (57) 826.
- root troubles, (58) U.S.D.A. 241.
- roots and straw, decomposition studies, (58) 517.
- roots, vascular structure and plugging, (60) Colo. 547.
- rust resistant varieties, (51) Ind. 844.

Alfalfa—Continued.

- screenings, feeding value, (59) Idaho 764.
- seed—
- Argentine, value, (55) Mich. 825.
 - certification, rules and regulations, (59) Idaho 627.
 - chalcis fly in, (56) Utah 553.
 - color, relation to plumpness and viability, (60) 533.
 - color separations, germination tests, (55) 735.
 - domestic, adaptation, (60) 432.
 - effect of dry heat, (53) 135.
 - effect of heating, (57) 328.
 - from different sources, (52) Mich. 334.
 - from southern France, characteristics, (52) 733.
 - from Turkestan, characteristics, (60) 533.
 - germination, effect of high pressure, (59) 228.
 - germination, factors affecting, (56) 433.
 - hard, agricultural value, (58) 534.
 - hard and soft, effect of high pressure, (60) 538.
 - heating, effect on germination, (56) Colo. 820.
 - impermeability, (57) 134; (59) Colo. 130.
 - impurities and determination of origin, (60) 539.
 - inoculated, effect of storage, (59) Can. 331.
 - inoculation, (53) 232.
 - longevity, (51) 140.
 - longevity of nodule bacteria on, (57) 127.
 - origin determination, (58) 433.
 - production, (53) U.S.D.A. 335; (56) Idaho 231, Utah 525; (57) Idaho 726; (60) 36.
 - scarification studies, Minn., (55) 332; (58) 828.
 - scarified and unscarified, longevity, (56) Minn. 524.
 - scarified and unscarified, value, (59) 627.
 - scarified and unscarified, yields, (57) Mich. 826.
 - screenings, feeding value, (56) Idaho 368.
 - setting, effect of tripping, (53) 735.
 - source tests, (54) Mich. 634; (56) Iowa 822; (57) N.J. 727.
 - stored, viability of legume bacteria on, (56) Can. 513.
 - tests, (56) U.S.D.A. 231.
 - treatment, (51) 34.
 - yields, factors affecting, (59) Idaho 728.
- seeding experiments, (51) 530, Idaho 830; (53) Minn. 130, Can. 530;

Alfalfa—Continued.

- seeding experiments—continued.
 - (55) Minn. 332; (56) Wis. 732;
 - (57) Mich. 526; (60) Oreg. 731.
- seedlings, growth in alkaline solutions, (59) Calif. 721.
- selection experiments, (51) Conn.State 127, 232.
- self-fertilization studies, (58) 130.
- shrinkage in weight during curing, (55) U.S.D.A. 638.
- spacing experiments, (52) Kans. 434.
- Spanish, winter resistance and regrowth, (55) 334.
- species, geographical distribution, (55) 827.
- stem nematode, notes, (53) N.Mex. 155; (56) Utah 540.
- stem rot, notes, (55) Oreg. 650.
- strains, morphological similarities, (57) 34.
- strains, winter-resistant, (60) Oreg. 731.
- studies, (53) Wis. 432; (56) Ill. 335.
- tests, (60) Ohio 636.
- tillage methods, (55) Minn. 228.
- time of cutting tests, (52), Ill. 433; (54) 827.
- tolerance for alkali, (53) 320.
- tolerance to brackish water, (51) Hawaii 787.
- tops, composition and rate of decomposition, (59) 719.
- treatise, (60) 533.
- v. clover hay for cattle, Wis., (51) 468; (53) 466.
- v. other legumes, yields, (59) Iowa 31.
- v. soy bean hay for helpers, (55) Ohio 469.
- v. soy bean hay for steers, (55) Ark. 59.
- v. Sudan grass pastures for pigs, (53) Kans. 371.
- v. Sudan hay for milk production, (53) Kans. 779.
- v. sweet clover, effect on soil, (54) 216.
- v. sweet clover hay, (53) Iowa 779.
- v. sweet clover pasture, (53) Minn. 171.
- v. tankage as corn supplement, (51) 774.
- v. timothy hay, net energy value, (60) Ill. 258.
- value for poultry, (56) S.Dak. 669.
- value in rotations, (52) Mont. 435; (54) Nebr. 328; (60) Mont. 729.
- varieties, (51) Wash.Col. 136, V.I. 833; (53) U.S.D.A. 334; (55) U.S.D.A. 32, N.Mex. 434; (57) Tenn. 126; (58) Ill. 327; (60) Mont. 729, Wyo. 733.
 - behavior, (56) Guam 228.
 - for Kansas, (53) 528.
 - forage value, (53) U.S.D.A. 132.
 - hardy, for Michigan, (59) Mich. 34.

Alfalfa—Continued.

- varieties—continued.
 - productivity, (59) Ohio 222.
 - relative hardness, (59) N.H. 222.
 - winter hardness, (56) Ill. 230, Minn. 527.
- variety for Minnesota, (55) Minn. 132.
- variety tests, (51) Minn. 134, N.Mex. 433, N.J. 636, N.Dak. 833; (52) Kans. 433, Wash.Col. 829; (53) Ind. 130, Minn. 130, Minn. 131, Miss. 131, N.Mex. 131, Wyo. 133, N.Dak. 334, Guam 430, Can. 530, 633, U.S.D.A. 834; (54) 530, Wash.Col. 827; (55) N.J. 31, Minn. 228, Miss. 228, Minn. 332, U.S.D.A. 433, N.Dak. 527, Oreg. 637, N.Mex. 638, Minn. 734; (56) Mont. 133, Ark. 332, Can. 432, Minn. 524, Wash.Col. 525, Fla. 821, Iowa 821, Kans. 822; (57) Tex. 126, N.Mex. 224, Minn. 226, Alaska 522, Okla. 523, Idaho 726, 727, N.J. 727; (58) Ark. 321, Minn. 828; (59) Wash.Col. 31, N.Mex. 222, N.J. 325, Tex. 729; (60) N.Dak. 34, Minn. 132, Oreg. 132, Ill. 223, Alaska 728, Oreg. 731, Guam 813, Wash.Col. 814.
- vascular bacterial disease, (58) 46.
- vitamin A formation in, (60) Fla. 195.
- weevil—
 - activity and control, variation in, (54) Idaho 58.
 - activity, new developments, (51) 364.
 - control, (51) Idaho 555, Idaho 853; (52) Idaho 851; (53) Nev. 454; (56) Nev. 260; (57) U.S. D.A. 562.
 - control by airplane, apparatus for, (60) Oreg. 754.
 - control, papers on, (58) 661.
 - distribution, (53) 557.
 - effect of low temperatures, (55) Idaho 853.
 - in Colorado, (55) 357; (58) 256.
 - in Europe, parasites of, (52) 662.
 - new parasite of, (54) 462; (59) 563.
 - notes, (53) 154, Colo. 154; (56) Wyo. 553, Colo. 854.
 - paper on, (55) 455.
 - parasite, introduction and establishment in Utah, (55) 357.
 - parasites, introduction, (51) U.S. D.A. 458.
 - seasonal history, effect of ovulation, (60) 460.
 - summary, (53) 51.
 - survey, Oreg. (55) 659; (60) 753.
- white spot, notes, (54) Mont. 343; (56) Utah 540.
- white stippling, cause, (51) 247.
- wilt and root rot, (56) Colo. 839.
- wilt disease, notes, (59) 845; (60) 446.
- wilt, new, notes, (53) Iowa 746.

Alfalfa—Continued.

- wilt, notes, (59) Wash.Col. 47.
- wilt or root rot, notes, (53) Colo. 146.
- wilt or stem rot, notes, (60) Wash. Col. 830.
- winter injury, (60) 347, U.S.D.A. 50
- winterkilling, (60) Ill. 223.
- winterkilling, causes, (56) Wis. 732.
- with hay grasses, cutting tests, (56) Wis. 732.
- yellow leaf blotch, notes, (56) Utah 540.
- yellowing, (59) 241.
- yellows, cause, (56) Wis. 756.
- yellows due to leafhoppers, (57) Tenn. 654, 656; (59) 458.
- yields, (51) Wash.Col. 136.
- yields, effect of fertilizers, (59) Ala. 625.
- yields, effect of precipitation and temperature, (56) 413.
- yields, effect of time of cutting, (59) Wash.Col. 32.

Algae—

- and food of anopheline larvae, (59)^{*} 657.
- assimilation in, effect of concentration of sea water, (53) 828.
- calcium requirements, (57) 117.
- changes in photosynthetic activity, (57) 817.
- clones in, (58) 525.
- flour from, therapeutic value for goiter, (55) 491.
- fresh water, absorption of various ions, (52) Calif. 25.
- green, nitrogen fixation by, (54) 718.
- in soil, distribution and functions, (60) 510.
- in tank waters in Bengal, control, (54) 382.
- in water supplies, (57) 582.
- in Wisconsin lakes, control, (59) 439.
- nitrogen fixation by, (56) 509.
- of normal English soils, (59) 814.
- parasitic and epiphytic, in Japan, (57) 344.
- photosynthesis in absence of oxygen in, (60) 807.
- red, starch in, (53) 519.
- relation to mosquito breeding places, (60) 248.
- soil, relation to soluble carbon compounds, (58) 727.
- vitamin A synthesis by, (53) 765.

Alimentary equilibrium, (52) 863.

Alkali—

- action on clay, (53) 722.
- action on concrete, (51) U.S.D.A. 684.
- action on hydraulic cements, (57) 880.
- action on silk and wool, protective agents, (60) 599.
- and salty soils, classification, (60) 508.
- content of soils as related to crop growth, (52) 812.
- determinations, iron or nickel crucibles for, (53) 714.

Alkali—Continued.

- disease, studies, (55) U.S.D.A. 372.
- effect on angular leaf spot of cotton, (56) Ariz. 745.
- effect on strength of mortar, (51) U.S.D.A. 589, 788.
- estimation in wool, (55) 613.
- forage weed, description, (57) 830.
- in soil, dispersing power, (52) 21.
- in soil, electrical method of determining, (53) 108.
- poisoning of livestock, (52) 199; (55) 173.
- removal by irrigation, (53) Calif. 430.
- salts, effect on bacterial activities in soil, (53) 512.
- salts, leaching from soils, (57) Idaho 775.
- soil, black—
 - Fresno type, reclamation, (59) Calif. 612.
 - reclamation, (55) Ariz. 319.
 - treatment with gypsum, (53) Ariz. 418.
- soil profiles, samples from, analyses, (59) 611.
- soil reclamation, (52) Calif. 20, Oreg. 419; (56) Wash.Col. 576; (60) Calif. 318, 510.
- soil reclamation, effects of sulfur, (60) 512.
- soil solution, methods of study, (51) 322.
- soil, studies, (51) 617.
- soils—
 - aluminum hydroxide in, (57) Ariz. 210.
 - base exchange in, (55) 510.
 - deterioration of concrete in, (57) 186.
 - effect of aluminum sulfate, (55) U.S.D.A. 418.
 - effect on peach stocks, (55) 550.
 - freezing up phenomenon, (56) 619.
 - in Hungary, reclamation, (52) 813; (58) Calif. 415.
 - increasing permeability, (56) 508.
 - leached and nonleached, microflora and productivity, (57) 713.
 - leaching, (51) 211.
 - mapping, (56) 511.
 - of Montana, (53) Mont. 417.
 - of Siberia and Turkestan, (56) 716.
 - origin, (56) 20, 210.
 - origin and management, (53) Calif. 719.
 - papers on, (60) 513.
 - permeability, effect of sulfur, (59) 515.
 - replaceable bases in, (52) Calif. 319.
 - solodization, (59) 116.
 - source of alkalinity, (57) Ariz. 211.

- Alkali—Continued.
 soils—continued.
 studies, (52) 116, 419; (55) Calif. 318; (56) Wyo. 509; (57) N. Mex. 210, Calif. 212, Idaho 709; (59) Wyo. 208.
 studies and reclamation methods, (59) Ariz. 611.
 sulfur oxidation in, (57) Calif. 512.
 toxicity of salts in, (57) Ariz. 211.
 treatment with aluminum phosphate, (57) N.J. 716.
 solutions, protection of concrete against, (51) 587.
 solutions, volumetric, preparation, (57) 708.
 studies, (52) 812; (53) 320; (55) 117, 510.
 studies in the Sudan, (55) 21.
 tolerance of plants, (56) Ariz. 512.
 vertical movement in irrigated clay soils, (52) 812.
 water, effect on livestock, (53) Nev. 478.
 water in New Mexico, (59) N.Mex. 203.
 water treatment for domestic use, Colo., (53) 185; (55) 277.
 water, use on soils, (52) Calif. 21.
- Alkalies—
 action on cellulose, (60) 97.
 action on clay, (56) 510.
 action on insulin, (55) 307.
 action on silk, (60) 496.
 added to infants' milk, effect, (59) 392.
 binding by proteins, (54) 802.
 effect on wool, (56) 697.
 effect on wool and rayon, (54) 596.
 of soil, bibliography, (52) U.S.D.A. 620.
- Alkaline—
 metabolic products, effect on growth of fungi, (56) 221.
 polysulfides for grape sprays, (57) 850.
 reaction of cotton plant, (52) 427, 519.
 soils, availability of phosphates, (56) Ariz. 213.
 soils, dispersion and mechanical analysis, (60) 618.
 soils, pH value, (54) 16.
 soils, properties, (60) 618.
 soils under irrigation, physical properties, (60) 508.
- Alkalinity—
 of ash of foods, (51) 711.
 of soil, relation to petrographic composition, (54) 416.
 potential, of irrigated soils, (51) 711.
- Alkaloidal solutions, extracting, automatic devices for, (54) 111.
- Alkaloids—
 analysis, errors in, (57) 312.
- Alkaloids—Continued.
 in plants, biological significance, (53) 826.
 migration in lupines, (58) 421.
 plant, treatise, (51) 8; (52) 309.
- Alkoxy estimation, Zeisel, modification, (58) 411.
- Allantoin metabolism in avitaminosis, (51) 463.
- Allegheny Forest Experiment Station, notes, (58) 398.
- Allelomorphic series in guinea pigs, aberrant ratios in, (54) 227.
- Allelomorphs, quadruple, affecting eye color in *Habrobracon*, (56) 223.
- Allergic irritability, (54) 127.
- Alligator pears, *see* Avocados.
- Allium species, susceptibility to smut, (54) 347; (55) 848.
- Allocota thyriderigis*, notes, (59) Ark. 252.
- Allomyces moniliformis* n.sp., notes, (58) 208.
- Allotments—
 and allotment gardens, law of, (51) 488.
 creation of, (55) 482.
 in England and Wales, cultivation, (51) 192.
- Allylthiourea, effect on plants, (54) 816.
- Almond rust, notes, (55) 346.
- Almond seedlings, bitter and sweet, identification, (52) Calif. 40.
- Almonds—
 acreage, prices, consumption, etc., (59) Calif. 485.
 as supplements to white bread, nutritional value, (60) 191.
 breeding, (51) 346; (55) Calif. 338.
 Caldwell system of training, (52) Calif. 42.
 culture, (55) N.Mex. 439.
 injury from crows, (56) 456.
 pollination requirements in California, (57) 833.
 pollination studies, (52) Calif. 41.
 production, Calif., (53) 344; (57) 285.
 pruning experiments, (52) Calif. 42.
 salted, new method of preparation, (59) 91.
 stock and scion compatibility, (60) 142.
 sweet, factor for bitterness in, (52) 221; (60) 128.
 use for various food products, (52) U.S.D.A. 507.
 varieties in United States, (52) U.S.D.A. 540.
 variety tests, (56) Miss. 739.
- Aloe vera* rust, life history, (55) 445.
- Alophora aureiventris* n.sp., notes, (59) 561.
- Alpine plant roots and mycorrhizas, (59) 218.
- Alsophila pometaria*, *see* Cankerworm, fall.
- Alternaria—
 allii n.sp., description, (59) 847.
 atrans, notes, (53) Ariz. 746.

Alternaria—Continued.

- blight of potatoes in Bermuda, (53) 852.
 brassicae nigrescens, notes, Del., (54) 647; (56) 348.
 brassicae, notes, (55) 346.
 brassicae on cauliflower, (52) 747.
 brassicae, studies, (51) N.Y.State 152
 citri, notes, (52) Fla. 242; (54) Fla. 245; (59) Calif. 747.
 core mold of apple, (56) 647.
 disease of cotton, (60) 241.
 facultative parasitism, (58) 543.
 fasciculata, notes, (59) 543.
 fici, notes, (56) 851.
 gomphrenae n.sp., notes, (57) 56.
 hereulea, studies, (56) 145.
 infection phenomena, (58) 543.
 leaf spot on watermelon, (56) Fla. 143.
 mall, morphological characters, (51) 650.
 oberacea n.sp., description, (51) 49.
 peglionii n.sp., description, (58) 846.
 penetration phenomena and facultative parasitism in, (57) 344.
 radicina n.sp., description, (51) 151.
 radicina, studies, (56) 545.
 rot of lemons, Calif., (52) 53; (56) 249.
 solani, cause of potato tuber rot, (56) Me. 246.
 solani infection of potatoes, relation to storage conditions, (57) Fla. 843.
 solani, notes, (53) 46; (54) Fla. 651; (55) 346; (60) 242.
 solani strains, variation in, (59) 344.
 sp. in citrus seed beds, (60) 353.
 sp., notes, (51) 248; (53) 750; (55) 445; (56) 249, 549, 748; (59) 534, Fla. 541.
 sp. on apple leaves, (55) 543.
 sp. on wheat, (55) 445.
 tenuis, notes, (60) 838.
 tuber rot of potatoes, (58) Me. 341.

Altica—see also *Haltica* and Flea beetle.
 woodsii, notes, (54) 152.

Altitude—

- and slope exposure, effect on soil temperature, (53) 19.
 effect on forage crops, (56) Wyo. 134.
 high, studies in Utah, (52) 798.
 Alum, effect on alkali soil, (60) Calif. 318.
 Alum floc properties, effect of anions, (53) 487.
 Alumina, hydrous, in soils, detection, (60) 709.
 Alumino-silicate active in base exchange and soil acidity, identification and composition, (60) 419.

Aluminum—

- absorption by soils, (60) 516.
 accumulation in corn plants, (53) 247.
 action in base-exchange reactions, (59) Ariz. 614.
 active, relation to soil reaction, (58) 316.

Aluminum—Continued.

- adsorbed, in soil, (55) 318.
 as factor in acid soil toxicity, (53) Wis. 416.
 biological and dietary significance, (59) 687.
 chloride, effect on phosphorus recovery from soils, (52) 817.
 chloride, electrokinetic behavior, (59) 419.
 compounds from baking powder, solubility, (60) 389.
 cooking utensils, corrosion, (51) 501.
 estimation in animal tissues, (60) 312.
 fertilizing value, (56) 323.
 hydroxide—
 and freezing up of alkali soils during reclamation, (56) 619.
 anion effect on precipitation reactions and dispersion, (59) 716.
 cream for concentration of bacteria, (52) 380.
 in alkaline soils, (57) Ariz. 210.
 in animal tissues, effect of feeding aluminum, (60) 389.
 in human autopsy tissue, (60) 389.
 ions, exchange with potassium ions, (54) 214.
 leaching from soil by neutral salts, (59) 511.
 nitride process of nitrogen fixation, (56) 623.
 paints, efficiency, (60) 378.
 phosphate and tricalcium phosphate, comparison, (54) 20.
 phosphate, assimilability, (51) 220.
 phosphate treatment of alkali soils, (57) N.J. 716.
 relation to activities of soil microorganisms, (51) 18.
 relation to plant growth in acid soils, (56) 323.
 relation to soil reaction and plant growth, (54) 620.
 salts, effect on plant growth, (53) 326.
 salts, effect on wheat seedlings, (52) N.J. 725.
 silicate soils, molecular condition, reaction, and fertilizer requirements, (54) 217.
 solubility in soils, effect of anions, (60) 509.
 soluble and colloidal, distribution in soils, (60) 23.
 sulfate action in the clarification of water, (54) 383.
 sulfate and lime, fungicidal action, (51) 55.
 sulfate, effect on acid soil plants, (60) 235.
 sulfate, effect on alkali soils, (55) U.S.D.A. 418.
 tolerance limit of seedlings for, (60) 623.
 tolerance of crops, (58) 121.
 toxic action on sugar cane, (53) 829.

Aluminum—Continued.

toxicity, studies, (59) N.J. 315; (60) 318.

Alysia manducator, habits, (60) 656.

Amaranth curculio, studies, (53) 159.

Amaranthus—

palmeri as silage crop, (53) Ariz. 433.

viridis as weed in Cuba, (54) 239.

Amarantus disease in Sumatra, (56) 456.

Amarilla bacterial wilt, studies, (59) 537.

Amathusia phidippus, notes, (52) 361.

Amatidae, data, (56) 358.

Amblyomma americanum, cause of typhus-like fever, (56) 277.

Amblyomma, description and hosts, (55) 859.

Amblyomma hebraeum, notes, (55) 174.

Amblyteles jucundus, notes, (59) 558.

Ameba disease of bees, (59) 461.

Amebas—

effect of antiseptics in soil, (55) 514.

human intestinal, infection of rats with, (53) 553.

of intestinal tract of rats and mice, (53) 553.

Amebiasis, experimental, in rabbits, (55) 375.

Armenia and Sharon Land Company, system of management, (53) U.S.D.A. 893.

America, its parks and playgrounds, (54) 540.

American—

Association—

for Advancement of Science, editorial, (52) 101.

of Cereal Chemists, committee on methods, report, (54) 613.

of Cereal Chemists, methods of analysis, (56) 13; (59) 503.

of Economic Entomologists, common names of insects approved by, (58) 557.

of Medical Milk Commissions, conference, (59) 575.

of Medical Milk Commissions, proceedings, (57) 372.

of Textile Chemists and Colorists, proceedings, (54) 596.

of Textile Chemists and Colorists, program, (58) 898.

of Textile Chemists and Colorists, yearbook, (55) 93.

Chemical Society, fiftieth anniversary, (56) 309.

Council of Education, report, (56) 587.

Dairy Federation, proceedings, (53) 380.

Dairy Science Association, proceedings, (59) 165.

Engineering Council, agricultural survey by, (60) 799.

Farm Bureau Federation, paper on, (55) 384.

Farm Economic Association, meeting, editorial, (60) 305.

Farm Economic Association, meeting, papers of, (51) 189; (54) 198; (57)

American—Continued.

Farm Economic Association—continued. 83, 382; (58) 400, 886; (59) 481; (60) 381, 883.

Home Economics Association, meeting, (52) 196; (59) 599.

Home Economics Association, proceedings, (51) 493.

Institute of Chemical Engineers, transactions, (57) 608.

Institute of Cooperation, conferences, (60) 680.

National Livestock Association, proceedings, (53) 167; (56) 69.

Society of Agricultural Engineers—meeting, (55) 199; (57) 398.

meeting, research at, editoria', (59) 401.

proceedings, (53) 399.

Society of Agronomy, meeting, (51) 798; (54) 99; (55) 799; (58) 200; (60) 299.

Society of Animal Production—meeting, (54) 100; (56) 98; (58) 398.

meeting, editorial, (60) 301.

proceedings, (53) 570; (57) 659, 761; (58) 864.

Society of Civil Engineers, papers on irrigation, (58) 887.

Society of Heating and Ventilating Engineers, guide, (53) 287, 590.

Society of Mechanical Engineers, boiler construction code, (53) 187.

Society of Parasitologists, meeting, papers, (60) 665.

Society of Testing Materials—specifications and methods for textiles, (58) 395.

standards, (53) 185.

standards, supplement, (56) 780.

Sociological Society—proceedings, (60) 88.

research projects, (55) 83.

rural sociology section, (54) 200.

Soil Survey Association, proceedings, (52) 17; (56) 511.

Soybean Association, proceedings, (60) 135.

Ametastegia glabrata larvae on apples, (51) 555.

Amidostomum anseris in geese, (55) 374, 375; (59) U.S.D.A. 54.

Amids, rôle in higher plants, (56) 325.

Amines and N-heterocyclic compounds, insecticidal action, (57) 557.

Amines in distillate from Kjeldahl-Gunning nitrogen determinations, (56) 111.

Amino acid—new, in proteins, (53) 802.

new sulfur-containing, (51) 109.

new sulfur-containing, effect on pancreatic amylase, (51) 710.

nitrogen in animal tissues, (60) 415.

synthesis, Erlenmeyer, (59) 802.

synthesis in animal organism, (51) 862; (53) 261; (57) 90.

Amino acids—

- action of acetic anhydride and pyridine, (60) 203.
 - action of quinones on, (60) 413.
 - and proteins, interrelations, (52) 665.
 - basic, from casein, (52) 708.
 - decomposition, (53) 310.
 - effect on activity of pancreatic amylase, (55) 10.
 - effect on blood sugar, (51) 365.
 - effect on insulin intoxication, (53) 462.
 - formation in *Pyrus malus*, (57) 609.
 - in alfalfa, (54) 804.
 - in blood, (51) 557.
 - in blood, determination, Folin's method, (59) 806.
 - in blood of children, (51) 265; (59) 891.
 - in corn kernel, (53) 502.
 - in nutrition, (51) 62, 862.
 - in nutrition, rôle of alanine and indole, (53) 657.
 - in oat kernel, (53) 501.
 - in rye kernel, (53) 712.
 - in shrimp muscle, (54) 408.
 - metabolism, (55) 592.
 - of protein hydrolysis, titration, (59) 807.
 - optical properties, (52) 803.
 - sulfonation, (59) 309.
 - titration methods, (51) 315; (59) 805.
 - titration with indicators, (59) 309.
 - titrimetric determination, (60) 205.
- Amino nitrogen, *see* Nitrogen.

Ammonia—

- absorption by soils, (53) 19.
- accumulation in soils, (55) Iowa 514.
- action on wool, (56) 496.
- assimilation by plants, (53) 726.
- determination in milk, (51) 207.
- determination in soil, (52) 612; (53) 11.
- determination, new micro-Kjeldahl method, (53) 107.
- determination, simplified Kjeldahl micro method, (55) 205.
- fixation in Indian soils, (53) 617.
- formation in partially sterilized soil, (51) 18.
- formation in water-logged soils, (59) 813.
- fumes, effect upon pears in cold storage, (52) Calif. 53.
- in rain from protected and exposed gage, (56) 212.
- in soil, (51) 813; (54) 514.
- in urine, determination, (52) 412.
- injury of fruits and vegetables in storage, (58) 542.
- injury to onions and fruits, (60) 345.
- nitric acid from, (59) 424.
- nitrication, effect of manganese, (53) 322.
- oxidation, catalyzers for, (51) 217.
- oxidation, conditions favoring, (51) 215.

Ammonia—Continued.

- oxidizing organisms in soils, (60) 510.
 - photosynthesis with, (57) 803.
 - production, (51) 722.
 - production in soil, (57) Mo. 412.
 - retention in soils, (53) 213.
 - sources, (55) S.C. 420.
 - synthesis from the elements, (58) 802.
 - treatment of soil for sedimentation analysis, (54) 414.
 - use for refrigeration, explosives, etc., (59) 502.
 - vacuum apparatus for distillation, (51) 11.
 - vapors, use against ticks, (58) 562.
- Ammoniacal silver chloride, toxicity, (55) N.H. 843.
- Ammonification—
- effect of temperature, (53) 817.
 - effect on elementary sulfur in soil, (57) 811.
 - experiments in moor soils, (54) 120.
 - in red prairie soils, (56) 21.
 - in Yahola soils, (59) 118.
 - of amine nitrogen (52) 512.
 - studies, (53) 512.
- Ammonium—
- bicarbonate—
- action, effect of methods of application, (51) 120.
 - fertilizing value, (53) 119.
 - toxicity to wheat sprouts, (53) 21.
- carbonate—
- fertilizing value, (55) 426.
 - photosynthesis of urea from, (59) 802.
 - toxicity to wheat sprouts, (53) 21.
- chloride—
- effect on yeast growth and gluten hydration, (53) 105.
 - fertilization, absorption and leaching of nitrogen from, (54) 19.
 - fertilizing value, (52) 123, 422; (53) 322; (60) N.C. 719.
 - toxicity to wheat sprouts, (53) 21.
- chlorohydrate, fertilizing value, (54) 218.
- nitrate—
- action on acid sand soils, (56) 514.
 - as an explosive, (52) 623.
 - effect on phosphate and potassium availability, (60) Ala. 120.
 - explosibility, (51) 518.
 - fertilizing value, (51) La. 830; (52) 123, 422; (60) N.C. 719.
 - physiological characteristics, (54) 218; (55) 426.
 - toxicity to wheat sprouts, (53) 21.
- orthophosphates, dissociation pressures, (58) 710.
- phosphate, fertilizing value, (53) 322; (60) N.C. 719.

- Ammonium—Continued.
 salts, determination, (52) 806.
 salts, fertilizing value, (52) 526.
 salts, micro determination, (53) 10.
 salts, volumetric determination, (51) 611.
 sulfate—
 action, effect of methods of application, (51) 120.
 action on acid sand soils, (56) 514.
 and sodium nitrate, comparison, (56) 23, 623.
 and sodium nitrate, relative lime needs, (57) 813.
 and urea, comparison, (53) 119.
 as source of nitrogen for apples, (58) Can. 836.
 detection when added to nitrogenous material, (57) 9.
 effect on apple trees, (58) 38, 420.
 effect on phosphate and potassium availability, (60) Ala. 120.
 effect on phosphorus determination, (53) 205.
 effect on soil bacteria, (52) 514.
 effect on soil reaction, (56) 22.
 effect on soy beans, (52) 326.
 efficiency, effect of pH of soil, (55) 221.
 fertilizing value, (51) Miss. 134, N.J. 622, 623; (52) 422; (53) Ind. 139, 819; (54) 218; (55) Ark. 18, 516, Miss. 527.
 for meadows, (55) 420.
 nitrification, (60) 718.
 nitrification, effect of potassium salts, (59) 424.
 nitrogen availability in, (59) N.J. 318.
 nitrogen availability under varying conditions, (53) 619.
 production, (56) 626.
 properties and fertilizing value, (57) Tenn. 115.
 repeated applications, effect, (51) N.J. 624.
 toxicity to wheat sprouts, (53) 21.
 volume weight, variation, (55) 421.
 with partial sterilization of soil, effect on crops, (54) 19.
 sulfo-nitrate, fertilizing value, (54) 516.
- Ammophila arenaria for planting on sand dunes, (53) 846.
- Ammophos, fertilizing value, (60) N. C., 719.
- Ammophos, nitrification, (60) 718.
- Amoeba meleagridis, notes, (57) Mo. 467.
- Amoebotaenia sphenoides—
 anatomy and life history, (57) 77, 879.
 notes, (58) 879.
- Amorbia—
 humerosana, life history studies, (54) Pa. 352.
 humerosana, notes, (56) Pa. 154.
 humerosana, studies, (56) Pa. 156.
 life history studies, (56) 82S.
- Amphoglypter cissi n.sp., description, (51) 59.
- Amphibians and reptiles—
 North American, check list, (51) 452.
 of Indiana, keys, (56) 754.
 of North Carolina, keys, (58) 157.
- Amphicoma vulpina, notes, (53) 555.
- Amphiplasty, new cytological phenomena, (58) 525.
- Amphitornus nanus, notes, (53) 756.
- Amphorophora—
 revision of genus, (54) 259.
 rhois, notes, (54) 154.
 rubi, notes, (57) N.Y.State 549, Mich. 651.
- Amsacta albistriga, campaign against, (52) 554.
 Amsacta albistriga, notes, (57) 655.
- Amygdalin, hydrocyanic acid determination in, (51) 409.
- Amyl acetate as grasshopper bait, (52) Minn. 556.
- Amyl salicylate as bait for tobacco hornworm moths, (59) 59.
- Amylase—
 in milk and cheese, (52) U.S.D.A. 503.
 in Rhizopus spores, (52) 126.
 malt, isoelectric point, (53) 106.
 pancreatic, activation, (60) 11, 12.
 pancreatic, as affected by sulfur-containing amino acid, (51) 710.
 pancreatic, behavior toward adsorbents, (55) 110.
 preparation from wheat and rye, (55) 110.
 stability and enzymic activity, effect of amino acids, (55) 10.
- Amylases—
 chemical studies, (51) 804; (53) 408; (56) 501.
 pancreatic and malt, heat destruction, (54) 504.
- Anabrus longipes, notes, (53) 756.
- Anacampsis fragariella, notes, (60) Oreg. 753.
- Anaerobes—
 causing explosion of chocolate candies, (57) 193.
 differentiating, (54) 172.
 effect of artificial peroxidase on growth, (51) 180.
 in meat, studies, (51) 262.
 infection in animals, (52) 280.
 of intestines, effect of Bacterium acidophilus on, (51) 65.
 spore-bearing, hydrogen sulfide production by, (55) 631.
 tissue-invading, identification, (56) 475.

- Anaerobic—
cultures, improved method, (53) 609.
infections in animals, (53) 677.
- Anagrus giraulti affecting beet leafhopper, (52) Calif. 58.
- Anagrus spp., notes, (54) 558.
- Anaphe infracta, silk from, tests, (56) 823.
- Anaphes iole, notes, (52) 858.
- Anaphothrips signipennis—
biology and control, (56) 459.
control, (57) 60.
notes, (58) 857; (59) 458.
- Anaphylaxis—
and tuberculin reaction, (53) 382.
in cattle, changes in lungs in, (57) 472.
papers on, (52) 882.
relation to immunity, (56) 676.
relation to tolerance or immunity, (53) 77.
- Anaplasma—
and jolly bodies, differentiation, (58) 474.
and Theileria, relation and biology, (58) 875.
Argentine and Algerian forms, comparative experiments, (59) 877.
argentinum, notes, (52) 778.
marginale in cattle of California, (59) 79.
marginale, inoculation of sheep with, (53) 183.
marginale, notes, (59) 173.
nature of, (60) 573.
ovis n.sp., notes, (53) 183, 482.
rossicum, notes, (60) 871.
- Anaplasmosis—
bovine, histopathology, (58) 675.
following dehorning, (60) 478.
in Chile, (52) 778.
in Palestine, (53) 678.
in sheep, (57) 77, 872.
in United States, (60) 73.
mercury injection treatment, (54) 72
of bovines in Russia, (60) 871.
of cattle, (55) 274; (59) 369, 672.
of cattle in United States, (59) 170.
production, (54) 171.
studies, (51) 382, 680; (54) 276.
susceptibility of sheep to, (55) 73.
vaccination of bovines against, (59) 878.
- Anarsia lineatella, *see* Peach twig borer.
- Anastatus—
albitarsis, bionomics, (59) 160.
bifasciatus, parasite of gipsy moth, (53) 561.
- Anastrepha ludens—
notes, (58) 61; (59) Tex. 759.
quarantine control work in Texas, (58) 350.
studies, (58) 163.
summary, (59) 860.
- Anatomy, comparative, of domestic animals, handbook, (57) 376.
- Anatomy of horses, atlas, (57) 673.
- Ancistrocerus catskillensis, parasite of, (58) 61.
- Ancylics comptana, *see* Strawberry leaf roller.
- Ancylostoma—
braziliense, studies, (60) 579.
caninum, notes, (52) 182.
spp., notes, (54) 72; (56) U.S.D.A. 776.
- Andraeaena deliensis n.g. and n.sp., description, (54) 251.
- Andropogon—
halepensis as weed in Belgian Kongo, (53) 839.
spp. seed, germination tests, (54) 635.
- Anemia—
alimentary, in infants, (60) 197.
aplastic, in pigs, (60) 476.
blood regeneration in, (56) 494; (57) 795; (58) 496; (59) 295.
effect of inorganic ash of various foods, (60) 695.
effect of inorganic elements, (59) 295, 793.
effect of iron salts, (58) 297.
hereditary in mice, relation to dominant spotting, (54) 228.
in avitaminous animals, effect of ultraviolet light, (52) 67.
in hens and increased pigmentation, (53) 81.
in pigs, effect of variation in rations, (59) Ind. 761.
in young pigs, (57) Ind. 669; (58) Ind. 280, 878.
infections equine—*see also* Swamp fever.
changes of red blood cells in, (53) 81.
epidemic, (52) Calif. 81.
experimental transmission, (52) Wyo. 384.
in Nevada, (53) 586.
in South Africa, (52) 85, 484.
pulse rate, (53) 889.
studies, (51) N. Dak. 882; (57) Tex. 180.
- iron salts and iron-containing ash extracts for, (59) 893.
liver recipes for, (58) 196.
liver treatment for, (60) 899.
nutritional and inorganic iron in hemoglobin building, (54) 293.
nutritional, correction, (57) 194.
of rice disease, studies, (58) 594.
on whole milk diets, correction, (58) 897.
- pernicious—
and aplastic, and leukemia, studies, (60) 475.
dietary treatment, (58) 93, 897.
dietary treatment, blood changes during, (57) 297.
effect of ash of liver on blood regeneration, (59) 793.
in horses, (60) Oreg. 774.
irradiated ergosterol for, (58) 596.

- Anemia—Continued.
 pernicious—continued.
 kidney in diet for, (59) 194.
 liver cocktail for, (57) 898.
 liver constituent effective in, nature, (58) 92.
 liver for, active principle, (59) 692.
 liver for, cooking, (60) 289.
 liver for, specificity, (60) 395.
 liver treatment, (58) 92, 596, 897; (59) 193, 495, 598; (60) 396, 695.
 Minot-Murphy liver diet in, (58) 93; (59) 193, 598.
 of sheep and goats, (51) 785; (52) 483.
 probable nature of, (60) 396.
 recent advances in, (58) 93.
 standard diet for, (58) 693.
 treatment, (56) 294.
 recovery from, rôle of iron and fat in, (51) 864.
 regeneration of hemoglobin and diet factors in, (52) 260.
 relation to iron in diet, (56) 494.
 relation to vitamin A deficiency, (56) 293.
 secondary, in dogs, liver extracts for, (58) 93.
 severe, blood regeneration in, (53) 866.
 sickle cell, in man, inheritance, (51) 129.
 studies with rats, (59) 892.
- Anemias—
 human, pathologic changes of, (60) 396.
 parasitic, of sheep and goats, (59) 80.
 response to liver therapy, (60) 395.
- Aneristus ceroplastae, notes, (57) 856.
- Anesthesia in plants, (51) 733.
- Anesthesia in treatment of botulism, (53) 368.
- Anesthetics—
 action on sugar cane sprouting, (60) 28.
 effect on carbon dioxide production by wheat, (55) 728.
 effect on respiration of cereals, (56) 125.
- Angina in horses, etiology and treatment, (58) 677.
- Angiosperms—
 chromosome numbers in, list, (56) 816.
 fertilization phenomena in, (58) 129.
- Angitia fenestralis, biology, (56) 856.
- Angitia sp., notes, (53) U.S.D.A. 54.
- Angleton grass, characteristics and habits, (56) Tex. 35.
- Angora hair, character, (54) 672.
- Angoumois grain moth—
 biology, (51) 159.
 chlorin gas for, (51) 358.
 control by fumigation, (52) 359.
 dispersion to wheat fields, (57) 361.
 in corn, control, (59) 57.
 infestation, prevention, (51) N.J. 658.
- Angoumois grain moth—Continued.
 notes, (55) 555; (59) 651.
 outbreaks, causes, (53) 454.
 protection of wheat from, (57) N.J. 57.
- Anhydraemia, gastric motility in, (59) 894.
- Anhydraemia in rats, (59) 894.
- Anicetus annulatus, notes, (52) 557.
- Anilastus ebeninus, hyperparasite of, studies, (53) 656.
- Aniline colorants, reactions of plant cells to, (53) 521.
- Animal—
 abnormalities, studies, (60) 727.
 and plant life, treatise, (58) 659.
 board, new, description, (59) 577.
 body size and pituitary secretion, (60) 31.
 bones, disinfection, (51) 679; (57) 378.
 breeding—*see also* Breeding, Hybridization, and specific animals.
 age as factor in, (51) Mo. 772.
 application of genetic research, (54) 663.
 at University of Edinburgh, (59) 220.
 basis of, (60) 428.
 principles, treatise, (56) 760.
 relation to recent experiments, (53) 267.
 Research Department, Edinburgh University, report, (55) 327.
 research methods and problems, (58) 526.
 treatise, (53) 267; (57) 660; (58) 762; (59) 462.
 types in, (59) 324.
 use of Manoiloff test for sex diagnosis, (58) 827.
- calorimetry, studies, (51) 265; (52) 665; (54) 269.
- communities of forests, (57) 754.
- diseases—*see also* specific diseases.
 and parasites, (58) 474.
 carried by ticks, transmission by emulsion of intermediate host, (58) 171.
 clinics and research at Cornell University, (58) 272.
 communicable to man, (57) 278.
 contagious, in Jamaica, (59) 671.
 diagnosis, (51) 477.
 diagnosis and autopsy technique, manual, (58) 273.
 diagnosis by complement fixation, (58) 771.
 diagnosis, preparation and sending of specimens, (51) N.J. 880.
 Diptera as transmitters, (59) 172.
 in Ajmer-Merwara, (52) 377; (56) 876.
 in Assam, (54) 475; (55) 776; (58) 273.
 in Australia, (59) 170, 876.
 in Baluchistan, (53) 479.
 in Bengal, (51) 381; (54) 475; (57) 872; (59) 272.

Animal—Continued.

diseases—continued.

- in Bihar and Orissa, (55) 70; (56) 876; (59) 671.
- in Bombay, (54) 379; (56) 774.
- in British Baluchistan, (56) 571.
- in Burma, (52) 776; (54) 574; (56) 876; (58) 771.
- in California, (54) 275; (58) 573.
- in Canada, (54) 573, 870; (58) 472.
- in Ceylon, (54) 171; (55) 677; (58) 72.
- in Chosen, (58) 472; (60) 72.
- in Connecticut, (56) Conn.Storrs 874; (58) 472.
- in Denmark, (58) 472.
- in Egypt, (54) 674; (60) 867.
- in England, (53) 79.
- in Fiji, (56) 277.
- in France, (51) 381, 781; (60) 475.
- in Germany, (52) 580.
- in Great Britain, (57) 278.
- in India, (51) 281; (52) 280; (54) 171.
- in Ireland, (53) 884.
- in Japan, (58) 473.
- in Java and Madura, (57) 181.
- in Kansas, (54) 475; (58) 472.
- in Kenya Colony, (52) 776; (54) 72, 574; (56) 173; (58) 474; (60) 475.
- in Madras, (52) 881; (57) 872.
- in Mauritius, regulation, (56) 277.
- in Muktesar, India, (57) 670.
- in New South Wales, (54) 71, 870; (55) 677; (57) 77, 181; (58) 874; (59) 272, 471.
- in New Zealand, (58) 72.
- in Nigeria, (60) 868.
- in Northern Ireland, (56) 277.
- in Ontario, (59) 577.
- in Philippines, control, (58) 874.
- in Prussia, (51) 678; (56) 571.
- in Punjab, (54) 674; (57) 872; (58) 171.
- in Rhodesia, (58) 273.
- in South Africa, (52) 82; (57) 77.
- in South Rhodesia, (58) 171.
- in southern Brazil, (52) 580.
- in Tanganyika, (55) 173; (59) 470; (60) 868.
- in Texas, (52) 881.
- in the Gold Coast, (52) 881.
- in Trinidad and Tobago, (56) 277.
- in western Australia, (54) 871.
- in Wisconsin, (55) 70.
- infectious, (57) 871.
- infectious, treatise, (53) 884.
- international office for dealing with, (55) 874.
- nutritional, (57) 377.
- papers on, (57) 179, 180; (59) 170.
- position of Great Britain toward, (53) 380.

Animal—Continued.

diseases—continued.

- post-mortem and laboratory examinations, (56) Kans. 875.
- prescriptions for, (53) 380.
- prevention, (53) 584.
- protozoal, in Germany, (57) 278.
- recent advances in, (54) 871; (55) 72; (56) 477.
- relation to public health, (56) 775.
- report, (53) 78.
- Research Association, report, (54) 71.
- simulating foot-and-mouth disease, (51) 83.
- studies, (52) Kans. 481; (53) Wyo. 680; (54) Del. 674; (57) Nebr. 573; (59) 875; (60) Mont. 772.
- tick-borne, (58) 472.
- tick-borne, transmission, (58) 474; (60) 573.
- transmissible, report, (57) 377.
- transmissible to man, (57) 378.
- treatise, (54) 573; (55) 573; (58) 771.
- treatment with ultra-violet light, (54) 171.
- tropical, manual, (54) 153.
- ultra-microscopic, cell inclusions, (56) 676.
- ecology, course in, (56) 250.
- ecology, treatise, (55) 657; (58) 667.
- evolution, discussion, (60) 428.
- experiments, operative technique, (56) 775.
- feeding, bulk in, (58) 563.
- feeding experiment, directions, (56) 390.
- fibers, protection from moths, (60) 557.
- genetics and breeding, treatise, (54) 25.
- genetics, fundamental laws, (54) 25.
- genetics research at experiment stations, (54) U.S.D.A. 726.
- glue, water-resistant, (56) 802.
- grafts, procedure and results, (53) 167.
- growth—
 - and health, relation to ultra-violet light, (59) 314.
 - and regeneration curves, similarities, (52) 678.
 - constants, (55) 57.
 - curves, effect of food supply, (60) Mo. 67.
 - constants and equivalent age values, (55) 58.
 - effect of ultra-violet light, (53) 63.
 - relation to amount of food consumed, (59) 687.
 - relation to energy requirements, (53) 66.
 - weight speed, relation to size of growing mass, (60) 463.
- hairs, disinfection, (57) 377.

Animal—Continued.

- husbandry—
 - courses in Spain, (51) 95.
 - instruction, papers on, (53) 571; (57) 659.
 - manual, (58) 688.
 - problems and disease control, (57) 763.
 - research and livestock interests of southwest, (57) 660.
 - specialists in marketing program, (53) 571.
 - textbook, (52) 794; (55) 56.
 - work in Tanganyika, (59) 471.
- hybridization, progress reports, (60) Can. 564.
- improvement methods, (53) 522.
- industry, research service to, (55) Mass. 561.
- life in hot springs, (58) 753.
- life in the Yosemite, (51) 656.
- life interrelations and environment, (57) 451.
- nutrition—
 - and electromotive series and oxidation potentials, correlation, (59) 410.
 - and veterinary dietetics, treatise, (58) 166.
 - base-line of, (59) N.H. 259.
 - Institute, report, (52) Pa. 274.
 - mineral elements in, (55) 260.
 - new factors in, (54) 858.
 - potassium in, (56) 465; (57) 64.
 - principles, (51) 670.
 - relation to minerals in pastures, (60) 853.
 - relation to sunlight, (53) Wis. 463 867.
 - research, (51) 73.
 - studies, (51) Mo. 170; (52) 674; (53) Okla. 66, Iowa 768; (55) Iowa 561; (56) Iowa 863; (58) Mo. 460; (59) Ala. 65, Iowa 65, Ind. 761, N. C. 761; (60) Ala. 168.
 - treatise, (52) 267; (58) 562.
 - zinc in, importance, (52) 161.
- organism, oxidation in, effect of thyroid, (54) 110.
- parts, protein in, nutritive value, (55) 487.
- pest control, relation to conservation, (56) 56.
- pests of agricultural plants, treatise, (56) 355; (59) 549.
- pests of field and garden, handbook, (53) 357.
- pests, treatise, (53) 855.
- photography principles and faults, (54) 168.
- physiology, relation to milk production, papers on, (60) 662.
- production, genetic contributions to, (53) 571.
- production, methods of experimentation, (52) 865.

Animal—Continued.

- production, relation to "Meat Ring," (53) 571.
 - products of commercial importance, textbook, (52) 794.
 - products, proteins from, growth values, (59) 861.
 - reproduction and inheritance, (52) Kans. 427.
 - shelters, ventilation, (52) 889.
 - shelters, ventilation, station work, (53) U.S.D.A. 686.
 - tissues—
 - aluminum determination in, (60) 312.
 - aluminum in, effect of feeding aluminum, (60) 389.
 - amino acid nitrogen in, (60) 415.
 - glutathione determination in, (57) 90.
 - histological technique, (56) 675.
 - insulin in, (53) 612.
 - iron content, (58) 191.
 - moisture determination in, (60) 624.
 - nitrates in, (59) 322.
 - oxygen consumption, effect of pH, (54) 88.
 - stain for, (52) 378.
 - variolas, experimental study, (59) 173.
 - vigor, effect of castration, (53) 733.
 - virus diseases, review, (53) 783.
- Animals—*see also* Livestock, Cattle, Sheep, *etc.*
- abnormal sexuality in, (57) 723; (58) 529.
 - albumin formation in, (57) 417.
 - biochemistry of, (60) 91.
 - body size and energy requirements, (53) 769.
 - body temperatures, variations in, (53) 884.
 - breeding, selection, (53) 369.
 - coat colors, relative value, (57) 222.
 - converters of matter and energy, treatise, (54) 262.
 - deformities, (60) 464.
 - differential sex mortality, (53) 525.
 - disproportionate dwarf growth in, (54) 126.
 - distant orientation and place-recognition, (60) 647.
 - domestic—
 - blood of, (59) 876.
 - comparative anatomy, treatise, (54) 870.
 - development, (55) 265.
 - diminished fertility in, (60) 867.
 - distribution, (55) 58.
 - effect of ectoparasites, (60) 355.
 - external parasites, (60) P.R. 774.
 - fertility and sterility in, (55) 58.
 - growth and arrested development, (53) Mo. 466.

Animals—Continued.

- domestic—continued.
 growth and development, Mo.
 (58) 352, 460, 762, 767, 768;
 (60) 67.
 history, effect on history of man,
 (53) 67.
 in Philippines, metazoan para-
 sites of, (54) 274.
 inheritance in, (58) 628.
 internal parasites of, diagnosis
 (55) 70.
 motor nerves in, changes of end-
 ings, (60) 73.
 of Rumania, (55) 768.
 origin, (51) 228; (50) 823.
 origin of color in, (60) 811.
 pathological anatomy, treatise,
 (53) 277.
 pathology and therapy, treatise,
 (51) 678.
 photographing, (51) 100.
 relation to Anopheles, (51) 256.
 shoeing, (55) 70.
 use of Volck against external
 parasites, (60) 266.
 worm parasites of, (56) 571.
 effect of aluminum, (59) 687.
 effect of sunlight, (58) 116.
 experimental, food consumption rela-
 tion to growth, (58) 790.
 exports and imports in Northern Ire-
 land, (56) 277.
 farm, classification, (60) 725.
 farm, goiter in, (60) Mont. 668.
 farm, parasites of, (54) Mo. 53.
 fat production in, technique for study,
 (52) 109.
 fattening, food requirements, (53)
 167.
 first aid to, treatise, (52) 480.
 food requirements, relation to tem-
 perature, (59) 314.
 fungus parasites of, (51) 680.
 fur-bearing, *see* Fur-bearing animals.
 general morphology, synopsis, (58)
 556.
 generic and specific names, index, (53)
 551.
 harmful and useful, treatise, (59)
 187.
 improvement, textbook, (54) 188.
 in Colorado, (59) 852.
 laboratory, biometrical measurements,
 (55) 26; (56) 669.
 laboratory, effect of diet upon growth
 and reproduction, (57) N.C. 265.
 linkage relation in, (55) 732.
 live weight, estimation, (59) 161.
 maintenance ration, relation to body
 composition, (60) 464.
 meat-producing, composition of edible
 viscera, (52) 158.
 metallurgical poisoning in Peru, (54)
 674.
 milking, effect of sunlight, (53) Wis.
 464.

Animals—Continued.

- morphological abnormalities, relation
 to irregularities in hair swirls, (57)
 821.
 mutation in, relation to reduction di-
 vision, (54) 821.
 nursing young, vitamin B require-
 ments, (58) 195.
 on desert mountains, vertical distribu-
 tion, (51) 733.
 on pasture, time used in foraging and
 resting, (52) 868.
 phlorhizinized, type of food used in
 muscular exercise, (59) 891.
 poisonous, and their venom, (57) 379.
 polyembryony in, (58) 528; (59) 648.
 polyploidy in, (54) 226.
 ruby eye in, heredity, (56) 428.
 segregation in, (55) 523.
 sex determination in, (55) 636; (59)
 128.
 sex in, compared with sex in plants,
 (55) 822.
 sex ratio in, (57) 223.
 slaughtered, infected with *Bacillus*
aertrycke, (59) 674.
 small, diseases, (59) 577.
 small, effect of light on metabolic rate,
 (54) 263.
 South African, parasites of, check list
 and host list, (58) 72.
 symbiosis in, (53) 856.
 useful, of China, (52) 795.
 utilization of sulfur by, (60) 853.
 vertebrate, of Tasmania, synopsis,
 (53) 50.
 vitamin deficient, sensitivity to ar-
 senic compounds, (58) 87.
 vitamin requirements, (53) Ind. 167.
 wild—*see also* Wild.
 in captivity, tuberculosis in, (60)
 669.
 in Kentucky, (54) 51.
 loss from rodent poison bait, (59)
 553.
 of Australasia, (56) 853.
 relation to diseases of man, (55)
 473.
 Anions, principal, detection, (57) 8.
 Anions, retention by soils, effect of ex-
 changeable bases, (56) 416.
 Anisogeny, suggested interpretation, (57)
 124.
 Anisolabis annulipes, notes, (58) 451.
 Anisopteryx aescularia, notes, (59) 856.
 Anixia berkeley n.sp., description, (60)
 216.
 Annual diseases in New South Wales, (60)
 475.
 Anobiid beetles, studies, (55) 759.
 Anobium punctatum, notes, (57) 552.
 Anobium punctatum, treatise, (59) 456.
 Anodontonyx tetricus, biology and control,
 (59) 658.
 Anocia spp., notes, (54) Ohio 155.
 Anogdus luggeri n.sp., description, (58)
 Minn. 459.

- Anolis pulchellus*, notes, (53) 156.
- Anomala—
 aenea, morphology and biology, (58) 560.
 antiqua, notes, (52) 154.
 innubia, notes, (54) Kans. 461.
 kansana, biology, (52) 856.
 orientalis—
 control, (53) Conn.State 450; (57) Conn.State 161; (58) 560.
 in Connecticut, (51) 363.
 life history notes, (57) 859.
 notes, (51) Conn.State 852; (55) Conn.State 252, 554; (57) 451; (59) 352.
 soil treatment and scouting for, (57) 859.
 spread and control, (60) Conn.State 751.
 sievleri, parasite of, (57) 64.
- Anopheles—*see also* Mosquitoes and Malaria.
 atropos, breeding and other habits, (58) 162.
 breeding, relation to water hyacinth, (54) 459.
 dispersion studies, (60) 849.
 eggs, resistance to desiccation, (58) 61.
 emergence, (56) 62.
 engorged, destruction as malaria control measure, (56) 62.
 fauna in Europe, zoophilous evolution, (60) 561.
 identification of bloodmeal, (60) 849.
 identification of larvae, (58) 162, 458.
 in Japan, revision, (55) 459.
 larvae, effect of oil on, (57) 362.
 larvicide, possibilities of Paris green as, (57) 858.
 maculipennis, change in habits of, effect on malaria, (59) 356.
 maculipennis, types around Amsterdam, (60) 561, 652.
 maculipennis, zoophily in the Ukraine, (60) 653.
 malaria-bearing, effect of bats, (55) 762.
 minimus, notes, (60) 652.
 natural breeding places in Louisiana, (51) 256.
 North American, bionomics, (57) 362.
 oviposition and early life, effect of temperature and humidity, (55) 762.
 pseudopunctipennis, blood-feeding habits, (60) 248.
 pseudopunctipennis, breeding places during dry season, (60) 248.
 quadrimaculatus, annual broods, (57) 362.
 relation to domestic animals, (51) 256.
 spp., American, bionomics, (59) 559.
 spp., blood-feeding habits, (59) 657.
 spp., control with Gambusia, (59) 357.
 spp., food of, (56) 62.
 spp. susceptibility to malaria parasites, (58) 348.
- Anopheles—Continued.
 spp. winter activities in coastal North Carolina, (58) 664.
 zoophilism with, (52) 358.
 Anopheline larvae, food of, (59) 657.
 Anophelini, catalogue, (53) 859.
 Anophelism without malaria around Amsterdam, (60) 561, 652, 850.
 Anoplocephalidae, monograph, (59) 550.
 Anoplura and Mallophaga, host relations, (57) 554.
- Anorexia—
 analysis, (59) 395.
 in children, prevention, (57) 898.
 in children, prevention and treatment treatise, (59) 189.
 paper on, (60) 786.
 relation to vitamin B deficiency, (60) 195.
- Anseres, life histories, (54) 52.
- Antagonism—
 and toxicity in salt solutions, (57) 24.
 between salts in bacterial development, (56) 26.
 studies, (51) 224.
- Antelope, pronghorned, status, (54) U.S. D.A. 52.
- Anteoninae, new, notes, (52) 859.
- Antestia lineaticollis egg parasites, sex ratio, (52) 333.
- Anthelmintic medication, progress, (55) 473; (59) 171.
- Anthelmintics—
 and uses, treatise, (60) 574.
 critical tests, (52) 776.
 for dogs, studies, (54) 675.
 method of administration, (53) 183.
 studies, (55) 271; (57) 282.
 tests, (53) 681.
 tests with hogs, (52) Ohio 84.
- Anthemiella rex affecting beet leafhopper, (52) Calif. 58.
- Anther smut, racial differences and secondary characters, (60) 831.
- Antheraea yamamai, fibers of, (58) 596.
- Anthesis and temperature, (55) 727.
- Anthidium porterae nesting habits, (60) 357.
- Anthocyan pigments—
 behavior in canning, (57) 890.
 formation, recent publications on, (53) 125.
 in grapes, (52) 610, 803; (56) 311.
 in red roses, (51) 523.
 relation to summer injury in plants, (52) 139.
- Anthocyanin—
 in Isabella grapes, (57) N.Y.State 502.
 inheritance in Crepis, (55) 126.
 origin in flowers and leaves, (53) 726.
 pigments of plants, (56) 813.
- Anthocyanins and carotins, parallelism, (53) 627.
- Anthomyidae of France, (51) 763.
- Anthomyiinae of New York, systematic study, (52) N.Y.Cornell 457.

Anthonomus—

- cinctus, studies, (52) 858.
- eugenii in California, (52) 662.
- musculus, life history and control, (56) 861.
- pomorum, control, (53) 558; (58) 863.
- pomorum, life history and control, (52) 560.
- pomorum, parasite of, (59) 861.
- pomorum, studies, (53) 652; (57) 64
- quadrigibbus, *see* Apple curculio.
- signatus, *see* Strawberry weevil.
- suturalis, notes, (56) 861.
- vestitus, biology and habits, (58) 351.
- vestitus, notes, (60) 161.

Anthranelic acid ester determination in grapes, (55) 711.

Anthrax—

- aggressin, immunization, (55) 173.
- bacilli infectivity, effect of site of inoculation, (54) 379.
- bacillus in imported hides and hairs, (58) 473.
- bacillus, morphology, cultural features, and pathogenicity, (60) Ark. 868.
- control, (52) 881; (54) 871; (55) Ark. 71; (58) 472.
- control, new phases in, (54) 574.
- immunity and infection, rôle of skin in, (51) 781.
- immunity, rôle of vitamin B in, (51) 282.
- immunity, single intradermal injection for, (53) 678.
- immunity, studies, (55) 70, 272.
- immunization, methods, (57) 573.
- immunization of horses against, (51) 782.
- immunization of sheep against, (51) 283, 782.
- in Australia, (53) 279.
- in South Africa, (60) 574.
- in the tannery industry, (51) 283.
- infection and immunity, (52) 884.
- international data, (55) 272.
- nature and control, (58) 477.
- notes, (54) 171; (55) 173; (57) 181, 278; (59) 471; (60) 475.
- organism, growth as affected by pH, (53) 582.
- plants as possible carriers, (56) La. 173.
- prophylaxis, Ark., (56) 378; (58) 368.
- report of advisory committee on, (51) 382.
- sensitivity and immunity, (52) 482.
- serum, antiaggressive action, (51) 781.
- spore vaccine and use, (58) 474.
- spores, disinfection, (58) 473.
- transmission by insects, (51) La. 879.

Anthrenus—

- muscorum, dead cluster flies as host, (60) 653.
- scrophulariae, *see* Carpet beetles.
- seminiveus in upholstered furniture, (55) 765.

Anthrenus—Continued.

- verbasci, biology and control, (59) 853.
- Anthropogeography, physical, problem, (60) 507.
- Antianaphylaxis, studies, (57) 378.
- Antibodies—
 - formation after mallein injections, (52) 180.
 - production in cutaneous immunity to anthrax, (52) 482.
 - rôle in immunity of bee moth, (51) 161.
 - specific, in rabbits' serum, (52) 282.
 - transmission in colostrum, (52) Mo. 679.
- Anticarsia gemmatilis, notes, (54) Fla. 257; (56) 155.
- Antidiabetic hormone from yeast, (52) 765.
- Antidiphtherine, vaccination of poultry with, (56) 679.
- Antigenic values, testing, immunity index, (59) 777.
- Antigens, preparation, (51) 582.
- Antiknock theory, studies related to, (57) 778.
- Antimony—
 - electrodes in pH determination of soils, (59) 709.
 - potassium tartrate for treatment of trypanosomiasis, (60) 372.
 - trichloride as test for vitamin A, (59) 92.
- Antimony-antimony trioxide electrode as measure of acidity, (59) 804.
- Antirrhinum—
 - diseases, (53) 550.
 - factor mutations in, (58) 525.
 - orontium, studies, (57) 120.
- Antiseptics—
 - and sweetening agents, (51) 12.
 - effect on soil amebas, (55) 514.
- Antispila isabella, notes, (54) Mich. 354.
- Antivitamin, use of term, (58) 494.
- Ants—
 - and plant lice, (60) 844.
 - Argentina—
 - affecting beet leafhopper, (52) Calif. 58.
 - campaigns against in Mississippi, (54) 261.
 - control in France, (57) 64.
 - eradication, (52) 454.
 - in citrus orchards, control, (60) 460.
 - in Valencia, (52) 663.
 - as pests in Australia, (53) 57.
 - attending aphids in Pennsylvania, (60) 249.
 - attending aphids, list, (53) 157.
 - baits for, (56) Utah 553.
 - bees, and wasps, treatise, (52) 854; (56) 862.
 - citrus, of south China, (53) 656.
 - colony formation, (57) 553.
 - faculty of communication in, evolution, (52) 155.

Ants—Continued.

- hibernation, (59) 659.
 in Hawaiian pineapple fields, (55) 858.
 household pest in Kansas, (60) 357.
 house-infesting, biology, (60) 250.
 in Porto Rico, importance, (52) 257.
 insecticides for, (52) Utah 752.
 leaf-cutting, control, (58) 346.
 leaf-cutting, of Panama, control, (58) 264.
 life history, treatise, (53) 861.
 mimicry, (57) 553.
 mound-building, destruction, (53) 456.
 mound-building, injuries to vegetation, (58) 666.
 mound-building, life history and habits, (59) 159.
 natural history, (56) 759; (57) 457.
 notes, (59) N.J. 351.
 of China, list, (53) 656.
 of Great Britain, life history and classification, (57) 365.
 of Timothy Thümmel, (53) 160.
 on citrus fruits, control, (57) Tex. 162.
 pale-green arboreal, of Australia, (60) 250.
 pavement, notes, (52) Md. 457.
 protecting refrigerators from, (59) 455.
 red, on coffee tree, (53) 156.
 social world of, (60) 66.
 treatise, (57) 562.
 wasps, and bees, treatise, (52) 854; (56) 862.
 white, *see* Termites.

Anuraphis—*see also* Aphids and Aphis.

- bakeri*, *see* Clover aphid.
cardui, control, (57) Idaho 754.
maid-radicis, *see* Corn root aphid.
padi, notes, (60) 161.
persicae-niger, *see* Peach aphid, black.
roseus, *see* Aphis, rosy, and Apple aphid, rosy.
 spp., notes, (54) Ohio 155; (58) 261.
tulipae in storage warehouses, control, (56) 60.
tulipae, notes, (58) 59, 663.

Anysis saissetiae, notes, (55) Calif. 352.

Anystis agilis, notes, (54) Mich. 354.

Aonidia lauri, parasite of, (51) 762.

Apanteles—

- aristotelidae*, notes, (52) 757; (55) Calif. 352.
artonae n.sp., description, (56) 760.
brachartonae, notes, (59) 655.
carpatu, notes, (56) Va. 556.
diatraeae, notes, (56) 557.
glomeratus—
 hyperparasite of, studies, (53) 656.
 notes, (52) 659.
 parasite of *Pieris brassicae*, (56) 661.
 parasites of, (52) 561; (57) 264.
 parasites, oviposition and feeding, (53) 560.
hidaridis n.sp., description, (52) 361.
hyphantriae, (59) Ark. 252.

Apanteles—Continued.

- Indo-Australian species, revision, (60) 252.
melanoscelus, hyperparasites affecting, (57) U.S.D.A. 457.
melanoscelus, new parasites of, (57) 365.
militaris, notes, (59) 558.
 n.spp., description, (52) 361.
nephopteris, notes, (57) 64.
ornigis, notes, (52) Iowa 358.
 spp., notes, (54) 259.
syleptae, notes, (54) 259.
Apate francisca, notes, (51) 252.
 Apatite, dicalcic phosphate from, preparation, (56) 510.
Aphaenogaster fulga aquia, notes, (52) Md. 457.
 Aphonomyces—
 euteiches—
 additional hosts, (59) 848.
 n.sp., description, (53) 351.
 notes, (54) Wis. 248; (56) Wis. 747; (57) 153, 749, 843; (58) 652; (59) N.J. 338.
 studies, N.J., (55) 43; (57) 47, 741.
 exoparasiticus n.sp., description, (57) 745.
 raphani n.sp., description, (58) Ind. 243; (59) 344.
 sp., notes, (52) Utah 745; (58) N.Y. State 844.
 sp., value in sprays, (52) Del. 844.
 Aphelenchus—
chamelocephalus n.sp., notes, (57) 749.
fragariae in strawberry plants, (56) 152.
fragariae, notes, (56) 850.
ormerodis, notes, (59) 536.
pseudoparietinus, notes, (57) 749.
ritzemabosi, notes, (52) 551; (58) 853; (59) 246.
 sp. on strawberry, infection experiment, (57) 850.
Aphelinoidea plutella affecting beet leaf-hopper, (52) Calif. 58.
 Aphelinus—
chrysomphali, notes, (59) Guam 554.
diapsidis, notes, (56) Guam 251.
jucundus, feeding habits, (56) 862.
mali, biological study, (52) N.Y. Cornell 359.
mali in New South Wales, (56) 362.
mali introduced into England, (54) 261.
mali introduction into Germany, (56) 856.
mali italica, notes, (53) 757.
mali, notes, (53) 358; (55) 253; (58) 857.
mali, parasite of woolly aphid, (52) 257; (53) 861.
mali parasitism, (57) 264.
mytilaspidis, biology, (54) 55.
 n.spp., description, (53) 561.
 spp., notes, (52) 557; (57) 452.

- Aphelopus bicolor* n.sp., description, (52) 859.
- Aphelopus comesi*, notes, (54) Mich. 354.
- Aphid—
- diseases, (55) Fla. 855.
- predators of Florida, distribution, (60) 559.
- spray, new, (55) 760.
- Aphidencirtus inquisitor*—
- feeding habits, (56) 862.
- notes, (57) 452.
- Aphididae—
- migration and sexual forms, effect of length of day, (51) 455.
- new genus and species, (60) 455.
- of British Columbia, notes, (55) 659.
- of Egypt, (56) 660.
- of Formosa, (53) 157.
- of France, (51) 455.
- of Great Britain, (56) 660; (58) 758.
- of Ohio, keys, (51) 56.
- of Sumatra, (55) 759.
- of Sweden, studies, (55) 854.
- reproduction in, (52) 156.
- Aphidius—
- avenae*, life history, (53) 260.
- cardui*, biology, (57) 167.
- sp., notes, (60) 250.
- sp., parasite of peach aphid, (54) 261.
- Aphidoidea, British species, (54) 156.
- Aphids—
- affecting cherries, (52) West.Wash. 56.
- affecting vegetables, (51) Pa. 254; (53) 255; (54) N.J. 554.
- alate forms, studies, (55) Tex. 352.
- attended by ants in Pennsylvania, (60) 249.
- black citrus, outbreak in Rhodesia, (54) 553.
- black, life history and classification, (59) 857.
- control, (59) 555, Mich. 556.
- control in Idaho, (58) 557.
- grain, wing production, (59) 556.
- green, control, (51) N.J. 658.
- in cauliflower seed beds, control, (52) N.Y.State 553; (53) 359; (56) N.Y. State 253.
- migration in, (58) 59.
- new citrus pest, (51) 660.
- new to Ohio, (54) 554.
- notes, (58) 451.
- of Brazil, (55) 854.
- of Great Britain, (54) 156.
- on cauliflower, control, (54) N.Y.State 552.
- on citrus, fumigation, (52) 357.
- on graminaceous plants, Mordvilko's keys, (51) 56.
- on nursery stock, control, (53) 358.
- outbreak in Connecticut, (59) Conn. State 455.
- parasites and hyperparasites, (57) 60; (59) 660.
- parthenogenetic-bisexual cycle and sex, (53) 524.
- Aphids—Continued.
- ratio of alate to apterous, factors affecting, (54) 457.
- rosy, control, (51) N.J. 658; (53) 359.
- rosy, notes, (51) 55, 157; (52) Mich. 355.
- rosy, susceptibility to dust mixtures, (54) 552.
- scarcity in 1924 in southern Britain, (58) 158.
- situation during 1926-27 in Florida, (58) 59.
- subterranean, of Ohio, (54) Ohio 155.
- survival expectancies, (56) 156.
- toxicity of fatty acids for, (52) 655.
- woolly—see also Apple aphid, woolly.
- and parasite, notes, (55) 253.
- biological control, (57) 160.
- control, (52) 554; (53) 358; (56) Tenn. 154.
- galls of, (57) 338.
- host plants, (52) 554.
- immunity of apple stocks to, (53) 255.
- life history studies, (52) Tenn. 553.
- notes, (51) 157.
- of apple and elm, (53) Conn.State 450.
- parasite of, (52) 257; (56) 362; (58) 857.
- parasite of, introduced into England, (54) 261.
- underground form, control, (57) Tenn. 654.
- Apiochaeta aletiae*, habits, (60) 850.
- Aphis—
- abbreviata*, studies, Me., (52) 253; (54) 658.
- brassicæ, see Cabbage aphid.
- fabæ group, life history and classification, (59) 857.
- fabæ, notes, (59) 541.
- forbesi, see Strawberry root aphid.
- gossypii—see also Cotton aphid and Melon aphid.
- and *A. spiræcola* on citrus, comparison, (57) Calif. 257.
- grossulariæ, parasite of, (57) 167.
- leguminosæ, notes, (52) 853; (56) 751; (57) 443.
- leguminosæ, transmission of rosette disease of *Arachis* by, (57) 349.
- maidî-radici, see Corn root aphid.
- maidis, insect enemies and hyperparasites, (54) 55.
- maidis, notes, (51) 855.
- maidis on sugar cane, (58) 850.
- maidis, transmission of sugar cane mosaic by, (51) 49; (55) 248.
- persicæ-niger, see Peach aphid, black.
- pomi, see Apple aphid.
- pseudobrassicæ, notes, (58) 158.
- ramni, transmission of virus diseases by, (60) 243.
- rubiphila as carrier of raspberry leaf curl, (54) 149.

Aphis—Continued.

- rubiphila as carrier of raspberry mosaic, (51) 656.
 rubiphila, life history and habits, (60) 250.
 rubiphila, notes, (57) N.Y.State 549, Mich. 651.
 rumicis, *see* Bean aphid.
 sanborni, notes, (57) Me. 163.
 solanina, notes, (58) 452.
 sorbi, control, (52) 60; (53) 358; (60) Oreg. 753.
 sorghi, insect enemies and hyperparasites, (54) 55.
 spiraeicola—
 and *A. gossypii* on citrus, comparison, (57) Calif. 257.
 control, (52) Fla. 755; (53) 358.
 diseases of, (55) 760.
 in Florida, factors affecting, (56) 555.
 life history, (52) 754.
 natural enemies, 359.
 notes, (56) Fla. 855.
 on *Spiraea* and citrus, (52) 753.
 papers on, (57) 260.
 parasite of, (60) Fla. 147.
 studies, (60) Fla. 159.
 spp., parasite of, (52) N.Y.Cornell 360.
 tavaresi, life history studies, (53) 53.
 tavaresi, outbreak in Rhodesia, (54) 553.
 varians, notes, (57) Me. 163.
Aphodius fimetarius, notes, (55) 657.
Aphodius pardalis as lawn pest, (60) 843.
Aphthona euphorbiae, notes, (59) 855.
Aphycus flavus, notes, (57) 856.
Aphycus lounsburyi, notes, (53) 260.
Aphycus spp., notes, (52) 557.
 Apiary—
 chemicals of use in, (60) N.J. 847.
 inspection, (51) 252; Conn.State 851; (53) Conn.State 450; (55) Tex. 159, Conn.State 251, 455; (57) Conn. State 160; (58) 256; (59) Tex. 64, Conn.State 455.
 inspection in Colorado, (53) 154.
 inspection in Indiana, (57) 755.
 inspection law, amendments, (53) 655.
 inspection law of Kansas, (52) 359.
 inspection, papers on, (54) 153.
 Apiculture, *see* Beekeeping.
 Apidae, European, life history and habits, (51) 60.
Apiomerus pilipes, host of *Trypanosoma cruzi*, (56) 362.
Apion carduorum, enemy of artichoke, (59) 553.
Apion ulicis, bionomics, (59) 658.
Apiosporina collinsii, notes, (54) Wash.Col. 841.
 Apiroplasmine, treatment for bovine piroplasmosis, (58) 175.
 Aplanobacter—
 dissimulans, notes, (52) 146.
 insidiosum, description, (56) 147.

Aplanobacter—Continued.

- insidiosum n.sp., description, (58) 46.
 insidiosum, notes, (56) Colo. 839; (59) Mich. 445, Calif. 727; (60) 347, 447, Colo. 547, 548.
 insidiosum, studies, (58) Mo. 442.
 michiganense, notes, (58) 52, N.Y.State 844; (60) West.Wash. 746, Wash. Col. 830.
Apodrosus wolcottii n.g. and n.sp., description, (51) 59.
 Apoplexy, parturient, *see* Milk fever.
Aporia crataegi, notes, (53) 652.
Apotettix eurycephalus, inheritance of color pattern, (55) Kans. 26.
 Apparatus—
 abortoscope, description, (55) 72.
 absorption, description, (51) 524.
 Bates laboratory aspirator, description, (58) U.S.D.A. 738.
 cataphoretic cell, description, (60) 410.
 colorimeter, description, (58) 804.
 dialyzer, rotating, description, (58) 412.
 distillation tube, all-glass without constriction, (59) 14.
 electric water still, (54) 204.
 fertilizer sampling tube, (51) 9.
 for ammonia distillation, (51) 11.
 for analysis of air in metabolism studies, (52) 615.
 for applying formaldehyde while planting onions, (53) 852.
 for ascertaining sun-and-sky irradiation, (57) 322.
 for automatically timing and separating excreta, (57) 692.
 for carbon dioxide determination, (56) 13.
 for carbon dioxide fertilization, (59) 320.
 for clarification and filtration of fruit juices, (59) 713.
 for continuous analysis of gases, (59) 808.
 for continuous dialysis, (55) 309.
 for continuous diffusion in sugar plant, (59) 507.
 for continuous extraction, (57) 111.
 for continuous extraction of plant materials, (52) 503.
 for continuous percolation of solutions through soil, (52) N.J. 719.
 for control of soil temperature, (58) Fla. 208.
 for control of temperature and moisture for grain disease study, (55) Wis. 145.
 for controlling temperature, (51) 25.
 for depicting fiber cross sections, (56) 193.
 for detecting threatened combustion in hay, (59) 283.
 for determination of specific gravity of hydrocyanic acid, (55) 206.

Apparatus—Continued.

- for determination of specific gravity of small quantities of materials, (58) 112.
- for determining arsenic in insect tissue, (58) 13.
- for determining carbon dioxide evolution from soil, (52) N.J. 724.
- for determining carbon, nitrogen, and hydrogen, (59) 414.
- for determining carbonic acid in soils, (51) 805.
- for determining effect of inhibitors and accelerators on oxidation of hydrocarbons, (60) 674.
- for determining heat value of substances, (54) 204.
- for determining H-ion concentration, (51) 611; (56) 503.
- for determining melting points of fats, (54) 111.
- for determining methane, (57) 12.
- for determining moisture, (53) 805; (59) 203.
- for determining moisture in living tissue, (60) 624.
- for determining pliability of prepared roofing, (55) 781.
- for determining sodium and potassium, (58) 112.
- for determining soil moisture, (54) 118.
- for determining specific gravity of condensed milk, (53) 314.
- for determining sulfuric index of oils, (52) 411.
- for determining the maturity of apples, (54) U.S.D.A. 39.
- for determining tin in canned food, (51) 713.
- for distilling oils, (52) 11.
- for drying crops in the stack, (56) 180.
- for drying of colloidal liquids, (58) 112.
- for drying of grass seed, (55) 683.
- for dusting orchards, (60) Oreg. 754.
- for electro dialysis of soils, (58) 717.
- for electrometric H-ion concentration determinations, (51) 804.
- for estimating capillary rise of water in soil, (59) 612.
- for extracting alkaloidal solutions, (54) 111.
- for grinding plant tissues, (55) 409.
- for growing plants under microbiologically controlled conditions, (60) 26, 317.
- for holding milk at uniform temperature, (56) 474.
- for inflating larvae, (52) 56.
- for maintaining constant water level, (53) 106.
- for making momentary electrical contacts, (51) 410.
- for measurement of plowing resistance of soils, (59) 378.

Apparatus—Continued.

- for measuring carbon dioxide in soil, (59) 113.
- for measuring daylight factor, (57) 417.
- for measuring energy consumption of staircase climbing, (60) 593.
- for measuring solar radiation in forests, (57) Vt. 242.
- for measuring strength of pectin jellies, (54) 690.
- for measuring vascular plugging, (56) 446.
- for measuring volume of roots, (52) 217.
- for measuring water flow in diseased plant stem tissues, (57) 246.
- for microtitration, (54) 8.
- for motion photomicrography of growth of bacteria, (58) 274.
- for obtaining measured areas of sprayed foliage, (60) 13.
- for photographic recording of quadrats, (55) 124.
- for plant and soil respiration studies, (53) 815.
- for rapid electrolytic analysis, (52) 711.
- for rapid preparation of protein milk, (54) 506.
- for rapid vaporization of carbon disulfide, (58) U.S.D.A. 255.
- for recording carbon dioxide consumption, (51) 806; (52) 806.
- for recording carbon dioxide production, (55) 207.
- for recording fluctuating weight of beehive, (56) 662.
- for recording gluten stretching, (53) 105.
- for recording oxygen consumption, (55) 207.
- for recording oxygen consumption and carbon dioxide output, (53) 206.
- for removal of dissolved gases from water, (58) 804.
- for removing hulls from rice, (60) 636.
- for sampling sugar beets in the field, (60) 226.
- for securing continuous distribution curves of suspensions, (57) 314.
- for soil volume determination, (54) 511.
- for sterilizing milk bottles, (55) 572.
- for study of density of cereal spikes, (58) 830.
- for study of relation of environment to disease, (51) Nebr. 847.
- for studying growth and nutrition of children, (52) 261.
- for sublimation, (51) 203.
- for testing breaking strength of straw, (53) 836.
- for testing flour quality, (52) 12.
- for testing twist of yarns, (58) 695.
- for testing yarns and fibers, (60) 398.
- for wet ashing, (55) 803.

Apparatus—Continued.

- gas-tight stirrer, description, (51) 9.
 gel tester, (51) 210.
 hydrogen electrode, description, (58) 11.
 hydrogen sulfide generator, automatic, (59) 412.
 Kjeldahl digestion, (57) 310.
 laboratory stirrer, (51) 711.
 microburette, new, description, (60) 504.
 new, for Neubauer method, (59) 209.
 new gage for measuring nap on Canton flannel, (60) 96.
 new micromelting point, (52) 310.
 penetrometer, for measuring stiffness of doughs, (59) 311.
 phototropic, description, (57) 859.
 respiration, for racial metabolism, (59) 391.
 respiration, for small animals, (56) 14.
 Saybolt thermoviscosimeter, (59) 502.
 sedimentation tubes, descriptions, (51) 207.
 simplified respiration, (54) 204.
 small refrigerating, studies, (54) 583.
 soil boring, description, (60) 711.
 soil sifting machine, description, (60) 556.
 solution renewal for water culture plants, (60) 424.
 speed controller for moisture-equivalent centrifuge, (59) 510.
 three-compartment cell for electro-dialysis of soils, (58) 514.
 turbidiscopes, description, (52) 11.
 used in grain drying experiments, (60) 881.
 used in wood distillation industry, (53) 209.
 vacuum extractor, description, (56) 12.
 vacuum resistance vessel for conductivity measurements, (58) 505.
 weighing device for transpiration experiments, (51) 227.

Appetite—

- effect of vitamin B on, (51) 267.
 failure of in young children, (57) 898.
 loss of, and vitamin B deficiency, (56) 795.

Apple and thorn skeletonizer—

- in Pennsylvania, status, (58) 345.
 notes, (51) Conn.State 852.
 present status, (52) 355.
 summary, (51) 661.

Apple—

- and walnut trees, incompatibility, (55) Va. 48.
 anthracnose, control, (51) 548; (55) Oreg. 651; (60) Oreg. 746.
 anthracnose, dust and spray for, comparison, (60) Oreg. 745.
 anthracnose, notes, (54) 448.
 aphid eggs, washes for killing, (51) 253.

Apple—Continued.

- aphid, green, summer food plants, (51) Me. 360.
 aphid, rosy—
 control, (52) 60; (53) 359; (59) 857; (60) Pa. 355, Oreg. 753.
 notes, (55) Oreg. 659; (57) Calif. 256; (60) 161, Md. 841.
 studies, (60) N.Y.State 452.
 value of oil emulsion sprays for, (56) 253.
 aphid, woolly—*see also* Aphids, woolly. biology and morphology, (60) 650.
 control, (52) Calif. 57; (56) Calif. 255; (58) 558; (59) Calif. 755.
 control and internal therapy of plants, (57) 57.
 enemy of, (53) 652.
 in France, (58) 558.
 in Japan, (57) 759.
 in southern Poland, (57) 759.
 infesting seedlings, effect of late planting, (54) 54.
 notes, (51) 763; (54) Ohio 155, Tenn. 257; (55) 555; (60) 161.
 paper on, (57) 553.
 parasite, introduction into Germany, (56) 856.
 parasite of, (52) N.Y.Cornell 359; (53) 861; (54) 159.
 resistance of apple varieties to, (60) 163.
 summary, (53) 757.
 aphids—
 and red mite, European, combined spray for, (59) N.J. 349.
 biology, (60) 163.
 control, (53) 358; (54) Del. 647; (55) Conn.State 251, N.J. 259; (57) Idaho 754; (58) N.Y.State 856.
 effects of oil spray, (52) 658; (53) Mo. 451.
 in Ontario, (60) 557.
 notes, (55) 555; (57) N.J. 57, Ohio 162.
 organisms causing death of, (55) Fla. 855.
 relation to profitable spray practices, (60) 842.
 studies, (59) Ohio 249.
 survival expectancies, (56) 156.
 bark canker in England, (51) 51.
 bark diseases in Volga region, (60) 55.
 bitter pit, cause, (52) 449.
 bitter pit in stored apples, development, (60) 550.
 bitter pit, studies, (52) Calif. 52; (57) N.H. 344; (59) N.H. 237.
 bitter pit, summary, (57) 650.
 bitter rot cankers in eastern United States, (54) 653.
 bitter rot, control, (55) Va. 47; (57) Va. 448, 751.
 bitter rot, notes, (54) 144.
 black end, cause, (59) 151.

Apple—Continued.

- black root rot disease, studies, (59) Va. 544.
- black rot canker, studies, (57) Mo. 352.
- black rot, control, (52) Pa. 243; (53) Mass. 446.
- black rot fungus, variability, (58) 552.
- black rot, notes, (57) 343.
- black scab, notes, (56) 747.
- black spot in Australia, (57) 449.
- black spot, studies, (57) 53, 54.
- blight resistant varieties, (56) Tenn. 145.
- blight resistant variety, (55) N.C. 235.
- blight susceptible varieties, (56) Ky. 144.
- blister canker, control, (51) Mo. 756; (54) Ill. 349; (60) Ill. 238.
- blister canker, Illinois, control, (55) Iowa 549.
- blister canker, studies, (57) Mo. 352.
- blister mite, control, (52) Oreg. 759.
- blossom weevil, control, (52) 560; (53) 558, 652; (56) 57; (58) 863.
- blossom weevil, parasite of, (59) 861.
- blossom weevil, studies, (57) 64.
- blossom wilt, notes, (56) 747.
- blotch—
- canker eradication, (59) 851.
- canker, notes, (51) Ind. 845.
- cankers, studies, (53) Ind. 146.
- control, (51) 547; (52) Pa. 243, Mo. 247, N.J. 744; (53) Tenn. 47, 241, Ill. 353, 548, Ohio 548; (55) Va. 47, Ohio 145, Ohio 149, 754; (56) Tenn. 145; (57) Ohio 153, 154; (59) N.J. 337, N.J. 338, Ind. 749; (60) Ohio 154.
- control, new aspects, (53) 753.
- fungus, life history notes, (59) 346.
- in Indiana, (55) 548.
- in New York State, (57) 847.
- in Ohio, studies, (56) 53.
- notes, (52) Ill. 440; (55) 242; (57) 343.
- pathologic histology, (56) 453.
- popular description, (55) U.S.D.A. 149.
- spraying experiments, (58) Ohio 248.
- studies, (57) Ind. 638, N.J. 741; (59) 451.
- time of infection, (53) 649.
- branches, seasonal changes in starch content, (58) 37.
- brown heart, cause, (55) 451.
- bud rot, notes, (60) 350.
- bud weevil, studies, (52) 858.
- bud worm, notes, (52) Ky. 453.
- buds grafted on pear trees, (53) N.Mex. 140.
- burrknots, studies, (53) 843; (55) 754; (56) 43; (60) 153.

Apple—Continued.

- canker—
- control, (51) 51; (55) Oreg. 452.
- diseases, treatment, Mo., (53) 447; (54) 750.
- European, description, (55) Oreg. 452.
- fungus, notes, (60) 352.
- in New Zealand, (58) 52.
- Japanese, cause, (55) 548.
- mode of infection, (51) 51.
- notes, (57) Mo. 442.
- organism causing, (57) 650.
- perennial, in Pacific Northwest, (58) 151.
- perennial, studies, (54) Oreg. 349.
- studies, (57) 352.
- capsid bug, control, (55) 760; (56) 660.
- caterpillars, illustrations, (53) 558.
- chlorosis, lime-induced, control, (60) 42.
- chlorosis, studies, (59) Idaho 750.
- collar rot or crown injury, cause, (60) Wash.Col. 821.
- core rot and premature fall, (57) 154.
- core rot, notes, (53) 656.
- crosses, acidity studies, (57) Idaho 734.
- crown gall—
- control, (51) Tenn. 349; (57) Tenn. 639; (59) Wis. 47.
- effect of sulfur treatment of soil, (57) 847.
- etiology, (60) 351.
- on root-grafted trees, (55) 541.
- studies, (51) N.Y.Cornell 354; (56) Tenn. 145, Wis. 746; (58) 553.
- water conduction studies, (57) 154.
- curcullo—
- bionomics and control, (60) Del. 750.
- control, (53) 856; (59) 255, 256.
- life history, (59) 255.
- notes, Iowa, (55) 554; (59) 55.
- papers on, (59) 551, 552.
- cuttings, rooting, (51) 442.
- cuttings, rooting, effect of sodium nitrate, (60) Wash.Col. 821.
- die-back, control, (56) Del. 348.
- disease, notes, (56) Kans. 842, 849.
- diseases—
- and pests, (58) Mich. 336.
- control, (54) 252; (59) Conn. State 46.
- control in West Virginia, (55) 149.
- in cold storage, (56) 53, 54.
- in Hudson Valley, (52) N.Y.State 543.
- in Illinois, (53) 547.
- in Indiana, (56) 647.
- in Maine, (59) Me. 544.
- notes, (52) Calif. 49; (55) Mass. 249; (56) 747; (58) 442.
- studies, (55) Va. 47.

Apple—Continued.

- fire blight—
 - control, (51) 45, 51; (52) Kans. 449.
 - description and control, (54) Mo. 149.
 - epidemiology and control, (59) 151.
 - history and control, (57) 846.
 - notes, (59) Nebr. 832.
 - studies, (52) Tenn. 549; (55) Pa. 549; (56) Pa. 144, Ill. 241.
- flea weevil, control, (54) Mich. 656.
- flea weevil, studies, (51) Ohio 257, 258, Ohio 453; (55) 759.
- fit moth, suggested name, (53) 652.
- flowers, self-pollinated, growth of pollen tubes, (53) 123.
- flowers, studies, (60) 823.
- foliage, effects of leaching with cold water, (55) 837.
- frog-eye, cause, (56) Pa. 144.
- frog-eye leaf spot, cause and control, (54) Pa. 344.
- fruit bud development, studies, (60) Ark. 819.
- fruit chafer, notes, (51) Ind. 853.
- fruit miner in Scotland, (55) 557.
- fruit miner in Sweden, (59) 558.
- fruit moth, notes, (56) 659.
- fruit rot, notes, (54) 744.
- fruit spot, cause, (56) Pa. 144.
- fruit spot, control, (60) Del. 744.
- fruit spot, notes, (55) 451.
- fruit spot, studies, (59) 451.
- fruits, growth rate, (52) N.J. 738.
- fusariose, notes, (59) 635.
- grafts, formation of scion roots, (56) 835.
- grafts, fruiting performance, (51) N.Mex. 440.
- grafts, variable growth, factors affecting, (58) Wis. 138.
- grain aphid, notes, (54) Ohio 155.
- hairy root of seedlings, (58) 553.
- industry—
 - commercial, survey, (56) Conn. Storrs 884.
 - economic aspects, (58) Calif. 783.
 - economic survey, (57) Me. 337.
 - in Nova Scotia, (54) 787.
 - in United States, (57) U.S.D.A. 583.
 - Massachusetts, economic study, (55) Mass. 183.
 - of Connecticut, (58) Conn.Storrs 187.
 - of New Hampshire, (55) N.H. 645.
 - of Ohio, statistics, (59) Ohio 285.
 - of Utah, economic study, (60) Utah 783.
 - of Virginia, (54) 838.
 - outlook for, (60) 883.
 - research service to, (55) Mass. 299.
- Jonathan spot and soft scald, notes, (52) 651.

Apple—Continued.

- Jonathan spot, relation to color pigment, (57) 352.
- juice as source of sorbitol, (55) 202.
- juice, blending to improve quality, (57) 891.
- juices, composition, factors affecting, (59) 233.
- juices, extraction for jelly making, (60) Mass. 89.
- leaf miner, biology and control, (56) 758.
- leaf miners, little known, (51) 256.
- leaf roller, control, (59) Idaho 156.
- leaf roller, notes, (59) Calif. 754.
- leaf rollers, life history studies, (56) 858.
- leaf scorch, studies, (56) 653.
- leaf trumpet miner, studies, (53) Iowa 755.
- leafhopper—
 - control, (58) Del. 455.
 - injury to leaves, (56) 59; (58) 656.
 - on potatoes, (55) Minn. 252.
 - pest, notes, (59) Va. 458.
 - studies, (59) Ohio 249.
- leafhoppers, control, (57) Ohio 162.
- leaves, arsenical residues on, (57) 358.
- leaves as portal of infection for fire-blight organisms, (59) Pa. 851.
- leaves, chlorotic, composition, (57) 750.
- leaves, effects of leaching with cold water, (57) 618.
- leaves, green and chlorotic, composition, (59) 450.
- leaves, pectin in, (57) 514.
- leaves, yellowing, overcoming, (60) Mont. 749.
- maggot—
 - anatomy and metamorphosis, (51) 857.
 - control, (55) Mich. 55.
 - in Michigan, (57) 456.
 - monograph, (59) U.S.D.A. 559.
 - notes, (52) 355; (59) Mich. 455; (60) 557.
 - summary, (53) 860.
- market, Indianapolis, (59) Ind. 786.
- measles, studies, (51) N.Mex. 445; (55) N.Mex. 444; (59) N.Mex. 237; (60) Ill. 238.
- measles, susceptibility of varieties, (56) 353.
- mildew, control, (56) 849; (60) 350.
- mildew, control with sulfur, (59) Calif. 747.
- mildew, mode of perennation, (60) 351.
- miner, notes, (56) 659.
- moth, new, from Manchuria, (59) 858.
- mushroom root rot, notes, (54) 448.
- nursery stock and crown gall, (58) 245, 247.
- nursery stock canker, notes, (56) 747.
- orchard, removal, (52) Kans. 486.

Apple—Continued.

- orchard, twenty years' profits from, (52) N.Y.State 92.
- orchards—
- cover crops for, (52) Wash.Col. 837; (54) Can. 442.
 - crowding, effects and remedies, (55) Wash.Col. 140.
 - establishing, (56) Ind. 237.
 - fertilization, (56) W.Va. 535.
 - frost protection, notes, (51) 155.
 - frost protection, rôle of topography in, (58) Pa. 334.
 - maintenance costs and returns, (60) Can. 638.
 - nitrogen forms for, (55) Oreg. 645.
 - sod-nitrate v. cultivation, (56) 536.
 - soil management, (55) Ohio 138; (57) Mich. 535; (58) Ind. 437; (59) N.H. 229.
 - soil moisture studies, (58) 234.
 - tillage v. grass mulch, (59) Ohio 231.
 - winter injury, (52) Wash.Col. 845.
- pansy spots, paper on, (55) 659.
- pectin, analyses, (53) U.S.D.A. 13.
- pectin pulp, feeding value, (52) U.S.D.A. 78.
- peels, quercetin in, identification, (52) 502.
- pest, new, in Illinois, (51) 363.
- Phyllosticta leaf spot, notes, (54) 144.
- Phytophthora rot, (53) 549.
- Pleospora rot, notes, (59) 346.
- pollen, abortive and sterile, (58) 642.
- pollen, longevity, (55) 325.
- pomace, dried, feeding value, Va., (55) 67; (59) 467.
- psylla, biology and control, (59) 653.
- psylla, biology, morphology, and control, (53) 53.
- psylla control in Nova Scotia, (53) 756.
- redbug eggs, destruction, (54) 155.
- redbug, notes, (55) 759.
- root and crown injury, (54) N.Y.Cornell 851.
- root borer, giant, studies, N.Mex. (59) 249; (60) 64.
- root disease, notes, (53) 147.
- root injury, relation to low temperatures, (51) Nebr. 756.
- root or collar rot, notes, (56) Ill. 349.
- root rot, notes, (56) 747; (58) 656.
- root stock investigations, (56) 44.
- root stocks, hardy, (60) Oreg. 739.
- root stocks, studies, (57) 138.
- roots, activity during winter, (58) 642.
- roots, resistance to low temperature, (52) N.H. 218.
- roots, winter injury, (51) N.H. 154.
- rot caused by Botryosphaeria ribis, (57) 847.
- rot, notes, (56) 541.
- rot storage fungi, (56) 849.
- rot, studies, (55) 747.

Apple—Continued.

- rots in storage, studies, (60) Wash.Col. 830.
- rots, studies, (59) Wash.Col. 46.
- rust, control, (52) Kans. 450; (55) 249.
- rust, notes, (53) 43; (55) 242; (57) 343.
- rust, studies, (57) 650.
- sappy bark, studies, (52) Calif. 49.
- scab—
- and cherry leaf spot, comparison, (55) 850.
 - and foliage injury, (55) 549.
 - and weather, (56) 550.
 - control, (51) N.H. 149, Va. 354, Mass. 451, 548, Ind. 836; (52) Pa. 243, Kans. 450; (53) Pa. 48, Ind. 139, 241, Mass. 446, N.H. 446, N.H. 447, Ohio 541, 548, Ohio 548, 754; (54) Del. 647, Me. 749; (55) Va. 47, N.J. 48, 149, Ohio 149, 651, Mich. 754, N.H. 843; (56) Tenn. 145, Me. 151, Wis. 746, 849; (57) Ohio 153; (58) 151; (59) Conn.State 46, Wis. 47, Ohio 238, 245, Me. 544; (60) N.H. 154, Ohio 154, Pa. 344, Mont. 744.
 - control, new methods, (59) 346.
 - control, relation to spore discharge, (51) Wis. 451.
 - epidemiology and control, (56) Wis. 550.
 - in Ohio, studies, (56) 53.
 - life history and control, (55) U.S.D.A. 48.
 - notes, (52) Del. 844; (55) 242; (56) 747; (58) 442.
 - seasonal development, (57) 751.
 - sepal infection by, (55) 850.
 - spore discharge, (53) Del. 353, Wis. 444.
 - spore dissemination, (53) 548.
 - spraying experiments, (52) N.Y. State 543; (58) Ohio 248.
 - sprays, timing, (57) Ohio 253.
 - studies, (55) Ohio 145; (56) 849; (57) 53, 54, 343, N.J. 741, 848; (58) 553; (59) N.J. 338, 346, 450, 451; (60) N.Y.State 449.
 - winter stages, (60) 345.
- scald—
- control, (57) 848; (59) 451.
 - control in barrels, test of oiled materials, (52) 653.
 - effect of cold storage, (51) Iowa 451.
 - in cold storage, (52) 52; (54) Iowa 39, N.Y.State 543.
 - use of oiled shredded paper for, (55) U.S.D.A. 755; (59) Ind. 738.

Apple—Continued.

- scald—continued.
 use of oiled wrappers for, (53) 549; (54) Ill. 350, 750; (55) Ind., 48, 549; (58) 536.
- scion rooting tendencies, (53) Iowa 742.
- scurf, notes, (60) 154.
- sectorial chimera in, (57) 123.
- seedling, notes, (59) Nebr. 832.
- seedling stocks, tests, (57) Nebr. 533.
- seedlings—
 cross bred, burrknot in, (60) 340.
 effect of delayed planting on woolly aphid infestation, (54) 54.
 effect of inbreeding, (56) 642.
 growth, effects of transplanting and budding, (58) 538.
 newly named, description, (55) Can. 835.
 propagation, (58) Ill. 332.
 studies of fruit, (51) 439.
- seeds, germination, (52) N.Y.State 46; (53) Iowa 741; (56) 832; (57) Nebr. 533.
- seeds, germination and storage, (56) Iowa 535.
- seeds, storage, after-ripening, and germination, (60) 640.
- shoots, movement of fat in, (60) 142.
- shoots, phloridzin in, (54) Oreg. 319.
- shoots, ringed, physiological anatomy, (57) 237.
- silver-leaf disease, (59) 450.
- situation in Calhoun Co., (56) Ill. 343.
- skin worm, notes, (57) Calif. 256.
- soft scald, control, (53) Iowa 741.
- sooty mold, control, (53) N.H. 446.
- sour sap, cause, (51) 250.
- spot rot in storage apples, (58) 657.
- sprays for codling moth, time for applying, (51) 362.
- spurs, bearing and nonbearing, analyses, (54) N.H. 837.
- spurs, composition, variation in, (56) 741.
- spurs, weak and vigorous, effect on flowers and fruit, (56) 642.
- stem-tumor, notes, (51) 654.
- stock variation, relation to scion growth, (56) 643.
- stocks, crown gall affecting, (56) 653.
- stocks immunity from attacks of woolly aphid, (53) 255.
- stocks, notes, (51) 240.
- stocks, own-rooted, propagation, (56) 835.
- stocks resistance to insect pests, (56) 57.
- stocks, studies, (60) 142.
- storage, refrigerated, (59) 586.
- storage, requirements for, (53) Ind. 184.
- storages, artificial cooling, (57) Ind. 676.

Apple—Continued.

- storages, underground, icing, (59) Ind. 782.
- sucker—
 biology and control, (59) 653.
 European, distribution, (54) 152.
 European, fungus parasite for control, (57) 452.
 morphology and biology, (57) 554.
 morphology and coloring, (57) 163.
 notes, (51) 761; (54) 152.
- tissue, pectin and protopectin in, (54) 7.
- tissue, sulfur in, (51) 225.
- tissues, internal resistance to fungal attack, (60) 550.
- tree borer, round-headed, control, (52) 61, 256; (60) 654.
- tree borer, round-headed, summary, (52) 657.
- tree growth, relation to fruitfulness, (56) 741.
- trees—
 biennial, annual crops from, (54) 741.
 biennial, effect of fertilizer, (53) Mo. 436.
 cambial activity, relation to stored food, (53) Calif. 725.
 catalase activity in bark, (58) 235.
 changes in composition, (54) Mo. 738.
 comparative size, (51) Ohio 747.
 cost of growing, (53) Ohio 89.
 disbudding experiments, (56) Kans. 833.
 dwarf, growth and fruitfulness in, (58) 839.
 dying out, cause, (57) 145.
 effect of ammonium sulfate, (58) 38.
 effect of crown gall on longevity and yield, (55) Ga. 144.
 effect of drought, (54) 837.
 effect of ringing, (56) 236.
 effect of shade, (58) 234.
 effects of shading, girdling, and photoperiod, (58) 437.
 grdrling test, (60) Ark. 819.
 growth, composition, and fruiting responses, (55) Wis. 537.
 growth, effect of fruiting, (58) 539.
 growth, effect of source of stock, (57) 437.
 growth, effects of environment and plant food, (59) Wis. 41.
 hardness, determination, (60) 541.
 head formation in, (58) Mass. 539.
 hemicellulose reserve in, effect of acid hydrolysis, (58) 235.
 in sod and clean culture, (59) 833.

Apple—Continued.

- trees—continued.
- interpreting performance, (54) 837.
 - leaf surface and assimilation tissues, relation to length of branches, (59) 530.
 - nitrogenous metabolism, (54) Pa. 319; (58) 235, Pa. 334.
 - nursery, fertilizer experiments, (60) N.Y.State 438.
 - nutrient studies, (58) N.Y.State 835.
 - nutrition, (60) Pa. 337.
 - one-year, disbudding, (54) Pa. 337.
 - own-rooted, (51) Mich. 535.
 - performance record, (54) 741.
 - physiological drop, studies, (58) Del. 448.
 - rejuvenation, (60) N.Y.State, 448.
 - removal of lateral growths, effect, (57) 238.
 - ringing, value, (58) Ohio 139; (60) 42.
 - root development, (57) 42.
 - root growth, (59) 139.
 - root growth, relation to scion variety, (58) Wis. 139; (60) 43.
 - seedling, treatment for early fruiting, (53) 641.
 - summer pruning, (56) Ill. 234.
 - topworking, (55) Md. 340.
 - training and pruning, (59) Pa. 744.
 - variation in yield, (52) Me. 428.
 - walnut toxicity to, (60) 55.
 - winter injury, (57) Nebr. 533.
 - winter injury, histology, (55) N.H. 850.
 - yield and growth, effect of fertilizers, (60) Ark. 143.
 - young, cutting back, (58) 539.
 - young, bisbudding value, (58) Pa. 335.
 - young, effect of fertilizers, (57) 833.
 - young, effect of tying down limbs, (56) 141.
 - young, factors affecting growth, (54) 740.
 - young, pruning, (55) Mass. 238.
 - trumpet leaf miner, studies, (52) Iowa 357.
 - tufts, (56) 751.
 - twigs, absorption of dye from solutions, (55) Iowa 535.
 - twigs, dormant, catalase activity in, (51) N.Y.Cornell 331.
 - twigs, intumescences on, effect of ethylene gas, (58) 821; (60) 28.
 - twigs, respiration during winter, (53) 143.
 - water core, studies, (54) 851.
 - wood, ashing methods, (56) 13.
 - wood decay, studies, (56) 248.

Apple—Continued.

- wood hemicellulose, analysis, (51) 113.
- wood, mealed, notes, (57) N.Mex. 245.
- wood tissue, rates of imbibition in, (56) 642.

Apples—

- air-cooled, storage, (60) Ind. 82.
- Arkansas, cross fertilization of, (56) 836.
- arsenical residues on, (54) 258; (58) 254 757; (60) 558.
- arsenical spray residue removal from, Wash.Col., (59) 39, 836, 837.
- as fillers in apple orchard, (60) Ky. 233.
- Baldwin, effect of environment, (52) 839.
- Baldwin, fertilizer experiments, (55) N.H. 833.
- Baldwin, pollination experiments, (60) 340.
- barreled, marketing, (55) U.S.D.A. 483.
- barreled, United States grades, (52) N.C. 94.
- bearing habits, (51) Mich. 40; (57) N.J. 735.
- Ben Davis, physiological activity, (55) Mich. 836.
- Ben Davis, variation in size and form, (53) 536.
- blooming data, (52) N.J. 738.
- blooming period and yield, (53) Ohio 743.
- blooming periods, (51) Ill. 535; (56) 42; (57) N.J. 40.
- blooming records, (59) N.J. 334.
- blossom bud formation, factors affecting, (56) Wis. 740.
- blossom performance, (58) Pa. 335.
- borne by stock, effect of scion, (60) 142.
- box scald injury, (60) 154.
- boxed, from Washington, rejections, (57) U.S.D.A. 288.
- breeding experiments, (51) Iowa 644; (52) Ill. 440, N.Y.State 728; (53) U.S.D.A. 141, Iowa 741; (54) Ill. 335; (55) Iowa 535, 836; (56) Ill. 233, Ill. 342; (57) Ill. 338, N.J. 735; (58) S.Dak. 738, N.Y.State 835; (60) 41, Iowa 42, 340, 541.
- breeding for late blooming habit, (58) Mo. 436.
- breeding, value of homozygous species, (60) 528.
- bud and root selection in, (59) Me. 530.
- bush form, (51) 839.
- canned, yeasts as cause of spoilage, (59) Can. 91.
- carlot unloads in four cities, (57) Ohio 697.
- cedar rust on, (54) Mo. 149.
- changes in due to cleaning and oil-coating processes, (59) 441.
- chemical changes during ripening, (56) Iowa 832.

Apples—Continued.

- chemical composition at weekly intervals, (59) Wash.Col. 40.
 Chinook, origin and characteristics, (54) S.Dak. 140.
 chromosomal composition and behavior, (60) 628.
 cider, production, (57) 44.
 coated, respiration studies, (51) 41.
 cold storage—
 acidity, (56) Iowa 849.
 effect of freezing, (53) N.Y.Cornell 727.
 experiments, (56) 237.
 functional diseases, (56) 53, 54.
 holdings, (55) U.S.D.A. 686.
 studies, (52) 539; (58) 140, 212.
 color and size, effect of root stock, (58) 438.
 commencement of bearing and yields, (57) N.J. 735.
 common storage for eastern growers, (54) 782.
 competition in Ohio markets, (58) Ohio, 381.
 composition, optimum temperatures for, (59) 234.
 cost of marketing, (53) Mass. 490.
 cost of production, (52) Minn. 390.
 cost of production in Shenandoah Valley, (56) U.S.D.A. 785.
 cost of production in western New York, (51) 240.
 crab, *see* Crab apples.
 critical spring temperatures for, (57) U.S.D.A. 208.
 cross and self-pollination in, relative value, (58) 233.
 cull, studies, (57) Mich. 44.
 cull, v. corn silage for beef cattle, (60) Wash.Col. 855.
 cull, v. corn silage for lambs, (60) Wash.Col. 856.
 culture, (51) N.Dak. 837; (57) Ohio 136, Calif. 337.
 culture experiments, (58) Alaska 435.
 culture in Canada, (54) 538.
 culture in Mount Etna region, (58) 140.
 culture on grass orchard principle, (60) 439.
 culture systems, (53) Can. 840.
 culture under irrigation, (57) U.S.D.A. 534.
 Delicious, cross-pollination studies, (58) 233.
 Delicious, straw mulch for, (52) Kans. 440.
 Delicious, studies, (57) 339.
 disease-resistant varieties, (56) 549.
 dropping, cause, (51) Del. 140; (53) Wis. 438; (55) Del. 451; (57) 337; (60) Ark. 819.
 drought spot, notes, (51) 155.
 dry weight and amount of cell-wall material, (58) 213.
 dusting experiments, (59) Ohio 232.

Apples—Continued.

- early ripening, (59) N.C. 739.
 early, spraying experiments, (53) Tenn. 47.
 effect of cultural treatments, (53) Ind. 139.
 effect of disbudding by birds, (53) N.H. 437.
 effect of fertilizers, (53) N.H. 437; (60) Ark. 819.
 effect of freezing, (59) N.Y.Cornell 215.
 effect of high temperature, (54) 819.
 effect of nitrogen, (57) N.H. 334.
 effect of nitrogenous fertilizers, (51) Mich. 40; (54) Pa. 336.
 effect of oiled paper wrappings, (53) 549; (54) Ill. 350, 750; (55) Ind. 48, 549, U.S.D.A. 755; (58) 536; (59) Ind. 738.
 effect of scion on root, (59) 836.
 effect of severe freeze, (53) N.Mex. 140.
 effect of stock on fruit, (58) 839.
 effect of stock on scion, (55) Mass. 238.
 effect of thinning, (56) Utah 533.
 effect of time of applying nitrogen, (59) N.H. 229.
 evaporated, deterioration in storage, (58) 713.
 fertilizer experiments, (51) Del. 140; Iowa 439, Ind. 836; (52) 140, 141, Pa. 233, Ill. 440, Kans. 440, N.Y. State 442, N.Y.State 443, Del. 836, Idaho 836; (53) Ohio 39, Me. 342, 398, Pa. 439, Can. 840; (54) Mo. 138, Ill. 334, 643; (55) Ind. 36, Ohio 138, 742, 743; (56) 43, Pa. 139, Ark. 341, Del. 341, Ill. 342; (58) Ark. 332, Del. 435, N.Y.State 835, Can. 837; (59) Idaho 738; (60) 43, Minn. 140, Ill. 229, Pa. 338, Can. 539, Mont. 738, Ore. 739.
 fertilizing, unusual results, (54) 740.
 flesh collapse in, (51) 240.
 freezing injury, (52) 652.
 French cider, chemical composition, (59) 440.
 freshly crushed, carbon dioxide, oxygen, and nitrogen in, (55) 239.
 from New Zealand, arsenic in, (58) 740.
 from single trees, keeping qualities, (53) Can. 841.
 frost injury, (55) Ohio 451.
 fruit bud formation, studies, (51) N.H. 142, 240.
 fruit production relation to leaf area, (60) Wash.Col. 821.
 fruit setting, effect of pruning, (58) 539.
 fruit setting, effect of temperature and sunlight, (59) 833.
 fruit setting studies, (58) 233; (59) Ohio 232.

Apples—Continued.

- fruiting, an exhaustive process, (56) 835.
 fungus flora of, (56) Wash.Col. 540.
 Golden Delicious, notes, (55) Oreg. 643.
 Golden Delicious, spraying, picking, and storage, (57) 635.
 grafting, (53) Mich. 39; (54) Can. 443; (58) 232, Can. 837.
 Gravenstein, marketing, (60) 681.
 Gravenstein, price at Sebastopol, factors affecting, (59) Calif. 682.
 Grimes, changes in, (55) Iowa 239.
 Grimes, cold-storage studies, (55) Iowa 535.
 Grimes, pruning studies, (59) Ind. 738.
 growth and composition, relation to leaf area, (56) 836.
 habits of growth, relation to biennial bearing, (54) 741.
 hardness in, determination, (57) Minn. 239.
 hardness in, dye adsorption test for, (56) 43, Iowa 832; (59) N.H. 230.
 hardness studies, (51) Iowa 439.
 hardy, for northeastern Colorado, (51) Colo. 535.
 hardy stocks for, (54) Minn. 37.
 harvesting and storage, (51) Oreg. 839; (55) 643.
 harvesting, grading, and packing, (54) 39.
 harvesting, relation to internal browning, (56) Utah 550.
 hybridization studies, (57) 833.
 Idaho, prices and destinations, (60) Idaho 186.
 in holds of ships, atmospheric conditions for, (54) 139.
 in New Brunswick, spraying v. dusting, (54) 152.
 in storage, breakdown, cause, (60) Wash.Col. 820.
 in storage, changes in, (51) 41; (54) Wash.Col. 835.
 in storage, fungal invasion through lenticels, (55) 656.
 in storage, spot rot affecting, (58) 657.
 Indiana, grades for, (57) Ind. 535.
 injury from ruffed grouse, (53) N.H. 437.
 inoculation method, (56) 849.
 insects affecting, (56) N.Y.State 251.
 insects affecting in California, (57) 854.
 internal breakdown, cause, (58) Can. 836; (59) Wash.Col. 40.
 internal browning, studies, (52) Calif. 52.
 Jonathan—
 breakdown in, (52) 538; (53) 143, Can. 841; (54) 442.
 changes during ripening, (51) Wash.Col. 142.
 in cold storage, (54) 837.
 keeping quality, (55) Iowa 535.

Apples—Continued.

- Jonathan—continued.
 spotting of, (58) 247.
 stored, examination, (52) Wash. Col. 837.
 juices, chemical composition, (59) 440.
 keeping quality—
 as affected by storage temperature, (52) Calif. 40.
 effect of acid wash, (60) Colo. 44.
 factors affecting, (58) 437.
 relation to respiratory activity, (58) 540.
 studies, (53) Iowa 741.
 King David, spotting, (54) Mo. 744.
 late blooming varieties, (53) Mo. 437.
 leaf temperature, studies, (52) Wash. Col. 837.
 length of storage life, factors affecting, (58) 540.
 McIntosh, as parent in breeding new varieties, (60) 528.
 McIntosh, on New York market, (60) Mass. 87.
 market for, (57) N.Mex. 284.
 marketing, (55) U.S.D.A. 483; (58) Ill. 333; (59) 786.
 Massachusetts, market outlet for, (56) Mass. 689.
 maturing, keeping quality and chemical changes in, (55) Wash.Col. 537.
 maturity, determining, (54) Can. 442.
 maturity, pressure test for, (54) U.S.D.A. 39, Wash.Col. 835.
 maturity tests, Can., (58) 837; (60) 540.
 metabolism through senescence to death, (55) 439.
 mineral constituents in ash, variation, (60) 723.
 mineral constituents, relation to other properties, (60) 723.
 mutations in, (60) 127.
 new, tests, (60) Guam 820.
 newly set, pruning, (54) Ill. 335.
 nitrogen and carbohydrate in developing fruit, (56) N.Y.Cornell 344.
 nitrogen fertilizers for, (51) 240; (55) Mo. 38; (56) 836; (58) 234.
 nonvolatile acids of, (58) 711.
 notes, (52) N.Y.State 46, Alaska 536.
 Nova Scotia, marketing in Great Britain, (58) 787.
 Nova Scotia, marketing methods, (58) 786.
 of Pennsylvania, marketing, (58) 889.
 Ohio, truck movement of, (59) Ohio 180.
 on the market, diseases of, (51) U.S.D.A. 756.
 open cores and calyx injury, (59) Oreg. 744.
 packing in boxes, (53) U.S.D.A. 895.
 pectic changes in, (55) 646; (58) 540.
 physiology of, chemical studies, (58) 212; (60) 723.

Apples—Continued.

- picking maturity, relation to storage, (56) U.S.D.A. 345.
- picking, packing, and shipping, (55) Mo. 587.
- pollen development in, (55) 731.
- pollen sterility in, (56) 643.
- pollen studies, (52) 739.
- pollen tube growth in, (58) 438.
- pollination, and fruit setting, (55) 239.
- pollination by bees, (54) 158; (55) N.J. 51.
- pollinization studies, (51) Ohio 440; (52) Calif. 41, 342, 839; (55) Ark. 36, Oreg. 643, Can. 834; (56) Ark. 340, 442, Wash.Col. 533; (57) Ohio 135, Calif. 338, 535, N.J. 735, Ohio 736; (58) 37, Del. 435, S.C. 639; (59) Wash.Col. 42, N.H. 230, N.J. 334; (60) 340, Del. 737, Mont. 737, S.C. 740, Ark. 818, Wash.Col. 821.
- pollinizing ability, (58) Ark. 331.
- prices and prospects for production, (52) N.J. 787.
- production, east of Mississippi River, (51) U.S.D.A. 839.
- propagation—
- bud and root selection, (52) 236.
 - by cuttings, (54) 538.
 - by root cuttings and layers, (58) 538.
 - by stem cuttings, (57) 238.
 - on own roots, (56) 140.
 - place of stocks in, (52) 428.
 - stocks for, (53) U.S.D.A. 141.
 - studies, (52) N.Y.State 537; (53) 742; (56) Del. 342; (58) Del. 435; (60) N.Y.State 438, Wash.Col. 821.
 - studies, correction, (56) Del. 741.
 - use of burrknots in, (56) 140.
- pruning, (51) Kans. 40, N.H. 142, Mo. 536, Ind. 747, N. C. 837; (52) Ky. 442; (53) N.H. 437; (54) Can. 442; (55) Minn. 141, Iowa 535, 743; (56) 44, Ill. 342; (57) 139, N.C. 236, N.H. 335, Ind. 634; (58) Ky. 36, Ill. 332, Ill. 333; (59) N.C. 739; (60) Ill. 229.
- pruning and fertilizing at planting, (55) 742.
- pruning at time of transplanting, (59) Nebr. 832.
- pruning effects, (53) Mo. 38, Ind. 139; (56) Ky. 141; (58) 38; (59) Mich. 140, N.J. 334.
- pruning, principles and practices, (54) Wis. 443.
- pruning the central leader, (54) 138.
- rate of senescence and control, (55) 646.
- Red Astrachan, notes, (58) Miss. 36.
- respiration at low temperatures and while frozen, (58) 643.
- respiration rate and response to temperature, (56) 742.

Apples—Continued.

- rest period in, (53) 124.
- ringing experiments, (53) Ohio 535.
- ripening, changes in size, (54) Wash. Col. 835.
- ripening processes, effect of climate, (51) 536.
- ripening, storage, and handling, (55) U.S.D.A. 538.
- Rome Beauty, annual bearing in, (54) Ohio 139.
- root development, factors affecting, (52) 838.
- russeting by Bordeaux mixture, control, (51) 249.
- Russian, culture experiments in Switzerland, (60) 341.
- Scarlet Pippin, pollination studies, (59) 139.
- scion selection, (56) Vt. 442.
- seasonal changes in carbohydrate and nitrogen distribution, (58) Mo. 436.
- sectorial chimera in, (57) 121.
- seedling, list, (58) Can. 836.
- seedling, technical descriptions, (60) Can. 638.
- self-fruitfulness tests, (56) S.C. 532.
- self-sterility in, (53) 39.
- setting of fruit, factors affecting, (51) 345.
- Sharon, behavior, (59) Iowa 39.
- shipments and unloads, (53) U.S.D.A. 293.
- shipments, Australian, brown heart in, (55) 451.
- shoot development, relation to thickening of older stems, (57) 238.
- soggy breakdown, control, (60) Iowa 55.
- soil management, studies, (51) Ohio 440; (53) Can. 841; (56) Kans. 833.
- soil management, systems, (53) U.S.D.A. 140.
- spray injury, (51) 359; (56) 47; (58) 53.
- spray residue on, (59) 854; (60) 640.
- spray residue, removal from, (56) 442; (57) Oreg. 43, Wash.Col. 239; (59) Wash.Col. 39, 552, Oreg. 743, Wash.Col. 836, 837, Wash.Col. 837.
- spray schedules for, (51) N.J. 144, W.Va. 240; (53) Mich. 37, N.J. 37; (55) N.J. 38, Ohio 38, W.Va. 140, Kans. 238, Mass. 249; (57) N.J. 42, W.Va. 239; (60) N.J. 823.
- sprayed, analyses for lead and arsenic, (59) 58.
- sprayed, arsenic content, (57) 855.
- spraying—
- and dusting, (51) N.Y.State 41; (53) Conn.State 442; (54) N.Y.State 539, N.Y.State 552, Me. 749; (55) N.Y.State 141, Conn.State 251; (56) Me. 151; (57) N.J. 39, Conn.State 161;

Apples—Continued.

- spraying—continued.
and dusting—continued.
(58) Can. 837; (59) N.J. 43,
Conn.State 455.
costs, (59) Mich. 42, Ohio 140.
directions for Japanese beetle,
(51) N.J. 162.
effect on, (54) Ill. 350.
experiments, (51) 249, Md. 442,
Ohio 748; (52) Ind. 141, Kans.
450, 646, N.J. 738; (53) 151;
(55) N.J. 48, 149, N.H. 843;
(56) Ark. 347, 849; (57) N.J.
52, N.H. 343, 847; (58) 41;
(60) Tenn. 148, 345, 842.
materials and cost, (53) Ohio 535.
spreader tests in, (51) 359.
v. dusting, (51) N.J. 654, Conn.
State 851; (55) Oreg. 651;
(59) W.Va. 140, Mo. 530.
spur growth and bud production, (52)
140.
sterility in, (57) Mo. 434; (58) 642,
739.
sting on, (55) Mich. 155.
stocks for, (56) N.Y.State 235.
storage—
air-cooled, (53) Mich. 440.
behavior, (58) Can. 837.
cellar, air-cooled, for, (56) 442.
cellars, humidity studies, (58)
235.
development of scab, (56) Me. 151.
experiments, (51) 345.
in air-cooled warehouses in Nova
Scotia, (60) 825.
internal breakdown in, (60) 551.
requirements, (53) Pa. 287.
studies, (52) Iowa 651; (53) Can.
841; (54) Iowa 39, Wash.Col.
338; (56) Wash.Col. 533; (57)
139, Ind. 634, Ind. 635; (59)
Iowa 39, Ind. 633; (60) 440.
temperature, relation to break-
down, (57) 352.
stored, biochemical changes in, (55)
439.
stored, effect of fertilizer treatments,
(56) Pa. 138.
stored, longevity and variation of sen-
escence, (55) 440.
survey of United States and Canada,
(54) 644.
temperature conditions in refrigerated
holds, (57) 139; (60) 551.
thinning experiments, (53) Okla. 141,
Can. 841; (54) 442; (55) Oreg. 340,
Oreg. 644; (57) Can. 236, Mo. 535;
(58) Can. 837; (60) 232.
thinning, value, (57) 833.
time of picking tests, (53) Can. 841;
(55) Oreg. 644.
top-working experiment, (58) N.Y.State
835.
transportation from Australia, (53)
260.

Apples—Continued.

- value of selection of framework
branches, (56) Pa. 139.
varietal susceptibility to cedar rust,
(60) 55.
varietal susceptibility to injuries, (54)
152.
varieties—
bad mixtures, (57) 139.
descriptions, (58) Ala. 434.
for Iowa, (52) Iowa 442.
for Massachusetts, (55) Mass.
238.
in Ohio, (58) Ohio 233.
in Romanic Switzerland, (60) 825.
in Wyoming, (53) 536.
key for identification, (52) 141.
morphological and biological pecu-
liarities, (59) 530.
new, (54) Mich. 538, N.Y.State
643; (55) Ohio 39.
notes, (55) R.I. 236; (58) Ill.
333; (59) Ala. 632; (60) 824.
variety and miscellaneous studies, (56)
Vt. 442.
variety, notes, (56) S.Dak. 532.
variety situation, (57) Mich. 43.
variety tests, (52) S.C. 537; (55) N.H.
833; (56) Miss. 739; (57) Ohio 136,
N.J. 735; (59) N.H. 230; (60) Ala.
139, Alaska 736.
vitamin C destructive factor in, (53)
566.
Washington, car-lot distribution, (58)
Wash.Col. 286.
watercore condition in, (57) 54.
western boxed, marketing, (55)
U.S.D.A. 483.
wild, self-incompatibility in, (53) 342.
winter hardiness, relation to pentosan
content, (59) 139.
winter injury, (53) N.H. 447.
winter varieties, pruning results, (54)
Ky. 336.
Yellow Bellflower, susceptibility to
cedar rust, (51) 155.
Yellow Newtown, internal browning,
(51) Calif. 52.
yield as affected by parent stock, (51)
240.
yield in Cumberland-Shenandoah re-
gion, (58) U.S.D.A. 538.
yields, annual variation in, (57) N.Y.
State 635.
York, annual and biennial bearing,
(54) Mo. 138.
York Imperial, fruiting habit, (56) 741.
- Apricot—
ash, effect on blood regeneration in
anemia, (60) 695.
black heart disease, studies, (54) 50;
(55) Calif. 344.
blossom blight, studies, (52) Calif. 848.
branches, growth and correlation in,
(52) Calif. 40.
brown rot, control, (53) Calif. 449;
(59) 245.

Apricot—Continued.

- brown rot, studies, Calif., (52) 848;
(55) 344.
buds, development, effect of environ-
ment, (52) Calif. 41.
die-back, notes, (58) 448.
fruit bud formation, factors affecting,
(54) 644.
fungus diseases in Valais, (52) 150.
oil, sulfuric index, (52) 411.
rootstocks for plums and prunes, (60)
541.
rosette, cause, (55) 550.
scale, brown, control, (59) 759.
shot hole fungus, control, (57) Calif.
243; (59) 245.
shot hole, notes, (53) 43.
sour sap, cause, (51) 250.
stocks, notes, (51) 240.
trees, distribution of carbohydrates in,
(56) 536.
- Apricots—
Caldwell system of training, (52) Calif.
42.
codling moth in, biology, (54) 156.
cold storage studies, (60) 541.
copper content, (52) Calif. 62.
Coryneum beijerinckii affecting, (56)
551.
culture in Arizona, (55) U.S.D.A. 438.
dried, nonvolatile acids of, (53) 105.
drying, (52) Calif. 14.
effect of crowding, (52) Calif. 41.
injury from crows, (56) 456.
keeping quality, (52) 539.
mutations in, (58) 824.
pollination requirements in California,
(57) 833.
pollination studies, (60) Wash.Col. 821.
preservation by freezing, (52) Calif.
15.
production, (57) Calif. 682.
protection from codling moth, (56) 556.
pruning experiments, (52) Calif. 42;
(53) Ariz. 741.
stock and scion compatibility, (60)
142.
use in ice cream and ices, (58) Calif.
289.
variety tests, (53) Ariz. 741.
- Aprion plicicollis, notes, (53) 558.
- Aquilegia* hybrids, partial sterility in, (58)
525'
- Arab manure, fertilizing value, (55) 625.
- Arabinose, laevo-, isolation, (56) 409.
- Arabinose, laevo-, preparation, (55) 10.
- Arachnidism, studies, (55) 858.
- Araucaria excelsa*, cooperation and conflict
of reflexes, (57) 26.
- Arbor Day—
program for rural schools, (55) Mich.
187.
purpose and observance, (55) U.S.D.A.
240.
- Arbor vitae*, hardiness tests, (55) Iowa
535.

- Arboretum, Cuban, history and organiza-
tion, (52) 344.
- Arbutus unedo*, root tubercles of, (56)
221.
- Arceuthobium*, haustoria, significance, (53)
43.
- Archips—
argyrospila, see Fruit tree leaf roller.
life history studies, (56) 858.
rosaceana, notes, (59) Guam 555.
- Architecture and home organization, (58)
598.
- Archon centaurus*, notes, (59) 860.
- Archytas analis*—
life history, (55) 157.
notes, (55) Miss. 555.
- Arduenna strongylina*, notes, (57) P.R.
468.
- Areca—
nut *koleroga*, control, (56) 544.
nut *koleroga*, notes, (52) 544; (55)
542.
nut root disease, studies, (52) 545.
palm disease, notes, (57) 156; (60)
546.
- Arecoline hydrobromide*, anthelmintic
value, (52) 886; (55) 178; (59) 171.
- Arenophilus bipuncticeps*, notes, (55)
U.S.D.A. 148.
- Argas—
miniatus, see Fowl tick.
persicus, longevity, (52) 258.
persicus, longevity of *Spirochaeta*
gallarum in, (58) 177.
persicus, pathogenic rôle, (55) 177.
reflexus, notes, (59) 175.
- Argan plant, collar disease, (54) 144.
- Arginine—
and histidine, relation to creatine and
purine metabolism, (54) 593.
and histidine, relation to growth, (52)
859.
and histidine, separation, (55) 714;
(58) 12; (60) 203.
crystallization, (60) 413.
determination in pure proteins and
tissues, (56) 710.
free diets, adequacy for maintenance
and growth, studies, (58) 892.
in proteins, (55) 714.
metabolism, studies, (53) 762.
monohydrochloride, preparation, (60)
311.
preparation, (58) 409.
- Argus* tortoise beetle, studies, (51) 58.
- Argyresthia*—
conjugella in Scotland, (55) 557.
conjugella in Sweden, (59) 558.
conjugella, notes, (56) 659.
nitidella, life history notes, (58) 451.
pruniella in Sweden, control, (51) 553.
- Argyrol* injection for sinusitis in turkeys,
(56) 478.
- Argyroploce variegana*, biology, enemies,
and control, (56) 360.

Argyrotaenia—

franciscana, life history and control, (59) Calif. 754.

franciscana, notes, (57) Calif. 256, 854.

velutinana, biology and control, (59) Va. 60.

velutinana, notes, (55) 555.

Arilus cristatus, notes, (59) 455.

Arion hortensis, control, (53) 252.

Aristida, North American species, revision, (51) 338.

Arizona—

Station, notes, (51) 97, 198, 496; (52) 398; (53) 799; (54) 797; (55) 600; (56) 300; (59) 696.

Station, report, (53) 798; (56) 797.

University, notes, (51) 97, 198, 496; (52) 398; (53) 799; (54) 797; (55) 600; (56) 196, 300, 798; (58) 199; (59) 696.

Arkansas—

Station, notes, (51) 97; (52) 398, 900; (54) 300; (55) 698, 797; (56) 497, 798; (57) 98, 395; (58) 697; (59) 100; (60) 399.

Station, report, (55) 96; (56) 398; (58) 395; (60) 899.

University; notes, (51) 97; (52) 98, 398; (54) 300, 699; (55) 698, 797; (56) 798; (57) 98, 395.

Arlington Experiment Farm, handbook for visitors, (60) U.S.D.A. 498.

Armadillidium speyeri, winter control, (58) 459.

Armadillo, chromosome numbers in, (53) 523.

Armillaria disease of oak, studies, (52) Calif. 49.

Armillaria mellea—

biology, (53) 43.

growth, (58) 144.

growth reaction toward acidity, (53) 224.

in orchard trees, (53) Calif. 754.

new hosts, (53) 148.

notes, (54) 46, 253, 254, 448, Can. 149; (55) 244, 346, 351, 551; (56) 748; (58) 656, Minn. 752; (59) 645.

on black walnut, (52) 749.

on conifers, (59) 646.

on oaks in Yugoslavia, (59) 548.

parasitism on privet and fruit trees, (55) Ark. 42.

strains, (55) Oreg. 651.

Armillaria root rot, notes, Calif., (54) 351; (55) 344.

Armillariella mellea, notes, (57) 157, 354.

Army worm—

damage to sugarcane, (52) 853.

destructive pest on northern prairies, (59) 460.

egg parasite, studies, (53) 454.

fall, monograph, (59) U.S.D.A. 60.

fall, notes, (56) 155; (60) Tenn. 161.

life history, (58) 158.

Army worm—Continued.

notes, (52) 154.

of paddy, difficulties of control, (57) 760.

of the forest, notes, (59) Mich. 455

parasite of, (53) 652.

Army worms—

control, (57) Iowa 165; (59) 552.

key, (58) 261.

notes, (55) Iowa 554.

Arna plana, notes, (53) 558.

Arnold Arboretum, salient features, (53) 539.

Arphia carinata, mites in trachea of, (55) 660.

Arrhenal treatment for bovine piroplasmosis, (58) 175.

Arrow grass, poisonous to livestock, Wyo., (56) 572; (60) 776.

Arrowroot starch production and commercial movement, (59) 627.

Arsenates as soil insecticides, (55) 552.

Arsenic—

anthelmintic value, (52) Ohio 84, 777. compounds, toxic action on rodents, (60) 162.

determination in dipwashes, (52) 203.

determination in lead arsenate, (52) 711.

determination in plant tissue, (53) U.S.D.A. 327.

determination in spray mixtures, (55) Conn.State 457.

dusting of cotton, (51) 762.

effect on plant growth, (52) Mont. 447.

in insect tissue, determination, (58) 13.

in New Zealand apples, (58) 740.

in sprayed fruit products, (57) 855.

pentoxide determination as magnesium ammonium arsenate, (58) 714.

resistance of trypanosomes, (51) 181.

sensitivity of vitamin-deficient animals to, (58) 87.

soluble, formation in sprays, (58) 254.

source in human environment, (58) 713.

substitute for, (60) 356.

tolerance to, attempt to develop in silkworms, (55) 552.

trioxide in soil, (59) N.Mex. 203.

water-soluble, determination, (52) 712.

white, insecticidal value, (51) 55.

Arsenical—

compounds, action on Lepidoptera, (56) 856.

compounds, effect on plant life, (57) 50.

dipping tanks, oxidation in, (52) 178.

injury to fruit trees, (55) N.J. 655.

injury to peach tree, (57) 752.

particles, electric charges, (53) 452.

poisoning of livestock, (53) 380.

powders, use as larvicide for mosquitoes, (56) 258.

Arsenical—Continued.

residue—

- on apple foliage, determination, (57) 358; (60) 113.
- on apples, effect of spray practices, (60) 558.
- on apples, removal from, Wash. Col., (57) 239; (59) 39, 836, 837.
- on apples, studies, (54) 258; (58) 254, 757; (59) 58.
- on cherries, effect of canning operations, (59) N.Y.State 56.
- on fruits, reduction, (57) 657.
- on fruits, removal from, (56) Colo. 442; (60) N.Y.State 438, Wash.Col. 820.
- on fruits, studies, (59) Wash.Col. 39.
- on pears, removal from, Wash. Col., (59) 39, 836, 837.
- papers on, (58) 557.
- spray mixtures, studies, (59) N.J. 350.
- sprays for weed control, (56) Colo. 821.
- sprays, Menhaden fish oil as sticker for, (60) Del. 750.
- sprays, spreading, adherence, and distribution, (57) N.J. 757.

Arsenicals—

- analysis, (55) 111.
- and fluorine compounds, relative toxicities, (59) 57.
- effect on respiratory metabolism of insects, (56) 553.
- from sprayed fruit trees, effect on bees, (55) U.S.D.A. 158.
- killing efficiency, for fruit flies, (54) 260.
- physical properties, (57) N.Y.State 655.
- toxicity, (51) Wash.Col. 157.
- use in Germany, (56) 856.

Arsenious oxide, toxicity, (55) N.H. 843.

Arsenites—see also Paris green.

- for control of Mormon cricket, (60) 558.

Art in home economics, bibliography, (54) 389.

Artemisia as trap plant for European corn borer, (58) 758.

Arteriosclerosis in domestic animals, (55) 574; (57) 770.

Artesian bore water, use for irrigation, (53) 483.

Artesian wells, potential source of danger, (52) 886.

Arthritis, specific, in lambs, (59) 272.

Arthropods—

- bloodsucking, of Dutch East Indian Archipelago, (59) 859.
- habits and injury from, (58) 855.
- hibernation studies, (59) 160, 659.
- poisonous, of Canal Zone, (55) Ark. 50, 758.
- root-feeding, method for life history studies, (59) 555.

Arthrosporium parasiticum, notes, (53) 147.

Artichoke—

- Botrytis rot, notes, (52) 649; (53) 849.
- plume moth, control (52) Calif. 58.
- powdery mildew, notes, (55) 346.
- root rot, studies, (60) 831.

Artichokes—

- culture experiments, Alaska, (55) 433; (57) 522.
- hogging-up, (54) Iowa 860.
- in treatment of diabetes, (54) 894.
- Japanese, pectins in tubercles, (51) 709.

Jerusalem—

- analysis, (51) 313.
- as crop plants, (58) U.S.D.A. 226.
- composition and uses, (58) 290.
- culture and use, (58) 532.
- culture experiments, Alaska, (52) 528; (58) 427.
- culture in British Columbia, (60) 38.
- distribution of inulin in, (59) 217.
- feeding value, (59) 565.
- grafted, heredity studies, (58) 523.
- inheritance of character acquired by grafting, (54) 429.
- intermittent heredity in, (59) 520.
- inulin in, food value, (54) 791.
- production tests, (60) Alaska 728.
- Rhizoctonia affecting, (53) 148.
- sugars in, (55) 737.
- tuber disease, notes, (58) 156.
- yields, (59) Mich. 526.

Artocarpus hirsuta, notes, (53) 745.

Artona catoxantha—

- notes, (53) 253; (57) 261.
- parasite of, (53) 257; (56) 760; (57) 264, 761.

Arum leaf spot, notes, (59) 534.

Arum soft rot, notes, (57) 247; (59) 535.

"Asahi Promoloid," fertilizing value, (54) 219, 423.

Asaphes americana, notes, (57) 60.

Asbestos—

- textiles, use, (58) 394.
- yarn, tentative specifications, (59) 795.

Ascariasis—

- autoinvasion during, possibility, (60) 176.
- in horses, (54) 678.
- in preventive medicine, (54) 674.
- in swine, treatment, (54) 277.

Ascarid toxins, studies, (58) 475.

Ascaridae—

- behavior in host, (56) Kans. 876.
- key to genera, (52) 480.

Ascaridia—

- anseris n.sp., notes, (53) 760.
- galli, control, (52) Calif. 59; (53) 184.
- galli, wandering habits, (55) 657.
- lineata, effect on growing chickens, (60) 672.
- lineata, notes, (54) 74; (56) 56.

Ascaridia—Continued.

- lineata, parasite of chickens, (53) 586.
 perspicillum—
 control, (53) Calif. 449.
 effect on blood sugar in chickens,
 (58) 481.
 eggs, resistance to disinfectants,
 (57) N.J. 772.
 habitat, (51) 385.
 in chickens, (52) Kans. 485.
 in chickens, effect on thymi, (58)
 581.
 life history, (53) 57; (59) 370.
 notes, (53) Calif. 477.
 resistance of chickens to, (58)
 481, 581.
 studies, (56) Kans. 875; (59)
 N.J. 373.

Ascarids—

- in foxes and dogs, (54) Mich. 674.
 in foxes, control, (57) 879.
 in hogs, treatment, (52) Calif. 81,
 Ohio 85.
 in man, pig, and chimpanzee, (51) 680.
 studies, (51) Mich. 80, 383.

Ascaris—

- eggs, destruction, (54) 262.
 eggs, development, (58) 475.
 eggs, development, effect of tempera-
 ture, (60) 67.
 eggs in soil, effect of northern winters,
 (60) 66.
 human and pig, (52) 683.
 inflexa, notes, (56) 576.
 lumbricoides—
 action of iodine solutions on, (54)
 Mich. 675.
 and *A. suilla*, differentiation, (58)
 574.
 egg producing capacity, (53) 760.
 eggs, development and viability,
 (58) 475.
 eggs, effect of disinfectants, (51)
 182.
 eggs, effect of low temperatures,
 (51) 182; (52) 561.
 eggs, longevity, (60) 672.
 eggs, viability, (58) Ill. 367.
 life cycle, (55) 70.
 life history and habits, (51) 383.
 notes, (57) P.R. 468.
 of sheep, (55) 274.
 physiology, (59) 777.
 regularity of egg production, (59)
 171.
 studies, (56) Nebr. 879.
 megaloccephala eggs, effect of low tem-
 peratures, (59) 877.
 megaloccephala, perienteric liquid,
 toxicity, (58) 475.
 sensitization, (52) 281.
 spp. in South Africa, life history, (53)
 884.
 spp. parasitizing equines, (52) 85.
 suilla and *A. lumbricoides*, differentia-
 tion, (58) 574.

Ascaris—Continued.

- suum eggs, embryonic development,
 (60) 75.
 suum eggs, longevity, (60) 672.
 suum ova on soil, viability, (58) 275.
- Ascochyta—
 asteris, notes, (56) 54.
 blight of canning peas, (56) N.Y.State
 241.
 caulicola, notes, (54) 247.
 foot rot, notes, (59) N.Y.State 52.
 gossypii, notes, (51) 544; (55) Ark.
 41.
 leaf and pod spot, notes, (59) N.Y.
 State 52.
 pisi, notes, (51) Del. 148; (54) Wis.
 248, Pa. 343.
 sodalis n.sp., description, (60) 216.
 species, new or little known, (57) 541
 sp., notes, (56) 748; (58) 652, N.Y.
 State 844.
 spp. on peas, (59) 344; (60) 241, 242.
 trifolii, notes, (56) 541.
- Ascogaster carpocapsae—
 notes, (56) Del. 357.
 parasite of codling moth, (55) Mich.
 853.
- Ascomycetes collected in Algeria, (57) 120.
 Ascospora ruborum, notes, (55) Oreg. 650.
 Aserica castanea—
 new Japanese lawn pest, (60) 850.
 notes, (57) 451.
- Ash—
 beef liver, effect on anemia, (58) 897.
 constituents of foods, simultaneous ti-
 tration, (51) 711.
 constituents, upward transfer, effect of
 ringing, (52) 125.
 content of beef, (51) Mo. 171.
 determination in flour, (55) 505; (56)
 14.
 in bones, effect of rations, (54) Pa.
 392; (55) 387.
 of various materials for nutritional
 anemia, (59) 295.
- Ash tree—
 black, heart rot, notes, (55) 150.
 wood, growth studies, (58) 41.
- Ash trees—
 enlarged trunk bases in, (53) 745.
 oyster-shell scale affecting, (53) Colo.
 154.
- Asiatic beetle—
 control, (53) Conn.State 450; (57)
 Conn.State 161; (58) 560.
 in Connecticut, (51) 363, Conn.State
 852.
 life history notes, (57) 859.
 new Japanese lawn pest, (60) 850.
 notes, (55) Conn.State 252, 554; (57)
 451.
 quarantine, (59) Conn.State 99, 455.
 soil treatment and scouting for, (57)
 859.
 spread and control, (60) Conn.State
 751.
 studies, (60) Conn.State 751.

- Asparagine—
 decomposition, (53) 310.
 in alfalfa, (54) 804.
 in etiolated corn seedlings, (57) 408.
 rôle in nitrogen transformation in
 plants, (56) 325.
- Asparagus—
 beetle, control, (51) 55, Md. 454; (52)
 753.
 beetle in Iowa, (59) 552.
 beetle, notes, (52) Wash.Col. 852;
 (59) Colo. 248.
 canning and preparation for table,
 (57) 591.
 cold storage studies, (58) 535.
 crowns, growing and handling, (52)
 Calif. 739.
 culture, (51) West.Wash. 96, Can. 238,
 239; (55) Calif. 339, V.I. 339; (59)
 833.
 culture, handbook, (52) 342; (54) 241.
 culture, sex as factor, (58) 230.
 cutting experiments, (60) Tenn. 141.
 cutting first year, effect, (56) S.C. 532;
 (58) 230; (60) Ill. 230.
 development, effect of depth of plant-
 ing, (51) 239.
 disease-resistant varieties, (56) 549.
 dwarf, description, (54) 147.
 effect of desiccation and root pruning,
 (58) 230.
 effect of potassium and sodium, (51)
 R.I. 746.
 fern blight, (60) 554.
 fertilizer experiments, (52) N.J. 738;
 (54) R.I. 38; (55) N.J. 37; (56)
 833; (57) N.J. 40, N.J. 736; (59)
 N.J. 334; (60) S.C. 740.
- growth—
 effect of sodium chloride and
 carbonate, (60) R.I. 24.
 factors in, (53) 822.
 physicochemical basis, (53) Ariz.
 421.
 rate, effect of salt, (57) 237.
 studies, (57) N.J. 736.
- harvesting and marketing in South
 Carolina, (51) 296.
- industry in California, (59) Calif. 137.
 nitrate assimilation in absence of light,
 (56) 344; (57) 514; (60) N.J. 741.
- plants, male and female, yields, (59)
 Calif. 737.
- production, relation to sex, (57) Calif.
 234.
- quality after cutting, factors affecting.
 (56) Calif. 235.
- root and crown bud formation, (58)
 229.
- roots, growth, (59) N.J. 333.
- rust-resistant strains, (53) 543; (57)
 Tenn. 639.
- secondary sex characters in, Calif.
 (54) 241; (55) 338.
- seed germination, (53) Calif. 22.
- storage studies, (58) 536.
- sugar content, (57) 137.
- Asparagus—Continued.
 time of cutting tests, (60) S.C. 740.
 variety tests, (53) 398.
 Washington, culture, (59) Tenn. 42.
 yields, (54) 536.
- Aspartic acid—
 in proteins, (60) 502.
 relation to nutrition, (58) 892.
- Aspen—
 forests of northern Lake States, (60)
 U.S.D.A. 46.
 heart rot, (58) Minn. 752.
 in central Rocky Mountain region, (52)
 U.S.D.A. 644.
 quaking, pathology, (52) 353.
- Aspergillus—
 flavus, infection of European corn
 borer by, (59) 459.
 fumigatus, action of radium on, (59)
 519.
- niger—
 growth stimulation, (55) 323.
 nitrogen metabolism of, (53) 122.
 notes, (51) 52; (53) Calif. 354;
 (56) S.Dak. 649; (58) 242.
 nutrition, effect of radiations, (59)
 26.
 on figs, (52) 451.
- oryzae, saccharine cultures, new prod-
 uct of, (56) 325.
- oryzae spores, ergosterol in, (59) 595.
- sp., notes, (53) 850.
- spp., causing mildew on cotton goods,
 morphology, (59) 497.
- spp., conversion of sugar into citric
 acid by, (59) 12.
- spp., notes, (55) 244, 349; (58) 393;
 (60) 347.
- Asphalt—
 and related bitumens in 1921, (51)
 485.
 for mineral-surfaced roofing, master
 specification, (53) 388.
 primer for roofing and waterproofing,
 master specification, (53) 388.
 shingles, fungus destructive to, (52)
 452.
 shingles, testing, (55) 682.
- Asphaltic mixtures, deformation test for,
 (53) U.S.D.A. 790.
- Asphondylia opuntiae, studies, (56) 58.
- Aspidiotiphagus—
 agillior, notes, (59) Guam 554.
 citrinus, notes, (56) Guam 251.
 citrinus on coconut palm, (56) 58.
- Aspidiotus—
 ancyclus, *see* Putnam scale.
 destructor, *see* Coconut scale.
 ficus, *see* Florida red scale.
 hederæ, feeding methods, (58) 455.
 perniciosus, *see* San Jose scale.
 spp., notes, (55) Miss. 555.
- Aspidomorpha miliaris, life history and
 control, (58) 257.
- Aspirator, Bates laboratory, description,
 (58) U.S.D.A. 738.
- Asses, chromosome number, (58) 823.

- Assimilation, methods of study, (59) 618.
- Association of—
 Feed Control Officials, meeting, (60) 99.
- Hawaiian Sugar Technologists, reports, (55) 112.
- Land-Grant Colleges and Universities—
 convention, (52) 1; (53) 701; (54) 400; (55) 701; (58) 1; (60) 1.
 convention, research at, editorial, (56) 1; (58) 101; (60) 101.
 notes, (55) 798; (56) 400.
 officers, (51) 800; (53) 800; (58) 99; (60) 9, 100.
 proceedings, (53) 597; (55) 383; (56) 587; (59) 787.
- Official Agricultural Chemists—
 meeting, (54) 98; (55) 499; (58) 100; (60) 99.
 methods of analysis, (55) 11.
 proceedings, (51) 699; (52) 708; (54) 609; (56) 501.
- Official Seed Analysts, proceedings, (52) 737; (58) 35.
- Southern Agricultural Workers, notes, (56) 399.
- Aster—
 blackleg, notes, (58) 442; (59) 534.
 damping-off, notes, (55) 243.
 diseases, studies, (56) 54.
 Fusarium wilt, notes, (58) 449.
 root aphid, life history, (53) Ohio 555.
 root aphid, white, notes, (54) Ohio 155.
 wilt, control, Ill., (56) 241; (60) 239.
 wilt, studies, (56) Iowa 840; (57) 540; (58) 154; (60) Wash.Col. 830.
 yellows—
 control, (59) Wis. 48.
 incubation period in insect host, (58) 555.
 insect transmission, (56) 54.
 insect transmission and host range, (55) 756.
 notes, (56) Ill. 349; (57) 343.
 sterility caused by, (60) 836.
 studies, (55) Mich. 843; (58) 251.
- Asterocystis radialis, notes, (57) 843; (59) 49.
- Asterolecanium—
 pustulans, notes, (56) 552.
 pustulans on mulberry trees, (51) 856.
 pustulans, parasites of, (55) 858.
 scale, control, (60) Guam 845.
 variolosum, biological control, (57) 160.
- Asters—
 China, diseases, control, (52) N.Y. State 543.
 China, wilt and yellows, control, (54) Ill. 351.
 forcing with lights, (58) 742.
- Astragalus—
 campestris poisonous to livestock, (59) 471.
 sinicus decomposition, effect on rice growth, (53) 215.
 sinicus, prevention of injury to rice, (53) 215.
 unifultus, studies, (60) 475.
- Astycus spp. on tea, (59) 861.
- Asympiesiella india, notes, (52) 361.
- Atalaya hemiglaucula, toxicity to horses, (60) 874.
- Athel—
 culture in Arizona, (55) U.S.D.A. 438.
 tests, (57) Tex. 136.
 trees as windbreaks for citrus orchards, (56) Ariz. 739.
- Atherigona spp.—
 genitalia, (52) 155.
 life history notes, (52) 155.
- Atite in plants, (56) 220.
- Atomometry in South Africa, (53) 823.
- Atmosphere—*see also* Air.
 sources of energy of, (53) 316.
- Atmospheric—
 moisture, *see* Humidity.
 pollution and domestic smoke, (57) 477.
 pressure, *see* Barometric pressure.
- Atomic weights and isotopes, (51) 100.
- Atoms, Bohr theory of structure, (51) 607.
- Atoms, treatise, (52) 201.
- Atoxyl treatment for dourine, (58) 176.
- Atractocerus kreuslerae in Western Australia, (53) 860.
- Atriplex—
 absorption of water by, (56) 724.
 canescens seed, viability, (53) N.Mex. 132.
 tumbleweed seed, effect of heat, (56) 433.
- Atta sexdens, control, (58) 346.
- Atticus—
 cythia, elasticity, (58) 596.
 mylitta, thickness of fiber, (58) 596.
 spp., eri silk from, (59) 897.
- Attitude research, use of term, (59) 685.
- Auction companies for fruit and produce, (54) U.S.D.A. 484.
- Aucuba leaves in vacuo, vitality, (53) 422.
- Aulacaspis rosae, *see* Rose scale.
- Aulacophora abdominalis, control, (55) 857.
- Aulacophora atripennis, notes, (55) 857.
- Aularches miliaris, life history, habits, and control, (56) 59.
- Aulatopria tucumana n.g. and n.sp.—
 description, (58) 266.
 notes, (59) 562.
- Australian Commonwealth Council for Scientific and Industrial Research, (60) 798.
- Australian saltbush, water requirement and cell-sap concentration, (60) 520.
- Austrotachardia, new genus, erection, (51) 660.
- Autofumer, description, (51) 659.

- Autographa brassicae, *see* Cabbage looper.
- Autointoxication, intestinal, theory, (52) 364.
- Automobile crankcase oil, reclamation, (53) 500.
- Automobile crankcases, acids in, (57) 778.
- Automobiles, effect on rural life, (54) 689.
- Automobiles, tractive resistance, (60) 583.
- Automotive industry, cast iron in, (56) 882.
- Automotive industry, X-rays used in, (56) 883.
- Auximones and plant growth, (52) 28.
- Auximones in soil, (51) 609, 723.
- Avena coleoptiles, growth regulators in, (57) 117.
- Avian post-mortem examinations, (53) 786.
- Aviation, commercial, in agriculture, (55) 258.
- Avitaminosis—
 anatomical changes from, (51) 463.
 biochemistry, (53) 164, 766; (60) 296.
 effect of a one-sided diet, (52) 67.
 effect of protein, carbohydrate, and fat hunger, (53) 61.
 fat metabolism in, (51) 369.
 metabolism investigations in, (52) 463.
 mineral metabolism in, (52) 66.
 nature of, (53) 766.
 nitrogen metabolism in, (52) 66, 67.
 uric acid and allantoin metabolism in, (51) 463.
- Avocado—
 anthracnose in Philippines, (60) 57.
 anthracnose, studies, (57) 851.
 bacterial disease, notes, (58) 658.
 diseases, control, (56) Fla. 143.
 fruit rots, studies, (59) 152.
 mealybug, control, (53) 653.
 oil, studies, (60) 11.
 rots, notes, (59) Calif. 747.
 scab organism, (58) 152.
- Avocados—
 asexual propagation, (53) 537.
 bacterial organism affecting, (55) Calif. 344.
 breeding experiments, (53) 141.
 cold storage studies, (54) 41.
 cull, utilization, (59) 90.
 cultivation and distribution, (55) 744.
 culture experiments, (59) VI. 439, Guam 529, Hawaii 632.
 effect of altitude, (54) Hawaii 136.
 fertilizer experiments, (56) 645.
 flower behavior, (57) 421.
 fruit decays, (58) 554.
 Guatemalan, early history, (51) Hawaii 841.
 improvement, (56) 532.
 in California, (60) 289.
 notes, (57) Hawaii 335.
 pollination, (52) 343; (55) U.S.D.A. 838; (56) 645.
 propagation, Hawaii, (51) 745; (55) 534.
 stocks for, (56) 645.
 time of ripening, (51) Hawaii 744.
- Avocados—Continued.
 trial shipments to Philippines, (60) Guam 820.
 use in ice cream and ices, (58) Calif. 289.
 varieties, (51) Hawaii 745.
 variety tests, (58) 39.
 vitamin A in, (52) 65.
 West Indian seedling, composition, (59) 191.
- Avocets, food of, (54) U.S.D.A. 52.
- Axle skeins, gather, standardization, (52) 288.
- Azalea—
 leaf beetle, notes, (52) Me. 661.
 leaf miner, biology and control, (57) 760.
 leaf miner, habits and development, (57) 658.
 leaf miner outbreaks, early detection, (59) 558.
 leaf miner, studies, (52) 660; (57) 655.
 leaf miner, summary, (60) 456.
- Azaleas, culture, (60) N.J. 342.
- Azotobacter—
 activity, effect of radioactive mineral, (55) 721.
 activity in soils, control, (60) 514.
 biology, (54) 321.
 chroococcum—
 and Chlorella sp., symbiosis, (54) 813.
 nitrogen fixation by, (58) 719.
 nitrogen fixation in displaced soil solution, (53) 216.
 notes, (52) 720.
 vitamin B synthesis by, (60) 294.
- distribution in Bavarian soils, (56) 319.
 effect of cellulose-decomposing bacteria, (60) 421.
 in Polish soils, (52) 320.
 in soil, papers on, (60) 510.
 in soils of Finland, (55) 813.
 in soils, studies, (55) 720.
 in timbered soils, (52) Idaho 813.
 inoculation and soil acidity, (54) 419.
 nitrogen-fixing power, (54) 120.
 soil inoculation with, (54) 719.
 sources of carbon for, (51) Tenn. 323.
 sources of energy for, (60) 20.
 spp. as affected by radioactive mineral, (52) 22.
 spp., physiological study, (53) 25.
 studies, (59) Colo. 211.
 test and soil reaction, (55) 721.
- Azoturia—
 blood, urine, and tissue juices in, (51) 582; (52) 684.
 of horses, blood and urine in, (55) 574.
- Azotus americanus n.sp., description, (59) 358.
- Babesiasis, studies, (54) 276.

Babesiella—

- berbera, notes, (59) 173.
- major n.sp., description, (57) 471.
- ovis, notes, (51) 383; (53) 183, 482.

Babesiellosis—

- bovine, experimental treatment, (57) 472.
- vaccination of bovines against, (59) 878.

Baby beef, *see* Cattle, baby beef.

Bacilli, encapsulated, from metritis in mares and from human origin, (60) 179.

Bacillus—

- abortus—*See also* Abortion, Alcaligines abortus, Bacterium, abortum, and Brucella abortus.
 - and Bacterium melitensis, differentiation, (52) 884.
 - and Malta fever germs, immunologic identity, (51) 81.
 - and Micrococcus melitensis, agglutinin isolates, (60) 267.
 - and Micrococcus melitensis, differentiation, (53) 381, 886; (58) 276.
 - bovine and porcine strains, (53) Wis. 478, 481.
 - carbon dioxide requirements, (52) 481.
 - cultural characters, (53) 885.
 - cultures for immunizing against Mediterranean fever, (51) 181.
 - cutaneous vaccination against, (53) 279.
 - effect on spleen weight of guinea pig, (53) Minn. 180.
 - equi, biological and serological study, (56) 175.
 - equi, studies, (55) 876; (56) Ky. 172; (57) 378.
 - immunity of guinea pigs against, (52) Mich. 481.
 - in cattle, effect of intravenous injections of drugs, (58) Mo. 479.
 - in man, (53) 279; (60) 478.
 - in man, septicemia of, (58) 673.
 - infection, dissemination, (60) 72.
 - injection, effect on proteins of blood plasma, (52) 883.
 - isolation from uterine exudate and diseased placenta, (58) 173.
 - longevity, (58) 474.
 - pathogenicity for rats and mice, (53) 582.
 - pneumonic condition associated with, (53) 785.
 - production of aggressins, studies, (56) Ark. 377.
 - relation to joint disease of cattle, (58) 279.
 - relation to Malta fever, (54) 872.
 - rôle in human infection, (60) 267.
 - strains, agglutinating properties, (60) Ky. 266.
 - strains, carbon dioxide requirements, (58) 173.

Bacillus—Continued.

- acetoethylicum fermentation of sugars, products, (54) 7.
- acidophilus—
 - cultures and preparations (57) 687.
 - feeding, effect on pH of ceca in chicks, (54) Calif. 277.
 - from digestive tract of calves, (54) 874.
 - implantation, (53) 266.
 - inhibition of putrefactive anaerobes by, (51) 65.
 - metabolism, (52) 163.
 - milk, preparation, properties, and uses, (54) 191.
 - milk production, (51) 613.
 - milk, temperature studies, (51) 65.
 - therapy, nature of, (51) 164.
- adhaerens, vitamin B synthesis by, (60) 294.
- aerogenes—
 - fate in sewage purification, (58) 585.
 - nitrogen fixation by, (58) 814.
- aerothermophilus, notes, (60) N.Y.State 771.
- aertrycke—
 - and B. abortus equi, relation, (55) 876.
- Bacterium pullorum, and B. galinarum, antigenic relation, (60) 180.
- cause of disease in squabs and other birds, (55) 476.
- in wild rats, (58) 575.
- infection in abattoir animals, (59) 674.
- infection in birds, (55) 177.
- infection in chicks, (57) 472.
- notes, (55) 473; (57) 80; (58) 277.
- poison produced by, (60) 575.
- agrotidis typhoides, notes, (59) 858.
- alvei and B. pluton, identity, (58) 561.
- amylobacter—
 - cellulose-decomposing bacteria, effect of, (60) 421.
 - coccoid phase, (60) 510.
 - notes, (52) 720; (56) 847.
- amylovorus—
 - control, (59) Calif. 746.
 - flagella on, (59) 851.
 - leaf tissues as portal of infection, (59) Pa. 851.
 - migration in apple tissue, (58) Pa. 247, 552.
 - migration in pear and quince tissues, (58) Pa. 339.
 - new host for, (52) 449.
 - notes, (53) 43; (54) 448; (59) 348.
 - number and arrangement of flagella, (59) 245.
 - overwintering, (58) Ark. 337.
 - studies, (59) 151.

Bacillus—Continued.

- amylovorus—continued.
 - transformation in apple tissue, (53) 552.
- anatum growth in foods, (58) 278.
- anatum, types of, (57) 80.
- anthracis—
 - attenuation of virulence, (52) 379; (55) 70.
 - morphology, cultural features, and pathogenicity, (60) Ark. 868.
 - rendering Gram-negative, (51) 81.
 - structure and reversal of Gram reaction, (58) 673.
- apisepticus, notes, (59) 461.
- aroideae and B. carotovorus, comparison, (56) 452.
- aroideae, control, (57) 247.
- atrosepticus—
 - and B. solanisaprus, relation, (54) 651.
 - notes, (53) Mich. 751.
 - synonymy, (52) 350.
- aviciida, notes, (53) N.C. 786.
- avisepticus—
 - effect of lactic acid, (54) 175.
 - notes, (52) 782.
 - studies, (52) Calif. 82.
- bifidus, metabolism, (52) 162.
- botulinus—
 - cause of grass sickness in horses, (57) 183.
 - distribution in Scottish soils, (60) 793.
 - distribution in soil, (56) 677.
 - growth, optimum pH value and nutritional substances, (52) 164.
 - in canned foods, (51) 168.
 - in human and animal excreta, (52) 164.
 - in various media, metabolism, (54) 72.
 - infections in animals, (52) 778; (53) 677.
 - inhibitive effect of sugars and salt, (52) 165.
 - preparation of antiserum, (51) 180.
 - serologic classification, (51) 180; (58) 575.
 - spores, germination in animal body, (51) 168.
 - spores, resistance to disinfectants, (52) 165.
 - toxin absorption through wounds (51) 283.
 - toxin in alimentary tract of animals, (55) 776.
 - type B, in New South Wales, (55) 677.
 - type B, in rabbit carrion, (59) 272.
 - type B, isolation from feces, (52) 164.
 - type C and B parabolulinus, comparison, (52) 482.

Bacillus—Continued.

- bronchisepticus, notes, (53) 784; (54) 174.
- bulgaricus—
 - cultures and preparations, (57) 687.
 - implantation in intestinal tract, (53) 267.
- cacticidus, notes, (55) 551.
- calidolactis—
 - notes, (60) N.Y.State 771.
 - proposed name and description, (60) 664.
- calidus, notes, (60) N.Y.State 771.
- carotovorus—
 - and B. aroideae, comparison, (56) 452.
 - control, (51) 152.
 - notes, (51) Mich. 148; (55) N.J. 43; (57) 247, 252, 540; (58) 442; (59) Colo. 236, 557, 644.
 - on iris, (54) 151.
- cereus, decomposition of proteins by, (53) 310.
- chauvoei—
 - cultivation, new medium for, (57) 670.
 - differentiating from other anaerobes, (54) 172.
 - immunization against, (52) 378.
 - infections in animals, (52) 778; (53) 677.
 - soluble toxin produced by, (57) 378.
 - strains from cattle and sheep, comparison, (58) 876.
- cinerea forms, metabolism, (56) 349.
- coli—see also Bacterium coli.
 - and water pollution, (54) 482.
 - communis in feces and water, (54) 383.
 - communis in lime-treated water, (51) 386.
 - communis, notes, (51) Del. 185; (56) 549.
 - communis, substances formed by, relation to yeast growth, (52) 162.
 - contamination of milk, detection, (51) 579.
 - fate in sewage purification, (58) 585.
 - from bovine sources, studies, (58) 477.
 - glucose-fermenting action as affected by insulin, (52) 611.
 - implantation in intestinal tract, (53) 267.
 - in milk, destruction temperature, (53) 276.
 - in milk, detection, (57) 869.
 - increased resistance of suckled calf to, (52) Mo. 679.
 - scours type, variations in, (58) 171.
 - substances formed by, relation to yeast growth, (51) 667.

Bacillus—Continued.
 coli—continued.
 synthesis of Tsukiye vitamin by, (53) 163.
 coliform, formation of antidiabetic hormone by, (52) 766.
 diphtheriae—
 rendering Gram-negative, (51) 81.
 resistance to disinfectants, tests, (58) 574.
 dysenteriae—
 in milk, destruction temperature, (53) 276.
 in Philippine foods, viability, (51) 364.
 edematis maligni, comparison with other anaerobes, (54) 172.
 enteritidis—
 gastro-intestinal poison produced by, (58) 673.
 in wild rats, (58) 575; (60) 59.
 infection in calves in South Africa, (58) 474.
 meningitis due to, (56) 677, 877.
 mouse typhoid infection, mode of spread, (58) 673.
 notes, (51) 272; (58) 277.
 poison produced by, (60) 575.
 equidistans n.sp., description, (56) 174.
 felsineus, notes, (56) 847.
 granulobacter pectinovorum—
 fermentation of pentoses by, (52) 611.
 leucic acid produced by, (52) 611.
 proteolytic action, (53) 106.
 histolyticus infections in animals, (52) 778; (53) 677.
 kaustophilus n.sp., notes, (60) N.Y. State 771.
 lactimorbus, notes, (59) 79.
 lactis acidi, *see* Bacterium lactis acidi.
 lactis viscosus, cause of ropy milk, (57) 76.
 larvae—
 control, (58) 62.
 cultural studies, (60) 847.
 disinfectants for, (53) 655.
 spores, destruction, (51) 663; (53) 259.
 studies, Can., (56) 362; (59) 358.
 lathyri, notes, (52) 146; (58) 442, 656.
 mallei, studies, (53) 678.
 melanogenes, synonymy, (52) 350.
 melitensis, *see* Bacterium melitensis and Micrococcus melitensis.
 mesentericus, action on cellulose, (56) 297.
 mesentericus, notes, (58) 393.
 michaelisii n.comb., notes, (60) N.Y. State 771.
 morificans bovis, food poisoning due to, (59) 579.
 murisepticus, notes, (58) 172.

Bacillus—Continued.
 mycoides—
 and B. radicola, simultaneous symbiosis, (58) 25.
 notes, (56) 549.
 vitamin B synthesis by, (60) 294.
 neoplitanus in feces and water, (54) 383.
 necrophorus—*see also* Necrobacillosis.
 treatment for, (53) Wyo. 680.
 neurotomae, notes, (51) 363.
 noctuarum, notes, (59) 252.
 nondiastaticus, notes, (60) N.Y. State 771.
 oedematiens—
 cultural characteristics, (59) 275.
 infections in animals, (52) 778; (53) 677.
 notes, (58) 676.
 rôle in necrotic infectious hepatitis, (59) 174; (60) 179.
 variation in, (58) 774.
 paratolulinus and B. botulinus type C, comparison, (52) 482.
 paratyphi—
 aertrycke type, (58) 278.
 alvei, studies, (51) 364.
 notes, (58) 171.
 paratyphosus—
 A and B in milk, destruction temperature, (53) 276.
 A, cause of food poisoning, (51) 169.
 abortus equi, notes, (52) 484.
 B, gastro-intestinal poison produced by, (58) 673.
 B, notes, (53) 166.
 B-B, sulpestifer group, differentiation, (57) 80.
 pestis caviae—
 cause of food infection, (51) 272.
 growth in foods, (58) 278.
 in wild rats, (58) 575.
 notes, (57) N.J. 80.
 pfaffi, notes, (52) 782.
 phytophthorus, notes, (58) 654.
 phytophthorus, synonymy, (52) 350.
 pluton among wasps, (59) 659.
 pluton and B. alvei, identity, (58) 561.
 prodigiosus, substances formed by, relation to yeast growth, (52) 162.
 proteus, substances formed by, relation to yeast growth, (52) 162.
 pseudoxerosis n.sp., description, (56) 174.
 pyocyaneus—
 production of pigment in colored light fields, (54) 725.
 substances formed by, relation to yeast growth, (52) 162.
 progones—
 cause of enzootic pneumonia in sheep, (60) 579.
 relation to bovine mastitis, (54) 476.

Bacillus—Continued.

- radicola—*see also* Nodule bacteria.
and *B. mycolides*, simultaneous symbiosis, (58) 25.
bacteriophage, absence in clover in sterile cultivation, (60) 809.
growth, effect of plant extracts, (58) 727.
longevity in soil, Mo., (54) 715; (58) 419.
nodule-forming capacity, effect of storage, (59) Can. 331.
notes, (52) 148.
strains, studies, (54) 534.
- radiobacter—
and nodule bacteria, differentiation, (54) 725.
notes, (59) Idaho 722.
physiological studies, (59) Iowa 722.
- rettgeri, notes, (52) 782.
- rhusiopathiae suis, notes, (58) 172.
- rickettsiformis n.sp., description, (56) 174.
- silvaticus, notes, (59) 79.
- solanisaprus—
and *B. atrosepticus*, relation, (54) 651.
synonymy, (52) 350.
- sphingidis, notes, (59) 252.
- sporogenes infections in animals, (52) 778; (53) 677.
- subtilis—
action on cellulose, (56) 297.
effect of temperature and pH, (57) 17.
galleriae, immunization of wax moth caterpillar against, (58) 758.
galleriae, notes, (59) 354.
in strainer cotton, (52) Calif. 80.
notes, (56) 651; (58) 393; (60) N.Y.State 771.
substances formed by, relation to yeast growth, (52) 162.
vitamin B synthesis by, (60) 294.
- suipestifer—
growth in foods, (58) 278.
human, infection in Bombay, (58) 472.
notes, (53) 680.
para-typhoid group, differentiation, (57) 80.
pathogenicity, (60) 873.
pathogenicity for man, (57) 181.
II, cause of food poisoning, (59) 171.
- terminalis thermophilus n.var., notes, (60) N.Y.State 771.
- tetani distribution in soil, (56) 677.
- tetani, studies, (54) 873.
- thermoalmentophilus, notes, (60) N.Y.State 771.
- thermoliquefaciens, notes, (60) N.Y.State 771.
- thirotrix, immunization of wax moth caterpillar against, (58) 758.

Bacillus—Continued.

- thuringiensis, notes, (58) 162.
timothy 213 as source of vitamin B, (51) 768.
- truffauti, notes, (59) 516.
- tuberculosis, *see* Tubercle bacilli.
- typhi gallinarum alcalifaciens, studies (58) 282.
- typhi murium, cause of food infection, (51) 272.
- typhi spermophilorum for rodent control, (60) 555.
- typhosus—
bactericidal power of coconut oil soap, (54) 393.
in ice cream, viability, (55) 69.
in milk, destruction temperature, (53) 276.
in oysters, (54) 92, 93.
in Philippine foods, viability, (51) 364.
resistance to disinfectants, tests, (58) 574.
resistant to soap, (53) 609.
- vulgatus, synthesis of vitamin B by, (52) 64.
- welchii—
action on involuntary muscle in vitro, (60) 870.
chronic infection with, (53) 678.
immunity of dogs to, effect of vitamin B in diet, (59) 894.
infections in animals, (52) 778; (53) 677.
notes, (58) 280.
- whitmori, studies, (53) 678; (58) 678.
- Bacon—
factories in England and Scotland, (52) 674.
fat, effect of oil meal feeding, (58) 568.
hog, breeding, growing, and finishing, (57) 70.
hog industry, new, (57) 660.
hog production, (55) N.Dak. 566.
hog production, feeding, (59) Wis. 68, 566.
hogs, breeds, (51) 175, Can. 375.
palatability and keeping qualities, effect of salt quantity, (56) Kans. 866.
selection and use, (56) Minn. 893.
sides, directions for cutting, (55) 890.
trade in England and Wales, (59) 684.
transportation, (59) 868.
Wiltshire, (52) 674.
Wiltshire, pig carcasses for, (58) 67.
- Bacteria—*see also* Microorganisms and Organisms.
acid-fast, as source of vitamin B, (51) 768.
acid-fast, in feces of healthy and diseased cattle, (60) 668.
acid-fast, studies, (56) Wis. 777.
activity with different soil treatments, (54) Mo. 717.
adsorption by soil, effect, (59) 26.
aerobic cellulose-decomposing, (59) 519, 717.

Bacteria—Continued.

- aerobic spore-bearing, from retted flax, (55) Mich. 896.
- agglutination capacity, relation to electrical charge, (56) Pa. 176.
- agglutination, relation to alcohol-soluble constituents, (57) 670.
- agglutination, spontaneous, (59) 671.
- anaerobic, *see* Anaerobes.
- and leaf variegation, studies, (56) 629.
- and plants not legumes, symbiosis in, (56) 629.
- and seeds, symbiosis, (55) 818.
- autotrophic, physiology, (58) 25.
- capsules, demonstrating, (60) 72.
- causing flat sour spoilage in canned food, classification, (57) 788.
- cellulose-fermenting, studies, (53) Wis. 424.
- concentration, (52) 380.
- cytogeny of, (57) 219.
- cytomorphosis in, (54) 221.
- development and surface tension, (57) Idaho 769.
- development, relation to antagonism between salts, (56) 26.
- effect on solubility of phosphates, (52) 320.
- enzymic content of spores, (53) 25.
- from avocado, lilac, citrus blast, and apricot gummosis, comparison, (59) Calif. 148.
- from sewage sludge, decomposition of organic matter by, (54) 216.
- gonidia formation, (60) Ark. 830.
- growth—
- apparatus for motion photomicrography, (58) 274.
- as affected by vitamins, (54) 90.
- effects of salt and pH, (56) 350.
- in synthetic medium, (52) 162.
- on silk, (55) 696.
- rate, morphologic variation, (60) 575.
- relation to vitamins, (53) 162.
- hydrogen sulfide produced by, (51) 713.
- in bees, (59) 562.
- in decomposing oysters, (57) 888.
- in milk, *see* Milk.
- in roots of *Gleditsia triacanthos*, (57) 26.
- in soils, *see* Soil bacteria.
- in water, *see* Water.
- internal structure and development, (51) 519.
- iron-depositing, rôle in formation of hardpan, (58) 19.
- lactic acid, physiology, (56) 73.
- lactic acid produced by, forms, (55) 710.
- legume, in Iowa soils, (59) 826.
- lethal effect of electric current on, (54) 572.
- local resistance and immunity to, (51) 478.

Bacteria—Continued.

- mannitol-forming, fermentation products, (54) 203.
- migration through sand, (51) 591.
- morphology and life cycles, (56) Ark. 348.
- newer knowledge, articles on, (59) 577, 578, 579.
- nitrate-forming, properties, (55) 418.
- nitrate-forming, studies, (54) 216.
- nitrifying, effect on manure, (53) 321.
- nitrite-forming, studies, (55) 418.
- nitrogen fixation by, effect of sugar concentration, (53) 117.
- nitrogen-fixing, effect of surface tension on growth, (52) Idaho 814.
- nitrogen-fixing, in Vesuvian soils, (52) 22.
- obligate thermophilic, from soil, studies, (56) 512.
- on tobacco, (56) 639.
- pathogenic, physiology, (54) 648.
- penetration through capillary spaces, (51) 591.
- phylogenetic position, (51) 127.
- physiology and biochemistry, treatise, (60) 176.
- pigment-producing, on fabrics, (55) 196.
- pigments of, (57) 318.
- pure culture study, manual, (54) 628.
- red chromogenic, studies, (54) N.Y. State 524.
- relation to protozoa in soil, (54) 718.
- resistance to heat, (51) 508.
- resistant to pasteurization in milk, (54) Ill. 375.
- solubilization of phosphates by, (53) 322.
- spore-forming, activity in soils, (51) N.Y. State 15.
- spores, heat resistance, (52) 113.
- that survive pasteurization, (60) N.Y. State 473.
- thermal death-points, relation to pasteurization, (52) 277.
- thermophilic, fermenting cellulose, (55) 203.
- thermophilic, relation of temperature to growth, (55) 631.
- thiosulfate, biology of, (52) 117.
- variation in, (56) 475.
- vitamin B requirement, (54) 308.

Bacterial—

- cells, enzyme content, (54) Mich. 673.
- cultures, removal of carbonic acid radicle, (59) 806.
- disease of insects, specificity, (54) 658.
- infections, chemotherapy, (54) 675.
- metabolism, studies, (52) 162.

Bacterins—

- preparation, use of chloroform in, (57) 469.
- value in swine disease treatment, (51) 180.

Bacteriological—

- culture media, *see* Culture media.

- Bacteriological—Continued.
 equivalents, dictionary in five languages, (58) 874.
 laboratory for dairy plants, operation, (58) Calif. 365.
 research in Wisconsin, (59) Wis. 12.
- Bacteriology—
 agricultural, problems and methods, (53) 424.
 and immunity, laboratory manual, (53) 783.
 and immunology, treatise, (59) 577.
 blood work, and animal parasitology, treatise, (59) 169.
 dairy—
 history, (52) 177.
 papers on, (51) 778.
 review, (51) 678.
 studies, (51) Ind. 877.
 textbook, (55) 676.
 treatise, (60) 864.
 determinative, Bergey's manual, (56) 326.
 fermentation, handbook, (57) 819.
 laboratory guide, (60) 489.
 manual, (59) 76.
 of food, textbook, (56) 490.
 of pickling, (55) 715.
 soil, papers on, (58) N.Y.State 119.
 studies, (52) N.Y.State 519.
 systematic, treatise, (54) 524.
 textbook, (57) 318; (58) 273; (59) 876.
 treatise, (59) 273; (60) 489.
 veterinary, manual, (57) 669.
- Bacteriophage—
 action, new conception, (59) 274.
 active against *Bacterium pullorum*, (55) Mich. 877.
 behavior, (57) 181.
 behavior, treatise, (57) 769.
 constitution, (53) 479.
 experiments, (59) 582, 583.
 in different media, studies, (53) 480.
 in plant pathology, (58) 443.
 in root nodules of legumes, (53) 123.
 isolated from house fly, (57) 658.
 lytic for *Salmonella pullorum*, (56) 575.
 nature of, (56) 676.
 of fowl cholera, (56) 575.
 prophylactic and therapeutic possibilities, (56) 475.
 quantitative estimation, (54) 524.
 relation to plant pathogens, (58) 41.
 tests on meconium of aborted fetuses, (54) 476.
 titration and particulate hypothesis, (58) 476.
- Bacteriophages, resistance to chemical substances, (53) 224.
- Bacteriophagy—
 and plant cankers, (57) 744; (60) 831.
 in plant pathology, (57) 838.
 treatise, (56) 518.
- Bacteriosis, studies, (52) 52, 146.
- Bacterium—
 abortum—
 agglutinability, effect of preservatives, (52) Mich. 382.
 aggressin, production, (57) 378.
 and *B. melitensis*, cross-immunization experiments, (51) 479.
 and *B. melitensis*, differentiation, (52) 580, 884; (57) 378; (60) Conn.Storrs 576.
 and *Micrococcus melitensis*, relation, (54) 476.
 and *Mycobacterium tuberculosis*, mixed infection with, (53) 885.
 and organism resembling it, (54) Mich. 676.
 avirulent strain for vaccination of cattle, (52) Mich. 581.
 cause of undulant fever, (59) 274.
 channel of invasion, (55) 574.
 controlled vaccination experiments with, (51) 82; (52) Calif. 83.
 elimination in feces of suckling calves, (55) Calif. 371.
 factor in human infection, (55) 373.
 from foal of aborting mare, (51) 383.
 in feces of calves fed infected milk, (53) 381.
 in milk of cows reacting to agglutination test, (55) 875.
 infection in cow's udder, nature of, (56) 573.
 infection in man, (59) 579, 580.
 infection in man, relation to milk consumption, (58) 672.
 infection of udder, relation to cellular count of milk, (51) Mich. 81.
 infection through ingestion, (53) 678.
 infection via the eye, (53) 480.
 infections, pathology, (60) Mich. 371.
 ingested with milk, location and longevity in calves, (54) Calif. 576.
 isolation and cultivation, (56) 876.
 isolation, whole milk and milk sediment for, (56) 477.
 metabolism, (56) 677.
 notes, (59) 79.
 number of generations to grow in air, (54) 871.
 passage through digestive tract of cattle, (58) 273.
 porcine type, (56) Ill. 379.
 specificity of, (51) 282.
 strains, agglutinating properties, (59) 777.
 strains, serological study, (52) Mich. 382.
 udder infection, treatment, (54) 577.

Bacterium--Continued.

- acidi-propionici (d), fermentation of sugars by, (51) 109.
- acidi-propionici, notes, (55) 270.
- alcaligines, metabolism, (56) 677.
- andropogoni, notes, (56) 48.
- angulatum, notes, (52) Fla. 247; (60) Ky. 239.
- atrofaciens, notes, (58) 846.
- beticola, notes, (60) 244.
- betle n.sp., notes, (57) 157.
- bronchisepticum, metabolism, (56) 677.
- campestre—
control, (55) 846.
description, (53) Va.Truck 851.
differentiation from other bean pathogens, (59) 340.
in South Australia, (57) 843.
notes, (56) 549.
overwintering, (55) 847.
serological studies, (60) 545.
- casei ϵ and *Mycoderma thöni*, biology, (56) 473.
- citri, see Citrus canker.
- coli—see also *Bacillus coli*.
index of proper milk pasteurization, (60) 264.
vitamin B synthesis by, (60) 294.
- coronafaciens atropurpureum, studies, (53) 849.
- coronafaciens, notes, (58) 545.
- cucurbitae n.sp., notes, (55) 753.
- delphinii n.comb., description, (52) 54.
- erivanense n.sp., notes, (56) 750.
- esteroaromaticum and *B. lactis acidii*, symbiotic relations, (57) 75.
- flaccumfaciens—
notes, (52) 148; (59) 640.
serological and physiological studies, (59) 340.
studies, (55) 846; (58) 547; (60) 545.
- fluorescens—
decomposition of proteins by, (53) 310.
liquefaciens, stimulating effect on *B. lactis acidii*, (57) 76.
notes, (58) 543.
- galleriae—
No. 2, immunization of wax moth against, (60) 63.
notes, (56) 758.
types 1, 2, and 3, notes, (59) 354.
- gallinarum—
B. pullorum, and *Bacillus aertrycke*, antigenic relation, (60) 180.
studies, (52) 782; (58) 282; (59) 277.
transmission method, (55) 679.
- globiformis n.sp., description, (60) N.Y.State 420.
- gummisudans n.sp., description, (51) 156.
- gummisudans, notes, (56) 54.

Bacterium—Continued.

- herbicola, lethal temperature, (53) 353.
- holci n.sp., description, (56) Iowa 542; (58) 647.
- hyacinthi, notes, (60) West.Wash. 746.
- lachrymans, control, (51) 152, 156.
lachrymans, notes, (53) 43.
- lactis acidii and *B. esteroaromaticum*, symbiotic relations, (57) 75.
- lepisepticum infection of rabbits, (56) 880.
- lepisepticum, notes, (53) 784.
- löhnisi n.sp., notes, (56) 750.
- lycopersici n.sp. on tomatoes, (56) 549.
- maculicolum, notes, (55) 545; (56) 541.
- maculicolum, studies, (59) 147.
- malvacearum—
new host for, (54) 649.
notes, (51) 248; (52) 132; (53) 351, Ariz. 745; (56) 549, 846; (57) N.C. 245.
studies, (59) 447.
- marginale, notes, (56) 549.
- marginatum, notes, (56) 54; S.C. 539.
- marginatum on gladioli, (52) 654.
- martyniae n.sp., notes, (52) 846.
- medicaginis var. phaseolicola, roughness in colony form and agglutination, (60) 240.
- melitensis—see also *Micrococcus melitensis*.
and *B. abortum*, differentiation, (52) 580, 884; (57) 378.
metabolism, (56) 677.
- melitensis-abortus group, relation to human health, (52) U.S.D.A. 580.
- michiganense, control, (59) 345.
- morgani, notes, (59) 579.
- mori, notes, (56) 647, 654.
- panici, notes, (54) Hawaii 849.
- paradysenteriae, studies, (58) 282.
- phaseoli—
control, (51) 151.
notes, (54) 345; (56) Pa. 145; (57) 343.
serological and physiological studies, (59) 340.
studies (60) 545.
- phaseoli sojense—
and *B. phaseoli*, cross inoculations, (55) 849.
notes, (56) Del. 348.
roughness in colony form and agglutination, (60) 240.
serological and physiological studies, (59) 340.
smooth and rough strain, (59) 340.
studies, (52) 651; (60) 545.
- pisi, notes, (52) Del. 844; (56) 648.
- pruni—
control, (55) Ga. 755; (56) 453.
enzymes produced by, (58) 204.

Bacterium—Continued.

- pruni—continued.
 notes, (52) Calif. 49; (55) Ohio 145; (57) Ohio 144; (59) 339.
 overwintering, (58) 553.
 studies, (54) Del. 647.
- puerariae, description, (59) 447.
 puerariae, notes, (59) 344.
- pullorum—
 agglutination tests for, (53) 82; (57) Calif. 277, Calif. 575.
 agglutination tests for, accuracy of, (60) 581.
 agglutinins in eggs, (51) 286.
 and *B. sanguinarium*, differentiation, (57) 674; (58) 273.
 animal feeding experiments, (56) Conn.Storrs 678.
 antigen, elimination of cloudy reactions, (57) Calif. 576.
B. gallinarum, and *Bacillus aertrycke*, antigenic relation, (60) 180.
 bibliography, (58) U.S.D.A. 178.
 carriers, method of determining, (51) 84.
 effect of lactic acid, (54) 175.
 fermentation of maltose by, (60) 180.
 fermentative characters, (60) Ky. 265.
 in chicks, (53) Wis. 479.
 in chicks, agglutination tests, (54) Mich. 678.
 in chicks, atypical symptoms and lesions, (57) Mich. 575; (58) 178.
 in eggs, toxicity, (56) Conn.Storrs 874.
 infection of cocks, (57) 674.
 infection, transmission, (59) 880.
 isolated from sparrows, (59) 476.
 notes, (52) Kans. 481, 782; (53) N.C. 786; (57) N.J. 79, Calif. 281, 877.
 studies, (54) Mich. 578; (58) 75, Ark. 371, 579.
 types A and B, (55) 579.
- rhaponticum, notes, (55) 247.
- salicis n.sp. notes, (55) 551.
- sanguinarium—
 and *B. pullorum*, differentiation, (57) 674; (58) 273.
 effect of acid soil, (57) N.J. 773.
 effect of lactic acid, (54) 175.
 growth in foods, (58) 278.
 morphology, (51) 883.
 notes, (51) 384; (57) Calif. 281.
 studies, (58) 282, Del. 480.
 transmission through eggs, (54) 579; (55) Calif. 371.
- savastanoi, studies, (55) 49; (56) 549; (57) 155, 156.
- sojae, notes, (55) 752.
- solanacearum—
 effect of previous crop, (59) 636.
 in Philippines, (51) 246.

Bacterium—Continued.

- solanacearum—continued.
 new host for, (54) 649.
 notes, (51) 353; 847; (53) 46, 148; (54) Fla. 245; (55) 346; (56) Fla. 143; (57) P.R. 442; (58) 53; (59) 246, 537, 547.
 on *Hibiscus*, (54) 151.
- syringae, notes, (59) 247; (60) West. Wash. 746.
- tabacum—
 control, (54) Wis. 251.
 host plants, (56) 248.
 notes, (51) 50; (54) Fla. 348; (55) Fla. 849; (56) 648, 748; (57) 846.
- translucens—
 secalis n.var., description, (52) 448.
 undulosum, notes, (57) 347.
 var. secalis, notes, (57) 348.
- trifoliorum, notes, (57) 343.
- trifoliorum, propagation and control, (54) 650.
- tularensis—
 cause of eye infection, (54) 262.
 hereditary transmission in wood tick, (56) 261.
 in birds, (60) 673.
 in sheep, (60) 872.
 in wild rats, (55) 852.
 notes, (53) 652; (59) 275, 472.
 recovery from ticks, (51) 657.
 transmission experiments with chickens, (60) 480.
- tumefaciens—
 biology, (51) N.Y.Cornell 354.
 cause of crown gall, (54) 144.
 effects of X-ray treatments, (56) 629.
 host relations, (60) 545.
 in crown gall tissue of plants, (58) 647.
 in tissues of plant cankers, (59) 341.
 longevity in soil, (58) 553.
 morphological changes in, (55) 747.
 morphological notes, (59) 240.
 notes, (54) 252, 448; (55) 244, 245, Iowa 541; (56) 549, 653; (57) 246; (58) 658; (59) Wis. 47, 247; (60) 245, 351, 445.
 on nasturtium, (51) 549.
 roughness in colony form and agglutination, (60) 240.
 studies, (52) 146; (54) 842; (57) 640.
 tumor-producing effect, (57) 540.
- vascularum notes, (51) 753; (55) 244; (57) 152, 647; (58) 50, 850; (60) 344.
- vesicatorium and *B. exitiosum*, synonymy, (54) 148.
- vignae—
 migration through Lima bean tissues, (59) 845.

- Bacterium—Continued.
 vignae—continued.
 notes, (56) 647; (57) 343; (60) N.Y.State 748.
 on Lima beans, (56) Del. 348; (58) Pa. 339.
 studies, (54) 650.
- viridifaciens—
 identity, (54) 650.
 notes, Pa., (54) 343; (56) 145.
 on Lima beans, studies, (58) Pa. 339.
- viridilividum, notes, (56) 549.
- viscosum equi—
 factor in diseases of foals, (59) 780; (60) Ky. 266, 873.
 notes, (58) Ky. 71.
- vitiens, notes, (56) 549.
- Bad lands, biotic succession in, (53) 826; (54) 25.
- Badger, habits and life history, (53) 50.
- Baeus rotundiventris n.sp., description, (53) 561.
- Baggage, delousing, (53) 557.
- Bagworm—
 affecting shade trees, (59) Ark. 252.
 biology and control, (55) 662.
 notes, (57) N.J. 57; (58) Ark. 344.
- Bagworms of Texas, life history, (60) Tex. 164.
- Bahia grass—
 cultural and pasturing studies, (56) Fla. 132.
 seeding experiments, (52) Fla. 224.
- Bakers, handbook for, (55) 291.
- Bakery by-products, feeding value, Pa., (56) 165; (58) 569.
- Bakery infection with *Monilia sitophila*, (56) 391.
- Baking, principles, (54) U.S.D.A. 86.
- Baking, science of, treatise, (51) 261.
- Balance—
 automatic self-recording, description, (55) 211.
 deflection, for use in biochemical laboratories, (56) 312.
 sheet, making and using, (55) 385.
- Balaninus caryae, see Pecan weevil.
- Balaninus obtusus, studies, (58) 158.
- Balantidium—
 coli, notes, (57) P.R. 468; (58) 176.
 n.sp. in cattle, (58) 472.
- Balclutha mbila—
 notes, (57) 546.
 on Natal coast, (54) 755.
 transmission of streak disease by, (56) 649.
- Bali disease, account, (54) 379.
- Ballardia pallipes n.g. and n.sp., notes, (59) 561.
- Ballistite, cultivation of soil with, (51) 387.
- Balloon observations, pilot, instructions, for, (60) U.S.D.A. 617.
- Balm of Gilead canker, notes, (53) 43.
- Balsam fir—
 decay in, (58) 54.
 growth rate, (59) Mich. 45.
- Balsam fir—Continued.
 in Upper Peninsula, (56) Mich. 838.
 tissue anatomy after budworm attack, (56) 355.
- Balsam red heart rot, cause, (56) 355.
- Balunsay, vitamin B in, (57) 94.
- Bamboo—
 and bamboo culture, (59) U.S.D.A. 144.
 culture and uses in China, (60) 145.
 disease, notes, (53) 246.
 eradication of staghorn fern by, (57) 440.
 fiber, size and variation, (58) 298.
 growth, relation to temperature, (58) 240.
 Myzocallis infesting, (56) 555.
 new chalcid attacking, (52) 859.
 structural, transverse strength, (54) 681.
 uses in China, (59) 144.
- Bamboos, culture and uses in United States, (53) U.S.D.A. 441.
- Banana—
 anthracnose, studies, (52) 653.
 bacterial wilt disease, studies, (58) 53; (59) 547.
 blood disease, studies, (54) 149.
 blossoms, male, removal, effect, (57) 336.
 bunchy top disease—
 cause and nature, (58) 153.
 of plantains, (54) 548.
 studies, (51) 250; (56) 354, 851; (57) 55, 56, 851; (60) 445, 451.
- Chamaluco, susceptibility to wilt, (54) P.R. 648.
- Colorado disease, notes, (58) 658.
- disease due to *Heterodera* sp., (55) 350.
- diseases in Dutch East Indies, (53) 250.
- diseases, notes, (55) 543; (57) 639.
- fiber, notes, (55) 334.
- freckle and leaf spot, identity, (59) 246.
- freckle, studies, (59) 547.
- fruit and stem rot, studies, (51) 250.
- fruit internal discoloration, (57) 56.
- fruit-scarring beetle, studies, (57) 263.
- fruitstalk rots, (59) 645.
- industry in British Empire, (52) 344.
- moth, synonymy, (53) 256.
- Panama disease, resistant varieties, (53) 152.
- Panama disease, studies, (51) 355; (56) 454; (60) 344, 345.
- plants, potash in, (60) P.R. 739.
- root borer—
 bionomics, (54) 757.
 control, (51) 855; (59) 460.
 host plants, life history, and control, (55) 258.
 notes, (53) 156; (58) 57, 857.
 on plantains, (51) 554; (59) 659.
 studies, (51) 554, 764.
 summary, (52) 558.

- Banana—Continued.
 squirter disease, notes, (60) 445.
 thrips, control, (57) 60.
 thrips, notes, (58) 857.
 thrips rust, (56) 549; (59) 458.
 variation, notes, (59) 529.
 weevil borer, baiting for, (59) 658.
 wilt—
 cause, (58) 658.
 in Philippines, (59) 547.
 notes, (55) 244.
 of manila hemp plant, (54) 48.
 resistant strains, (51) P.R. 847.
- Bananas—
 breeding experiments, (54) 141.
 culture, (56) Hawaii 743.
 culture experiments, (59) V.I. 439.
 culture, harvesting, and marketing,
 (57) 438.
 culture in Canary Islands, (53) 643.
 culture, transportation, food value,
 etc., (58) 439.
 effect of premature inflorescence, (51)
 524.
 Gros Michel, origin, (57) 536.
 in diet of children, value, (58) 689.
 injury from fruit-piercing moths, (56)
 756.
 insects affecting, (52) 356, 853; (55)
 758; (59) 352, 456; (60) 559.
 Manning River, disease in, (57) 56.
 notes, (57) Hawaii 335.
 nutritive value, (55) 692.
 place in the diet, (56) 894; (58) 387.
 propagation, (59) Guam 529.
 recipes, (55) 291.
 ripening, effect of acetylene, (60) 641
 ripening, effect of ethylene, (60) 822.
 ripening, temperature and respiration,
 (56) 837.
 time of planting and cold storage stud-
 ies, (56) 44.
 treatise, (59) 442.
 types and origin, (60) 825.
 use in ice cream and ices, (58) Calif.
 289.
 varieties, Hawaii, (51) 744, 745.
 vitamin A in, (52) 65; (53) 162.
 vitamin B in, (51) 666.
 vitamin C in, (57) 690.
- Banchus femoralis, development, (57) 554.
 Bangalore maintenance experiments, (57)
 865.
 Bank of North Dakota, merits and defects,
 (53) 291.
 Bankia gouldi, notes, (51) N.J. 657.
- Banks—
 cooperative central, in Germany, (51)
 296.
 function in financing farmers, (52)
 U.S.D.A. 591.
 rural, in Germany, (53) 592.
- Barathra configurata, destructive pest on
 northern prairies, (59) 460.
- Barberry—
 and cereal rust in Denmark, (55) 348.
- Barberry—Continued.
 eradication, (51) N.Dak. 847; (52)
 Mont. 447, U.S.D.A. 546; (54)
 U.S.D.A. 146, Mont. 650; (55)
 Mich. 45, Ill. 446; (56) U.S.D.A.
 448, Mont. 544.
 effect on grain rust losses, (51)
 48.
 in Colorado, (58) 256.
 in western Canada, status, (57)
 149.
 in Wisconsin, (55) 348.
 progress in, (53) 748; (55) 845.
 relation to black stem rust, (55)
 544.
 of Rocky Mountain region as host of
 wheat stem rust, (58) 651.
 relation to black stem rust of cereals,
 (58) U.S.D.A. 545.
 relation to wheat stem rust, (58)
 U.S.D.A. 747.
 sprouts, etiolated and green, composi-
 tion, (57) 25.
 use of sodium arsenite against, (53)
 U.S.D.A. 327.
- Barbitistes constrictus as pine pest, (60)
 844.
- Baris—
 chlorizans, notes, (57) 264.
 species and parasites, (51) 761; (53)
 259.
- Barium—
 sulfate, anthelmintic value, (55) 272.
 tetrasulfide, toxicity, (55) N.H. 843.
- Bark beetles—
 and mites, (55) 854.
 British, (56) 661.
 control in national forests, (55) 857.
 epidemics and rainfall deficiency, (54)
 461.
 North American, distribution, (54) 462.
 on western yellow pine, relation to fire
 injury, (57) 456.
 Pacific coast, life history and habits,
 (53) 259.
 supplement, (59) 853.
- Bark deductions from logs, tables, (54)
 447.
- Bark parenchyma, nitrogen storage in, (52)
 426.
- Barley—
 albinism in, (51) 735.
 albino type, (58) 26.
 alkali-tolerant strain, isolation, (59)
 Calif. 727.
 analyses, (52) 530; (53) 666; (59)
 627, 628.
 and alfalfa, feeding value, (52) Nev.
 468.
 and flax mixtures, tests, (59) Ohio
 824.
 and oats mixtures, tests, (59) Ohio
 824.
 and products, composition and digesti-
 bility, (56) 665.
 and wheat mixtures, tests, (59) Ohio
 824.

Barley—Continued.

- as affected by sulfur, (52) U.S.D.A. 34.
 as a grazing crop, (52) Ga.Coastal Plain 225.
 Atlas, new strain, (57) 728.
 blindness in, (57) 526.
 bran, feeding value, (53) 666.
 breeding and selection, (51) Ga. 132.
 breeding experiments, (51) Wis. 434, 530; (52) Mich. 334, Kans. 433; (53) Okla. 133, 230; (55) 223, U.S.D.A. 433; (56) Ill. 333; (58) Ill. 322; (59) Mich. 432, N.Dak. 825; (60) Ill. 222, Oreg. 731.
 breeding work and genetic studies, (58) 418.
 Brio, new variety, (52) 437.
 cellulose, digestibility by fowls, (53) 172.
 census of an acre, (59) 327.
 chlorophyll defect in, (56) 724.
 coleoptiles, growth, effect of electrification, (59) 216.
 Colsess, new variety, value, (54) Colo. 232.
 composition, effect of geographical factors, (58) 631.
 correlated inheritance of botanical characters, (53) 729.
 correlation between quantitative characteristics, (54) 127.
 cost of production, (59) Wis. 483.
 cost of production and profit, (58) Ill. 379.
 covered smut, notes, (57) Calif. 247.
 covered smut, studies, (57) 445; (58) 746.
 critical moisture periods, (58) 734.
 cross, inheritance of characters, (56) 630.
 culms, number of nodes in, (56) 230.
 cultivation tests, (54) Mo. 732.
 culture, (59) Iowa 130, Ohio 824.
 culture and uses, (54) U.S.D.A. 330.
 culture experiments, (51) 36; (52) Alaska 528, Nebr. 529; (53) U.S. D.A. 132, U.S.D.A. 333; (54) U.S. D.A. 132, 531; (55) Alaska 433, Minn. 734; (56) 35; (57) Alaska 522, 524; (60) Minn. 132, 133.
 culture in Rumania, (54) 441.
 culture in Värmland, Sweden, (53) 633.
 dietetic value, (52) 365.
 disease, new in California, (54) 745.
 diseases and pests, (51) 47.
 diseases near Nanking, control, (57) 640.
 duty of water for, (54) N.Mex. 680.
 effect of acid soil, (54) 213.
 effect of aeration and renewal of solutions, (51) N.J. 630.
 effect of fallow, (56) Wyo. 825.
 effect of soil and season, (51) 36.
 electroculture experiments, (51) 232; (54) 434, 633.

Barley—Continued.

- feeding methods, (53) 374.
 feeding value, (52) Ky. 470; (54) Wyo. 759; (55) 163; (59) Wis. 71; (60) Ohio 461.
 fertilizer experiments, (51) Wis. 421; (53) Mo. 431, 625; (58) 224; (59) 20, 21, 319.
 fertilizer nutrients required by, (53) 216.
 flour, fat content, (56) 312.
 flour, feeding value, (58) 867.
 following tobacco, nitrogen content, (60) Ky. 223.
 for pigs, methods of feeding, (52) Mont. 471.
 fungus diseases, (51) 48.
 genetic factors, interrelations, (51) 633.
 genetic studies, (52) 30, 31; (55) 428; (57) 121.
 germination, stimulating action of metallic compound, (57) 119.
 germination tests, (52) Mont. 435.
 gout fly, life history and control, (58) 458.
 gout fly, summary, (53) 654.
 grades, feeding value, (56) 665.
 grain in spike, micrometric analysis, (59) 224.
 growing in winter by artificial light, (57) 38.
 growth, effect of climate, (56) 113.
 growth, effect of methyl and ethyl alcohol, (56) 125.
 growth in artificial light, (51) 25.
 hay, feeding value, (54) Calif. 373.
 hay production, (54) Calif. 329.
 hay yield, (60) Ga. 815.
 home grown, feeding value, (60) Wyo. 765.
 hulledness in, effect of geographical factors, (58) 734.
 hulls, digestibility as affected by sodium hydroxide, (51) 372.
 hybrid, inheritance of characters in, (59) 429.
 hybrid seeds, method of producing, (58) 527.
 hybrid, somatic segregation in, (57) 121.
 immature, germination tests, (55) Alaska 433.
 immature, post-harvest growth, (54) 636.
 improvement, (56) Ill. 334, Kans. 822; (57) Okla. 226.
 infection by *Ustilago nuda*, (52) 648.
 inheritance in, (52) Minn. 244.
 inheritance of nitrogen content, (55) 633.
 inheritance studies, (59) 223.
 inoculating with covered smut, (54) 745.
 insects and mites affecting, (54) 257.
 kernels removed when immature, development, (55) 133.

Barley—Continued.

- lateral spikelets, genetic studies, (58) 720.
- leaf blotch, notes, (52) 448.
- leaf rust, aecial stages, (52) 545; (53) 749.
- leaf rust, inheritance, (59) Ind. 748.
- leaf stripe, notes, (58) 442.
- linkage in, (56) 630; (60) 726.
- lodging in, resistance to, (55) 827.
- loose smut, control, (57) 247; (58) 545.
- loose smut, strains and host relations, (59) 342.
- malting tests, (51) 36; (54) 734; (57) Can. 33, 328; (59) 627, 628.
- meal, digestibility, (53) 668.
- methods of preparation for pigs, (60) Oreg. 765.
- Michigan 2-row, merits, (55) Mich. 825.
- minimum fertilizer requirement, (54) R.I. 30.
- moisture in under varying humidity, (54) 636.
- mutations in, (60) 127.
- natural crossing in, (60) 433.
- net blotch, notes, (59) 536.
- new, strain tests, (59) Wis. 33.
- nutrient requirements, (53) R.I. 325.
- optimum soil reaction for, (53) 320.
- pasturing with hogs, (54) U.S.D.A. 162.
- percentage returns, (51) Ind. 830.
- phosphorus in, (60) 204.
- planting and spacing experiments, (57) Okla. 125.
- planting tests, (57) Idaho 726.
- pollen, preservation, (56) 230.
- Prentice and Abed Rex, characters, (54) 734.
- prices, index numbers, (59) N.Dak. 885.
- Princess II, qualities, (57) 428.
- production in Czechoslovakia, (59) 224.
- production on irrigation projects, (54) Wash.Col. 434.
- pure lines, effect of climatic conditions, (56) 730.
- quality and growth, factors affecting, (54) 733; (57) 328; (59) 627.
- rate of manuring experiments, Minn., (51) 120; (53) 119.
- rolled, feeding value, (60) Ariz. 472.
- rotation and tillage experiments, (53) U.S.D.A. 528.
- rotation experiments, (52) U.S.D.A. 827; (53) Wyo. 133; (54) Calif. 230, 530; (59) N.C. 728.
- rusts, notes, (55) 346.
- rusty blotch, notes, (57) Calif. 247.
- rusty blotch resistance, inheritance, (59) 146; (60) 50.
- seed, dehulling for studies of covered smut, (58) 746.
- seed, impurities and determination of origin, (60) 539.

Barley—Continued.

- seed stimulation tests, (58) 625.
- seeding experiments, (51) Mich. 133, Minn. 133, Minn. 636, Nebr. 831; (52) Nebr. 529; (53) Minn. 130; (54) U.S.D.A. 31; (55) Ark. 30, Nebr. 229, Minn. 332; (56) 825; (58) S.Dak. 325.
- seedlings, respiration rate, effect of ionized air, (60) 522.
- seeds, frosted, germination, (56) Colo. 820.
- seeds, water absorption by, (57) 617.
- selections, merits, (59) Calif. 727.
- single fertilization in, (53) 426.
- size of seed experiments, (57) 826.
- smooth-awned, breeding, (56) 825.
- smut control, (51) Minn. 150; (52) Kans. 445; (53) Minn. 149; (54) 47; (55) 348, Alaska 446, 845; (58) Tenn. 43, 649; (60) Va. 149.
- smut infection experiments, (59) 49.
- smut infection, factors affecting, (55) 544.
- smut infection through seed inoculation, (57) 747.
- smuts, control, (56) Wis. 746; (58) 649; (60) 240.
- smuts, notes, (55) 346.
- species, chromosome number in, (58) 628.
- spike, lateral florets, fertility, (54) 822.
- spring and winter growing habit, inheritance of, (53) 830.
- sprouted v. unsprouted, for pigs, (51) N.Dak. 872.
- starch determination in, (52) 112.
- stimulation of seeds, (55) 125.
- storage studies, (59) 626.
- straw, production of artificial manure from, (58) 721.
- strength of culms, factors affecting, (57) 327.
- stripe, control, (53) Wis. 443; (55) 146, 844; (56) 541, Wis. 746; (58) 545, 650; (59) Wis. 47, 538, 844.
- stripe development, effect of nutritive condition of host, (60) 546.
- stripe rust, notes, (52) 648.
- stripe, studies, (57) 247, 444.
- supplements for hogs, (51) 76.
- Svalöf Brage, origin and history, (54) 734.
- test for hay, (60) Minn. 132.
- tests, (60) Ohio 636.
- tillering, effect, (55) N.Dak. 528.
- time of plowing, (52) Kans. 434.
- tolerance for alkali, (55) 117.
- treatise, (56) 337.
- under dry land culture, (55) U.S.D.A. 132.
- v. corn for milk production, (57) Mich. 868.
- v. corn for pigs, Can., (51) 375; (53) 871, 872.
- v. oats for pigs, (52) Can. 873.

Barley—Continued.

- v. rye for pigs, (52) Mont. 471.
- v. wheat in scratch grain, (60) 860.
- variatal resistance to *Helminthosporium sativum*, (52) Minn. 244.
- varieties, (51) Ga. 132, Mich. 133, Wash.Col. 136, Wash.Col. 338, Oreg. 739, Idaho 830; (52) Calif. 33, U.S. D.A. 827; (53) U.S.D.A. 132, Calif. 430; (54) 231; (55) Ark. 30, N.C. 228, N.Mex. 433; (56) Ind. 132; (57) Tenn. 126, Calif. 225; (58) Ill. 224, 830; (59) Mont. 129; (60) Pa. 327, Mont. 729.
- and requirements, (58) 632.
- characteristics, (55) Alaska 230; (57) 826.
- different response to fertilizers, (59) 130, 827.
- for Kansas, (53) 528.
- for Minnesota, (55) Minn. 132.
- for peat lands, (55) Minn. 527.
- in America, tests, (54) U.S.D.A. 330.
- in Norway, (51) 138.
- new, yields and malting value, (54) 828.
- of Sweden, (53) 835.
- registration, (56) 438.
- relations between, (57) 727.
- tillering and culm weight, (59) 129.
- variations within, (54) N.Y.Cornell 32.
- varieties, yields, (55) Mo. 132.
- variety, improved, (54) Minn. 30.
- variety tests, (51) Minn. 133, Minn. 134, N.Mex. 433, 530, Minn. 636, N.Dak. 833; (52) Ind. 226, Kans. 433, S.C. 528, Nebr. 529, N.J. 732, Utah 732, Idaho 828, Wash.Col. 829; (53) W.Va. 31, Minn. 130, Minn. 131, N.Mex. 131, Wyo. 133, U.S.D.A. 134, Ga. 230, N.Dak. 232, N.Dak. 334, Mo. 431, N.Dak. 529, Can. 530, Ariz. 733, N.C. 734, U.S.D.A. 834; (54) Ill. 327, Mont. 328, 530, Mich. 634, Wyo. 733, Wash.Col. 827; (55) N.J. 31, Ga. 131, Minn. 227, Minn. 228, Minn. 332, Alaska 433, U.S.D.A. 433, N.Dak. 527, Nebr. 636, Oreg. 637, Minn. 734, Minn. 735, Idaho 825; (56) 35, Mont. 133, Ill. 229, Ark. 332, Ill. 333, Minn. 524, Utah 525, Wash.Col. 525, Wyo. 526, Ariz. 731, Kans. 822, 825; (57) Can. 33, Okla. 125, N.Mex. 224, Ga. 225, Minn. 226, Okla. 226, 227, Alaska 522, Ind. 628, Idaho 726, N.J. 727; (58) Ark. 321, Ill. 322, S.C. 325, Alaska 427, U.S.D.A. 532, S.C. 632, 828, Minn. 828; (59) Wash.Col. 31, Ga. 221, N.Mex. 222, Wyo. 223, Idaho 728, N.C. 728, Tex. 729, Nebr. 824; (60) N.Dak. 34, Minn. 132, Oreg. 132, Ariz. 133, Ill. 222, N.J. 431, Alaska

Barley—Continued.

- variety tests—continued.
- 728, Oreg. 731, Wyo. 733, Wash.Col. 814, Ga. 815.
- viscosity and winter hardiness in, (57) 126.
- vitamins in, (52) 564.
- wild, notes, (53) U.S.D.A. 334.
- winter and spring habits, inheritance, (54) 629.
- with orange lemmas, (56) 329.
- yield and quality, factors affecting, (58) 224.
- yields, (51) U.S.D.A. 135; (54) Pa. 328; (55) Ohio 528; (60) Mont. 730.
- after fallow, (52) Oreg. 435.
- and agronomic data, (52) Can. 733.
- and quality, factors affecting, (52) 530; (59) 327.
- effect of preceding crop, (60) Ariz. 133.
- effect of precipitation and temperature, (56) 413.
- effect of sodium silicate, (60) 623.
- increasing, (56) Mich. 899.
- on muck lands, (56) Mich. 823.
- under dry farming, (54) U.S.D.A. 30.
- Barleys of eastern Transcaucasia, (58) 632.
- Barn—
- for air curing tobacco, design, (51) 389.
- masonry arch, construction, (53) Iowa 788.
- roof, Gothic, with sprung rafters, (56) 683.
- Barns—
- dairy, for Nebraska, (53) 86.
- dairy, plans and construction, (54) Kans. 781.
- masonry, construction, (59) Iowa 81.
- planning, space unit method, (60) 281.
- plans, (57) 582; (60) Ark. 877.
- plans and construction, (54) 283.
- ventilating systems, (53) Mich. 792.
- ventilation—
- effect on animals, (53) 571.
- flue velocities, factors affecting, (54) 781.
- principles, (51) U.S.D.A. 590.
- studies, (52) 388.
- Barometric pressure—
- and soil aeration, (52) 116.
- periodicities in, studies, (57) 807.
- Barrows, raising, (52) 874.
- Bartonella bacilliformis, experimental transmission by ticks, (56) 662.
- Bartsia trixago, feeding value, (55) 677.
- Base balance, use of term, (51) 63.
- Base exchange in soils, papers on, (54) 316, 317.
- Basic slag, *see* Phosphatic slag.

- Basidiobolus ranarum, light growth reaction in, (53) 423.
- Basidiomycetes, sexuality in, (57) 219.
- Basisporium gallarum—
notes, (53) 544, Iowa 746, Iowa 749; (57) 843.
on tomato, (51) 50.
- Basketry and osier growing in rural England, (57) 484.
- Baskets, standard, for fruits and vegetables, (52) U.S.D.A. 296.
- Bassia hyssopifolia—
description, (57) 830.
notes, (59) Calif. 726.
- Bassus—
albicinctus, notes, (52) 858.
gibbosus, notes, (58) 60.
laticinctus, notes, (52) N.Y.Cornell 256.
stigmaterus, notes, (56) 557.
- Basswood seeds, germination, (57) Mich. 637.
- Bast fibers—
effect of caustic alkalies, (54) 196.
structure and methods of preparing, (54) 196.
- Bathyplectes—
curculionis, introduction and establishment in Utah, (55) 357.
curculionis, notes, (52) Idaho 851; (53) Colo. 154.
curculionis, parasite of alfalfa weevil, (51) U.S.D.A. 458; (55) Idaho 853.
exigua, notes, (52) 858.
- Batrachetra arenosella, relation to nutfall of coconuts, (52) 358.
- Bats—
American, (59) 852.
food habits, relation to mosquitoes, (54) 459.
life of, treatise, (54) 752.
relation to guano production and destruction of insects, (55) U.S.D.A. 49.
spermatozoa, length of life, (57) 724.
- Batteries, treatise, (53) 187.
- Baudouin test, notes, (51) 411.
- Bay tree scale, parasite of, (51) 762.
- Bayer 205—
chemotherapy, (52) 280.
effect on Trypanosoma spp., (52) 779; (53) 886.
for mal de caderas, (51) 382; (52) 582.
for surra in horses, (51) 586; (54) 277.
literature on, (54) 171.
summary of information, (53) 583.
toxic effects in stallions, (53) 786.
- Beal, W. J., editorial, (51) 101.
- Bean—
anthracnose—
control, (51) 542; (54) N.Y.State 543.
in Canada, physiological study, (56) 148.
notes, (55) N.H. 843; (57) 51; (59) 635.
resistant varieties, (54) 345.
- Bean—Continued.
aphid—
biological studies, (57) 856; (58) 455.
control, (51) Md. 454; (52) 753.
life cycle, (57) 554.
life history and bionomics, (55) 855.
notes, (57) Ohio 162; (58) 452.
toxicity of amines and N-heterocyclic compounds to, (57) 557.
toxicity of fatty acids and derivatives to, (58) 452.
toxicity of hydrocyanic acid for, (60) 454.
toxicity of insecticides to, (55) 852.
toxicity of organic chemicals to, (57) 557.
toxicity of plant products to, (56) 358.
- ashy stem blight, notes, (58) S.C. 646.
- bacterial blight—
effect of late planting, (55) 846.
resistant varieties, (54) 345.
studies, (59) Wis. 48.
varietal susceptibility, (55) 846.
weed host, (56) 351.
- bacterial disease, new, (59) 147.
- bacterial spot, control, (60) N.Y.State 748.
- bacterial spot on Limas, (54) 650.
- bacterial wilt, studies, (58) 547.
- bacteriosis, effect of planting old seed, Colo., (56) 839; (59) 236.
- beetle, Mexican—
alimentary canal, (57) 658.
control, (53) 357; (54) S.C. 656; (55) N.Mex. 456; (56) Ky. 157; (57) Ind. 654; (58) Ky. 56, 256.
distribution, (59) 62.
distribution relation to climate, (53) 362.
effect of heat and drought, (55) Tenn. 152.
emergence, precipitation as factor, (59) 62.
in Indiana, summary, (54) Ind. 356.
in Kentucky, (51) Ky. 363.
in North Carolina, (53) 557.
in Ohio, (51) Ohio 256; (54) 157; (58) 754.
in Ontario, (60) 843.
in Pennsylvania, (55) 764; (57) 860; (58) 345.
in South Carolina, (52) S.C. 553; (53) 363; (55) 357.
in Southeast, (52) U.S.D.A. 256.
in the East, (51) U.S.D.A. 554.
in Virginia, (51) 157.
life history studies, (57) S.C. 167.
new insecticides for, (52) Tenn. 555.
notes, (53) Colo. 154; W.Va. 455, N.C. 755; (55) 555; (56) S.C.

Bean—Continued.

- beetle, Mexican—continued.
 notes—continued.
 553; (59) N.Mex. 249; (60) S.C. 755.
 papers on, (55) 455.
 studies, (51) N.C. 854; (52) Ohio 757; (53) Ohio 556; (55) Ohio 152; (58) S.C. 662.
 summary, (57) Ky. 561; (58) Mich. 760; (59) N.Y.State 62, 658.
 blight, effect of time of planting, (56) N.Y.State 241.
 blight, studies, (53) 350.
 chocolate spot disease, notes, (52) 146; (56) 747; (58) 442; (59) 48.
 crop, effect of weevily seed beans, (52) 858.
 decay in transit, prevention, (59) U.S.D.A. 50.
 disease—
 caused by virus of sugar beet curly top, (58) 146.
 in Costa Rica, (57) 543.
 new in Mississippi, (58) 146.
 notes, (53) 147; (56) 148.
 resistance, building up, (59) N.Y. Cornell 50.
 diseases, control, (51) 151; (59) N.Y. State 50, U.S.D.A. 51.
 diseases near Nanking, control, (57) 640.
 diseases, studies, (54) Mich. 647; (55) Idaho 842, Mich. 842.
 downy mildew, control, (60) N.Y.State 748.
 dry root rot, notes, Idaho, (52) 844; (57) 740.
 dry spot, studies, (51) 247; (55) 652.
 foot and stem blight, notes, (54) S.C. 648.
 frost blister, (57) 50.
 fusariosis, notes, (56) 545.
 hybrids, anthracnose resistance in, (52) Mich. 346.
 hybrids, color factors in, (52) Me. 430.
 hybrids, seed color in, (57) 121.
 jassid, control, (54) Fla. 352.
 leaf beetle, notes, (60) S.C. 755.
 leaf beetle, transmission of cowpea mosaic by, (52) 546.
 leaf disease, notes, (57) 444.
 leaf roller, notes, (56) 155.
 leafhopper, control, Fla., (52) 251; (56) 855.
 leafhopper, notes, (57) N.C. 259.
 leaves, nitrogen distribution in, (52) 325.
 leaves, sleep and awakening in, (59) 324.
 mildew on Limas, control, (52) Pa. 243.
 mosaic—
 anatomical structure of leaves, (51) 543.
 cytological studies, (59) Mich. 444.
 diagnosis, (51) Mich. 148.

Bean—Continued.

- mosaic—continued,
 effect of high temperatures, (59) Idaho 748.
 notes, (56) 648; (57) Idaho 740; (59) Wis. 48; (60) 344.
 protozoa associated with, (53) 646.
 temperature studies, (53) 646.
 root bacterial disease, notes, (57) 245, 247.
 root rot in California, (54) 845.
 root rot, notes, (57) 540.
 rust, notes, (55) 346; (58) 647; (59) 635.
 rust on leaves in solutions, reaction, (57) 149.
 screenings, feeding value, (58) Calif. 268.
 seeds—
 dormancy in, cytological study, (60) 521.
 from arid West, value, (60) Fla. 140.
 germination, (55) Mich. 837.
 soaked in water, injurious factor, (56) 516.
 soaked in water, loss of viability, (54) 443.
 soaking, effect on germination, (55) 826.
 stem blight, notes, (56) S.C. 539.
 streak disease, (52) 146.
 sun scald, cause, (54) 650.
 transit disease, studies, (57) 347.
 weevil—
 effect of low temperatures, (54) 355.
 field control, (54) 462.
 four-spotted, control by fumigation, (52) 359.
 four-spotted, embryology, (54) 662.
 four-spotted, host selection studies, (58) 263.
 four-spotted, longevity and fecundity, (52) 661.
 infestation, prevention, (51) N.J. 658.
 notes, (52) Mich. 355.
 rôle of bean straw stack in spread, (54) 558.
 summary, (57) 264.
 weevils—
 control, (59) 57.
 effect of cold storage, (51) 58.
 fumigation, (52) 157.
 wilt—
 effect of moisture, (52) 148.
 in Uganda, cause, (55) 543.
 notes, (59) 640.
 organisms, studies, (60) 545.
 studies, (55) 846.
 yeast spot on Limas, (52) 448.
 Beans—
 adzuki, genetic behavior of factors in, (51) 228.
 adzuki, linked inheritance in, (52) 333.

Beans—Continued.

- bonavist, culture experiments, (54) V.I. 231.
 breeding experiments, (51) Mich. 133, P.R. 833; (52) Mich. 334; (54) N.Y.State 543; (59) Mich. 432.
 breeding for immunity against *Colletotrichum lindemuthianum*, (59) 50.
 Burma, selection for low prussic acid content, (57) 328.
 bush Lima, culture, (59) Ill. 334.
 canning, diseases, (56) Wis. 747; (58) N.Y.State 844.
 canning, inoculation experiments, (56) Wis. 734.
 canning, value of scalding, (52) U.S.D.A. 460.
 cold storage studies, (58) 535.
 cull, feeding value, (52) Mich. 80; (59) Mich. 463, Idaho 764; (60) Mich. 467.
 cultivation tests, (59) Mich. 431.
 culture experiments, (60) Mont. 729.
 culture in Montana, (51) Mont. 530.
 culture, treatise, (58) 32.
 curing, McNaughton system, (56) Mich. 826.
 disease-resistant varieties, (54) 345; (56) 549.
 effect of acid soil, (54) 213.
 effect of length of day, (57) P.R. 435.
 effect on following crop, (54) 829.
 electrocultural experiments, (54) 633.
 embryo development, (55) 731.
 fall seeding experiments, (52) 633.
 fermenting, *Clostridium botulinum* in, (51) 271.
 fertilizer experiments, (55) Miss. 237, Miss. 536; (58) Ill. 333.
 Florida butter, notes, (57) V.I. 335.
 Florida butter, selection in, (55) V.I. 339.
 germination, effect of fertilizers, (57) 428.
 germination, physiology and chemistry of changes during, (58) 523.
 green string, vitamins in, (57) 293.
 growth in artificial light, (51) 25.
 hardshell in, (58) N.Y.State 828.
 harvesting with combine in Michigan, (60) 880.
 hereditary abnormalities in, (59) 147.
 heterosis in, peculiar case, (60) 527.
 Hopi Lima, notes, (55) Calif. 331.
 horse, *see* Horse beans.
 hyacinth, value, (53) Calif. 430.
 inheritance in, (58) 824.
 insect infestation, preventive action of clay, (52) N.J. 750.
 insects affecting, (53) 755.
 jack, *see* Jack beans.
 Kentucky Wonder, fertilizer experiments, (59) Guam 529.
 Lima—
 bacteria parasitic on, Pa., (56) 145; (58) 339.

Beans—Continued.

- Lima—continued.
 bacterial rust, control, (58) N.Y. State 844.
 characteristic injury from pod borer, (56) 258.
 culture experiments, (54) Ill. 336.
 diseases, studies, (54) Pa. 343.
 effect of seed treatment, (59) 343.
 growth relation to seed weight, (53) N.J. 23.
 migration of *Bacterium vignae* through tissues, (59) Pa. 845.
Nematospora affecting, (55) 846.
 pod spot of, (58) S.C. 646.
 preparation for market, (59) Ill. 334.
 pure line breeding, (59) Conn. State 28.
 spot disease on, (56) Del. 348.
 spraying experiments, (60) N.Y. State 748.
 varieties as cover crop, (56) Guam 228.
 variety tests, (52) Wash.Col. 829.
 Madagascar butter, fungus disease affecting, (53) 147.
 manganese in, (59) 708.
 mat, characteristics and culture, (54) Calif. 332.
 methods of applying fertilizers, (59) Wis. 34.
 Moki, value, (53) Calif. 430.
 monograph, (51) 535.
 moth, value, (53) Calif. 430.
 mungo, *see* Mung beans.
 paper mulch experiments, (57) 40.
 Patani, varieties as cover crop, (56) Guam 228.
 pellagra-preventive action, (53) 662.
 photoperiodism of, (60) 625.
 pigment patterns in, factors affecting, (60) 433.
 pink, culture, (53) Ariz. 433.
 pinto and tornillo, feeding value, (57) N.Mex. 69.
 pinto, nutritive properties, (52) N.Mex. 868.
 pod characters in, inheritance, (60) 127.
 prices and shipments from Florida, (59) 886.
 production, (56) U.S.D.A. 528.
 production and consumption, (58) Calif. 782.
 production in Michigan, (51) Mich. 436.
 quantitative inheritance in, (55) 731.
 reciprocal grafts, (57) 421.
 red kidney, new varieties, (60) N.Y.-State 433.
 response to length of day modifications, (58) P.R. 536.
 Robust, merits, (55) Mich. 825.
 Robust, paper on, (51) Mich. 96.
 seed weight, studies, (57) 121.

Beans—Continued.

- seeding experiments, (52) N.Y.State 543; (53) Can. 530; (57) Mich. 628; (60) Mont. 730.
- selection experiments, (51) Can. 238.
- sensitivity for *Colletotrichum lindemuthianum*, (57) 441.
- size differences, relation to pattern and pigmentation, (52) Me. 431.
- size inheritance in, (54) Me. 323.
- snap, cold storage studies, (60) 541.
- snap, fertilizer experiments, (53) Miss. 341.
- soil moisture requirements, (53) 543.
- spacing experiments, (55) U.S.D.A. 132.
- sprayed, poison from, (55) 455.
- stimulation of seeds, (55) 125.
- string, losses of vitamin B in cooking, (56) Wis. 794.
- stringless varieties, studies, (57) 831.
- susceptibility to sugar beet curly top, (55) 748.
- teparty, *see* Tepary beans.
- varieties, (51) P.R. 837.
- varieties for cover crops, (59) Guam 523.
- variety for peat land, (55) Minn. 527.
- variety tests, (51) Minn. 134; (52) Guam 226, Ga.Coastal Plain 232; (53) Minn. 131, Guam 430, Can. 530; (54) Fla. 230; (55) U.S.D.A. 132, Mich. 529, Minn. 735; (56) Minn. 524, Ga.Coastal Plain 531; (57) Can. 33; (58) Ga.Coastal Plain 738; (59) N.Mex. 222.
- velvet, *see* Velvet beans.
- yields and agronomic data, (52) Can. 733.
- yields, effect of thick planting, (60) Ill. 231.
- Bearings—**
- full and partial journal, characteristics, (56) 682.
- lubrication of, theory, (52) 687.
- oil film in, charts for, (55) 378.
- oil flow in, (56) 578.
- plain, lubrication, (55) 882.
- Beauveria—**
- effusa*, parasite of insects, (57) 451.
- globulifera*, notes, (58) Del. 456.
- notes, (60) 162.
- oryzae* n.sp., α and β , description, (25) 747.
- spp., studies, (54) 758; (59) 154.
- Beaver trap of Biological Survey, (55) U.S.D.A. 455.
- Beavers—**
- habits and raising, (58) U.S.D.A. 343.
- in the Adirondacks, status and natural history, (59) 247.
- in Yellowstone National Park, (59) 647.
- life history and habits, (57) 356.
- nematodes of, (53) 553.
- raising, (54) 274.
- Beccari system of organic waste disposal, (51) 423.

Bedbugs—

- control in steam-heated rooms, (53) 453.
- cyanide for, (51) Mont. 359.
- microscopic changes of tularemia in, (58) 576.
- summary, (55) Mich. 456.
- transmission of *Herpetomonas donovani* by, (51) 253.
- Bee—see also Bees.**
- hives, humidity of, (60) 66.
- hives, queenless, (51) Iowa 452.
- larva, morphology, (52) 560.
- larvae, utilization of carbohydrates by, (58) 264.
- louse in United States, (52) U.S.D.A. 660.
- moth caterpillars, immunity work with, (53) 55.
- moth caterpillars, transmission of foul-brood by, (52) 758.
- moth, chronological distribution, (55) 54.
- moth larvae immunity, rôle of antibodies in, (51) 161.
- moth spread, (58) 344, 758.
- Beech—**
- coccid, control, (58) 558.
- red, *Micrococcus ulmi* on, (58) 154.
- wood, hemicelluloses of, (56) 10.
- Beeches—**
- height growth, effect of spacing, (60) 236.
- nitrogenous substances in, migration, (59) 217.
- Beechnut cake, poisonous, chemical composition, (56) 202.
- Beef—see also Cattle, beef.**
- blood, chemical composition, (56) 463.
- calf club, manual, (53) Ill. 599.
- carcass, lean and fat, composition and value, (55) Mo. 290.
- cold storage, changes in short periods, (55) 692.
- cooking according to cut, U.S.D.A., (58) 491; (60) 789.
- cost of production, (54) Oreg. 880; (56) Ill. 385.
- cuts, selection and preparation, (52) 62.
- dressed, market classes and grades, (51) U.S.D.A. 869.
- effect of cold storage, (55) 261.
- extract, effect on bacterial count of milk, (51) 779.
- extract, protein in, nutritive value, (56) 290.
- fat deterioration, (51) 201.
- freezing, economic importance, (58) 764.
- fresh, as pellagra preventive, (51) 270; (55) 890.
- grading, (54) 564.
- ground, bacteriological examination, (51) 262.
- heart, protein value, (57) 90.
- heifer v. steer, (58) 567.

Beef—Continued.

- herd demonstration, Missouri, (57) 763.
- industry in South Africa, (51) 670.
- kidney, protein value, (57) 90.
- kosher, effect on regular beef trade, (59) 662.
- lean, as supplements to white bread, nutritional value, (60) 191.
- lean loin, composition, (57) Mo. 407.
- liver ash, effect on anemia, (58) 897.
- liver, protein value, (57) 90.
- liver, vitamin content, (53) Wis. 459.
- measuring color, (57) 763.
- nitrogen, ash, and phosphorus distribution in, factors affecting, (51) Mo. 170.
- preparing and cooking, (57) Mo. 888.
- preservation by freezing, (53) 260.
- press juices, freezing, (56) 892.
- production—
 - economic, (56) Ark. 365.
 - effect of spaying, (57) 762.
 - factors affecting, (58) 567.
 - feeding concentrates v. fertilizing pastures, (58) 64.
 - sex as factor, (54) 267; (57) 660.
 - studies, (56) S.C. 560.
 - winter, feeding for, (53) 667.
- protein as supplement to vegetable proteins, (57) 389.
- proximate composition, (55) U.S.D.A. 590.
- quality—
 - and composition, (58) Ill. 355.
 - and grades, papers on, (57) 762.
 - and palatability, effect of feeding methods, (60) Mont. 760.
 - and palatability, effect of temperature and time of cooking, (58) 492.
 - and palatability, factors affecting, (59) Iowa 65.
- refrigerated, trade in Great Britain, (55) 186.
- refrigeration, studies, (56) 466, 892.
- roasting, standard methods, (59) N.Dak. 891.
- scrap, feeding value, Mo., (51) 776; (54) 762; (57) 462; (58) 467.
- scrap v. fish meal, Can., (54) 763, 764.
- scrap v. milk for laying hens, (52) Can. 571.
- scrap v. skim milk for poultry, Can., (54) 164, 272.
- scrap v. tankage for poultry, (53) Can. 876.
- scrap, value for egg production, (53) Mo. 471.
- slaughtering, cutting, and curing, (52) U.S.D.A. 270.
- specific dynamic action, (52) 665.
- statistics, (58) U.S.D.A. 81.
- viscera, composition, (52) 159.
- vitamin A in, (54) 390.

Beef—Continued.

- yearling, available meat from cuts, (60) 287.
- Beekeepers' Association—
 - Iowa, proceedings, (59) 551, 552.
 - Maryland State, report, (56) 64.
 - of Ontario, report, (52) 858; (54) 59; (56) 461; (58) 165.
- Beekeeper's guide, (52) Mich. 257.
- Beekeepers, International Congress, proceedings, (56) 662.
- Beekeeping—
 - at Alaska Matanuska Station, (60) Alaska 758.
 - business management and profits, (51) 593; (53) 591.
 - commercial, (52) 663.
 - conditions in Tennessee, (57) 853.
 - Erlangen yearbooks of, (53) 860.
 - for beginners, (53) Ky. 259.
 - for beginners, treatise, (52) 859.
 - in Brazil, textbook, (56) 558.
 - in California, (54) Calif. 58.
 - in Canada, (54) 261.
 - in Canada, Can., (51) 259, 555; (54) 159; (56) 461; (58) 165, 561.
 - in Colorado, (51) 364.
 - in Kansas, (58) 557.
 - in North Dakota, (51) N.Dak. 855.
 - in Ontario, papers on (52) 858.
 - in Oregon, (59) 358.
 - in outyards, (56) 64.
 - in South Africa, (60) 655.
 - in the Northwest, (52) 663.
 - in Victoria, (56) 462.
 - in Wisconsin, (52) 859.
 - manual, (60) 66, N.J. 66.
 - notes, (51) Wis. 453; (52) Kans. 452; (57) 64; (59) Wyo. 258, Can. 659.
 - papers on, (58) 165; (59) 551; (60) 65.
 - research in, (58) Tex. 61.
 - scourge of, (58) 344.
 - studies, (57) Tex. 162; (59) N.J. 351, Tex. 759, N.Dak. 854.
 - summary of information, (51) 764.
 - textbook, (54) 158.
 - treatise, (51) 555; (53) 56; (54) 261, 662; (56) 662, 760; (57) 862; (60) 655.
 - Tula's Experiment Station for, (55) 561.
 - use of calcium cyanide in, (56) 558; (59) Wyo. 562.
- Beer—
 - manufacture, fermentation processes in, (52) 315.
 - vitamins in, (52) 564; (53) 566.
- Bees—
 - activities, effect of temperature, (60) 66.
 - ameba disease in United States, (59) 461.
 - amebic disease of, (56) 856.
 - anatomy and physiology, treatise, (53) 655.
 - and wasps, life of, treatise, (53) 56.

Bees—Continued.

anthidiine, nesting habits, (60) 357.
ants, and wasps, treatise, (52) 854.
as pollinizers, (54) 59, 158; (57) 264; (59) 358.
body temperature, (58) 760.
breeding and wintering, (60) Wyo. 758.
breeding, possibilities, (60) 655.
breeding resistant and high-producing stock, (55) N.J. 52.
brood disease, (57) 654.
brood rearing, (53) 259.
brood rearing cycle, (54) U.S.D.A. 58.
brood rearing, relation to stores, (54) 158.
buckeye poisoning, (54) Calif. 663; (55) 56.
burrowing in lawns, control, (60) Md. 841.
care and product, treatise, (56) 862.
Caucasian queen, peculiarities in structure, (59) 358.
colony weight changes, (54) 158, U.S.D.A. 356.
concentration of nectar in body, (58) 62.
controlled mating, (60) 65, 252.
Cyprian, seasonal brood-rearing activity, (59) 461.
differentiation of sex in, (51) 60; (53) 655.
digestive tracts, flora, (59) 562.
disease immunity in, (58) 344.
disease in Great Britain, (56) 760.
diseases, control, (54) 663; (55) 252, 663.
diseases in California, (59) 659.
diseases in Connecticut, (54) 158.
diseases in Montana, (51) Mont. 259.
diseases in Ontario, (55) 858.
diseases in United States, (56) 558.
diseases of, (53) Tex. 57; (57) N.J. 60; (60) 66.
effect of arsenicals sprayed on fruit trees, (55) U.S.D.A. 158.
effect on apple pollination, (57) Calif. 338.
enemies of, (60) 167.
European, life history and habits, (51) 60.
fall management, (56) 64.
fight activities, (53) U.S.D.A. 455; (58) 761.
foulbrood, *see* Foulbrood.
habits and injury from, (58) 855.
housing, (59) N.Dak. 881.
immune strain to foulbrood, (54) 462.
immunity to American foulbrood, (54) 558.
individual activities, (56) Iowa 856.
inducing to work with greater energy, (57) 853.
infectious diseases of, (54) 159.
infectious diseases of, treatise, (57) 457.

Bees—Continued.

infested with Isle of Wight disease, pathological changes in, (59) 461.
intestinal bacteria, (56) 362.
Italian race, anatomy, (57) 659.
Japanese, biology and morphology, (53) 160.
larvae, growth and feeding, (51) U.S.D.A. 59.
law pertaining to, treatise, (53) 560.
leaf-cutter, injury to telephone poles, (53) 154.
life and habits, (57) 64.
life of, treatise, (54) 261.
life-sustaining value of various carbohydrates and honeys, (56) 64.
marking, for behavior studies, (54) 462.
microscopic examination for acari, (57) 365.
moult of, paper on, (54) 158.
muscles, (59) 659.
muscles in acarine disease, (58) 265.
native California, studies, (52) Calif. 59.
native on fruit trees, and honey, (60) Oreg. 754.
nosema disease of, Swiss Commission on, proceedings, (60) 564.
of central Europe, (57) 659.
of Chile, studies, (56) 65.
papers on, (56) 461.
poisoning by orchard sprays, (57) Mass. 364.
pollination of fruit by, N.J., (55) 51, 663.
pollination of peaches by, (55) Mich. 39.
queen—
artificial insemination, (59) N.J. 351.
controlled mating, (56) 662; (57) 364; (58) 165.
daily egg-laying rates, (58) 62.
instrumental insemination, (58) 62.
papers on, (54) 59.
rearing, (53) Tex. 456, 860; (56) 760; (57) 167.
race adapted to Iowa, (53) Iowa 755.
recording work of, (56) 662.
relation to alfalfa in California, (59) 461.
relation to fruit growing, (57) 264.
relation to production of fruits and vegetables, (53) 856.
research work with, (55) Tex. 354.
salivary glands, (60) 655.
sealed and unsealed brood, (52) 459.
seasonal management, (52) Mich. 257.
selective breeding and wintering, (56) Wyo. 553.
sense of smell in, (54) 158.
sensitivity to light of different wave lengths, (58) 62.
septicemic condition, (59) 461.
sex forms, (57) 659.

Bees—Continued.

- sirups for autumn feeding, (58) 761.
 strains, (57) Okla. 555.
 studies, (52) N.J. 752; (56) Kans. 862; (57) N.J. 758.
 thickening of nectars by, (53) 652.
 time required for food acquisition, (59) Iowa 257.
 tongue length and honey storing ability, (58) 165.
 treatise, (60) 65.
 utilization of carbohydrates by, (58) 264.
 utilization of pollen and pollen substitutes, (55) 56.
 value in fruit production, (51) 260; (59) 552.
 wasps, and ants, treatise, (56) 862.
 water carriers and nectar carriers, (56) 159.
 winter protection, (57) Wis. 364.
 winter stores, relation to health of colony, (59) Wis. 55.
 wintering, (53) Wis. 451; (54) 59.
 wintering in Canada, (57) 167.
 wintering in Colorado, (53) 160.

Beet—

- army worm, notes, (53) Utah 254.
 blight or heart rot, (59) Wash.Col. 47.
 curly leaf, transmission experiments, (51) 255.
 diffusion juice, filtration, (54) 506.
 dry rot, notes, (59) 536.
 eelworm, life history on hops, (58) 158; (60) 350.
 fly, *see* *Pegomya hyoscyami*.
 frost blister, (57) 50.
 heart rot in Switzerland, (57) 151.
 heart rot, studies, (59) 642.
 hybrids, rare, (58) 525, 526.
 leaf blight, notes, (57) 443.
 leaf bug in Silesia, (59) 853.
 leaf miner, notes, (53) Utah 254.
 leaf miner, studies, (59) Ohio 249.
 leaf spot, notes, (55) 346.
 leafhopper—
 absence in Argentina, (59) Calif. 755; (60) 163.
 affecting squashes, (57) 657.
 and curly top on sugar beets, (59) 653, Utah 653.
 control, (60) 454.
 curly leaf infection, and winter host plants, (54) 553.
 distribution in Idaho, (58) Idaho 58.
 effect of sap concentration of host plants, (58) 757.
 fluctuation in numbers of spring brood, (52) 658.
 life history and control, (57) Utah 558.
 natural breeding area, (54) 553.
 natural enemies, (52) Calif. 58, 60.

Beet—Continued.

- leafhopper—continued.
 notes, (52) 149; (53) Utah 254; (54) 653; (55) Calif. 352; (57) Mont. 258; (58) 146; (59) 345.
 occurrence in eastern United States, (54) 455.
 origin in Santa Clara Valley, (57) Calif. 257.
 outbreak in California, (55) 556.
 parasites, exploration in Argentina for, (60) 559.
 range of, (58) 258, 347.
 studies, (53) Calif. 449; (57) Idaho 755; (60) Oreg. 753.
 studies, methods, (57) 359.
 transmission of curly top by, (59) Calif. 747.
 transmission of tomato yellows or curly top by, (59) Calif. 644.
 transmission of western yellow blight of tomatoes, (59) Calif. 747.
 mildew, notes, (59) 635.
 mosaic, control, (59) 541.
 mosaic, notes, (56) 541; (59) 536.
 nematode, biology and control, (55) 47.
 nematode, control, (60) 834.
 plant, abnormal behavior in, (60) 725.
 pulp—
 dried, effect on flavor and odor of milk, (58) U.S.D.A. 69.
 dried, feeding value, (52) Can. 374; (55) Va. 67.
 dried, v. mangels for cows, (53) Can. 674.
 feeding value, (56) Idaho 368.
 v. alfalfa meal, feeding value, (55) Fla. 870.
 wet, feeding value, (54) Wyo. 759.
 wet, with alfalfa, feeding value, (51) Wyo. 172.
 root blight, control, (53) 543.
 root rot, protectives for, (59) 642.
 scab organism, host range, (59) N.J. 337.
 seed disinfection, (53) 543.
 seed, longevity, (52) 340.
 seed production, (55) Idaho 536.
 seed production in Czechoslovakia, (59) 630.
 seedling diseases in greenhouse, (59) Va.Truck 241.
 seedling rot in Italy, (53) 47.
 silphid beetle, hibernation, (58) 560.
 sugar factory control, use of enzymes in, (53) 811.
 sugar industry of Nebraska, (54) 831.
 sugar industry of Wisconsin, (52) 534.
 sugar juices, dry substance in, determination, (52) 205.
 tops, feeding, effect on composition of blood, (60) 867.
 tops, feeding value, (51) U.S.D.A. 171; (56) 471; (59) N.Dak. 872.
 webworm, control, (56) Minn. 557.

Beet—Continued.

- webworm, Hawaiian, new pest in Virginia, (57) Va.Truck 857.
- webworm, Hawaiian, notes, (51) V.I. 856.
- webworm, notes, (53) Utah 254.
- webworm on corn, (59) Iowa 55.

Beetle, new beneficial, in Massachusetts, (60) 563.

Beetles—

- Hymenopterous parasites of, (55) 854.
- injurious to timber, summary, (59) 460.
- of New Jersey, (60) 556.
- of New Jersey, keys, (58) 164.
- powder-post, effect of high temperature, (51) 58.
- powder-post, infestation of hickory billets by, (51) N.J. 658.
- scarabaeid, notes, (54) Kans. 460.

Beets—

- albinism in, inheritance, (60) 526.
- as crop plant, history, (55) 230.
- breeding operations, hastening, (53) Mich. 798.
- canned, discoloration in, (53) 208.
- chromosome types in, (59) 621.
- concentrated fertilizers for, (54) Mass. 123.
- crown gall affecting, (56) 653.
- culture experiments, (51) 36.
- different forms, distribution of sugar in, (57) 529.
- early, fertilizer experiments, (54) Ill. 335.
- effect of acid soil, (54) 213.
- effect of cultivation, (54) 137.
- feeding value, (53) 665.
- fertilizer experiments, (52) 723; (55) 220; (58) Ill. 333.
- field, *see* Mangels.
- for seed, planting, (57) 35.
- forage value, (59) 130.
- frozen, composition, (55) 436.
- high quality table variety, (60) Ohio 741.
- improvement, (59) Ohio 231.
- inheritance in, (54) 823.
- interior color, (55) Oreg. 643.
- nematodes parasitizing, (57) 151.
- parasitic fungi of, (57) 151.
- pasturing with sheep, (57) U.S.D.A. 565.
- seed production, (53) 738.
- self-fertility and effect of inbreeding, (57) 727.
- solar energy used by, (53) 598.
- spontaneous self-pollination in, (57) 121.
- standard descriptions, (57) 736.
- sterility and inbreeding in, (58) 132.
- stimulation of seeds, (55) 125.
- sugar, *see* Sugar beets.
- test garden studies in Ukraine, (58) 430.
- thinning, Can., (51) 238, 239.
- varieties and yields, (54) 435.

Beets—Continued.

- variety tests, (57) Tex. 136, 227; (60) Miss. 34.
- wild, in California, (60) 336.
- yields, (59) Mich. 524.

Beggiatoa mirabilis, permeability in, (56) 324.

Begonia immune to crown gall, (58) 658.

Belascaris marginata—

- action of iodine solutions on, (54) Mich. 675.
- in foxes, (53) Wis. 479.

Belladonna roots, grafts of woody nightshade on, (59) 324.

Belle Fourche field station, report, (57) U.S.D.A. 599.

Belpaese, microbial flora of, (60) 661.

Belting formula application, effect of creep on, (52) 586.

Belting, leather, methods of testing, (51) 88.

Belvosia, revision of genus, (59) 859.

Bembex primaestate, notes, (51) U.S.D.A. 857.

Bemisia spp., notes, (60) 559.

Benedict sugar reagent, effect of sodium carbonate concentration in, (54) 111.

Bengal grass, helminthosporiose of, (57) 643.

Bent grass turf, fertilizer test, N.J., (57) 727; (59) 325.

Bentonite, use as oil emulsifier, (54) 154.

Benzene—

- as grub fumigant, (54) 257.
- as larvicide for screw worms, (54) 660.
- vitamin B soluble in, (55) 802.

Benzoate, preservative action in catsup, (56) N.Y.State 711.

Benzoic acid—

- in foods, determination, (59) 15.
- small quantities, determination, (59) 807.

Benzoïn, gum, alcoholic extractive in, (60) 15.

Benzol v. alcohol-benzol mixture for motor plows, (56) 80.

Benzyl phenol, anthelmintic value, (52) 776.

Bephrata cubensis, notes, (51) 252.

Berberis spp. resistance to rust, nature of, (59) 843.

Berea College, new agricultural hall, notes, (60) 500.

Bergamot juice, vitamin C in, (60) 595.

Beriberi—

- epidemiology, effect of lack of exercise, (52) 463.
- experimental, gastric secretion in, (55) 388.
- history of recognition as avitaminosis, (59) 494.
- in India, rôle of rice in, (51) 866.
- in Louisiana, (59) 895.
- in man and polyneuritis in fowls, relation, (60) 394.

- Beriberi—Continued.
 in pigeons, temporary spontaneous disappearance, (58) 194.
 laryngeal symptoms in, (51) 371.
 metabolic mechanism in, (51) 71.
 motility of the intestinal tract in, (57) 691.
 papers on, (60) 197.
 production in nursing young, (59) 894.
 relation to pre-beriberi condition in Japan, (59) 691.
- Berlese, Antonio, list of publications of, (60) 556.
- Bermuda grass—
 as weed in Cuba, (54) 239.
 germination, favorable effect of reduced oxygen, (58) 124.
- Bermuda onions, American-grown, marketing, (52) U.S.D.A. 593.
- Berries, *see* Fruit, small, and Raspberry, Strawberry, *etc.*
- Berry beetle control in Sao Paulo, (58) 755.
- Berseem—
 analyses, (53) 666.
 culture experiments, (52) Calif. 33.
 culture on irrigated land, (55) 334.
 diseases, (54) 246; (57) 540, 639.
 stem rot, notes, (58) 143.
 studies, (53) Calif. 633.
 value, (53) Calif. 430.
- Besem grass rust, life cycle, (53) 245.
- Beta spp., revision, (58) 734.
- Betaine fraction of alfalfa plant juice, (54) 408.
- Betanaphthol, anthelmintic value, (55) 271.
- Betel—
 bacterial leaf spot in Ceylon, (57) 157.
 mildew, notes, (52) 544.
 vine disease, (58) 147.
 vine disease in Bengal, (54) 254.
 vine wilt, notes, (55) 445; (60) 546.
- Beverages—
 alcoholic, manufacture, fermentation processes in, (52) 315.
 analysis, (51) 12.
 carbonated, from fruit sirups, (52) Calif. 14.
 contamination with zinc, (51) 163.
 fermented, bacteria used in, (54) Ill. 375.
 fruit juice, preparation, (59) Calif. 488.
- Bibliography of—
 abortion, (54) 277; (58) 276; (59) 674.
 abortion, immunity and carrier problem, (53) Calif. 181.
 abortion, relation to Malta fever, (57) 182.
 abscission of catkins, (57) 719.
 actinomycosis, (60) 73.
 agricultural cooperation, (57) 386.
- Bibliography of—Continued.
 agricultural economic conditions, (55) 481.
 agricultural machinery industry, German, development, (58) 284.
 agricultural products, bounties on, (57) U.S.D.A. 884.
 agricultural programs, (53) U.S.D.A. 493.
 alfalfa leaf beetle, (57) 63.
 anaplasmosis, (51) 382.
 anatomy of domestic animals, (57) 376.
 anemia, infectious equine, in South Africa, (52) 85.
 animal ecology, (55) 657.
 Anopheles spp. susceptibility to malaria parasites, (58) 349.
 anthelmintics, (52) 777.
 Anthomyidae, (51) 763.
 Anthonomus pomorum, (57) 64.
 ants of China, (53) 656.
 Aphelinus mali, (52) N.Y.Cornell 360.
 aphididae, reproduction in, (52) 156.
 Aphidoidea, (54) 156.
 aphids of Ohio, (54) 554.
 Aporia crataegi, (53) 652.
 apple aphid, woolly, (57) 759.
 apple aphid, woolly, in France, (58) 558.
 apple diseases in cold storage, (56) 53.
 apple maggot, (59) U.S.D.A. 559.
 apple tree borer, round-headed, (52) 256.
 apple trumpet leaf miner, (52) 358.
 apricot blossom blight, (52) Calif. 848.
 art in home economics, (54) 389.
 artichokes, Jerusalem, as crop plants, (58) U.S.D.A. 226.
 Ascaris, human and pig, (52) 684.
 Ascaris lumbricoides, (56) Nebr. 879.
 Ascaris lumbricoides eggs, effect of low temperature, (51) 183.
 auction companies, (54) U.S.D.A. 484.
 Bacillus abortus fever of man, (58) 673.
 bacteria, (51) 478.
 bacteria penetration into fruits and disinfection, (54) 591.
 bacteriophage, (56) 475.
 bacteriophage lytic or Salmonella pul-
 lorum, (56) 575.
 bananas, place in diet, (56) 894.
 Baris spp. and parasites, (53) 259.
 bark beetles, British, (56) 661.
 beavers, (57) 356.
 bees, amebic disease of, (56) 856.
 bees, queen, controlled mating, (58) 165.
 bird banding in America, (60) 647.
 birds of Alabama, (51) 550.
 birds of New York City region, (52) 153.
 birds of Oklahoma, (59) 549.
 blackleg in sheep, (60) 872.
 blood, acid-base balance, regulation, (53) 658.

Bibliography of—Continued.

- blood cells in domestic animals, (57) 79.
 blood, chemical changes in, (52) 777.
 blood of insects, (51) 54.
 blood transfusion, (56) 876.
 blowflies in Great Britain, (58) 862.
 Borna disease, (52) 584.
 Borna disease and encephalomyelitis, (60) 477.
 botryomycosis in man and animals, (51) 382.
 botulism, cause, (53) 663.
 bread making and flour milling, (53) U.S.D.A. 9.
 Brucella melitensis, (54) 872.
 bud moths, (52) U.S.D.A. 255.
 bulls, fertility and sterility in, (51) 182.
 bumblebees, (52) 257.
 bumblebees in Illinois, enemies, (57) 64.
 bumblebees, rearing, (56) 760.
 Buprestidae of North America, (56) 661.
 cabbage worm, (57) 164.
 cadelle, (56) 259.
 calcium cyanide dust fumigation, (59) Calif. 651.
 Calliphora erythrocephala, (57) 657.
 camphor thrips, (51) 455.
 canning of vegetables, preliminary operations, (52) U.S.D.A. 460.
 carbohydrate utilization by bees, (58) 265.
 carbon tetrachloride poisoning, (53) 278.
 casein, chemistry, manufacture, and industrial uses, (55) 709.
 caterpillars, venomous, (52) 358.
 cattle grubs, (55) U.S.D.A. 176.
 cattle industry and tariff, (56) 486.
 cedar pole borer, (58) 863.
 cell sap density, (52) 424.
 cells, internal pH of, (60) 202.
 cereal foot rot, (58) 445.
 cereals, (57) 826.
 cestodes, classification and keys, (58) 556.
 Charadriiformes, (54) 256.
 chemical technology bibliographies, (54) 707.
 cherry fruit fly, (59) 158.
 chestnut blight, (57) 157.
 chicken mite, (56) 879.
 chloropierin, (55) U.S.D.A. 554.
 chocolate and cocoa, nutritive value, (55) 592.
 chondriomes, fixators of, (59) 724.
 chromosome numbers in angiosperms, (56) 816.
 citrus diseases, (56) 751.
 climate for agricultural entomology, (56) 856.
 climate of air near soil, (59) 416.
 clover, white, (52) 832.

Bibliography of—Continued.

- clover-seed worm, (52) N.Y.Cornell 256.
 Coccaceae, (52) N.Y.State 520.
 Coccidae, (56) 858.
 Coccidae of Palestine, (53) 157.
 coccidiosis of rabbits, (54) 479.
 coccids, (54) 156.
 cocklebur, (52) U.S.D.A. 178.
 cockroaches, (52) 156.
 cocoa by-products as fertilizers, (55) 616.
 codling moth control, (60) 165.
 codling moth, relation to weather and climate, (57) 559.
 coffee berry beetle borer, (56) 856.
 coffee leaf miner, (51) 553.
 cold storage, (54) 587.
 Coleoptera, Nearctic, (58) 61.
 colon-typhoid group of bacteria, (57) 472.
 concrete aggregates, (60) 583.
 cookery research, (58) 386.
 cooperation, (56) 485.
 Coraebus rubi on roses, (59) 158.
 corn and corn products, nutritive value, (53) Ill. 168.
 corn borer, European, (54) U.S.D.A. 55.
 corn dry rot, (53) Iowa 749.
 cost of living in factory town, (52) N.Y.Cornell 296.
 cotton fiber, (55) 596.
 cotton seed bug, Egyptian, (52) 357.
 cottonseed storage, (56) U.S.D.A. 436.
 cottonseed toxicity, relation to gossypol in, (51) 880.
 cracker dough fermentation, (54) 109.
 Culicidae of Argentina, (60) 849.
 Curculionidae, (57) 264.
 currant gall mite, (60) 852.
 Cyclopeans, mammalian, cause, (51) 29.
 deep tillage requirements, (55) 779.
 Dermaptera of France, (58) 257.
 diarrhea, bacillary white, diagnosis in United States, (60) 374.
 diarrhea, bacillary white, of fowls, (55) U.S.D.A. 877; (57) N.C. 578; (58) U.S.D.A. 178.
 Dibrachys boucheanus, (54) 261.
 dietary scales and standards, (58) U.S.D.A. 86.
 diets of different types, (57) 690.
 Diptera, leaf-mining, (53) N.Y.Cornell 56.
 Diptera parasites, (59) 660.
 diseases, tropical, (54) 53.
 disinfection of food products, (54) 753.
 distomiasis of sheep, (58) 578.
 dog distemper, (56) 477.
 dragonflies of Connecticut, (58) 663.
 dyeing, (57) 298.
 earth for wall construction, (54) 282.
 economic periodicals of foreign countries in English, (54) U.S.D.A. 782.

Bibliography of—Continued.

- eggs, phosphoric acid in, (51) 713.
 electrargol, use in pneumoenteritis of swine, (58) 775.
 electricity, effect on plant cells, (53) 323.
 emmer production, (55) 134.
 engineering, agricultural, research at experiment stations, (52) U.S.D.A. 485.
 enteritis in swine, (58) 176.
 entomologists, biographical sketches, (60) 839.
 enzymes, proteolytic, of yeast, (54) 109.
 Epilobium for genetic research, (56) 127.
 ergosterol as precursor of vitamin D, (60) 596.
 Eriophyes ribis, (60) 852.
 Eriophyidae, (59) 563.
 Erysiphaceae of Croatia, (56) 654.
 erythrocytes and action of hemolysins, (53) 278.
 Erythroneura spp., (52) Ky. 753.
 Eulia, North American species, (59) Pa. 858.
 evolution, (53) 328.
 extension work in United States, (60) U.S.D.A. 188.
 farm accounting associations, (55) Calif. 286.
 fats and waxes, industrial chemistry, (58) 201.
 fats, biochemistry of, (55) 202.
 fats, nutritive value, (58) 296.
 fertilizers and fertilizer materials, (59) 121.
 flagellates in plants, (58) 55.
 flax as fiber and oil plant, (59) 328.
 flaxseed, (57) U.S.D.A. 130.
 flies, larval stages, (59) 357.
 flies, rôle in disease transmission, (57) 456.
 flour, diastatic activity in, (59) 608.
 flour milling and bread making, (53) U.S.D.A. 9.
 flour moth, Mediterranean, diseases, (60) 652.
 flour moth, Mediterranean, web construction, (55) 258.
 food preservation, (57) 291.
 food supply, world, (53) U.S.D.A. 896.
 foot-and-mouth disease, (51) 480; (53) 181; (60) 269.
 foot-and-mouth disease immunity, (58) 773.
 footwear, (57) U.S.D.A. 298.
 forests, effect on climatic conditions, (58) U.S.D.A. 440.
 formaldehyde and serum proteins, reaction, (52) 801.
 fowl cholera, (54) N.C. 176.
 fowl paralysis, (58) 77.
 fowl pox, (58) 776.
 fowl typhoid, (54) N.C. 176.

Bibliography of—Continued.

- frog hopper blight of sugar cane, (58) 455.
 fruit fly, Mediterranean, in Palestine, (53) 654.
 fruit growing, (53) 641.
 fruit tree bark canker and die back, (57) 649.
 furfural determination, (51) 315.
 gardening, (57) 142; (58) 239.
 genetics of Linum, (60) 324.
 gipsy moth parasites and hyperparasites in Morocco, (59) 155.
 goiter, (55) 390.
 goiter and iodine distribution, (57) 297.
 goiter, endemic, in swine, (57) 79.
 goiter, iodization of water supplies for, (57) 693.
 grain heating by insects, (52) 555.
 granary weevil, (55) U.S.D.A. 460; (59) 853.
 growth, (60) 658.
 ham beetle, red-legged, (53) 759.
 heat transmission of insulating materials, (53) 685.
 heliotherapy, (57) 198.
 Hemiptera, (58) 454.
 Hemiptera-Heteroptera, North American, (54) 553.
 hemp, (53) 235.
 hemp, economic status in Germany, (58) 226.
 heredity and eugenics, (51) 227.
 heredity in rabbits and guinea pigs, (53) 522.
 Heteroptera of eastern North America, (56) 660.
 hog cholera control, (59) 675.
 Homoptera, cane, of Cuba, (56) 858.
 hookworm of cattle, (52) 781.
 hookworm of sheep, (58) 775.
 house planning, (57) 883.
 hydroelectric power in Washington (56) 682.
 Hymenolepididae, avian species of, (54) 580.
 Hymenoptera, biology, (57) 562.
 Hymenoptera, leaf-mining, (54) 558.
 Hymenoptera of central Europe, (57) 659.
 hyperparasitism, (57) U.S.D.A. 457.
 ice cream, (59) U.S.D.A. 169.
 Ichneumonidae, (54) 159.
 Ichneumonidae of Japan, (56) 462.
 immunity in plants, (57) 146.
 inanition, (52) 564.
 industrial revolution and the home, (59) 486.
 insect larvae, leaf-mining, (57) 262.
 insecticides for Japanese beetle, (53) 259.
 insects, aquatic, (54) 752.
 insects, autohemorrhage of, (58) 856.
 insects, biology, (59) 648.
 insects in decaying hickory, (52) 753.
 insects injurious in French West Africa (56) 756.

Bibliography of—Continued.

- insects, intracellular symbionts of, (51) 660.
 insects, leaf-mining, (59) 651.
 insects, Malayan, and food plants, (56) 857.
 insects of Australia and New Zealand, (57) 359.
 insects of Brazil, (59) 552.
 insects of India, (58) 858.
 insects, physiology of, (60) 839.
 insects, polyhedral diseases of, (58) 346.
 insects, responses to smell and taste, (60) 556.
 insects, social, (53) 156; (60) 59.
 insects, soil, (54) 53.
 insects, teratology, (58) 253.
 insulin, (51) 559; (52) 611.
 insulin, utilization and toxic manifestations, (54) 791.
 intestinal auto-intoxication, (52) 364.
 iodine distribution and goiter, (57) 297.
 iodine treatment of water supplies for goiter, (57) 693.
 irrigation, (59) 478.
 John's disease, (59) Wis. 174, 581; (60) 578.
 keratin, (60) 97.
 Lactobacillus acidophilus therapy, (55) 88.
 land problems in United States, (53) 894.
 land tenancy in Philippines, (52) 190.
 Lepidoptera, (56) 258.
 Lepturini of America north of Mexico, (60) 654.
 lignin chemistry, (51) 501.
 liming, effects, (53) 220.
 liver fluke, (58) 667.
 livestock financing, (54) U.S.D.A. 80.
 locusts, migratory, variability, (59) 853.
 Malta fever, (51) 284; (54) 476.
 manganese in hydrophytes, (59) 821.
 marine borers on Atlantic coast of Canada, (56) 657.
 marketing agricultural products, (53) U.S.D.A. 91.
 marketing course, (59) 889.
 mastitis, streptococcic, of cattle, (59) 674.
 meadow mouse, (57) 853.
 meat, putrefaction tests, (57) Mich. 594.
 Melolontha melolontha, development of reproductive organs of female, (59) 853.
 metabolism, basal, (51) 556; (53) 764.
 metabolism in pregnancy, (54) 292.
 metabolism of children, (54) 291.
 metal fume fever, (58) 674.
 metallic coatings, protective, (59) 178.
 metals, fatigue of, (52) 388.
 meteorological literature, (51) 719.

Bibliography of—Continued.

- meteorology of Egypt and the Sudan, (54) 509; (55) 508.
 mice, American lemming, revision, (58) U.S.D.A. 56.
 microbiology, soil, (57) 113.
 micrococci, (52) N.Y.State 520.
 milk, chemistry, (52) U.S.D.A. 503.
 milk, colloidal problems of, (52) 10.
 milk fever, (57) 874.
 mosaic disease, (53) Iowa 748; (59) 637.
 mosquitoes, anopheline, (53) 559.
 mosquitoes, control by Chara fragilis, (59) 356.
 mosquitoes of the Americas, (59) 859.
 mosses, genetic studies, (56) 128.
 muscular activity, (58) 492.
 Nicotiana genus, genetics, (60) 324.
 nitrogen losses through denitrification, (58) 518.
 nodular typhlitis in pheasants, (52) 86.
 nodule bacteria in legumes, (57) 318.
 oat crown rust, (59) 539.
 oats, false wild, (57) 821.
 olive fly, (53) 654.
 organic matter of soil, (58) 616.
 Orthezia urticae, (60) 650.
 Orthoptera of France, (58) 257.
 osteomalacia and diet, (53) 461.
 oxydo-reductions, (60) 123.
 Pacific flathead borer, (60) U.S.D.A. 851.
 paper making for 1924, (55) 14.
 paranasal sinuses, (53) 182.
 parasites in Philippine chickens, (57) 579.
 parasites of domestic animals in Philippines, (54) 275.
 parasites of forest tree seedlings, (60) 354.
 Paratetranychus on citrus and deciduous fruit, (59) 65.
 paratyphoid infection of swine and man, (57) 672.
 parthenogenesis, cytology, (58) 159.
 parthenogenesis in Thysanoptera, (60) 61.
 pavement and subgrade studies, (60) Colo. 278.
 peach borer control, (51) N.J. 457.
 peach industry, (54) U.S.D.A. 386.
 peat, (56) U.S.D.A. 421.
 pectin preparation from citrus, (53) U.S.D.A. 14.
 pectin substances, (58) 309.
 Pestalozzia diseases, (57) 541.
 phenology, (55) 716.
 Phomopsis disease of conifers, (57) 551.
 photosynthesis, (56) 425.
 physiology, comparative, (56) 775.
 pickling, (55) 715.
 pine geometrid in Bavaria, (56) 856.
 pine tip moth, (57) 454.
 pineapple pests, (56) 459.

Bibliography of—Continued.

piroplasmoses, (57) 471.
 piroplasmosis and piroplasms, (54) 72.
 plant breeding, (58) 29.
 plant cancer or crown gall, (57) 541.
 plant chimeras, (60) 217.
 plant disease resistance, nature of, (55) 242.
 plant diseases and pests, (59) 636.
 plant diseases in Poland, (58) 749.
 plant diseases, virus, (59) 638.
 plant growth, (57) 117.
 plant nutrition, (54) 427.
 plant nutrition, relation to soil solution, (56) 723.
 plant products, (59) 108.
 plant protection, (54) 447; (56) 647; (59) 635; (60) 238.
 plants, nearly related, (58) 623.
 plants, sterile culture, (56) 816.
 plants with insecticidal properties, (51) U.S.D.A. 158.
 plasmodia of birds, infectivity for mosquitoes, (59) 356.
 pleuropneumonia, (59) 476.
 pleuropneumonia of horses, (60) 373.
 pneumonia of horses, treatment, (58) 879.
 poison production in animals, (55) 852.
 polyembryony in animals, (59) 648.
 potash from blast furnaces, (51) U.S.D.A. 122.
 potato beetle, Colorado, hibernation, (54) 556.
 potato varieties, German, (59) 629.
 potato virus diseases, (57) 51.
 potatoes, seed, source and treatment, (59) U.S.D.A. 134.
 potatoes, size of seed sets, (52) U.S.D.A. 36.
 poultry, air requirement, (55) 180.
 poultry diseases, (56) 478.
 poultry parasites, (60) 671, 672.
 price fixing 424 B.C.—1926 A.D., (56) U.S.D.A. 388.
 prices, factors affecting, (55) U.S.D.A. 186.
 protein chemistry, (53) 105.
 protein metabolism, (53) 762.
 proteins, decomposition, (53) 311.
 proteins, molecular weight, (53) 711.
 proteins, nutritive value, (52) 364.
 proteins, physicochemical studies, (54) 408, 802.
 proteins, tryptophan and cystine in, (52) 803.
 protozoa, (55) 758.
 protozoa of man, (57) 854.
 quinhydrone electrode, (56) 111; (57) 805.
 range studies, (52) U.S.D.A. 466.
 Ransom, B. H., (56) 755.
 refrigeration, household, (59) U.S.D.A. 695.
 Rhagoletis cerasi, (59) 860.
 rice weevil, embryological studies, (58) 264.

Bibliography of—Continued.

rubber chemistry, (54) 208.
 rubber diseases, (55) U.S.D.A. 150.
 rubber diseases and pests, (54) 454.
 rural economics and sociology research in Southern States, (54) U.S.D.A. 782.
 rural life, (53) U.S.D.A. 297.
 Salmonella pullorum, agglutinability, (59) 175.
 seed treatment, effect on germination and growth, (57) 219.
 septicemia of cutworms, (59) 859.
 sewage disposal on the farm, (52) 787.
 sex control, (53) 732.
 sex determination, (51) 430.
 sex ratio in animals, (57) 224.
 sieve tubes, function, (57) 23.
 silicate rocks for potassic fertilization, (51) 327.
 silkworms, (57) 261.
 soil alkalies, (52) U.S.D.A. 620.
 soil colloids and tillage, (53) 589.
 soil microbiology, (51) 812.
 soil moisture control, (56) 177.
 soil moisture regulation, factors affecting, (58) 582.
 soil publications of United States and Canada, (57) U.S.D.A. 410.
 soil reaction, (51) 116; (54) 122, 417.
 soil solution, reaction, (55) 318.
 soils, carbon-nitrogen ratio in, (56) 210.
 soils of Italy, (51) 116.
 soils, shrinkage coefficient, (54) 118.
 sorghum smuts, (53) U.S.D.A. 752.
 sorghums and broom corn, (54) U.S.D.A. 635.
 spermatogenesis, factors affecting, (55) 823.
 spiders, venom of, (55) 758.
 spray plants, stationary, (56) Calif. 283.
 sprays, (57) 345.
 squash bug parasites, (52) 157.
 stains, biological, (54) 504.
 starch formation in foliage, (58) 624.
 starch, gelatinization temperatures, (53) 410.
 Stenopelmatus fuscus, (59) 353.
 sterility of cows, (57) 182.
 streptococci, (58) 877.
 Streptococcus equi, (58) 675.
 strongylids of South African equines, (52) 85.
 sugar cane borers, (56) 858.
 sugar cane culture, (55) 232.
 sugar cane mosaic, (55) 247.
 sugar cane moth borers in British Guiana, (58) 860.
 sugar cane mottling disease, (54) 451.
 sugars and derivatives, (57) 803.
 surra transmission, (58) 678.
 sweet corn varieties for canning, (52) 140.

Bibliography of—Continued.

- symbiosis, (60) 123.
 Synchytrium, (57) 518.
 Syrphidae, (54) 756.
 tachina fly, red-tailed, (56) Miss. 558.
 take-all disease, (53) N.Y.Cornell 348.
 tariff and agriculture, (59) 682.
 taxation and the farmer, (59) U.S.D.A. 884.
 taxation, income v. property for school revenue, (60) 587.
 tea diseases, (53) 49.
 tepary beans, digestibility, (52) 664.
 termites, (52) 753.
 termites of Belgian Congo, (60) 163.
 Theileria spp., (52) 583.
 thyroid secretion, (54) 91.
 Thysanura of France, (58) 257.
 ticks of Australia, (57) 863.
 timber defects caused by insects, (58) U.S.D.A. 57.
 tissue culture, (54) 72.
 tobacco cooperative marketing, (54) U.S.D.A. 784.
 tobacco diseases, (52) U.S.D.A. 247.
 tobacco leaf carbohydrate metabolism, (57) 23.
 tobacco, wild, poisonous to livestock, (58) U.S.D.A. 874.
 transpiration, (52) 626.
 transpiration of Australian plants, (57) 320.
 trematodes of Brazil, (53) 357.
 trypanosome drug resistance, (51) 182.
 trypanosomiases, North African, (55) 273.
 tsetse flies, (51) 57; (53) 257.
 tuberculosis of Carnivora, (56) 678.
 tuberculosis of swine, (53) Nebr. 384.
 ultra-violet rays, sources, (57) 693.
 undulant fever, (58) 876.
 Ustilago spp., (57) 120, 441.
 vertebrates, (51) 656.
 virus disease transmission, (60) 243.
 viruses, filterable, (58) 274.
 vital registration in Europe, (60) 590.
 vitamin A, (51) 565.
 vitamin B, nomenclature of factors in, (59) 689.
 vitamin D, ergosterol as precursor, (60) 596.
 vitamin E, (58) 595.
 vitamins, (57) 92.
 vitamins, fat-soluble, experiment station work in, (52) U.S.D.A. 462.
 vitamins, water-soluble, (52) 805.
 wasps, mutillid, (59) 660.
 weather forecasting, long-range, (58) U.S.D.A. 412.
 weeds, relation to soil reaction, (60) 713.
 wheat in India, (59) 438.
 wheat root rots, (52) 649.
 wheat situation, world, (55) 786.
 wheat smut control, (57) 748.
 wheat smut, stinking, (51) U.S.D.A. 351.

Bibliography of—Continued.

- white scours in calves, (51) 681.
 wireworms injurious to wheat, (56) Idaho 64.
 wood, veneers, and plywood, (57) 696.
 woods of the world, (60) 444.
 wool, (58) 696.
 wool, absorption of acids by, (60) 696.
 wool bleaching with sulfur dioxide, (55) 696.
 Xanthium species, (57) 134.
 zoology, economic, (52) 495.
 zootropism in mosquitoes, (60) 561.
 Bicarbonates formation in soil, value, (51) 215.
 Bichloride of mercury, *see* Corrosive sublimate *and* Mercuric chloride.
 Bidens leucantha as weed in Cuba, (54) 239.
 Bidens pilosa, water requirement and transpiration, (57) 218.
 Big bud mite, control, (56) 57, 558.
 Bighead of horses, inheritance, (59) 276.
 Bile—
 effect on swine erysipelas bacillus, (52) 283.
 for prevention and cure of rickets, (52) 263.
 relation to fecal lipids, (57) 91.
 Binder and knotter troubles, (56) 384.
 Binder twine—
 imperfections of, effect, (55) Ind. 75.
 physical properties, (59) 378.
 tests, (53) Ind. 184.
 Binders, binding and knotting mechanism, (54) 78.
 Bindweed—
 characteristics and control, (59) Kans. 137.
 control, (56) Utah 525, Wash.Col. 525, Kans. 823; (59) Wash.Col. 32, Colo. 228; (60) Wash.Col. 814.
 damage and control, (57) Wash.Col. 633.
 eradication, (51) 836, Utah 836; (55) Idaho 825; (59) Calif. 736; (60) Oreg. 731.
 spraying experiments for, (58) 433.
 Biochemistry—
 agricultural, and food problem, (55) 201.
 applied, treatise, (54) 706.
 fundamentals, relation to human physiology, (60) 891.
 lectures on, (56) 408.
 of man and animals, 1914-1925, treatise, (55) 201.
 outlines of, (60) 188.
 principles, treatise, (52) 108.
 progress in, treatise, (56) 309.
 relation to progress in medicine, (59) 592.
 treatise, (56) 309.
 Biocoenose of spruce budworm, (56) 661.
 Bioecology, principles and methods, (53) 825; (54) 25.

- Biogine, fertilizing and disinfecting value, (51) 221.
- Biological—
control in California, commercial development, (53) 357.
methods, handbook, (51) 801, 802, 803.
- Biology—
and medicine, relation to colloid chemistry, (60) 410.
economic, for students of social science, treatise, (59) 187.
elementary, treatise, (57) 289.
experimental, at Moscow institute, (51) 524.
experimental, monographs, (51) 223.
growth, treatise, (54) 395.
laboratory manual, (57) 89.
physical, treatise, (52) 795.
treatise, (52) 551; (58) 21.
- Biomathematics, treatise, (51) 524.
- Bios—
activity, studies, (56) 110.
and vitamin B, significance of terms, (52) 110.
Beta, isolation, (59) 109.
chemically pure, isolation, (52) 110.
critical concentration, (59) 109.
multiple nature, (51) 667.
notes, (54) 504.
I and II, natural distribution, (51) 562.
review of literature, (54) 193.
Wildiers', studies, (51) 561.
- Bios-like substance, isolation, (53) 204.
- Biosterin—
crude, antirachitic property, (60) 197.
properties, (55) 593.
- Biotite as source of potash, (51) 22.
- Biozoological studies, (53) 652; (55) 854.
- Bipolaris sulsepticus in hogs with cholera, (51) N.Dak. 881.
- Birch—
borer, bronze, control, (57) 263.
disease, notes, (59) 348.
gray, seed germination, (57) 46.
leaf miner, European, notes, (55) 554.
leaf skeletonizer, biology, (57) Conn. State 857.
leaf skeletonizer, notes, (51) Conn. State 852; (52) Mich. 355.
leaf skeletonizer, paper on, (56) 458.
Nectria canker, notes, (55) 44.
river, and sweet gum, soil and moisture relations, (56) 346.
seeds, germination and vitality, (60) 827.
skeletonizer, parasite of, (58) 265.
- Bird—
houses, permanent, (54) 655.
houses, plans, (53) U.S.D.A. 856.
islands of Peru, treatise, (53) 756.
malaria, cause, (58) 678.
parasites, keys, (58) 157.
pests in Sweden, (57) 655.
- Birds—
ailments, accidents, and treatment, (53) 786.
- Birds—Continued.
and animals of Great Britain, treatise, (53) 251.
and other checks upon insects, (59) 853.
as friends and foes, treatise, (55) 851.
as hosts for chiggers, (60) 839.
attacking freshly shorn sheep, (51) 550.
attributes, (60) 158.
banded, returns from, U.S.D.A., (52) 250; (58) 753.
banding, (58) 556.
banding in America, bibliography, (60) 647.
banding in Europe, (54) 53.
banding, instructions for, (51) U.S. D.A. 452.
behavior to nun moth, (55) 854.
beneficial to agriculture, (57) 160.
bred in captivity, records, (56) 657.
British, food of, (59) 549.
British, handbook, (51) 54.
British, popular account, (53) 252.
cause of twinning and abnormal development, (51) 829.
cestode parasites of, (57) 863.
Danish, of house and garden, (53) 552.
destruction of corn borer larvae by, (53) 757.
distribution in Ecuador, (56) 657.
diving, treatise, (53) 855.
east of the Mississippi, key, (58) 450.
edible domestic, chemistry of, (57) 687.
exotic species in North America, (59) U.S.D.A. 454.
external parasites, (53) 552.
eye worm of, (60) 480.
feeding range, (58) 56.
game, critical factor in existence, (60) 555.
game, propagation, (57) U.S.D.A. 56.
hooding, effects, (59) 869.
in captivity, longevity, (60) 647.
in captivity, management, (56) 56.
in city parks, treatise, (57) 356.
in New Zealand, treatise, (55) 851.
insect control by, (51) 657.
International Committee for Protection, (57) 552.
introduction to study of, (53) 252.
life of, treatise, (54) 655.
male and female, equipotentiality of tissues, (59) 523.
marsh, of central New York, (57) 255.
marsh, of North America, life histories, (57) 357.
metabolism, effect of ultra-violet radiation, (60) 898.
migrant shore, in southern South America, (58) U.S.D.A. 556.
migration of, treatise, (55) 851.
migration, relation to light and length of day, (60) 555.
migrations, (56) 754.

Birds—Continued.

- migratory, Convention Act and federal regulations in Canada, (57) 356.
 nematodes of, (56) 56.
 nests, fauna of, (53) 552.
 new malarial parasite of, (60) 580.
 North American, migration, (53) 51.
 North American shore, life histories, (58) 753.
 notes, (55) Ark. 50.
 nutrition studies, (59) 691.
 of Alabama, (51) 549; (54) 52.
 of Alaska, laws and regulations, U.S.D.A., (57) 552; (60) 355.
 of Alaska, laws and regulations, amendments, (58) U.S.D.A. 855.
 of an Indian garden, treatise, (53) 651.
 of Argentina, Paraguay, etc., (54) 752.
 of Arkansas, (56) Ark. 356.
 of Australia, check list, (59) 549.
 of Australia, treatise, (51) 54.
 of British Columbia, (59) 549.
 of British India, (56) 551.
 of California, treatise, (51) 252.
 of Cartagena Lagoon, Porto Rico, (57) 159.
 of central Europe, treatise, (57) 357.
 of Denmark, (57) 754.
 of eastern United States, treatise, (57) 159.
 of Eurasian tundra, (59) 853.
 of Europe and North Africa, treatise, (51) 550.
 of Florida, treatise, (54) 655.
 of Germany, stomach analyses, (58) 753, 755.
 of Malay Peninsula, (60) 59.
 of Massachusetts and New England States, treatise, (54) 655; (58) 660.
 of Mount Rainier National Park, (57) 853.
 of New Mexico, treatise, (60) 647.
 of New York City region, (52) 153.
 of North and South America, catalogue, (59) 549.
 of Oklahoma, (59) 549.
 of Pacific States, (59) 549.
 of Portugal, (53) 552.
 of prey, diurnal, synopsis, treatise, (51) 657.
 of prey, list, (51) 550.
 of San Francisco Bay region, directory, (57) 357.
 of South Dakota, (59) 454.
 of southwestern United States, treatise, (54) 256.
 of the Netherlands, (56) 754.
 of the Riviera, treatise, (55) 851.
 of western Canada, (56) 754.
 of Wisconsin, (57) 255.
 of Yellowstone National Park, (54) 52.
 orchard, food of, (59) N.Y.State 353.
 origin, treatise, (55) 851.
 Palearctic, behavior toward forest insects, (55) 854; (60) 844.
 parasites in, (54) 151.

Birds—Continued.

- polyneuritic, blood analyses, (55) 192.
 practical value, treatise, (57) 653.
 protection, directory of officials for, U.S.D.A., (52) 452; (54) 256; (56) 56; (58) 252; (60) 158.
 protection in Pennsylvania, (58) 855.
 protection, international congress for study, proceedings, (56) 456.
 relation to foot-and-mouth disease, (52) 282; (60) 869.
 relation to man, treatise, (53) 756.
 relation to plant-feeding insects, (58) 661.
 relation to woodlots in New York State, (57) 159.
 reproduction in, physiology, (54) 730; (56) 67; (59) 364.
 right ovary, sexuality, (55) 526.
 rôle in agriculture, (59) 553.
 sanctuaries for, (54) 655.
 sex determination and differentiation, (53) 524.
 sex reversal in, (53) 30.
 sex-limited characters, (53) 525.
 shore, food of, (54) U.S.D.A. 52.
 social parasitism in, (60) 838.
 song, of Europe, handbook, (51) 657.
 stomach contents, (59) 554.
 treatise, (51) 452, 549; (54) 52; (58) 252.
 trematode parasites of, (59) 677.
 value, (55) N.Dak. 351.
 vesicula seminalis in, cyclical growth, (60) 531.
 vitamin B requirements, (51) 378.
 wild plants and seeds for, (56) 754.
 winter, food habits, (52) U.S.D.A. 354.
 without gonads, studies, (53) 733.
 Bird's-foot trefoil, hard-coated seed, growing experiments, (52) 831.
 Birgus latro on coconut palm, (56) 58.
 Birth ratios, twin and triplet, (58) 731.
 Birthmarks, etiology, (57) 28.
 Births, monthly rate, in Netherlands, (55) 432, 734.
 Biscuits—
 checking in, factors affecting, (60) 613.
 experimental, volume measurement, (54) 109.
 Bison—*see also* Buffalo.
 and cattle cross, paper on, (54) 265.
 Biston spp., notes, (59) 856.
 Bitumen, breaking point, determination, (55) 781.
 Bitumens, insulating, effect of moisture, (57) 777.
 Bituminous—
 mixtures, stability test, (53) U.S.D.A. 483.
 paving mixtures, researches on, (56) U.S.D.A. 480.
 Black—
 color inheritance in swine, (56) 729.
 corn weevil, notes, (53) N.C. 755.
 cutworm, *see* Cutworm, black.

Black—Continued.

disease bacilli in livers of normal sheep, (60) 871.

flies—*see also* Simuliidae.

collections and records, (53) N.H. 451.

control, (57) N.H. 62.

fly fatal to goslings, (57) 658.

fly, new species, notes, (55) N.H. 854.

fly plague in Bulgaria, (58) 755.

medic, culture experiments, (51) 36.

pigment in chickens, genes for extension of, (52) 128.

pigments, carbonaceous, monograph, (55) 114.

quarter, notes, (60) 475.

rot fungus of apple, variability, (58) 552.

rot of cruciferous crops, control, (55) 846; (57) 248.

rot, studies, (55) 847.

sand mite, notes, (53) 657.

Black scale—

control, (52) 357; (56) 555.

control in California, (54) 554.

control, value of sprays and fumigation, (54) 259.

parasite, establishment in California, (57) 168.

parasites, (53) Calif. 449; (57) Calif. 257; (59) 661, Calif. 756.

parasites and hyperparasites of, (53) 260.

significance of unit counts on, (60) 164.

unit method of orchard inspection for, (60) 455.

Black Sea regional plant protection station work, (59) 553.

Black vine weevil—

in nurseries and greenhouses in Pennsylvania, (57) 456.

studies, (60) Oreg. 753.

Blackberries—

breeding experiments, (53) Tex. 643; (55) 836; (60) West.Wash. 740.

culture, (51) U.S.D.A. 748; (53) Mo. 241; (59) 441.

culture experiments, (58) Alaska 435.

fertilizer experiments, (59) R.I. 633.

hardiness, relation to composition, (56) Mo. 644.

Himalaya, redberry disease of, cause, (54) Calif. 559.

nonvolatile acids in, (53) 803.

of New York, (55) N.Y.State 39.

pollination studies, (55) Oreg. 643; (57) Okla. 533.

preservation by freezing, (52) Calif. 15.

pruning, (51) Kans. 40; (59) Ohio 441.

thornless, origin, (59) 128.

variety tests, (55) Ga. 137; (57) N.J. 735.

wild, control, (58) 157.

Blackberry—

anthracnose, control, Ill., (58) 339; (60) 239.

blight, notes, (58) 53.

blister mite, control, (52) Calif. 60.

blue stem, notes, (53) 43.

diseases, control, (56) U.S.D.A. 54.

diseases, notes, (55) Oreg. 650.

dwarf, notes, (60) Oreg. 745.

leaf anthracnose, notes, (53) 547.

leaf miner, biology and control, (59) N.Y.State 254.

mite, control, (54) Calif. 559.

mosaic, notes, (56) 647.

orange rust, studies, (52) 451.

products, detection of spoilage in, (53) 807.

psyllid, control, (52) N.J. 752.

rust, notes, (59) Mich. 455.

rust, nuclear fusions in, (55) 453.

seeds, germination, (52) N.Y.State 46.

Blackhead—

in chicks, (52) Kans. 481; (54) 175.

in chicks, progress report, (53) 681.

in turkeys, (53) Calif. 477, Calif. 787;

(55) R.I. 275, N.Dak. 575; (59) Conn.Storrs 477.

in turkeys, abligation of ceca for, (57) Mo. 467.

in turkeys and avian coccidiosis, comparison, (55) 679.

in turkeys, control, (53) 786, U.S.D.A. 889; (56) Conn.Storrs 874; (59) N.Dak. 880; (60) 876.

in turkeys, rotation method of control, (59) R.I. 677.

in turkeys, transmission, (59) 370.

induced and natural transmission, (54) 176.

transmission experiments, (57) 773.

Blackleg—

and gas gangrene in cattle, (52) 780. diagnoses, (53) 678.

etiology, (60) 275.

immunity, duration, (59) 672.

immunization, (52) 378; (54) 574, 775; (55) 71; (57) 670, 872.

immunizing agents, tests, (53) 181.

in cattle, (60) Mont. 179.

in cattle, cause, (55) 373.

in sheep, (60) Mont. 772, 872.

in sheep, immunization, (56) Mont. 173.

latent infection in, (55) 174.

liver and kidney lesions in, (57) 182. notes, (59) 471.

of cruciferous crops, (55) 846; (57) 248.

organism, identity with that of diseases in other countries, (54) 872.

pathology, (55) 70; (56) 174.

precipitin serum, preparation, (53) 79; (57) 378.

protective inoculation, (55) 174.

serum, precipitins, agglutinins, and complement-fixing bodies in, (51) 181.

studies, Kans., (52) 481; (56) 875.

- Blackquarter in cattle and sheep, vaccination against, (58) 472.
- Blackquarter in South Africa and methods of inoculation, (57) 77.
- Blacktongue—
 of dogs and pellagra, tissue changes in, (60) 793.
 of dogs, relation to pellagra, (59) 476; (60) 793.
 yeast treatment, (53) 662.
- Bladder maple gall, notes, (59) Mich. 455.
- Blakeslea trispora in Dutch East Indies, (59) 850.
- Blandy Experimental Farm, notes, (56) 799.
- Blast furnace slag, agricultural value, Pa., (58) 316; (59) 23.
- Blast furnaces, potash from, (51) U.S.D.A. 122.
- Blasters' handbook, (55) 780.
- Blasting directions, (53) 84.
- Blatophaga—
 insects, rôle in fig production, (54) 644.
 psenes, carrier of fig soft rot fungus, (54) 453.
- Blatta orientalis—
 biology, (51) 551.
 notes, (52) 156.
- Bleaching, dyeing, printing, and finishing industries, activities, (56) 194; (57) 97.
- Bleichsand soils, formation, (53) 115.
- Blepharospira cambivora—
 effects of ultra-violet rays, (58) 422.
 notes, (56) 55; (57) 354.
 sporangia formation in, (57) 318.
 toxic action of calcium cyanamide on, (58) 340.
- Blepharospira, isolation from lupines, (58) 341.
- Blight—*see also specific hosts.*
 disinfectants, color indicators for, (52) 746.
- Blindness—
 in fowls, (53) 681.
 in mice, (55) 821; (56) 129.
- Blissus leucopterus, *see* Chinch bug.
- Blister beetle, striped—
 control, (55) 662.
 on soy beans, (58) U.S.D.A. 760.
- Blister beetles—
 control, (54) Ark. 157.
 notes, (55) Ark. 50.
 of New Jersey, (60) 556.
 on beets, (53) Utah 254.
 on soy beans, control, (55) La. 456; (56) 860.
- Blister canker—
 control, (51) Iowa 452; (53) Iowa 753; (56) Iowa 849; (58) Ill. 338.
 Illinois, on apples, control, (55) Iowa 549.
 studies, (59) Iowa 53.
- Blister mites—
 control, Utah, (52) 752; (57) 855.
- Blister mites—Continued.
 on apples, control, (59) Idaho 757; (60) Oreg. 754.
 on pear trees, life history, (60) 461.
 studies, (59) 563.
- Blitophaga opaca, hibernation, (58) 560.
- Blood—
 acid-base balance, regulation, (53) 657.
 amino acid content, (51) 557.
 amino acid determination in, Folin's method, (59) 806.
 analysis, system, (52) 614.
 analysis, treatise, (52) 113.
 as affected by insulin injection, (51) 466.
 calcium in, determination, (55) 311, 615.
 calcium in experimental scurvy, (53) 165.
 calcium in, relation to calcium ingestion, (53) 261.
 calcium of infants, seasonal variation, (58) 493.
 cell count as aid to diagnosis of hog cholera, (60) 873.
 cells in domestic animals, (57) 79.
 cells, red, in domestic animals, resistance, (55) 473.
 cells, red, irradiated, effect, (53) 568.
 chemical changes in, significance, (52) 777.
 chemical differences, related to sex, (56) 331.
 chemistry, effect of protein diets, (58) 689.
 chemistry in clinical medicine, (53) 411.
 chemistry of horses, (54) 478.
 chemistry, studies, (58) Pa. 309.
 cholesterol and lecithin in, (56) 14.
 cholesterol in, determination, (54) 10.
 coagulation, relation to secretions of blood-sucking insects, (59) 172.
 constituents of domestic animals, (58) 473; (59) 876.
 corpuscles, red, in fowls, effect of sex hormones, (56) 769.
 counts in pigeons, (57) 382.
 counts in vitamin A deficiency disease, (55) 489.
 dried, *see* Dried blood.
 enzymes in experimental scurvy, (53) 165.
 fat as sex differential in birds, (59) 364.
 fat determination in, (55) 410.
 fat or sugar of dogs, effect of insulin, (55) 91.
 fibrin, effect of carbon tetrachloride intoxication, (55) 677.
 groups, linkage relations of, (58) 426.
 groups, undescribed anomaly in, (56) 475.
 hemoglobin in, standard method of recording, (57) 871.
 in dietary deficiencies, bactericidal action, (53) 367.

Blood—Continued.

- iron determination in, (55) 613.
- lipids, effect of single foods, (58) 790.
- lipoid phosphorus determination in, (53) 12.
- meal, vitamin in, (53) 571.
- nitrogen determination in, microcolorimetric, (56) 504.
- of calf and cow, complement in, (53) Mo. 479.
- of chickens, calcium in, variation, (58) 67.
- of children, amino acid nitrogen in, (51) 265.
- of children, amino acids in, (59) 891.
- of children, effect of irradiated milk, (56) 593.
- of cocks, testicular hormone in, (58) 128.
- of cows in Switzerland and Netherlands, (59) 777.
- of goats, normal and castrated, (55) 578.
- of horses, (53) 586; (58) 677.
- of insects, pH value, (53) 856.
- of insects, studies, (51) 54.
- of men living in Tropics, analyses, (55) 192.
- of portal vein, sampling method, (56) 775.
- of rats, effect of fasting and lack of vitamin B, (51) 70.
- of scorbutic guinea pigs, studies, (59) 597.
- pH determination in, (55) 615.
- phosphates, determination, (53) 12.
- phosphates, relation to carbohydrate metabolism, (53) 763.
- phosphorus determination in, (55) 410, 614.
- phosphorus distribution in, (55) 492.
- phosphorus in, normal variations, (55) 894.
- platelet count, effect of vitamin A deficiency, (51) 768; (55) 294.
- platelets, formation, effect of light, (51) 865.
- platelets in rats, (52) 261.
- pressure and pulse rate in rabbits, (58) 476.
- pressure, high, dietary treatment, (59) 392, 393.
- pressure in fowls, (54) 175.
- pressure of dogs, (53) 482.
- pressure of laboratory animals, method for taking, (58) 476.
- pressure under deficient diets, (51) 667.
- regeneration in dogs, effect of ash of liver, (59) 793.
- regeneration in severe anemia, (53) 866; (58) 496; (59) 793; (60) 695.
- regeneration studies, (56) 494; (59) 392.
- samples from carriers of white diarrhea, collecting, (51) N.J. 586.

Blood—Continued.

- sera, pH determination methods, (60) 312.
- serum, calcium determination in, (56) 313, 896.
- serum, H-ion concentration, determination, (54) 205.
- serum, inorganic bone-forming elements in, (53) 61.
- serum of cow, bacteriolytic action for *Bacillus coli*, (52) Mo. 679.
- serum of rachitic chicks, (53) 671.
- serum, sodium determination in, (53) 12, 206.
- stains, removal from fabrics, (54) 494.
- studies, (57) 77.
- sucking thrips, (58) 454.
- sugar—
 - after insulin injection, (51) 502; (52) 265.
 - and sugar tolerance in women, variations, (54) 592.
 - changes in avian polyneuritis, (58) 89.
 - concentration during insulin action, (51) 271.
 - concentration, effect of food ingestion, (54) 192.
 - curve, effect of food on, (52) 64.
 - determination, (51) 507; (52) 615, 806; (54) 10, 806; (55) 613, 805; (56) 112, 505.
 - determinations, reduction tables for, (53) 13.
 - effect of different substances, (51) 365.
 - in parasitized chickens, (58) 481.
 - level, effect of vitamin B deficiency, (55) 489.
 - nature of, (51) 165.
 - of animals, studies, (56) 225.
 - of cow in milk fever, (57) 874; (58) 577.
 - relation to urine sugar, (52) 860.
 - time curves after dihydroxyacetone ingestion, (54) 595.
 - variations in nature of, (52) 764.
- transfusion problem, (56) 876.
- typing, new clinical method, (52) 580.
- urea determination in, (54) 10; (60) Pa. 313.
- uric acid in, cyclic variations, (56) 193.
- Blossom beetle, notes, (58) 158.
- Blossom blight in Pacific Northwest orchards, (57) 846.
- Blossom worm, life history notes, (59) N.J. 351.
- Blossom-end rot, notes, (58) 442.
- Blouses, fitting, (57) U.S.D.A. 298.
- Blowflies—
 - and parasites, (53) 160.
 - distribution in South Africa, (58) 163.
 - in Great Britain, seasonal frequency, (58) 862.
 - in South Africa, distribution, (60) 562.

- Blowfly—
 baits and repellents, tests, (60) U.S.D.A. 459.
 repellents, (60) 458.
 thermal death point, effect of humidity, (60) 249.
 traps, construction and operation, (55) 762.
- Blueberries—
 chromosomes in, (58) 423.
 cultivated, insects affecting, (57) N.J. 758.
 culture, (52) N.J. 237; (57) N.J. 536; (59) Fla. 531.
 culture experiments, (55) Miss. 235; (60) Ala. 139.
 culture in Washington, (60) Wash.Col. 825.
 cutworm affecting, (57) Me. 559.
 galls on stems of, cause, (58) 62.
 hardiness, (60) 234.
 insects affecting, (59) N.J. 351.
 insects affecting in Indiana, (60) 60.
 nonvolatile acids of, (58) 711.
 propagation, (56) Wash.Col. 534; (59) Fla. 531; (60) Fla. 140.
 propagation by root cuttings, (58) Miss. 37.
 wild, tests, (56) Miss. 739.
- Blueberry—
 leaf beetle and allied species, (52) Me. 660.
 seeds, germination, (57) Can. 236.
 spittle bug egg, (53) Conn.State 450.
 tip worm notes, (54) 756.
- Bluebottle fly, parasitism of, (53) 160.
- Bluegrass—
 bulbous, studies, (59) 524.
 establishing in Missouri, (57) Mo. 528.
 farming, (54) Ky. 284.
 Kentucky, metals in, (56) 804.
 Kentucky, pastures, experiments, (54) Pa. 17.
 Kentucky, pastures, fertilizer experiments, (60) Pa. 327.
 Kentucky, yield as pasturage and as hay, (55) 827.
 leaf spot, notes, (52) 448; (57) 347.
 pastures—
 improvement with sweet clover, (59) 34; (60) 436.
 injury from burning off, (56) 433.
 maintenance, (59) Wis. 33.
 pests of, (56) Ky. 57.
 top-dressing for, (57) Idaho 727.
 polyembryony in, (57) 618.
- Bluetop grass, haymaking period, (60) Alaska 728.
- Boarnia sp., notes, (53) 558.
- Boars, selection, care, and management, (52) 874.
- Bobwhite quail, costs of production, (54) 550.
- Bodo phlebotomi, notes, (55) 856.
- Body—
 build and its inheritance, (51) 30.
 fluids, colloidal behavior, (54) 6.
- Body—Continued.
 fluids, iodine in, determination, (56) 312.
 parts, genetic independence in size, (51) 736.
 size, relation to bone length, (58) 563.
 surface area of man, measurement, (60) 291.
 surface area, tables for computing, (59) 188.
 temperatures, variations in, (53) 884.
- Boehmeria nivea, bast fibers of, (56) 697.
- Bog hay, studies, (57) 428.
- Bog lands of Germany, (60) 513.
- Bog plants, subterranean organs, (51) 127.
- Bog soil, microbiological activities in, (59) N.C. 721.
- Bogeria buccata as parasite of house mice, (58) 665.
- Bogs in New Jersey, minimum temperature equation, (51) U.S.D.A. 617.
- Bogs, sphagnum, of North Pacific coast, (55) 419.
- Boiler construction code of A.S.M.E., (53) 187.
- Boilers, furnaces, and boiler accessories, (51) 188.
- Boilers, small domestic, heat transference and combustion tests, (54) 95.
- Boletus granulatus relation to Scotch pine, (60) 322.
- * Boll weevil—
 American cotton, menace to India, (52) 154.
 and weather in Cotton Belt, (60) U.S.D.A. 357.
 biological studies, (54) S.C. 662.
 breeding from infested cotton squares, (56) 158.
 control, (51) Ga. 162, 259, 458, 662, Tex. 764; (53) Miss. 231, S.C. 759; (54) Ga.Coastal Plain 158, S.C. 637, 757; (55) Fla. 560, Miss. 560; (56) Ga.Coastal Plain 558; (57) La. 555, Okla. 556; (59) 197, 651, Ala. 652; (60) Ala. 159.
 by airplane, (53) 363; (55) 258; (59) Tex. 759.
 in South Carolina, (52) 559.
 methods, (56) Miss. 135.
 progress in, (55) 56, Ala. 857.
 recommendations for, (56) 158.
 tests, (51) 662; (60) Ga.Coastal Plain 167.
 tests of insecticides, (56) 158.
- dispersal, (59) 63.
 dusting with Root Saddle Gun, (51) La. 858.
 early summer dispersion, (55) Ark. 55.
 56.
 effect of climatic conditions, (53) La. 553.
 fumigation of cotton for, (59) 651.
 habits and control, (51) 258.
 hibernation studies, (55) La. 455; (59) Ala. 652.

- Boll weevil**—Continued.
 in cotton, action of hydrocyanic acid gas on, (55) 663, 764.
 in Oklahoma, (55) Okla. 158.
 in Virginia, (51) 157.
 infestation, relation to leaf color and size, (58) Ark. 344; (60) 166.
 ingestion of poison by, (59) Tex. 759.
 injury, relation to age of bolls, (56) 158.
 life history and control, (51) Ga. 59, 554.
 life history and habits, (56) S.C. 558
 life history notes, (51) N.C. 854.
 losses, estimating, (51) 356.
 Mexican, in Oklahoma, history of distribution, (60) 655.
 new preparation for, (52) S.C. 553.
 notes, (53) Okla. 155, N.C. 755; (55) 555; (56) S.C. 552; (60) Ark. 841.
 oviposition, relation to food, (59) 63.
 poison ingestion studies, (55) Tex. 353; (57) Tex. 162; (58) Fla. 760.
 poisoning, (52) S.C. 857; (60) Fla. 167.
 poisoning, progress in, (53) Miss. 56.
 poisons, preparation, (59) 63, 64.
 problem in Arizona, (56) 259.
 senses of, (56) 558.
 situation in Arizona, (52) 559.
 studies, (52) S.C. 559; (56) Ark. 355, Fla. 861; (57) Ga. 257, 860; (58) S.C. 665; (60) S.C. 755.
Thurberia, in Arizona, (55) 858.
 winter survival in South Carolina, (57) 862.
 work of Chemical Warfare Service on, (56) 158.
- Boll wound parasite**, notes, (55) 346.
- Bollworm**—
 affecting oranges, (54) 553.
 control, (55) N.Mex. 456.
 eggs, *Triphleps* attacking, (56) 555.
 in Egypt, loss in cotton from, (51) 158.
 new cotton, notes, (52) 154.
 new, from Peru, (54) 755.
 notes, (51) Ohio 453; (53) N.Mex. 155, 559; (56) S.C. 553; (58) S.C. 662.
 of South American cotton, (60) 652.
 on tomato, (51) 763.
 pink—
 control, (51) 762.
 control in the Sudan, (53) 158.
 entry from Mexico, (51) 457.
 extent of damage to cotton in Montserrat, (54) 156.
 in Australia, races of, (54) 457.
 in Australia, summary, (55) 257.
 in Barbados, (54) 553.
 in cotton seed, control, (53) 55.
 in Egypt, control, (57) 657.
 in Egypt, statistics, (51) 661.
 in French West Africa, (56) 756.
 in Haiti, (58) 663.
- Bollworm**—Continued.
 pink—continued.
 in Mexico, (55) U.S.D.A. 154.
 in Mexico, biology, (56) 661.
 in Porto Rico, (53) 156.
 in Queensland, (60) 560.
 loss from, (51) 762.
 notes, (51) 856; (56) 553; (58) 57; (59) 652.
 on cotton in Tanganyika, (55) 762.
 parasite of, (58) 666.
 parasites in Hawaii, (58) U.S.D.A. 457.
 present status, (59) 249.
 seasonal variation in Egypt, (55) 257.
 steps taken to prevent establishment, (55) U.S.D.A. 257.
 studies, (59) 554.
 summary, (53) 51.
 survival in buried seed in Egypt, (54) 56.
 studies, (59) 554.
Thurberia, life history and habits, (55) Ariz. 357.
- Bollworms**—
 control, (59) 651.
 cotton, parasites of, (52) 154.
 damage caused by in Nigeria, (55) 759.
 in French West Africa, (53) 361.
 in green bolls, (51) 762.
 in South Africa, (57) 61.
 in South Australia, summary, (59) 251.
Bombus spp., studies, (52) Calif. 59.
- Bombyliidae**—
 of India, catalogue, (51) 54.
 of the Ethiopian region, (52) 660.
- Bombyx mori**, *see* Silkworm.
- Bonbons**, recipes, (56) 590.
- Bone**—
 chewing by cattle, (51) Mont. 374.
 chewing by range cattle, prevention, (59) Tex. 776.
 composition, (56) 14; (60) 310, 312, 388.
 development in infants, relation to calcium and phosphorus retention ratios, (59) 791.
 development in pigs, effect of diet, (55) Ohio 666.
 development in pigs, effect of sunlight, (55) 864.
 flour, steamed, feeding value, (56) 872.
 formation, effect of fluorine, (56) Ark. 363.
 ground, analyses, N.J., (51) 222; (53) 220; (55) 223; (57) 214.
 ground, inspection and analyses, (59) N.J. 23.
 growth, biochemical study, (55) 491.
 growth, systemic and sex determinants, (55) 461.
 inorganic composition, (56) 191.
 length, relation to body size, (58) 563.

Bone—Continued.

- meal, effect on growth of heifers, (56) 73.
- meal feeding, effects on hens, (56) Can. 468.
- meal, feeding value, (56) Mont. 164.
- meal, feeding value for range cattle, (56) Tex. 263.
- meal, fertilizing value, (56) 509.
- products and manures, treatise, (53) 724.

Bones—

- as affected by diet, (51) 265.
 - calcification in rats, effect of cod-liver oil, (58) Pa. 391.
 - calcification in rats, effect of ultra-violet light, (58) Pa. 391.
 - green, for laying hens, (51) Can. 276.
 - of cattle, porosity, (60) 464.
 - of fowl, effect of inbreeding, (60) Conn.Storrs 530.
 - united fractures of, studies, (53) 61.
- Boneset leaf beetle, notes, (52) Me. 661.
- Book beetle, Mexican, in Boston, (59) 561; (60) 166.
- Book lice, control, (59) Mich. 250.

Books on—

- Accipitres, synopsis, (51) 657.
- agrarian revolution in Rumania, (52) 94.

agricultural—

- analysis, principles and practice, (55) 110.
 - analysis, quantitative, (57) 504.
 - business organization, (53) 591.
 - college education, (52) 898.
 - commerce, (51) 299.
 - cooperation, (52) 194; (60) 889.
 - cooperation in British Empire, (57) 386.
 - credit, (51) 689.
 - credit, principles, (58) 685.
 - economics, (51) 196; (53) 694; (55) 888; (60) 490, 884.
 - education, (58) 687.
 - education, vocational, efficiency in, (60) 685.
 - education, vocational, teaching, (52) 494.
 - geology, (60) 315.
 - industries, substances important in (55) 501.
 - journalism, (56) 390; (58) 289.
 - machinery, (51) 389; (53) 84.
 - mechanics, (52) 598.
 - parasitology, (58) 661.
 - resources and living conditions in Texas, (51) 297.
 - situation, (53) 795.
 - surveying, (56) 187.
 - vocations, teaching, (57) 887.
- agriculture, (51) 337, 598, 693; (53) 792; (57) 725.
- American and European market, (52) 193.
- and rural life in England, (52) 789.

Books on—Continued.

- agriculture—continued.
 - and the guild system, (52) 94.
 - and weather, (55) 715.
 - British, (52) 96, 193; (60) 686.
 - effect of industrial prosperity, (58) 78.
 - elements of, (55) 888.
 - 1471-1840, editorial, (55) 606.
 - in Europe and America, (53) 397.
 - in India, (52) 193.
 - principles and aims, (54) 181.
 - teaching, (52) 298.
 - tropical, (57) 89.
- agronomy, (54) 827.
- alcohol, industrial, (51) 210.
- alfalfa, (60) 533.
- alfalfa culture in United States and Canada, (55) 637.
- alkaloids, plant, (52) 309.
- amphibians and reptiles, North American, (51) 452.
- anatomy, comparative, of domestic animals, (57) 376.
- animal—
 - and plant life, (58) 659.
 - breeding, (53) 267; (54) 25; (56) 760; (57) 660; (58) 762; (59) 462.
 - diseases, (54) 573; (55) 573; (58) 771.
 - diseases, infectious, (53) 884.
 - diseases, tropical, (54) 153.
 - ecology, (55) 657; (58) 667.
 - husbandry, (52) 794; (55) 56; (58) 688.
 - nutrition, (52) 267; (58) 562.
 - nutrition and veterinary dietetics, (58) 166.
 - parasites and human disease, (54) 855.
 - parasites and parasitic diseases, (52) 881.
 - pests, (53) 357, 855.
 - pests of economic plants, (56) 355; (59) 549.
 - products of commercial importance, (52) 794.
- animals—
 - converters of matter and energy, (54) 262.
 - distant orientation and place-recognition, (60) 647.
 - domestic, comparative anatomy, (54) 870.
 - domestic, pathological anatomy, (53) 277.
 - domestic, pathology and therapy, (51) 678.
 - first aid to, (52) 480.
 - harmful and useful, (59) 187.
 - anorexia in children, (59) 189.
 - anthelmintics and uses, (60) 574.
 - ants, (53) 861; (57) 457, 562.
 - ants, bees, and wasps, (52) 854; (56) 862.
 - ants, social world of, (60) 66.

Books on—Continued.

- asparagus, culture, (52) 342.
 atoms, (52) 201.
 bacteria, physiology and biochemistry, (60) 176.
 bacteriology, (57) 318; (58) 273; (59) 76, 273, 876; (60) 489.
 and immunology, (53) 783; (59) 577.
 blood work, and animal parasitology, (59) 169.
 dairy, (60) 864.
 fermentation, (57) 819.
 of food, (56) 490.
 systematic, (54) 524.
 veterinary, (57) 669.
 bacteriophage, behavior, (57) 769.
 bacteriophagy, (56) 518.
 baking, (51) 261; (55) 291.
 bananas, (58) 439; (59) 442.
 barley, (56) 337.
 bats, (54) 752.
 beans, (51) 535; (58) 32.
 beekeeping, (52) 859; (53) 56; (54) 158, 261, 662; (56) 662, 760; (57) 862; (60) 66, N.J. 66, 655.
 beekeeping in Brazil, (56) 558.
 bees, (60) 65.
 anatomy and physiology, (53) 655.
 and wasps, life of, (53) 56.
 ants, and wasps, (52) 854; (56) 862.
 care and product, (56) 862.
 infectious diseases of, (57) 457.
 law concerning, (53) 560.
 life of, (54) 261.
 wasps, and ants, (52) 854; (56) 862.
 biochemistry, (52) 108; (56) 309; (60) 188.
 biochemistry, applied, (54) 706.
 biochemistry of man and animals, 1914-1925, (55) 201.
 biology, (58) 21.
 elementary, (57) 289.
 growth of, (54) 395.
 physical, (52) 795.
 principles, (52) 551.
 biomathematics, (51) 524.
 bird islands of Peru, (53) 756.
 birds, (51) 452, 549; (54) 52, 655; (58) 252.
 as friends and foes, (55) 851.
 British, (51) 54.
 diving, (53) 855.
 in city parks, (57) 356.
 in New Zealand, (55) 851.
 migration, (55) 851.
 of an Indian garden, (53) 651.
 of Australia, (51) 54.
 of California, (51) 252.
 of central Europe, (57) 357.
 of eastern United States, (57) 159.
 of Europe and North Africa, (51) 550.
 of Florida, (54) 655.

Books on—Continued.

- birds—continued.
 of Great Britain, (53) 251.
 of Massachusetts, (54) 655.
 of Massachusetts and New England States, (58) 660.
 of New Mexico, (60) 647.
 of southwestern United States, (54) 256.
 of the Riviera, (55) 851.
 origin, (55) 851.
 practical value, (57) 653.
 relation to man, (53) 756.
 song, of Europe, (51) 657.
 blood analysis, (52) 113.
 bone products and manures, (53) 724.
 botanical terms, (56) 722.
 botany, (51) 693; (52) 397; (54) 123; (55) 322; (57) 116, 513; (60) 388, 686.
 botanists' aid and lexicon, (59) 818.
 descriptive systematic, methods, (56) 812.
 laboratory exercises, (59) 817.
 systematic, (59) 426.
 winter, (57) 22.
 boxwood gardens, old and new, (54) 244.
 bread making, (54) 86.
 bridges and buildings, foundations of, (55) 76.
 bridges, reinforced concrete, (53) 683.
 building construction, mechanics of, (53) 684.
 building construction, theory of, (59) 376.
 building costs, estimating, (51) 389.
 buildings, framed, theory and practice, (58) 375.
 bulbs, culture, (53) 40; (57) 439.
 bulbs, popular information, (55) 442.
 bulbs, spring flowering, (59) 532.
 bulldogs, French, origin, (60) 363.
 business forecasting, (52) 892.
 butter and cheese making, (53) 276.
 butter and dairy products, (55) 471.
 butter industry, (57) 769.
 butter production, (55) 472.
 butterflies, (53) 558.
 butterflies British, (53) 255.
 cacao, (55) 744.
 calorimeter, modern, (60) 111.
 canaries, (52) 552.
 canaries, Yorkshire, (53) 855.
 canning, (53) 716; (54) 87.
 canning and preserving fruits and vegetables, (57) 890.
 carbohydrate metabolism and insulin, (55) 694; (60) 687.
 carbohydrates and glucosides, (52) 108.
 carbohydrates, polymeric, chemistry of, (55) 502.
 carbon compounds, pharmacology, (53) 309.
 carbon dioxide cycle in nature, (52) 320.

Books on—Continued.

- carnations, culture, outdoor and indoor, (56) 837.
 carpentry and contracting, (51) 482.
 casein, industrial applications, (57) 610.
 catalysis, industrial, (59) 713.
 cats, races, breeding, and diseases, (56) 769.
 cattle—
 Aberdeen-Angus, history, (60) 565.
 beef, feeding and management in Corn Belt, (54) 859.
 breeding, (57) 175.
 dairy, (51) 577; (55) 66.
 dairy, feeding and management, (59) 666.
 industry and tariff, (56) 486.
 judging, (52) 174.
 production, (53) 67.
 cells, development and heredity, (53) 829.
 cellulose and wood, chemistry of, (56) 107.
 cellulose chemistry, (54) 7.
 cellulose microbiology, (59) 202.
 cement, Portland, prices, (53) 590.
 cements, limes, and plasters, (60) 278.
 cereal chemistry, (52) 609.
 cereals, (57) 825.
 cereals, culture, (51) 34.
 cheese and butter making, (53) 276.
 cheese industry, (58) 69, 572; (60) 664.
 cheese making, (52) 279; (54) 869.
 chemical—
 analysis, (52) 806; (53) 503; (56) 110; (60) 112.
 analysis, inorganic quantitative, (55) 205.
 analysis, standard methods, (54) 505.
 analysis, technical methods, (51) 503; (57) 503.
 synonyms and trade names, (52) 108; (56) 309.
 synthesis, (52) 108.
 terms, (52) 409.
 terms, German-English-French-Spanish, (54) 609.
 chemistry, (51) 501, 709; (52) 609; (53) 801; (55) 407; (60) 10.
 and the home, (57) 111.
 applied, (55) 188, 709.
 biological, (53) 711; (60) 610.
 colloid, (52) 609.
 colloid and capillary, (56) 201.
 food, (56) 201.
 for agricultural students, (56) 588.
 in agriculture, (55) 501.
 in America, (56) 309.
 in industry, (52) 309; (54) 201.
 in modern life, (54) 407.
 in service of man, (54) 706.
 industrial, (54) 407; (55) 501.

Books on—Continued.

- chemistry—continued.
 industrial organic, (57) 501.
 inorganic, (57) 201.
 inorganic and physical, recent advances in, (55) 502.
 of familiar things, (57) 801.
 of food and nutrition, (55) 691.
 of foodstuffs, (59) 108.
 organic, (56) 309; (57) 201; (59) 201; (60) 201.
 organic, methods, (54) 407; (55) 201.
 physical, (54) 6, 407, 706.
 physiological, (54) 692; (55) 306, 801; (57) 291.
 relation to food, (52) 258.
 surface, introduction, (56) 501.
 theoretical, (59) 201.
 chicory culture, (54) 537.
 children, (51) 494.
 children, feeding and care, (54) 693.
 children, health of, (54) 391.
 children, loss of appetite, prevention and treatment, (59) 189.
 chocolate manufacture, (54) 507.
 Christian ideals, application in rural communities, (54) 289.
 chromosomes, sex, (60) 325.
 chrysanthemums, (58) 742.
 church, rural, (53) 797.
 cities, American, suburbs of, (53) 797.
 citrus diseases and control, (56) 751.
 citrus fruits, culture, (55) 744.
 citrus insects, control, (59) 855.
 city planning, (55) 884.
 clay, occurrence, properties, and uses, (58) 881.
 clays, chemistry and physics, (52) 811.
 climate of United States, (54) 508.
 climatic laws, (52) 808.
 clothing and textiles, (56) 790.
 clothing, choice, care, and cost, (56) 397.
 clothing construction, (58) 395.
 clothing for women, (53) 398.
 clothing selection, principles, (54) 389.
 clover, white, (52) 832.
 Colchicum culture, (52) 344.
 colloid—
 and capillary chemistry, (56) 201.
 chemistry, (51) 407; (52) 609; (54) 407; (55) 407, 709; (56) 501; (58) 9, 801; (60) 201.
 chemistry foundations, (53) 802.
 chemistry, new conceptions, (56) 501.
 chemistry, present status, (57) 501.
 chemistry, theoretical and applied, (60) 410.
 colloidal behavior, theory and application, (54) 6.
 colloidal systems, effect of ions in, (54) 108.
 colloids, (57) 501.

Books on—Continued.

- colloids, chemistry and applications, (54) 6.
- colloids, physics and chemistry of, (55) 10.
- color, chemical constitution, (52) 201.
- color, science of, (52) 201; (59) 297.
- colors and varnishes, (53) 891.
- commerce and industry, (59) 789.
- community organization, (56) 187.
- concrete, (51) 388; (52) 585; (60) 779.
 - designs, (56) 780.
 - impervious, (51) 587.
 - plain and reinforced, (56) 882.
 - reinforced, construction, (58) 582.
 - structures, (51) 187; (58) 375.
 - structures, formwork for, design and construction, (58) 482.
- conifers, (52) 841.
- conifers, junipers, and yew, (57) 143.
- cooking, (54) 86; (60) 89.
- cooking and serving, art of, (56) 792.
- cooking principles, (55) 693.
- cooking recipes, (55) 291.
- cooperation in agriculture, (60) 889.
- cooperative movement in Russia, (52) 95.
- coprology, microscopic, (59) 550.
- corn and corn growing, (57) 89; (60) 433.
- costume design, history, (56) 597.
- costumes, folk, (55) 95.
- costumes of eastern Europe, (55) 94.
- cotton, (56) 387; (57) 129, 227; (58) 695.
 - and the cotton market, (51) 192; (58) 286.
 - botany and culture, (59) 434.
 - cellulose, chemistry and technology, (53) 412.
 - crops, world's, (52) 194.
 - futures, (51) 892.
 - in Australia, (52) 634.
 - production, (56) 36.
- country life and school, (52) 795.
- country planning, (51) 690.
- coverlets, hand-woven, (56) 397.
- cows, dairy, (57) 766.
- credit system, Federal intermediate, (57) 481.
- Crocus culture, (52) 344.
- crop production, (54) 290.
- crop production and soil management, (52) 696.
- crop production in British Isles, (54) 529.
- crop production in India, (53) 335.
- crops, botany of, (54) 722.
- crops, nutrition, (60) 119.
- crops, production, (60) 221.
- crops, root development, (57) 415.
- crops, tropical, (60) 46.
- cucumbers, (53) 640.
- cytology, (51) 631; (55) 730.
- dahlias, (53) 242; (57) 439; (58) 645; (60) 641.

Books on—Continued.

- dahlias, history, development, and culture, (58) 645.
- dairy—
 - analysis, (53) 808.
 - bacteriology, (55) 676.
 - chemistry, (56) 310.
 - engineering, (53) 791.
 - farming, (56) 870.
 - practices and machinery, (54) 169.
 - produce, grading, (55) 69.
 - products, technical control, (55) 268.
 - science, (56) 671; (59) 165.
 - tests, (56) 274.
- dairying, (51) 380; (52) 174; (55) 468; (56) 769.
- dairying, physics of, (59) 574.
- dairying, science of, (60) 188.
- diabetes, (51) 770; (54) 791; (57) 194, 296.
- diabetes, new method in, (53) 266.
- diet and flour, (59) 889.
- diet, normal, (58) 388.
- diet in health and disease, (55) 590; (56) 895.
- diet, normal, (54) 889.
- dietetics and dietotherapy, (58) 292.
- dietetics for nurses, (53) 456.
- diseases, human, and animal parasites, (54) 855.
- diseases, insect-borne, (57) 359.
- diseases of horses and cattle, (57) 871.
- disinfection, practice of, (58) 673.
- dispensatory of the United States, (56) 275.
- distillation, (54) 612.
- dogs, (51) 384; (52) 886; (58) 569.
- dogs, police, (52) 674.
- dogs, training, (56) 279.
- drainage and flood control engineering, (55) 376.
- drug plants, (53) 225.
- drugs, (51) 280, 281.
- drugs, chemistry of, (55) 110.
- drying by air and steam, (52) 785.
- ducks, (57) 370.
- ducks, breeds, (54) 866.
- ducks, raising, (59) 465.
- dust explosions, (55) 480.
- dyeing, chemistry of, (56) 496.
- dyes and dyeing, (59) 498.
- ecology, plant, (54) 222.
- economic—
 - development in modern Europe, (55) 786.
 - history, American, (53) 393.
 - history, general, (59) 382.
 - history of Tudor period in England, (53) 93.
 - life, American, and means of improvement, (55) 486.
 - life, needs of, (52) 794.
 - progress in United States, (56) 187.

Books on—Continued.

- economic—continued.
resources of the Pacific North-west, (51) 688.
economics, (51) 598; (52) 795; (54) 86.
economics, principles and problems, (55) 289.
education, adult, in Scandinavia and America, (53) 94.
egg production, (55) 869.
elasticity, applied, (53) 386.
electric development as aid to agriculture, (56) 580.
electric heating, (60) 280.
electric motors and control, (52) 586.
electric power transmission, (57) 777.
electricity, encyclopedia of, (53) 686.
electricity in agriculture, (58) 681; (60) 280.
electricity, industrial, (52) 688.
embryology, experimental, (59) 462.
endocrine diseases, (53) 266.
engineering, (51) 385, 482.
chemical, (58) 201.
construction materials, (51) 388.
heat-power, (56) 780.
highway, (53) 589.
problems, (60) 673.
specifications and quantities, (57) 80.
time-saving suggestions, (54) 75.
water-power, (55) 878.
entomology, (53) 252, 651; (60) 388.
agricultural, and parasitology, (52) 552.
applied, (54) 752.
elementary, (56) 553.
forest, (54) 552; (57) 854.
medical and veterinary, (51) 356.
theory and practice, (59) 550.
environment, organic adaptation to, (53) 27.
enzyme action, (52) 409; (54) 504.
erythrocytes and action of hemolysins, (53) 278.
eugenics and genetics, (52) 822.
everyday life, science of, (53) 693.
evolution, (53) 225, 328.
evolution and genetics, (55) 730.
evolution, genetics, and eugenics, (55) 223.
evolution, heredity, and variation, (54) 628.
explosives, use, (54) 681; (55) 780.
fabrics, (55) 94.
fabrics and yarns, testing, (56) 496.
fabrics, how to know them, (54) 697; (57) 97.
fabrics, microscopic study, (54) 697.
family life on moderate income, (57) 97.
farm—
accounting, (53) 95; (56) 489; (59) 883.
and farmer, (56) 891.
animals, feeding, (52) 866.

Books on—Continued.

- farm—continued.
buildings, (59) 883.
calculations and accounts, (55) 691.
economics, (52) 197; (55) 289.
economics, management and distribution, (60) 686.
income and farm life, (57) 886.
management, (51) 488; (54) 879.
measurements, (55) 691.
mechanics, (60) 686.
mechanics, teaching, (58) 289.
organization and management, (59) 187.
practice, elements, (60) 388.
projects and problems, (57) 290.
shop work, (53) 186.
shop work, teaching, (58) 289.
woman, American, (53) 297.
zone, (53) 797.
farmer's church, (53) 797.
farmers, laws for, (51) 297.
farmers' movements in Canada, (53) 895.
farmer's raw material, (51) 510.
farmer's repair jobs, (56) 283.
farming, (51) 291; (53) 898; (59) 187.
farming as business, (52) 197.
farming in England, (54) 687; (57) 885.
fats, (56) 310.
fats and oils, technology, (57) 309.
fats and oils, vegetable, (54) 7.
fats and waxes, industrial chemistry, (58) 201.
fats, natural and synthetic, (54) 7.
Federal aid, (59) 482.
feeding of farm animals, (55) 56.
feeding stuffs, (60) 852.
fermentation bacteriology, (57) 819.
fermentation industries, (52) 315.
fermentations, industrial, (55) 113.
ferns, (57) 22.
ferrets and ferreting, (58) 556.
fertilizer industry, (52) 123.
fertilizer instruction, (52) 816.
fertilizers, (51) 120, 216; (53) 819; (56) 720; (57) 317; (59) 22, 317.
fertilizers and soil, (55) 16.
fertilizers, selection and use, (52) 118.
field crops, (60) 635.
field crops, southern, (52) 794.
flax, (55) 231.
flora of South Africa, (56) 837.
floriculture, (55) 441.
flour and diet, (59) 889.
flour milling, (54) 11; (59) 713.
flower gardens, (51) N.J. 647.
flower gardens, planning and planting, (56) 646.
flowers, culture, (51) 242, 346; (57) 142; (60) 441.
flowers for herbaceous border, (59) 838.

Books on—Continued.

- flowers, mountain, (52) 344.
- flowers of South Africa, (55) 442.
- fluids, mechanical properties, (51) 885.
- food—
 - analysis, (52) 113.
 - and dietetics, (53) 456.
 - and health, (56) 791.
 - and nutrition, (59) 487.
 - and the family, (55) 188.
 - buying and markets, (53) 899.
 - chemistry, (56) 201.
 - consumption and preparation, (54) 389.
 - economy, (52) 258.
 - from grains, (56) 490.
 - handling, (52) 459.
 - health, vitamins, (60) 891.
 - human, contributions of science toward, (60) 591.
 - industries, (59) 889.
 - industry of the Nation, (57) 87.
 - infections and intoxications, (58) 771.
 - nutrition, and health, (55) 487.
 - plants, (60) 124.
 - preservation, (53) 208; (54) 87.
 - products, (52) 258.
 - products, source, chemistry, and use, (60) 89.
 - study for high schools, (55) 888.
 - supply, (51) 291.
 - supply of New England, (53) 394.
 - terms, (51) 60.
- foods—
 - analysis, (55) 111.
 - and condiments, (55) 692.
 - and condiments, chemical technology, (57) 787.
 - and cookery, (56) 491, 690.
 - and home making, (57) 290.
- forage plants, culture, (52) 334.
- forage plants, native American, (52) 334.
- forest engineering and extraction, (58) 880.
- forest finance, (55) 343.
- forest insects, (51) 253.
- forest mensuration, (53) 244.
- forest zoology, (53) 651.
- forestry, (51) 842; (52) 196, 345; (53) 42; (54) 645, 839; (55) 40; (56) 538; (57) 45.
- forestry in Denmark, (56) 838.
- forestry in Ontario, (59) 534.
- forests of Belgium, (57) 836.
- forests of tropical America, (52) 345.
- forests, protection against animals, (60) 647.
- formaldehyde, (59) 108.
- foundations, abutments, and footings, (52) 887.
- fowls of the world, (51) 675.
- fox farming, (56) 769.
- fruit growing, (53) 641.
- fruit trees, (54) 739.

Books on—Continued.

- fruit trees, pruning, (53) 641; (55) 539.
- fruits—
 - American, (52) 342.
 - and the fruit trade, (55) 645.
 - conservation, industries for, (55) 507.
 - culture, (54) 836; (56) 834; (57) 833; (60) 232.
 - growing and marketing, (58) 437, 642.
 - of Great Britain, (53) 843.
 - of Temperate Zone of North America, (53) 37.
 - propagation, cultivation, and marketing, (57) 437.
 - small, (53) 536.
 - small, culture, (53) 343.
- fuels and their combustion, (57) 882.
- fungi, (54) 46.
- fungi and plant diseases, (55) 444.
- fungi, beneficial and injurious, (57) 441.
- fungi, parasitic, causing plant diseases, (57) 637.
- fungus diseases in Great Britain, (51) 245.
- fur farming for profit, (59) 165.
- fur rabbits, raising, (56) 168; (58) 767.
- fur-bearing animals, raising, (54) 273.
- furs, (55) 94.
- gardening, (51) 539; (52) 138, 341, 540, 640, 642, 741; (53) 40, 144, 640; (55) 442, 741, 839; (57) 136, 142, 242, 336; (58) 142; (59) 44; (60) 543, 544.
- gardening in California, (51) 145; (52) 344.
- gardening, ornamental, in Florida, (57) 739.
- gardening, tropical, (53) 844.
- gardens, (57) 342.
- gardens, English, (58) 439.
- gardens, flower and vegetable, (54) 244.
- gardens of South Africa, (52) 344.
- gardens, planning, (51) 243.
- gardens, plans and sketches, (52) 540.
- genes, theory of, (55) 522.
- genetics, (51) 28; (53) 522; (54) 427; (59) 621.
- genetics and eugenics, (52) 822.
- genetics and evolution, (55) 730.
- genetics, relation to agriculture, (58) 728.
- geography, business, (55) 788.
- geography, commercial, (53) 95.
- geography, economic, (51) 299; (53) 694.
- geography, industrial, (52) 899.
- geography of North America, (59) 889.
- geography, political, (52) 196.
- geology, agricultural, (60) 315.
- geology, engineering, (53) 587.

Books on—Continued.

- germ cells and somatic tissue, (56) 427.
 germ plasm, architecture, (58) 423.
 gladiolus culture, (57) 242, 341; (58) 142, 645.
 gladioli, varieties and culture, (53) 644.
 glucosides and carbohydrates, (52) 108.
 grain, (59) 685.
 grains, food from, (56) 490.
 grapes, culture, (52) 641; (57) 341.
 grassland, fertilizing, (51) 215.
 grasslands, British, (58) 29.
 green manuring, (58) 19.
 greenhouses, construction, (59) 179.
 growth, (60) 657.
 gymnosperms of British Columbia, (57) 143.
 health and environment, (55) 589.
 heat transfer and evaporation, (56) 78.
 heating and ventilation, (60) 380.
 heating, electric, (60) 280.
 heliotherapy, (57) 198.
 herbaceous borders for amateurs, (55) 442.
 heredity, (53) 425; (55) 522.
 and eugenics, (51) 227.
 in plants and animals, (54) 188.
 laws and mechanism, (53) 226.
 physiological theory, (57) 819.
 present knowledge, (55) 730.
 principles, (60) 428.
 hides and skins industry, (57) 386.
 hides and skins, manufacture and distribution, (55) 260.
 highway curves and earthwork, (56) 76.
 histology, (54) 772; (58) 753.
 histology, vegetable, (59) 24.
 histones and protamines, (60) 202.
 home—
 conveniences, (52) 890.
 decorating and furnishing, (54) 394.
 economics, (55) 888; (57) 290, 493, 883.
 economics, elementary, (56) 690.
 economics, girl's problems in, (56) 690.
 economics in education, (52) 197; (60) 686.
 economics, teaching, (60) 686.
 repairs, (54) 394.
 homemaking, (58) 688.
 horse-shoeing, principles and practice, (60) 363.
 horses, (51) 176; (60) 565.
 horses, age determination, (51) 482.
 horses, breeding, (56) 72.
 horses, diseases of, (54) 678.
 horses, evolution of, (56) 766.
 horses, saddle, (55) 64.
 horticulture, (52) 696; (56) 891; (57) 290.
 horticulture for Pacific slope, (59) 137.

Books on—Continued.

- house heating, (58) 598.
 household work and management, (55) 889.
 houses, model, (53) 694.
 houses, planning, decoration, and furnishing, (56) 690.
 hydraulic engineering data, (58) 582.
 hydraulics and applications, (54) 875.
 hydrodynamics, (52) 584.
 hydroelectric practice, (57) 777.
 hydrogen-ion concentration, (51) 504.
 hydrology, elements of, (60) 276.
 hygiene and preventive medicine, (56) 895.
 Hymenoptera, biology, (57) 562.
 ice cream, (58) 71, 573, 873.
 ice cream mix, preparation and processing, (59) 271.
 ice cream plant and manufacture, (52) 377.
 immunity in natural infectious disease, (53) 581.
 immunization, (54) 574.
 immunization, local, (56) 775.
 inanition, (52) 564.
 inanition and malnutrition, effect on growth and structure, (54) 692.
 incubation, (51) 276.
 indicators, use, (56) 312.
 indigestion, (55) 596.
 insecticides and fungicides, (54) 656.
 insects, (53) 357.
 and disease control, (58) 661.
 destructive and useful, (60) 648.
 forest, (54) 552.
 in Great Britain, (51) 245.
 injurious, (54) 551.
 injurious to household, (56) 857.
 leaf-mining, (59) 651.
 of trees and shrubs, (53) 252.
 of western North America, (56) 553.
 relation to man, (54) 258, 752.
 social, (60) 59.
 insulin and carbohydrate metabolism, (55) 694; (60) 687.
 insulin, use, (54) 791.
 ions in colloidal systems, effects, (54) 108.
 irises, (52) 143; (57) 242; (58) 143; (60) 341.
 irrigation engineering, (51) 885.
 irrigation projects, success on, (60) 686.
 kitchens, modern, arrangement and equipment, (53) 899.
 laces, (54) 290.
 land economics, (51) 598.
 land planning in United States, (55) 884.
 land policies, public, history, (53) 88.
 land reform in Czechoslovakia, (51) 392.
 land tenure in England, history, (52) 91.

Books on—Continued.

landscape gardening, (51) 243; (57) 242.
 latex, (58) 240.
 laundry chemistry, (55) 598.
 law of diminishing returns, (53) 290.
 lawn making, (53) 139.
 lawns, links, and sportsfields, (51) 233.
 leucocytes, (52) 281.
 life, nature of, (54) 219.
 life phenomena, chemical dynamics of, (54) 6.
 Illacs, (60) 543.
 lilies of eastern Asia, (54) 244.
 lime in agriculture, (56) 624.
 livestock—
 and poultry raising, (54) 290.
 breeding and improvement, (56) 760.
 enterprises, (60) 686.
 feeding, (51) 569; (56) 69; (57) 168, 366.
 industry, financing, (57) 481.
 judging and selection, (53) 867.
 judging, elements, (58) 688.
 marketing, (59) 487.
 parasites in Great Britain, (58) 661.
 productive feeding, (55) 56.
 types and market classes, (51) 274.
 lubricants, American, (59) 178.
 lubrication, theory and practice, (57) 502.
 lupines, (54) 223.
 magnolias, (57) 341.
 malaria prevention, (56) 58.
 mammals, domestic, natural history, (56) 662.
 mammals, domestic, physiology, (54) 71.
 mammals, North American, (60) 59.
 man and plants, (56) 123.
 man, relation to soil, (58) 15.
 manures and fertilizers, (53) 819.
 maps, interpretation, (54) 75.
 marketing, (54) 86, 290, 389; (55) 885; (56) 489; (58) 589, 686.
 marketing, cooperative, (51) 296; (60) 680.
 marketing principles, (56) 187.
 marketing, readings in, (53) 694.
 materials—
 building, fundamental properties, (53) 284.
 of construction, (53) 284.
 resistance of, (53) 684.
 strength of, (53) 185; (54) 580.
 testing, (54) 681; (57) 81.
 meat and meat products, (54) 664.
 meat, food value, (51) 860.
 meat hygiene, (53) 278.
 meat inspection, (52) 881.
 meat, military, and dairy hygiene, (53) 783.
 meat packing industry, (51) 170.
 mechanochemistry, (59) 708.

Books on—Continued.

medicine, modern, physiology and biochemistry in, (57) 590.
 medicines, (51) 280.
 Mendelism, (60) 322.
 menu planning, (58) 292.
 metabolism, basal, (51) 163; (52) 362; (53) 764.
 metallic coatings, protective, (59) 178.
 metals, fatigue of, (58) 374.
 meteorology, (60) 113.
 microbiology, soil, (57) 113.
 microchemistry, (56) 201.
 microscopy, analytical, (51) 611.
 milk, (57) 178, 869, 871.
 analysis, (57) 805.
 and its products, (53) 581; (60) 864.
 and science, (52) 373.
 butter, and dairy products, (55) 471.
 chemistry and physiology, (57) 178.
 condensed, (59) 576.
 condensed, and powder, (56) 75.
 secretion, (53) 72.
 testing, (52) 12.
 utilization, (56) 73.
 mineral raw materials for fertilizers, world conditions, (56) 720.
 mineralogy, soil, (57) 314.
 mink raising, (57) 175.
 mistletoe, (53) 728.
 mosquitoes, British, (60) 63.
 motor trucks, (53) 187.
 motors, farm, (53) 590.
 Mount Rainier National Park, (53) 744.
 mules, production, (56) 767.
 muskmelons, (59) 138.
 muskrat farming, (52) 676.
 mycorrhiza, (59) 519.
 national formulary, (56) 275.
 natural history, (57) 255.
 nitrate industry, (52) 622.
 nitrogen, (51) 422.
 nitrogen fixation, (60) 10.
 nitrogen, industrial, (52) 817.
 nitrogen industry, (51) 327.
 North America, (53) 397.
 nucleins, chemistry and physiology, (51) 407.
 nutrition, (51) 764, 860; (59) 188, 792.
 and diet in health and disease, (59) 187.
 and food, (58) 589; (59) 487.
 essentials, (57) 192.
 in health and disease, (60) 891.
 in infancy and childhood, (55) 487.
 newer knowledge, (54) 889.
 of children, (58) 86.
 of crops, (60) 119.
 science of, (60) 686.
 oak trees, (51) 299.
 oats, (57) 631.

Books on—Continued.

- oil heating, domestic, (60) 883.
 oil seed plants, (57) 631.
 oils and fats, (55) 805.
 oils, essential, (56) 201.
 orchids, (58) 439.
 organic compounds, preparation and analysis, (57) 201.
 organic evolution and heredity, (53) 627.
 organic microanalysis, (53) 714.
 organic syntheses, (54) 7, 707; (55) 709.
 organotherapy and vaccine and serum therapy, (52) 178.
 paint and varnish technology, (59) 479.
 painting, paper hanging, etc., (52) 689.
 paints, (55) 312.
 paints, pigments, and varnishes, (51) 210.
 palms of British India and Ceylon, (56) 838.
 parasitology, veterinary, (57) 179.
 partridges, (57) 653.
 pathology, (56) 275, 675; (57) 376.
 pathology, chemical, (56) 275.
 peanuts, (53) 236.
 peanuts in India, (60) 225.
 pears, culture, (59) 140.
 peasant industry, (53) 297.
 pecans, production, (52) 642.
 pectin, (55) 502.
 pectin, preparation and uses, (60) 111.
 perennials, (58) 239.
 perfumes, cosmetics, and soaps, (55) 507.
 perfumes, industry, (52) 413.
 periodicity, physicochemical, (60) 111.
 pharmacology, (51) 365; (52) 776.
 pharmacology and therapeutics, (51) 280.
 pheasants, (57) 56, 255.
 phosphates and related products, (57) 502.
 photo-electricity, (54) 407.
 photosynthesis, (52) 819; (56) 424, 626.
 physicochemical methods, (59) 410.
 physics, (53) 386.
 physiology, (54) 692.
 physiology, comparative, (56) 774.
 physiology, nutritional, (51) 163; (56) 289.
 physiology, sexual, (54) 431.
 pigeons, raising, (60) 70.
 pigments, (52) 201.
 pigs, (52) 172, 770.
 pigs, raising, (53) 69; (60) 363.
 pine, loblolly, in Maryland, (51) 43.
 plant—
 alkaloids, (51) 8.
 anatomy, (54) 722; (60) 624.
 anatomy, pathological, (57) 246.
 and animal life, (58) 659.

Books on—Continued.

- plant—continued.
 breeding, (51) 137, 529; (52) 827; (58) 29.
 cells, life of, (60) 423.
 diseases, (54) 245, 743; (55) 242; (58) 240.
 diseases and fungi, (55) 444.
 diseases and injuries, (55) 144.
 diseases and pests, (51) 45; (57) 343, 539, 637; (58) 661.
 diseases, control, (60) 238.
 diseases, fungus, (60) 828, 829.
 diseases, parasitic, (51) 45.
 ecology, (57) 514.
 families, (57) 116.
 geography, (57) 116, 513.
 growth, (59) 817.
 growth and soil conditions, (56) 714.
 histology methods, (53) 420.
 husbandry, (54) 589.
 materials for foundation planting, (57) 439.
 movements, (51) 222.
 movements, developmental, (53) 324.
 nutrition, (54) 427; (58) 9.
 physiology, (51) 23; (53) 623; (55) 816; (56) 423; (57) 414, 415, 513.
 products, (59) 108.
 products, chemistry of, (52) 409; (60) 201.
 protection, (51) 245; (57) 637.
 plants—
 and man, (56) 123.
 biochemistry of, (57) 116.
 bulbous, (57) 439.
 chemical researches on, (54) 220.
 climbing, (52) 144.
 colonial, (57) 631.
 cultivated, (54) 423.
 culture, (57) 888.
 electrophysiology, (57) 116.
 flowering annuals, (52) 741.
 flowering, biology, (55) 321.
 flowering, effective use, (56) 646.
 for elementary schools, (53) 694.
 for exhibition, (52) 741.
 injury, recovery, and death, (51) 223.
 life of, (56) 626.
 ornamental, (51) 539; (52) 643; (55) 442; (57) 22, 121; (59) 142, 443.
 ornamental, biology, (60) 213.
 ornamental, culture in Florida, (57) 739.
 ornamental, of California, (57) 116.
 perennial, (52) 741.
 poisonous to livestock, (52) 280.
 raising from seed, (55) 835.
 poisons, (52) 178.
 polysaccharides, (52) 609.
 pomology, (60) 41.

Books on—Continued.

- pomology, systematic, (53) 37; (54) 443.
 potash, industrial development, (56) 213.
 potato diseases, (55) 47; (56) 50.
 potatoes, (54) 248; (58) 634; (59) 436, 889.
 poultry—
 diseases, (51) 482.
 farming, (52) 876; (53) 174.
 husbandry, (56) 892; (60) 489.
 products, marketing, (51) 95; (53) 397.
 raising, (51) 176, 577; (54) 270, 471, 568, 863; (55) 869; (57) 766, 868; (58) 570; (59) 465.
 power plant operation, (55) 781.
 power plant testing, (58) 681.
 prices, science of, (53) 898.
 primulas for garden and greenhouse, (60) 144.
 protamines and histones, (60) 202.
 proteins and theory of colloidal behavior, (54) 108.
 proteins, chemistry of, applications, (56) 9.
 proteins, vegetable, (51) 501.
 protoplasm, colloid chemistry of, (53) 309.
 protozoa in soils, forms and distribution, (57) 510.
 protozoa, parasitic, of man, (54) 855.
 protozoology, (56) 657.
 protozoology, human, (56) 675.
 pruning, (53) 641; (55) 539.
 quilts, patchwork, history, (56) 397.
 rabbits, Chinchilla, (57) 175.
 rabbits for food, (54) 866.
 rabbits, raising for fur, (56) 168; (58) 767.
 rabbits, reproduction in, (54) 866.
 racoons, raising, (54) 866.
 rats, albino and Norway, (53) 274.
 rats, destruction, (58) 556.
 rats, eradication, (59) 348.
 rats, habits and control, (55) 657.
 raw materials, conversion into animal products, (54) 262.
 rayon, (54) 697.
 rayon industry, (57) 96.
 reclamation in United States, (59) 383.
 refrigerating machine, absorption, (55) 96.
 refrigerating machine, compression, (59) 481.
 refrigeration, (60) 380, 781.
 refrigeration, household, (57) 97.
 refrigeration in chemical industry, (57) 779.
 refrigeration, mechanical, (53) 188; (59) 480.
 refrigeration principles, (56) 783.
 research and the land, (55) 697.
 research, organic, (53) 309.
 research work procedure, (56) 489.

Books on—Continued.

- resins, natural and synthetic, chemistry of, (56) 107.
 rhododendrons, (52) 239, 642.
 rhododendrons and hybrids, (52) 144.
 rice, (52) 534; (53) 636.
 river gaging, (54) 280.
 road materials, sampling and testing, (56) 882.
 roads, construction, (53) 388.
 roads, construction and maintenance, (53) 186.
 roads, English, (53) 186.
 roads, maintenance and reconstruction, (51) 387.
 rock gardens, (57) 342; (60) 235.
 roof coverings, manufacture and application, (56) 78.
 root development of crops, (57) 415.
 roses, (51) 346; (52) 144, 344, 741, 841; (53) 539, 845; (55) 745; (57) 142.
 roses, wild, in British Isles, (52) 344.
 rubber, chemistry of, (51) 210.
 rubber, Gottlob's technology, (57) 502.
 rubber industry, (51) 614.
 rural—
 church, (52) 494; (54) 289, 486.
 church survey, town and country series, (51) 94.
 economics, (51) 290; (52) 299; (54) 188.
 economics and bookkeeping, (51) 89.
 economics and sociology, (57) 887.
 England, (53) 693.
 life, (53) 798; (56) 187; (58) 788.
 life expansion, (60) 890.
 Pennsylvania, (53) 595.
 social psychology, (53) 692.
 social problems, (52) 94.
 social resources, (56) 487.
 sociology, (56) 489; (60) 387, 591.
 rust and smut fungi, (57) 441.
 salts, complex, (52) 409.
 sands and crushed rocks, (51) 886.
 sanitation, domestic, (53) 188.
 sanitation, municipal and rural, (58) 885.
 santonin, use, (58) 874.
 school and country life, (52) 795.
 science, general, (53) 693.
 science of everyday life, (53) 693.
 science teaching, (56) 488.
 sciences, humanistic and social, research in, (58) 890.
 secretions, internal, properties, (54) 889.
 sedimentation, (56) 619.
 seed testing, (59) 438.
 seeds, production and marketing, (58) 229.
 Sequoia trees, (52) 345.
 sewage disposal, (53) 188.
 sewage problems, (57) 782.

Books on—Continued.

- sewing, (52) 696.
- sewing materials, (53) 496.
- sex chromosomes, (60) 325.
- sex, inheritance and fertility, (58) 320.
- sheep diseases, (51) 681.
- sheep production, (57) 661.
- shrubs, (52) 642; (57) 142, 242; (58) 142; (60) 235.
- shrubs and trees of California gardens, (56) 346.
- shrubs and trees, ornamental, (53) 41; (56) 443; (59) 142.
- silage and silos, (58) 761.
- silk culture, (55) 662.
- silk terms, (54) 394.
- silks, artificial, (55) 796.
- silos in Germany, (58) 682.
- silviculture, (53) 644.
- sisal culture in German East Africa, (56) 828.
- smut and rust fungi, (57) 441.
- social statistics, (57) 486.
- sociology, rural, (56) 489; (60) 387, 591.
- soil—
 - analysis, chemical, handbook, (57) 504.
 - characteristics, (56) 617.
 - conditions and plant growth, (56) 714.
 - fertility and crop production, (55) 508.
 - management, (51) 116, 493; (57) 812.
 - management and crop production, (52) 696.
 - science, (60) 18, 207.
- soils, (51) 510; (52) 115; (54) 116; (57) 314; (59) 113, 608.
- and civilization, (58) 15.
- and crops, (51) 598.
- and fertilizers, (55) 16; (59) 114.
- and manures, science of, (55) 211.
- cultivation, (57) 710.
- evolution and classification, (59) 608.
- management and fertilization, (58) 116.
- of Cuba, (59) 206.
- solubility, (51) 503.
- South America, (57) 89.
- soy beans, (52) 636.
- species problems, (59) 621.
- spices, (53) 9.
- spiders, British, (56) 362.
- spraying, dusting, and fumigating of plants, (59) 536.
- squabs, (51) 177.
- standard of living on farms, (60) 889.
- starch chemistry, (59) 202.
- starches, (52) 609.
- statistics, elements, (56) 690.
- steel and timber structures, (52) 183.
- steel construction, (57) 776.

Books on—Continued.

- steelwork, constructional, (60) 376.
- storage batteries, (53) 187.
- strawberries, culture, (53) 343.
- strawberries, culture and marketing, (55) 646.
- streams, gaging, (58) 373.
- stresses, statically indeterminate, (56) 780.
- structural engineering, (53) 388.
- sugar, (59) 831.
- sugar beet diseases, (57) 646.
- sugar beet industry, (60) 39.
- sugar beets, culture, (58) 134.
- sugar cane, (55) 337.
- sugar cane culture, (60) 536.
- sugar in relation to tariff, (51) 690.
- sugar industry of world, (57) 829; (59) 830.
- sugar machinery, (52) 615.
- sugar manufacture, (53) 411.
- sugars and derivatives, (57) 803.
- sulfur metabolism, (57) 194.
- surveying principles and practice, (56) 76.
- sweet peas, culture, (57) 342.
- sweet peas, history, development, and culture, (55) 839.
- tariff and cattle industry, (56) 486.
- tariff on wool, (56) 485.
- tea plant, (52) 840.
- teaching of science and the science teacher, (56) 488.
- termites, (57) 163.
- textile—
 - fabrics, (58) 694.
 - fabrics, finishing, (56) 596.
 - fibers, (51) 337; (55) 93.
 - industries, (57) 199.
 - microscopy, (59) 693.
 - plants, (58) 130.
- textiles, (52) 197; (53) 694; (56) 93.
- and clothing, (56) 790.
- cleaning and dyeing, (53) 507.
- distribution, (55) 794.
- technical studies, (57) 795.
- terms and definitions, (53) 412.
- theater, country, (54) 887.
- timber and underwood industries.
- treatise, (56) 487.
- timber measurement, (58) 646.
- timber, seasoning and preservation, (53) 684.
- timbers, structure and identification, (54) 245.
- tissue culture, (54) 72.
- titrations, potentiometric, (55) 712.
- tobacco industry, (54) 237.
- tobacco production in South Africa, (54) 237.
- tomatoes, culture under glass, (53) 842.
- toxicology, veterinary, (55) 776.
- trade, international, (60) 589.
- tree repair, (54) 245.
- trees, (51) 842; (56) 240; (57) 46, 142.

Books on—Continued.

- trees—continued.
 and forestry practices, (57) 142.
 and shrubs, (53) 41; (56) 443.
 and shrubs in British Isles, (53) 243.
 and shrubs of California gardens, (56) 346.
 and shrubs, propagation, (58) 142.
 evergreen, (59) 532.
 flowering, of India, (53) 243.
 forest, (55) 342.
 identification, (51) 146; (58) 143.
 of California, (53) U.S.D.A. 243.
 of Great Britain, (56) 646.
 ornamental, care, (59) 443.
 structure and growth, (58) 239.
 truck crops, (58) 640.
 truck crops, manuring, (52) 421.
 ultra-violet radiation and actinotherapy, (58) 297.
 varnishes, (51) 716.
 varnishes and colors, (53) 891.
 vegetable diseases, (53) 246.
 vegetable products of commercial importance, (52) 794.
 vegetables, culture, (52) 341; (53) 40, 640; (54) 240; (56) 833; (57) 336, 534; (58) 738.
 vegetation of British Empire, (57) 513.
 ventilation and heating, (60) 380.
 vertebrates, (51) 656.
 Veterinary Corps, Royal Army, (58) 273.
 veterinary—
 diagnosis and treatment, (54) 673.
 hygiene, (52) 480; (53) 278, 884.
 medicine, (51) 678; (60) 573.
 medicine, biological diagnosis, (53) 884.
 medicine, surgery, and obstetrics, (52) 280.
 parasitology, (57) 179.
 prescriptions, (52) 881.
 science, (52) 197.
 toxicology, (55) 776.
 village communities, (58) 385.
 villages, American, (55) 690; (57) 88.
 vinegar manufacture, (55) 806.
 violets, culture, (57) 142.
 viruses, filterable, (60) 370.
 vitamin deficiency diseases, (60) 197.
 Wales, 1284-1415, (53) 393.
 wasps and bees, life of, (53) 56.
 wasps, ants, and bees, (52) 854; (56) 862.
 waste materials, uses, (51) 318.
 water—
 bacteriology, (51) 889.
 fowl, (53) 651.
 gardening, (52) 741.
 power engineering, (55) 878.
 works practice, (56) 280.
 weather, (52) 315.
 weather and agriculture, (55) 715.
 weather forecasting, (51) 14.

Books on—Continued.

- weeds, control, (55) 235.
 weight control, (60) 193.
 wheat flour and diet, (59) 889.
 wheat flour, chemistry of, (56) 108.
 wheat production, (51) 641.
 winter blossoms from the outdoor garden, (57) 142.
 wood, (51) 245; (52) 887.
 wood, chemistry of, (56) 107.
 wood rots, (58) 252.
 wool, (54) 896.
 wool clip, classing for market, (59) 463.
 wool, tariff on, (56) 485.
 woman on the farm, (53) 297.
 worms in furniture and structural timber, (59) 456.
 yarns and fabrics, testing, (56) 496.
 zoological dissections, (51) 657.
 zoology, (54) 151; (57) 289; (60) 890.
 zoology, Danish forest, (53) 651.
 zoology, economic, (52) 495.
 zoology, invertebrate, (51) 452.
 zoology, medical, (51) 179.
Boophilus australis, disseminator of surra, (58) 678.
Boophilus microplus, notes, (57) 672.
Booponus intonsus, new myiasis-producing fly, (51) 383.
 Borax—
 as disinfectant for citrus fruit, (53) 355.
 as larvicide for mosquitoes, (59) 355.
 in fertilizers, effect, (57) Ind. 317.
 new reagent and standard for, (55) 804.
 residual effect on potatoes and corn, (51) N.J. 625.
 standardizing acids and bases with, (53) 714.
 treatment for citrus blue mold rot, (52) 451.
 Bordeaux mixture—
 action, (54) 543; (58) 444.
 adhesive power in Egypt, (60) 240.
 copper hydroxide as substitute for, (53) 241.
 effect of calcium carbonate in, (57) 839.
 effect of composition on plants, (53) N.H. 444.
 effect of form and proportion of lime, (57) 444.
 effect on transpiration in plants, (56) Kans. 813.
 efficiency of "stickers" in, (53) Iowa 755.
 foliage injury, prevention, (59) N.H. 237.
 for potatoes, (56) Minn. 547.
 homemade v. commercial, (53) Minn. 131.
 physiological effects, (51) 536.
 preparation, chemical hydrated lime for, (60) 49.
 properties, (53) 348.

- Bordeaux mixture**—Continued.
 solubility by green organs of grape, (58) 852.
 toxicity studies, (51) N.H. 47.
 v. copper lime dust, (56) N.Y. Cornell 351.
 v. lime-sulfur, (51) Ohio 748.
 v. lime-sulfur for brown rot, (51) 548.
 v. Pyrox for potatoes, (51) Minn. 134.
- Borers**—
 control, injection experiments for, (59) 57.
 marine, in Barnegat Bay, (51) N.J. 657.
 softwood, affecting fire-killed lumber, (51) 554.
 wood, damaging timber in Australia, (51) 554.
- Boric acid**—
 and borax, effect on broad beans, (53) 26.
 as disinfectant for citrus fruit, (53) 354.
 determination in foods, (51) 112.
 effect on crops, (52) 426.
 passage into fruits and vegetables, (60) 724.
- Borna disease**—
 and encephalomyelitis of sheep and cattle, (60) 476.
 experimental study, (58) 772.
 intranuclear inclusions of, (60) 668.
 neuritis caused by virus of, (59) 672.
 of horses, (56) 878; (60) 373.
 outbreak in Hesse, (52) 584.
 studies, (51) 285, 384.
- Borneol** in spruce turpentine, (54) 708.
- Boron**—
 absence from nutrient solution, effect on anatomical structure of *Vicia*, (58) 725.
 as toxic constituent of arid soils, (60) 511.
 effect on nodules of *Vicia faba*, (60) 28.
 effect on plants, (57) 21, 515.
 effect on tomato plants, (59) 323.
 effects on growth of *Vicia faba*, (57) N.J. 717.
 in soils and irrigation waters, effect, (60) Calif. 628.
 rôle in plant growth, (60) 724.
 spectrophotometric detection, (58) 309.
 toxicity in citrus orchards, (59) Calif. 708.
- Borrellina**—
 new genus, erection, (55) 459.
 new group of ultramicroscopic parasites, (56) 554.
- Boston fern anthracnose**, studies, (54) 254.
- Bostrichidae** of French tropical Africa, (53) 259.
- Botanical**—
 Congress, Fifth International, notes, (57) 499.
 microtechnique, manual, (56) 626.
 pen-portraits, treatise, (53) 225.
 survey of portions of South Africa, (56) 748.
- Botany**—
 aid and lexicon, (59) 818.
 Chinese economic, studies, (56) 390.
 course in, laboratory directions, (54) 487.
 descriptive systematic, methods, treatise, (56) 812.
 dictionary of, (56) 722.
 economic and general, notes, (52) Can. 846.
 elementary, laboratory manual, (59) 817.
 laboratory manual, (60) 686.
 of cultivated plants, papers on, (57) 137.
 systematic, textbook, (59) 426.
 textbook, (51) 693; (52) 397; (54) 123; (60) 388.
 treatise, (55) 322; (57) 116, 513.
 winter, treatise, (57) 22.
- Botfly**—*see also* *Gastrophilus and Oestrus ovis*.
 as parasite of house mice, (58) 665.
 eggs on horses, control, (60) 266.
- Botryodiplodia**—
 pinea, notes, (58) 449.
 sp., notes, (51) 46.
 theobromae, notes, (51) 45, 46; (53) 147; (57) 145, 540.
- Botryomycosis**—
 in man and animals, (51) 382.
 of sheep, (60) 179.
- Botryosphaeria**—
 and *Physalospora*, comparison, (52) 248.
 fuliginosa, notes, (58) 543.
 life history and taxonomic problems, (55) 44.
 ribis chromogena, notes, (57) 847.
 ribis in eastern United States, (58) 543.
 ribis on currant, (52) 248.
 ribis on horse-chestnut and rose, (51) 757.
 ribis, studies, (58) 552.
 xanthocephala, notes, (57) P.R. 442.
- Botrytis**—
 bassiana, infection of European corn borer by, (59) 459.
 byssoidea n.sp., description, (58) 49.
 cinerea—
 action of salts on, (57) 649.
 conidia, germination, (56) 748.
 effect of heat, (52) 146.
 formation of appressoria by, (55) 324.
 growth on strawberries, (55) 453.
 in Alaska, (56) 243.

- Botrytis**—Continued.
cinerea—continued.
 notes, (54) 549; (55) 755; (56) 54; (57) 345, 850; (58) 442; (59) Fla. 541; (60) 553, 644, 646.
 on artichokes, (52) 649; (53) 849.
 spores, effect of sulfur, (57) Calif. 243.
 disease of peanuts, (54) 847.
 diseases in Washington, (54) 744.
 genus, studies, (57) 441.
narcissicola, notes, (59) 535.
 notes, (51) 353.
 on truck crops, (54) Pa. 344.
paeoniae, notes, (54) 51.
parasitica, notes, (56) 748.
parasitica on tulips, (58) 752.
 sp., notes, (52) Calif. 49, 352; (54) 245, 253; (56) Pa. 50; (57) 150; (58) 442.
 sp. on lettuce, control, (55) 848.
 spp. causing distinct onion neck-rots, (56) 450.
 spp., notes, (56) 747.
squamosa n.sp., description, (58) 49.
tulipae, notes, (58) 443.
vulgaris, notes, (59) 152.
- Bots** in camels, sheep, goats, etc., (55) 856.
 Bots in horses, control, (56) U.S.D.A. 259.
- Botulinus**—
 anatoxin, work with, (60) 176.
 antitoxic serum, production, (51) 283.
 toxin, effect of digestive juices, (53) 367.
 toxin, effect of sunlight and heat, (52) 464.
 toxin, persistence in discarded canned foods, (57) 393.
 toxin, potency, (52) 282.
 toxin production, effect of *Clostridium sporogenes*, (53) 609.
- Botulism**—
 and Osteophagia, (59) 171.
 anesthesia and sedatives in treatment of, (53) 368.
 cause, prevention, and treatment, (54) Colo. 93.
 in cattle from rabbit carcasses, (55) 678.
 in domestic animals, (58) 276.
 in equines, (60) 573.
 in fowls, account, (52) Ill. 86.
 in horses, (58) 677.
 in Russia, (57) 596.
 or limberneck in chickens, (52) West.Wash. 386.
 organisms causing, (53) 662.
 outbreak in Ohio, (55) 595.
 outbreaks, (51) 560; (57) 95; (58) 897.
 outbreaks in United States, (55) 391.
 toxin, destruction by milk bacteria, (60) 570.
 toxoids, protection of horses with, (60) Ill. 274.
- Bourletiella**—
hortensis, notes, (57) 259.
lutea, notes, (58) 451.
- Boveria teredinini** n.sp., notes, (55) N.J. 50.
- Bowlesia** bacterial disease, notes, (59) 852.
- Box**, planting, cultivation, and pruning, (54) 446.
- Box-elders**, staminate, as shade trees, (59) 455.
- Boxwood**—
 gardens, old and new, treatise, (54) 244.
 insect pests, (55) N.J. 152.
 leaf miner, control, (59) 460.
 leaf miner, notes, (51) Conn.State 852; (55) N.J. 152.
 leaf miner, studies, (53) Md. 559.
 stem rot, notes, (53) 43.
- Boxwoods**, descriptions, (53) 644.
- Boyce Thompson Institute** work and applications, (54) 624, 625.
- Boys**—
 American, increase in stature in last fifty years, (56) 897.
 growth and periodic gain, (58) 492.
 private school, growth standards, (56) 394.
 private school, height, (57) 594.
 training as farmers, (56) 892.
 underweight and overweight, percentages, (54) 693.
- Boys'**—
 club work, (54) Hawaii 189.
 club work, 1922, (51) U.S.D.A. 796.
 clubs, organization, (54) 86.
 clubs, organization and programs, (52) 795.
 4-H club national encampment, editorial, (59) 106.
 4-H club work, U.S.D.A., (54) 86; (56) 84, 691.
 4-H clubs in Missouri, (52) 795.
 4-H clubs, place in public school system, (59) U.S.D.A. 186.
- Brachartona catoxantha**, notes, (59) 655.
- Brachiararia ciliaris** as weed in Belgian Kongo, (53) 839.
- Brachycoma**—
acridiorum, notes, (58) 263.
sarcophagina, notes, (57) 64.
- Brachypterolus pulicarius**, notes, (58) 561.
- Brachyrhinus**—
ovatus, control, (58) 351.
ovatus, popular account, (51) 554.
rugifrons, notes, (58) 256.
 spp., control, (57) Oreg. 263.
 spp., poisoned baits for, (55) Wash.Col. 55.
 spp., studies, (60) Oreg. 753.
sulcatus in nurseries and greenhouses in Pennsylvania, (57) 456.
- Brachyrhynchus ovatus**, bait for, (54) Wash.Col. 853.
- Brachysporium** sp., notes, (53) 750.
- Brachysporium trifolii**, biology, (55) 23.
- Brachystegus hoplisivora**, notes, (53) 656.

- Brachytrypes sp., notes, (53) 558.
- Bracken—
effect of cutting, (60) 437.
eradication, (55) 740.
poisoning of cattle, (55) 574; (57) 873; (60) 71.
- Bracon—
carpocapsae, notes, (56) Del. 357.
gibbosus, notes, (56) Va. 556.
spp., notes, (51) 761.
spp., studies, (53) 259.
- Braconidae—
forest, notes, (55) 854.
Javanese, descriptions, (52) 361.
new species, (56) 662; (57) 863; (58) 666.
south Indian, notes, (59) 660.
- Braconinae, revision, (57) 562, 863.
- Bradshot, studies, (58) 480.
- Bradynotes chilcotinae, notes, (53) 756.
- Brain, respiratory activity and vitamin B content, (52) 65.
- Brains, irradiated, antirachitic value, (57) 792.
- Bramble diseases, notes, (53) 547.
- Bramble mosaic, notes, (60) Oreg. 745.
- Brambles—
diseases and control, (54) Ill. 750.
diseases of, (55) Oreg. 650.
hardiness in, (57) Mo. 435.
hardiness, relation to composition, (56) Mo. 644.
insects affecting, (55) Oreg. 659.
spray schedules for, (55) Ohio 38.
- Bran—*see also* Rye bran, Wheat bran, *etc.*
prices and index, (56) Ohio 285.
v. alfalfa meal, feeding value, (54) Can. 472.
- Brans, Swedish, feeding value, (53) 666.
- Brassica campestris—
control, (54) 240.
oil production in Argentina, (52) 228.
- Brassica, forms, Mendelian inheritance between, (53) 630.
- Brassicacae, cultivated, (57) 137.
- Braula coeca—
in Maryland, (55) 55.
in United States, (52) U.S.D.A. 660.
paper on, (56) 64.
- Braxy—
immunity studies, (57) 670.
in sheep, vaccine for, (58) 774.
notes, (54) 71.
of Australian sheep, (59) 174, 275; (60) 179.
- Braxy-like disease of sheep and liver flukes, (58) 676; (60) 179.
- Brazil nuts, decay, (51) 156.
- Bread—
and wheat prices in Great Britain, (54) 82.
baking at high altitude, (60) Wyo. 789.
brown and white, nutritive value, (53) 265.
chemistry of, (54) 889.
- Bread—Continued.
dough, action of phosphatides in, (60) 288.
dough, changes during fermentation, (51) 459.
dough fermentation, organic acids produced during, (55) 408.
German war, vitamin B in, (51) 368.
loaf volume, measuring, (54) 690.
loaves, volume measuring device for, (60) 289.
making—
and flour milling, bibliography, (53) U.S.D.A. 9.
colloidal phenomena in, (51) 318.
directions and score card, (59) Ariz. 890.
effect of water containing free chlorine in, (53) 161.
from Missouri wheat, (55) Mo. 291.
function of oils and fats in, (57) 389.
H-ion concentration in, (53) 261.
history and development, treatise, (54) 86.
rôle of phosphates in, (59) 712.
suggestions, (51) 261.
variable factors in, (55) 591.
with only panary fermentation, (55) 189, 692.
with sweet potato flour, (51) 364.
milk content, determination, (52) U.S.D.A. 505.
molds, difference in sexes, (57) 124.
nutritionally balanced, formula, (51) 860.
production, biochemical survey, (57) 192.
proportion in diet, (55) 292.
quality, judging by size of pores, (53) 261.
quality, judging, six cardinal points, (53) 261.
quality, rôle of H-ion concentration, (52) 202.
residual sugar content, (54) 503.
rôle in nutrition, (51) 458.
ropy, studies, (60) 289.
substitutes in diabetic diets, (53) 266.
total solids, determination, (54) 710.
white, vitamin B in, (51) 567.
whole wheat, superiority, (60) 786.
whole wheat v. white, (57) Ind. 687.
yeast v. baking-powder, nutritive value, (51) 61.
- Bread-and-milk proteins, maintenance values, (51) 365.
- Breadfruit—
culture experiments, (59) Hawaii 632.
of Tahiti, (60) 825.
propagation, Hawaii, (51) 745; (55) 534.
v. corn meal for cows, (56) 568.
- Breads, fat content, (56) 312.
- Breadstuffs, import requirements in Germany, (52) U.S.D.A. 297.

- Breakpins—
 substitutes for, (60) 80.
 wooden and metal, strength, (59) 586.
- Breeding—*see also* Animal breeding and Plant breeding.
 stock, selection, care, and management, (54) N.J. 357.
- Bregmatothrips iridis n.sp., description, (53) 52.
- Bremia lactucae, notes, (55) 346; (56) 748; (59) 535, Fla. 541.
- Bremidae, natural grouping, (60) 252.
- Brevicoryne brassicae, *see* Cabbage aphid.
- Brewers' grains, feeding value, (55) 163.
- Brewers' yeast, nutrition experiments, (55) 891.
- Brewery waste, feeding experiments, (51) 675.
- Brick—
 crushed, for concrete blocks, (52) 585.
 effect of size on rattler loss, (55) U.S.D.A. 583.
 pavements, thin, (55) U.S.D.A. 781.
 sand-lime, Poisson's ratio and modulus of elasticity, (59) 478.
 walls, plastered and unplastered, infiltration through, (57) 81.
- Brickwork, reinforced, (60) 878.
- Bricks—
 adobe, for farm buildings, (55) Colo. 280.
 adobe, of historic buildings, plant material in, (57) Calif. 225.
 making on the farm, (55) 682.
- Bridge—
 floor slabs, tests, U.S.D.A., (55) 278; (58) 283.
 floors, concrete v. timber for, (56) U.S.D.A. 177.
 slabs, concrete, effective width, (55) U.S.D.A. 76.
 surveys, highway, (59) U.S.D.A. 177.
 test, Yadkin River, (58) 582.
- Bridges—
 and buildings, foundations, treatise, (55) 76.
 highway, impact studies, (52) U.S.D.A. 184; (55) 879.
 highway, location, (57) U.S.D.A. 475.
 reinforced concrete, treatise, (53) 683.
 steel highway, specifications, (52) U.S.D.A. 287.
- Brill's disease in lower Rio Grande Valley, (53) 360.
- Brinjal leaf-webber, notes, (59) 558.
- Brisquet disease, form of, (51) 100.
- British Goat Society, yearbook, (54) 466; (56) 71.
- Broccoli—
 leaf spot, notes, (58) 442.
 ringspot, notes, (54) 843.
 yellows, notes, (60) 348.
- Broilers, Easter, raising, (52) Ohio 476.
- Brom-cresol purple milk, culture for study of nodule organisms, (54) 725.
- Brome grass—
 as dry-land pasture, (60) Mont. 730.
 awnless, selection in, (59) 433.
 bacterial disease, studies, (53) 849.
 breeding experiments, (55) N.Dak. 527.
 culture, U.S.D.A., (52) 828; (54) 132.
 effect on nitrate production in pastures, (59) N.Dak. 815.
 in Kansas, (54) 732.
 in pasture mixtures, effect, (59) N. Dak. 825.
 leaf blotch, notes, (52) 448.
 pasturing with hogs, (55) U.S.D.A. 161.
 seed, impurities and determination of origin, (60) 539.
 self-fertilization studies, (58) 130.
 water requirements, (58) Can. 223.
- Bromine determination in small amounts, (55) 111.
- Bromocresol green, dissociation constant, determination, (53) 714.
- Bronchitis, epizootic, among chickens, (53) 681.
- Bronchitis in poultry, summary, (55) N.J. 374, 680.
- Bronchitis, infectious, of poultry, (55) 177; (57) N.J. 79, 674.
- Bronchitis, verminous, in pigs, treatment, (58) 74.
- Bronchopneumonia—
 contagious, etiology and pathology, (51) 785.
 in calves, (53) 279.
 verminous, in pigs, control, (52) 283.
- Bronchospirochetosis in fowls, (60) 274.
- Bronze beetle, life history, habits, and control, (55) 559.
- Broomcorn—
 bacterial disease, (56) 47.
 bibliography, (54) U.S.D.A. 635.
 culture in New Mexico, (56) 35.
 curing test, (59) Tex. 729.
 experiments at Dry-Land Field Station, (59) U.S.D.A. 34.
 in Oklahoma, (53) 532.
 seeding experiments, (59) U.S.D.A. 35.
 selection in, (51) 32.
 spacing experiments, (59) U.S.D.A. 35.
 variety tests, (53) U.S.D.A. 834; (56) Can. 432; (57) Okla. 226; (59) N.Mex. 222, Tex. 729.
- Brown bast census, (52) 151; (54) 550.
- Brown patch—
 and air drainage, (57) 346.
 control, 1927 experiments, (58) 747.
 control on lawns and putting greens, (58) 546; (59) 339.
 effect of early morning work on greens, (57) 347.
 studies, (57) 343, 345, 346, 347, 444, 642.
- Brown rot—
 control, (53) Ga. 239; (55) 662.
 fungi, American, studies, (53) Md. 448.
 fungus, European, in America, (57) 752; (58) 53.

- Brown rot—Continued.
 fungus, studies, (52) Calif. 49; (60) 551.
 notes, (56) 747; (57) Ohio 144.
 of fruits, cause, (52) 450.
 spores, effect of sulfur, (59) Calif. 243.
- Brown vegetable weevil, studies, (52) 662.
- Brown-tail moth—
 caterpillars, action of poisonous hairs on human skin, (58) 859.
 control, (51) 252; (55) 355.
 in Nova Scotia, control, (56) 458.
 notes, (59) N.H. 248.
 parasite, studies, (54) U.S.D.A. 756.
 parasites of, (51) 162.
 pebrine of, (58) 755.
 quarantine, enforcing, (54) 154.
 summary, (53) 51.
- Brownian molecular movement in plants, (52) 425.
- Brucella abortus—
 agglutinins in human sera, significance, (60) 667.
 and *B. melitensis*, bacteriological relation, (60) 75.
 and *B. melitensis*, comparative inoculations in goats, (60) 667.
 and *B. melitensis*-paramelitensis, differentiation, (56) 776.
 and *Mycobacterium tuberculosis* in cows' milk, (55) 175.
 and undulant fever in man, (55) 575.
 bacterins, agglutinin response to, (58) 174.
 cultures, biochemical modification, (60) 578.
 from human sources, identification, (60) 667.
 from man and cattle, comparison, (55) 575.
 from man, injection into pregnant heifers, (57) 772.
 in cattle, agglutination test for, (59) 369.
 in cows, relation to agglutination test, (59) 170.
 in human blood, agglutinins for, (55) 576.
 in milk and dairy products, (57) 874; (59) 672; (60) 72.
 in milk, thermal death point, (60) 267.
 in udders of cows, (55) 576.
 infection in a woman, (57) 278.
 infection in man, (56) 174; (58) 273; (59) 672.
 notes, (59) 580, Tex. 776.
 pathogenicity for monkey and man, (60) 870.
 pathology, (60) 871.
 rapid macroscopic agglutination test for, (59) 78.
 respiratory quotients, (60) 666.
 sensitiveness to gentian violet, (60) 666.
 studies, summary, (59) 878.
 thermal death point studies, (58) 674.
- Brucella—
 differentiation of genus, nonspecific agglutination in, (58) 276.
 group, acid agglutination optimum in, (60) 666.
 group, pathogenicity of strains, (60) 870.
- Brucella melitensis abortus*—
 in man, (55) 576.
 notes, (56) 877.
 proposed name, (58) 276.
- Brucella melitensis*—
 and *B. abortus*, bacteriological relation, (60) 75.
 and *B. abortus*, comparative inoculations in goats, (60) 667.
 and *B. abortus*, studies, (60) 267.
 distribution, (53) 886; (54) 476.
 domestic animal carriers, (57) 471.
 respiratory quotients, (60) 666.
 sensitiveness to gentian violet, (60) 666.
 studies, (51) 283; (54) 872.
- Brucella—
 spp., crystals in cultures of, (57) 469.
 spp., evolution, thermoagglutination, (60) 870.
 spp., pathogenicity for monkeys, (60) 667.
 strains, differentiation and classification, (55) 272.
 type strains, differentiation, (58) 875.
- Bruchidae, bionomics, (58) 451.
- Bruchus—
 egg production in, (51) 363.
 obtectus, *see* Bean weevil.
 quadrimaculatus, *see* Bean weevil, four-spotted.
 responses to environment, (51) 257.
- Brückner cycle in United States, (56) U.S.D.A. 712.
- Brunchorstia pinea, notes, (57) 653.
- Brusone in Japanese medlar, (51) 542.
- Brussels sprouts—
 blackleg, control, (59) N.Y.State 50; (60) 444, 445.
 black rot, control, (56) N.Y.State 242.
 black rot, studies, (57) 248.
 ringspot, notes, (54) 843.
 seed beds, corrosive sublimate treatment for, (56) N.Y.State 846.
 seed, hot water treatment for, (58) N.Y.State 844.
 yellows, notes, (60) 348.
- Bryobia praetiosa, *see* Clover mite.
- Bryophyllum calycinum—
 isolated piece, regeneration, (56) 324.
 tumor formation in, (56) 541.
- Bucculatrix—
 canadensisella, *see* Birch leaf skeletonizer.
 gossypiella n.sp., description, (57) 559.
 gossypiella on cotton in Mexico, (58) 59.
 pomifoliella, studies, (51) 661.

- Buckeye**—
California, relation to bees, (55) 56.
poisoning of honey bees, (54) Calif. 663.
- Buckthorn aphid**, studies, Me., (52) 253; (54) 658.
- Buckwheat**—
breeding experiments, (55) 126.
chromosome numbers in, (57) 31.
cost of production, (52) W.Va. 589.
culture experiments, (55) Mich. 133.
effect of aeration and renewal of solutions, (51) N.J. 630.
feeding value, (53) Can. 871.
fertilizer experiments, (58) 532.
flour, vitamins in, (59) 594.
ground whole, feeding value, (56) Pa. 169.
growth in artificial light, (51) 25.
growth, relation to seed weight, (53) 23, N.J. 23.
hulls v. wood shavings as bedding for cattle, (57) N.J. 73.
inheritance of length of style in, (57) 31.
moisture in, under varying humidity, (54) 636.
proteins in, (60) 291.
seed stimulation tests, (58) 625.
seed weight relation to variability, (57) N.J. 23.
seeding experiments, (55) W.Va. 529.
self-fertilization in, (57) 31.
stimulation of seeds, (55) 125.
varieties and requirements, (58) 632.
variety for peat land, (55) Minn. 527.
variety tests, (52) N.J. 732; (53) W.Va. 31, Can. 530.
- Bud development**—
correlation in, (53) 825.
inhibition relation to sap concentration, (55) 728.
- Bud moth**—
eye-spotted, biology and injury to apples, (58) 559.
eye-spotted, biology, enemies, and control, (56) 360.
eye-spotted, notes, (57) Idaho 755; (59) Calif. 754.
life history, (58) 260.
studies, (52) U.S.D.A. 254.
worms affecting cherries, (52) West. Wash. 56.
- Bud moths of Nova Scotia**, (60) 843.
- Bud mutation theory**, critique, (52) Me. 428.
- Bud mutations in citrus**, (53) 729.
- Bud variation in *Codiaeum variegatum***, (51) 632.
- Bud worm, green**—
biology, enemies, and control, (56) 360.
notes, (52) U.S.D.A. 255.
- Budgets**—
family, for fruits and vegetables, (55) 592.
family, making, (55) U.S.D.A. 598; (56) 489.
- Budgets—Continued.**
family, methods of conducting inquiries, (56) 890.
farm, making, (59) U.S.D.A. 884.
- Buds**, accessory, studies, (56) 326.
- Buffalo gnat**, notes, (57) 760; (60) 60.
- Buffalo**—
mange parasite, bionomics, (52) 154, 760.
milk, butter from, (52) 177.
nematodes of, (53) 553.
- Buffalo treehopper**—
egg parasite of, (60) 846.
injury to apples, (52) 156.
mutilation of twigs by, (57) Mich. 554.
- Buffer**—
mixtures, dilution and neutral-salt errors, (59) 803.
mixtures, new set, (53) 610; (56) 503.
solutions in alkaline range, series, (58) 505.
- Bufo aqua**, notes, (51) P.R. 855.
- Building**—
code requirements, recommended, (56) 780.
codes, modification due to termites, (57) 856.
construction, mechanics of, treatise, (53) 684.
construction, theory of, treatise, (59) 376.
costs, estimating, treatise, (51) 389.
insulation, economic thickness, (59) 98.
materials—
dry rot in, (51) La. 452.
heat transmission through, (52) 288.
insulating value, (59) Mich. 85.
properties, (52) 887.
sampling and testing, (56) 882.
tax law in Austria, (55) 381.
timbers, decay due to *Poria incrassata*, (54) 255.
- Buildings**—
and bridges, foundations, treatise, (55) 76.
design, minimum live loads allowable for, (53) 684.
framed, theory and practice, treatise, (58) 375.
wind pressure against, (58) 683.
- Bulb diseases**, control, (52) 645; (59) 646.
- Bulb fly, lesser**—
bionomics, (60) 653.
in Oregon, (56) 259.
life history, habits, and control, (60) 850.
life history notes, (53) 361.
notes, (60) Oreg. 753.
- Bulb mite**, notes, (60) Oreg. 753.
- Bulb pests**, summary, (59) Mich. 456.
- Bulbs**—
American, behavior in forcing house, (56) U.S.D.A. 743.
culture, (54) 645.
culture in Florida, (55) 838.
culture, treatise, (53) 40.

Bulbs—Continued.

- Dutch flowering, heteroploidy and somatic variation in, (56) 634.
 Dutch, history and treatment, (54) 446.
 effect of ethylene stimulation, (58) 645.
 flowering, culture and diseases, (59) 443.
 growing in Alaska, (60) Alaska 341.
 hardy, for amateurs, (54) 446.
 in storage, aphids infesting, (56) 60.
 popular information, treatise, (55) 442.
 rotting diseases, (56) 446.
 spring flowering, treatise, (59) 532.
 treatise, (57) 439.
- Bulimulus tenuissimus*, description, (54) 460.
- Bull associations in Idaho, survey, (60) Idaho 70.
- Bull index, Hereford, (54) 563.
- Bull snake as enemy of rodents, (56) 56.
- Bulldogs, French, origin, treatise, (60) 363.
- Bulls—*see also* Sires.
 breeding, cause of impotency, (58) Mo. 479.
 dairy, care and management, (52) U.S. D.A. 276.
 dairy, selection and management, (52) Mo. 276.
 dairy, selection and use, (59) 572.
 fertility and sterility in, (51) 182.
 impotency in, (53) 278.
 range, desirable characteristics, (54) 466.
 safe method of handling, (59) Mich. 586.
 vitality and breeding ability, (52) Wash.Col. 870.
 vitality of sperm cells, factors affecting, (54) Wash.Col. 867.
- Bulrush millet green ear disease, (57) 443.
- Bumblebees—
 in North Wales, (58) 561.
 life history and habits, (52) 257.
 nesting habits, (57) 659.
 North American, nesting habits, (51) 764.
 of Illinois, parasites and enemies, (57) 64.
 queen, attracting to artificial domiciles, (55) 56.
 queen, fertilization and hibernation, (58) 62.
 rearing in artificial nests, (56) 759.
 rôle in plant pollination, (54) 757.
 species, relationships, (60) 252.
 systematic and biological notes, (52) 158.
- Bunostomum phlebotomum in cattle, (57) P.R. 468.
- Bupalus piniarius*, notes, (57) 359.
- Buprestidae of North America, (56) 661.
- Buprestidae of Pennsylvania, (57) 63.
- Bureau of—
 Agricultural Economics, foreign outposts of, (53) 795.

Bureau of—Continued.

- Animal Industry, history, (51) 602, 694.
 Animal Industry, monograph, (57) 366.
 Dairy Industry, monograph, (60) 861.
 Entomology, directory of field activities, (56) U.S.D.A. 553.
 Plant Industry, directory of field activities, U.S.D.A., (52) 796; (58) 497.
 Public Roads, new research projects, (58) U.S.D.A. 78.
 Soils, origin and objects, (60) 507.
- Burgundy mixture—
 for wheat stinking smut, (51) 247.
 toxicity studies, (51) N.H. 47.
- Buri palm fibers, character and value, (51) 531.
- Burlap, value against frosts, (56) 239.
- Burrknot in cross-bred apple seedlings, (60) 340.
- Burrknots in apples, studies, (57) 338.
- Bursattee—
 in horses, etiological factor, (58) 75.
 nonparasitic origin, (57) 379, 872.
- Bush sickness, studies, (52) 282.
- Bushes, spraying, paper on, (52) West. Wash. 598.
- Business economics, (51) 189.
- Business forecasting, treatise, (52) 892.
- Busseola fusca*, notes, (55) 555; (56) 858.
- Busses, use on rural highways, (56) U.S.D.A. 384.
- Bustomum phlebotomum, preparasitic stages, (52) 781.
- Butter—
 adulterated, detection, miscibility tests in, (56) 205.
 adulteration, detection, (52) U.S.D.A. 506.
 adulteration, studies, (51) 317.
 air content, (52) 775.
 analysis, (56) 506.
 analysis, method of sampling, (57) 275, 276.
 and cheese making, treatise, (53) 276.
 and dairy products, treatise, (55) 471.
 Argentine, Reichert-Wollny indexes, (53) 882.
 as pellagra preventive, (55) 890.
 bacteria in, effect on quality, (56) 674.
 Canadian creamery, manufacture, (56) 673.
 Canadian pasteurized, mold in, (53) 676.
 carbonated, studies, (53) 178, 882; (56) 74.
 coconut and palm fats in, estimating, (53) 806.
 cold storage, H-ion concentration, (59) 575.
 colloidal chemistry, (52) U.S.D.A. 503.
 color in, reduction, (52) 279.
 composition, effect of prolonged working, (59) 367.
 composition, relation to mold and yeast counts, (58) 871.

Butter—Continued.

- composition, variation in, (54) Pa. 375.
- control, papers on, (52) U.S.D.A. 575.
- creamery, composition and control, (54) Minn. 377.
- depreciation during storage, cause, (59) Ind. 468.
- deterioration, peroxidase as factor, (56) 274, 612.
- effect of carbon dioxide, (55) Iowa 573.
- effect of ground soy beans and cottonseed meal on, (56) S.Dak. 671.
- effect on hemoglobin production, (56) 495.
- effect on quality of ice cream, (53) 677.
- exposition, scores of, (57) 76.
- factory companies, advantages, (55) 286.
- fat, *see* Fat and Milk fat.
- faulty flavors in, (53) 276; (55) 269.
- fishy flavor in, (53) 882.
- flavor, effect of sweet clover on, (51) 278.
- for pellagra prevention, (51) 270.
- freight rates, (56) Ohio 285.
- from buffalo milk, analysis and quality, (52) 177.
- from Finland, (59) 875.
- from sweet cream, (52) Utah 774.
- from sweet cream, keeping quality, (56) 474.
- grading, Australian methods, (60) 661.
- grading methods, (55) 69.
- green color in, (52) 279.
- greenish-gray color in, cause, (58) 170.
- imports into United Kingdom, (52) U.S.D.A. 594.
- improvement of flavor and keeping quality, (53) Iowa 782.
- industry, treatise, (57) 769.
- Irish, tests and standards, (54) 771.
- keeping quality, factors affecting, (56) 274.
- keeping quality, relation to yeasts and molds, (52) 775.
- making—
 - and storing for winter use, (58) U.S.D.A. 272.
 - bacteriological background, Mich., (51) 79; (53) 781.
 - citrated starters in, (59) Wis. 75.
 - cooling cream for, (53) Ind. 177.
 - experiments, (51) 278.
 - in Minnesota, (53) 277.
 - in Spain, (55) 676.
 - lactic fermentation in, (51) 581.
 - methods in Ontario, (60) 366.
 - neutralization of cream for, (53) 581; (54) 868; (56) 474; (57) 466.
 - neutralizers and their effect, (53) Wis. 475; (60) Ark. 865.
 - on the farm, (55) 573; (58) W.Va. 272.

Butter—Continued.

- making—continued.
 - problems, papers on, (52) U.S.D.A. 575.
 - starters for, (51) 678; (56) Ark. 377; (57) Mich. 572; (58) Ill. 364.
 - treatise, (55) 472.
 - use of vacuum in, (52) Calif. 81.
- marketing—
 - by cooperative sales agency, (59) Minn. 787.
 - cooperative, (60) Wis. 683.
 - cooperative, papers on, (52) U.S.D.A. 593.
 - in Minneapolis and St. Paul, (58) 589.
 - problems, (55) Oreg. 382.
- mold and yeast count, determination, (60) 865.
- mold in, sources, Minn., (58) 366; (59) 775.
- overrun, factors affecting, (57) 76.
- pasteurization temperature of cream for, (53) 178.
- pasteurized creamery, surface flavor in, source, (60) 865.
- pathogenic organisms in, viability, (57) 668.
- prices, (58) Ill. 380.
- prices, Australian, and Paterson plan, (60) 680.
- print, shrinkage, (56) 674.
- printing, effect, (56) Ill. 376.
- properties, effect of carbon dioxide, (55) Iowa 676.
- proteolytic action of organisms in, (51) Ind. 877.
- quality—
 - and composition, (57) Ind. 668.
 - effect of care of churn, (56) 74.
 - effect of cream quality, (56) Ill. 273.
 - effect of frozen cream, (54) S.Dak. 170.
 - effect of starters, (51) 278.
 - factors affecting, (54) 573; (56) S.Dak. 570.
 - relation to bacteria, (56) 674.
- rancidity in, determination, (59) 204.
- sale and advertising, (51) 179.
- salt in, effect on quality, (55) 269.
- salted and unsalted, yeast and mold in, (59) Calif. 773.
- salts, studies, (60) 572.
- samples for analysis, preparation, (54) 614.
- sampling and testing methods, (56) Vt. 570.
- sorting, rapid method for, (56) 615.
- spontaneous decomposition, (53) 712.
- standardization and improvement, (58) Calif. 366.
- storing on the farm, (55) N.Dak. 573.
- surface taint, (60) 571.
- synthetic, bacteria in, proteolytic action, (56) 610.

Butter—Continued.

- testing, (58) 871.
- v. oleomargarine for rickets prevention, (59) 163.
- vitamin A in, (52) 65.
- vitamin A in, effect of copper, (51) 569.
- vitamin A in, effect of different feeds, (56) 472.
- vitamin A in, inactivating action of other fats or oils, (53) 62, 377.
- washer and worker, description, (55) 676.
- water content, (52) 775.
- whcy, *see* Whey butter.
- worked, lipolysis, (60) 661.
- wrapping, treatment of parchment paper for, (58) 69.
- yeasts in, (60) 570.

Butterflies—

- British, life history, treatise, (53) 255.
- carnivorous, summary, (57) 361.
- dispersal, (54) 457.
- of California, (57) 657.
- of Ceylon, (54) 755.
- of India, (53) 53.
- of Lahore, (58) 451.
- of Sakhalin, (53) 858.
- papers on, (57) 554.
- swarms of, (51) Conn.State 852.

Butterfly—

- lore, treatise, (53) 558.
- migration, problems of, (57) 553.
- Painted Lady, notes, (58) Ohio 434.

Butterfly pea, culture experiments, (54) V.I. 231.

Buttermilk—

- analyses, (53) Conn.State 657.
- artificial, quality, factors affecting, (57) 571.
- commercial manufacture, Okla., (53) 177; (55) 172.
- commercial, starter for, (51) 678.
- condensed and dried, feeding value for poultry, (57) N.C. 271.
- condensed and powdered, for calves, (51) 778.
- dried, feeding value, (53) Ind. 173; (55) Fla. 863; (59) Idaho 772.
- dried, in ice cream, (57) 376.
- drinks, manufacture, (59) 368.
- enzyme in, (54) 868.
- fat determination in, (51) Ill. 317.
- fat in, error in determination, (60) 313.
- fat loss in, (56) Ill. 273; (60) 366.
- fat loss in, reducing, (52) Ill. 479.
- feeder for chicks, (51) Ohio 277.
- feeding, effect on coccidiosis, (54) Tex. 579.
- feeding value, (51) Iowa 471, Mass. 173; (54) Can. 61; (56) Can. 469; (57) 660; (58) Ky. 67.
- feeding value and cost for egg production (54) N.Mex. 765.
- for fattening poultry, (53) Iowa 778.
- for pellagra prevention, (51) 270.

Buttermilk—Continued.

- gelatinated, (57) 373; (58) Okla. 471; (59) 469.
 - in feeds, estimation, (59) 504.
 - metallic flavor in, (57) 870.
 - pasteurization, (51) 278; (55) 472.
 - pink, cause, (51) Mich. 178.
 - products, feeding value for pigs, (53) Minn. 469.
 - semisolid, feeding value, (56) Wis. 765; (58) 670.
 - soured in zinc containers, toxicity, (57) Okla. 572.
 - testing, (58) 871.
 - tests, Roese-Gottlieb v. Babcock, (51) 207.
 - use for infants in Tropics, (54) 592.
 - v. meat meal for laying hens, (56) Minn. 567.
 - v. tankage for pigs, (52) Can. 873; (54) Minn. 163, Can. 270.
 - v. water for breeding hens, (54) Can. 272.
 - v. water for chicks, (53) Can. 876.
 - whey formation, effect of viscolization, (59) N.J. 368.
- Butternut—
- Melanconis disease, (53) 650; (54) 654.
 - trees, sirup from, (52) Mich. 445.
- Butyl alcohol from bacterial fermentations, (59) Wis. 12.
- n-Butyl alcohol manufacture, yellow oil from, (55) 109.
- Butyric acid in butterfat, (59) 711.
- Byturus unicolor on strawberry blossoms, (55) Conn.State 252.
- Cabbage—
- and lettuce resistance to low temperature, varietal differences, (51) 733.
 - and radish polyploid hybrids, (60) 324.
- aphid—
- control, (55) N.Mex. 456.
 - dusting experiments, (53) Conn. State 450.
 - effect of length of day, (52) Tenn. 553.
 - false, control, (51) Pa. 254.
 - notes, N.Mex., (53) 155; (59) 249.
 - parasite of, (52) N.Y.Cornell 360.
 - soap spray for, (51) N.C. 854.
- attacked by broom rape, (58) 647.
- behavior of sulfur compounds in cooking, (59) 389.
- black rot, control, (56) N.Y.State 242.
- black rot, studies, (57) 248, 843.
- blackleg, control, (54) Pa. 343, Pa. 845; (59) N.Y.State 50; (60) 444, 445.
- blackleg resistant variety, (52) Pa. 233.
- blackleg, studies, (52) Pa. 243.
- breeding, (58) 230; (59) 833.
- breeding experiments, Del., (51) 140; (52) 836; (54) 642; (56) 342; (60) 736.
- bug, *see* Harlequin bug.

Cabbage—Continued.

- butterfly, control, (59) 553.
 butterfly, parasites of, (51) 555.
 canned, vitamin C in, (51) 462.
 clubroot—
 control, (54) Pa. 343; (59) 48.
 effect of corrosive sublimate treatment, (55) 847.
 notes, (52) N.Y.State 50.
 relation to soil reaction, (59) N.J. 337.
 relation to soil temperature and moisture, (52) 244.
 studies, (51) N.Y.State 152; (58) 548, 748.
 composition, relation to sauerkraut quality, (58) 611.
 composition, variations in, (54) 803.
 core formation, (60) Oreg. 738.
 culture experiments, (55) Can. 835.
 culture in British Columbia, (57) 34.
 damping-off, control, (59) 842.
 Danish, fertilizer experiments, (55) N.H. 834.
 disease, notes, (58) 651.
 disease-resistant varieties, (56) 549; (60) Ill. 231.
 diseases, (56) U.S.D.A. 749.
 diseases, control, (51) 151; (53) 544.
 diseases in Indiana, (56) 649.
 diseases, notes, (55) 749; (57) Tenn. 639.
 diseases, studies, (53) Wis. 443.
 downy mildew, notes, (55) 346.
 drop, studies, (57) 247; (58) 47.
 drying, air velocity and temperature in, (58) 486.
 duty of water for, N.Mex., (54) 680; (55) 478.
 early, culture, (54) N.Mex. 835; (59) Pa. 138.
 effect of cultivation, (54) 137.
 effect of overhead irrigation, (58) Ill. 334.
 effect of preceding crop, (51) R.I. 746.
 effect of self-fertilization in, (58) 640.
 electrocultural experiments, (54) 633.
 feeding, effect on milk flavor, (52) U.S.D.A. 578.
 fermenting, *Clostridium botulinum* in, (51) 271.
 fertilizer experiments, (51) N.Mex. 440; (52) Ohio 23; (53) N.Mex. 140, 142; (55) Ohio 138, Va.Truck 138, Miss. 237, N.Mex. 439; (57) Ohio 135, N.Mex. 235, N.H. 335, Pa. 436, 534; (58) Ill. 333; (59) N.H. 230, N.Mex. 231, Ala. 632, Idaho 738, Ohio 835; (60) Ala. 139.
 fertilizer requirements, (52) Pa. 233; (55) Wis. 122.
 flea beetle, control, (57) 561.
 flea beetle, foreign, in United States, (55) 857.
 flowering habit, (60) 231.
 fly, notes, (59) 855.

Cabbage—Continued.

- Fusarium*-resistant, studies, (53) 849.
 gall weevil, notes, (57) 655.
 genetic studies, (57) 121.
 group, seed setting and heredity in, (60) 533.
 growth, effect of high temperature, (59) 439.
 Hawaiian, mineral constituents, (51) Hawaii 765.
 heads, solidity, effect of fertilizers, (58) 537.
 hybridization technique, (53) 842.
 hypoglycemia-producing principle in, (52) 667.
 Iacope, tests, (56) Iowa 841.
 Iacope, yellows-resistant strain, (58) 547.
 inheritance of bolting in, (52) 139.
 inheritance studies, (58) Del. 435.
 injury from copper, (56) Del. 324.
 irrigation experiments, (51) N.Mex. 483.
 leaf spot, notes, (56) 145; (58) 442.
 leaves, dehydration, relation to hardness, (51) 126.
 liming experiments, (51) 143.
 looper, notes, (51) Ohio 453.
 looper on cauliflower, control, (54) N.Y.State 552.
 maggot—
 control, (51) 252, N.J. 661, N.Y.State 858; (52) Pa. 252; (54) Pa. 353, N.Y.State 355, N.Y.State 552; (56) 63; (57) Ohio 456.
 control, effect on seed-bed diseases, (51) 161; (52) N.Y.State 50.
 fly, substances attractive to, (53) Conn.State 450.
 life history and control in Nova Scotia, (58) 163.
 life history, habits, and parasites, (58) 458.
 notes, (52) 252; (60) N.Y.State 453.
 on cauliflower, control, (54) N.Y.State 552.
 parasite, (58) 263; (59) 660.
 turnips as trap crop, (59) Wis. 56.
 use of cheesecloth against, (59) N.Y.State 56.
 manganese in, (59) 708.
 marketing, (51) U.S.D.A. 892; (54) N.Y.Cornell 783; (59) N.Mex. 485.
 maturity in, effect of fertilizers, (55) Mich. 339.
 mildew, notes, (58) 442.
 mineral content, variations in, (54) 803.
 moth, larger, in Union of South Africa, (54) 259.
Olpidium brassicae affecting, (54) 649.
Peronospora parasitica affecting, (57) 347.

Cabbage—Continued.

- planting dates, (60) Mont. 737.
 plants, hotbed and greenhouse, (60) Mont. 737.
 preparation for market, (52) U.S.D.A. 43.
 prices and shipments from Florida, (59) 886.
 production and marketing, (54) N.Y. Cornell 783.
 proteins of, (56) 709.
 Pythium affecting, (58) 47; (59) 341.
 red, strains, selection for market demand, (58) Ill. 333.
 ringspot, notes, (54) 843.
 root maggot, control, (55) Alaska 460.
 rotation experiments, (54) Pa. 337.
 seed bed diseases, studies, N.Y.State, (52) 50, 543.
 seed beds, corrosive sublimate treatment for, (56) N.Y.State 846.
 seed, hot water treatment, (54) 47; (58) N.Y.State 844.
 seed, longevity, (52) 340.
 seed production, (55) Idaho 536; (57) Can. 237.
 seed selection for disease resistance, (53) Mo. 444.
 seed treatment, (51) U.S.D.A. 652.
 seed-stalk curculio, notes, (59) 855.
 selection experiments, (51) Can. 239.
 self-pollination, effect, (56) Pa. 139.
 shipments and unloads, (53) U.S.D.A. 293.
 soluble calcium and phosphorus in, (56) 108.
 sterility in, (58) 640.
 storage and transportation diseases, (57) Mich. 642.
 storage studies, (59) N.H. 230.
 superior strains, (58) Pa. 335.
 varieties, (51) R.I. 746; (54) 38; (55) N.C. 235; (59) Guam 529; (60) N.Dak. 41.
 varieties, biometrical studies, (60) 822.
 varieties, description, (51) 343.
 variety tests, (56) Can. 432; (57) Tex. 136; (60) Tenn. 141, Pa. 337, Guam 820.
 variety, variations in, (59) Tex. 740.
 webworm, control, (59) Ala. 652.
 webworm on collards, control, (59) Ala. 55.
 weevil, European, in United States, (58) 264.
 wilt-resistant varieties, (57) Tenn. 639.
 wire stem, (53) N.Y.Cornell 44.
 worm—
 biological complex, (57) 164.
 control, (55) U.S.D.A. 154.
 host-selection habits, (54) 153.
 imported, embryology, (58) 860.
 imported, notes, (59) N.H. 248, N.Mex. 249.
 imported, on cauliflower, control, (54) N.Y.State 552.

Cabbage—Continued.

- worm—continued.
 in Ontario, life history and control (52) 356.
 poisons for, (53) 52.
 yellows—
 control, (52) Miss. 242.
 description, (55) Iowa 545.
 effect of temperature, (51) Wis. 446.
 in Kansas, studies, (55) 847.
 in seedlings, factors affecting, (56) 448.
 notes, (56) Kans. 842.
 resistance in, inheritance, (58) 547.
 resistance to, nature, (54) 846.
 resistant, testing, (58) Mo. 436.
 resistant varieties, (52) Kans 446; (53) 543; (56) Wis. 740; (58) 547; (60) 347.
 resistant variety, (54) Tenn. 245; (55) Ohio 145, Iowa 541; (57) Ohio 144; (59) Ohio 740.
 tests, (53) Iowa 746.

Cacao—

- bark sapper, new parasites of, (60) 656.
 bean meal, feeding value for pigs, (60) Ohio 461.
 beans, fermentation of pulpy matter, effect, (57) P.R. 435.
 beans, molds on, (55) 244.
 beetle, life history, habits, and control, (55) 258.
 black pod, control, (51) 246.
 black pod, notes, (55) 345.
 budded, yield, (51) 241.
 butter adulteration, detection, (53) 504.
 canker in Java, (57) 254.
 collar crack disease, notes, (52) 150; (55) 244; (59) 645.
 culture, (53) 643.
 curing, (56) 45; (58) P.R. 536.
 diseases and pests in Java, (55) 249.
 diseases of Gold Coast, control, (60) 245.
 fertilizer experiments, (57) 835.
 habits of branching, (52) 237.
 handbook, (55) 744.
 insects affecting, (60) 649.
 meal, palatability and feeding value, (56) 472.
 mealy pod disease, (51) 246, 251.
 mealy pod disease fungus on coffee, (55) 244.
 Melioid disease, (54) 51.
 monograph, (55) 504.
 new disease of, (52) 249.
 of British Empire, (51) 896.
 pests, life history and habits, (56) 757.
 pod black rot, notes, (57) 640.
 pod diseases, studies, (60) 245.
 pod rots, notes, (55) 243; (60) 344.
 pollination, studies, (53) 537.

- Cacao—Continued.
 production and yield, (57) 45.
 production in Ecuador, decline due to
 pests, (58) 152.
 products, analyses, (53) Conn.State
 657.
 products, fat determination in, (52)
 713; (54) 613.
 products, milk proteins in, determina-
 tion, (57) 112.
 research, (60) 641.
 tests, (56) 532.
 thread disease, types, (52) 150.
 thrips, red-banded, in Gold Coast, (60)
 650.
 trees, yields, variations in, (60) 234,
 235.
 witches' broom disease, (56) 843; (57)
 443.
 yeasts, (59) 324.
 yields, relation to rainfall in Gold Coast,
 (60) 207.
- Coccobius mutans* in human intestines, (52)
 155.
- Cachaza as fertilizer, (55) 725.
- Cachexia, bovine osseous, etiology and treat-
 ment, (59) 474.
- Cacoecia—
argyrosphila, see Fruit tree leaf roller.
fumiferana, studies, (53) 559; (56)
 460.
rosana in Canada, (51) 159.
rosana in Nova Scotia, (54) 152.
 spp., notes, (56) 58.
xylosteara, chorographical distribution,
 (54) 659.
- Caconema radicolica*, control, (59) Calif.
 747.
- Cactaceae, studies, (54) 21.
- Cacti—
 ancestral lines, (56) 46.
 forms and species in commerce, (55)
 838.
- Cactus—see also *Opuntia*.
 jointed, in Cape Province, (52) 639.
 prickly pear—
 bacteriosis of, (55) 551.
 control in Australia, (59) 856.
 control, propriety of introducing
 insects for, (58) 159.
 in Australia, (51) 641; (52) 556;
 (57) 633; (58) 229.
 insects affecting, (51) 759; (54)
 656.
 spread, relation to climate, (55)
 235.
 use as cattle feed, (52) 869.
 spineless, merits and status, (57) 728.
 tree, growth and permeability of cen-
 tury-old cells, (56) 516.
 tree, growth in, (59) 122.
- Cadelle, summary, (56) U.S.D.A. 259.
- Caenurgia erechtea* as alfalfa pest in Kan-
 sas, (51) 362.
- Caecoma nitens*—
 nuclear fusions in, (55) 453.
 uninucleated acidiospores in, (52) 451.
- Caffeine, ingestion, effect on uric acid ex-
 cretion, (60) 193.
- Cajanus indicus*—
 inheritance studies, (59) 223.
 pot culture experiments, (55) 661.
 wilt, notes, (60) 546.
- Cake flour laboratory, (52) 259.
- Cake making in high altitudes, (60) 490.
- Cakes, graphic record of texture and vol-
 ume, (55) 591.
- Cakes, texture, factors affecting, (51) Mo.
 765.
- Calaphis betulaecolens*, notes, (51) Conn.
 State 852.
- Calarnic dust, use of term, (55) La. 455.
- Calavo growers of California, (60) 681.
- Calcarata, value, (53) Calif. 430.
- Calcification—
 in growing animals, effect of menhaden
 fish meal, (58) N.Y.Cornell 166.
 processes, studying, use of rabbit for,
 (56) 593.
- Calcion buffer values, determination, (52)
 612.
- Calcium—
 absorption by colloidal clay, effect of
 pH, (58) 520.
 absorption by man and animals, stud-
 ies, (54) 891.
 absorption in intestines, (56) 192.
 adsorption, relation to soil reaction,
 (51) 515.
 and phosphorus absorption, relation
 to diet, (52) 763.
 and phosphorus metabolism, factors
 affecting, (53) 364.
- arsenate—
 basic, preparation, (51) 610.
 cause of aphid infestation, (58)
 558.
 dust, diluting, for boll weevil con-
 trol, (59) 197.
 dust, effect on boll weevil, (52)
 559.
 free calcium hydroxide in, (53)
 110.
 poisoning of boll weevil, methods,
 (54) Ga.Coastal Plain 158.
 toxicity, (60) 162.
 toxicity, effect of lime, (60) 844.
 v. sodium fluosilicate for boll
 weevil control, (56) 158.
- arsenate-lime-sulfur spray, (56) 107.
- arsenates, injury to foliage, (58) 661.
- arsenates, special, preparation, (59)
 64.
- arsenite, toxicity, (60) 162.
- assimilation—
 dietary factors in, (53) 379; (56)
 464.
 effect of fish meal, (57) 761.
 effect of physical state, (59)
 Ohio 258.
 in pigs, effect of oil, (51) 374.
 studies, (57) 177.
- availability, effect of curing methods
 of hay, (51) Wis. 475.

Calcium—Continued.

available in soil, determination, (60) 504.

balance—

in adult humans, effect of irradiation and cod-liver oil, (58) 896.

in dairy cattle, (55) 871.

in horses, (51) 775.

in pigs, effect of potassium iodide, (54) 567.

in pullets, laying and nonlaying, (54) 568.

in rats during pregnancy and lactation, (60) 592.

behavior in milk, (51) 316.

biphosphate, effect on acid soils, (52) 621.

carbonate—

effect on acid soils, (52) 621.

effect on availability of phosphate, (56) 624.

effect on Bordeaux mixture, (57) 839.

effect on decomposition of organic matter in soil, (53) 219.

effect on microbiological activities in soil, (51) 16.

effect on nitrification in peat soils, (53) 118.

effect on soil reaction, (54) 20; (56) 22.

for orange trees, (55) Calif. 322.

fungicidal value, (55) 544.

in diet of hens, effect on chicks, (55) 868.

in diet of hens, effect on drop-pings, (54) 165.

in diet of hens, effect on eggs, (54) 165.

in soil, decomposition, (51) Tenn. 320.

loss in drainage water, (51) 420.

solutions, limits of H-ion concentration, (51) 110.

sources for laying hens, (59) Iowa 71.

transformation of calcium oxide into, (53) 516.

carbonate-soil equilibrium and lime requirement, (59) 515.

carbonates, chemico-physical effect, (52) 723.

chemistry, manufacture, and use, (53) 621.

chloride—

action on cements, (56) U.S.D.A. 882.

action on plants and soils, (53) 21.

curing concrete with, (53) U.S. D.A. 84.

effect on acid-sugar-pectin gels, (52) 62.

effect on black alkali soil, (52) Calif. 21.

Calcium—Continued.

chloride—continued.

effect on cheese yield of milk, (58) 170.

effect on citrus seedlings, (55) 23.

effect on concrete, (56) 77.

effect on setting of concrete, (51) 85.

effect on white pine, (52) 353.

fertilizing value, (53) 121.

hygroscopic properties, (55) 796.

in manufacture of cheese, use, (51) 780.

in milk for cheese making, effect, (57) 179.

citrate, manufacture from lime juice, (55) 14.

compounds for hens, Ky., (58) 67; (60) 261.

concentrations in blood serum, effect of fasting, (51) 567.

consumption of children, (56) Ohio 493.

crop-producing power, (59) 514.

cyanamide—

and acid phosphate mixtures, chemical changes in, (53) 713.

composting with soil, effect, (56) 321.

decomposition, (52) 212.

decomposition, effect of oils, (51) 817.

effect on bacterial activity in soils, (60) 714.

effect on *Blepharospora cambivora* and *Pythiacystis citrophthora*, (58) 340.

effect on phosphate and potassium availability, (60) Ala. 120.

effect on plant parasites, (58) 340.

fertilizing value, (52) 120; (55) Ark. 18, Miss. 527, N.Dak. 542.

for meadows, (55) 420.

granulation, (54) 516.

guanidinium salts from, (52) 212.

in stick form, persistence of dicyanodiamide nitrogen in, (54) 19.

injurious to lupines, (57) 150.

nitrification, (60) 718.

production, (56) 626.

total nitrogen in, determination, (53) 611.

toxic action, (51) 818.

urea-containing, fertilizers from, (54) 613.

use in Egyptian agriculture, (55) 221.

cyanide—

as pest control, (56) 358.

as soil fumigant, (52) 459, 856; (56) 157.

composition and manufacture, (51) 158.

dust for grape leafhopper, (53) 454.

Calcium—Continued.

- cyanide—continued.
 dust fumigation, (55) 658; (59) Calif. 650.
 dusting experiments with, (51) Md. 454.
 for banana thrips, (57) 60.
 for chinch bug control, (51) 359; Ill. 455.
 for control of fleas, (51) 357.
 for control of new aphid on orange, (51) 660.
 for control of prairie dogs, (51) 357.
 for control of stored product pests, (60) 843.
 for destruction of mound building ant, (53) 456.
 for *Helopeltis* in tea, (57) 60.
 for household insects, (55) 52.
 for killing condemned chickens, (52) 782.
 for peach borer control, (55) Fla. 853.
 for pocket gophers, (53) 551.
 for rosy apple aphid, (52) 60.
 forms and use as insecticide, (52) 156.
 fumigation, (54) 656; (59) Calif. 756.
 fumigation for house fly, (57) S.C. 262, 859.
 fumigation of citrus trees, (52) Calif. 56, 357.
 fumigation of greenhouses, (51) 357; (53) 357; (55) U.S.D.A. 254; (57) Mo. 451, 656; (58) Ohio 346.
 in solid form, manufacture, (55) 307.
 insecticidal value, (52) Calif. 56.
 notes, (59) N.J. 351.
 use, (53) Calif. 449.
 use in bee culture, (56) 558; (59) Wyo. 562.
 cyanides, notes, (55) 52.
 deficiency—
 effect of ultra-violet radiations, (53) 763.
 effect on young apple trees, (55) 323.
 in forage, (60) Mont. 720.
 deficient diet—
 changes in intestinal flora on, (54) 594.
 effect on fertility, pregnancy, and lactation, (57) 65, 91.
 value of egg yolk in, (56) 293.
 deposition in rats, effect of management of cow supplying milk for diet, (52) 176.
 deposition in rats on special milk rations, (52) 66.
 determination, (55) 803.
 determination in animal substances, (52) 614.
 determination in bone, (56) 14.

Calcium—Continued.

- dietary sources, (52) 260.
 effect of manure and irrigation, (53) 218.
 effect on orange trees, (52) Calif. 26.
 effect on soy bean inoculation, (59) 328.
 elimination in experimental scurvy, (53) 165.
 equilibrium in milking cows, effect of sunlight, (56) 464.
 excessive in maternal diet, effect on young, (53) 263, 563.
 excessive ingestion, effect, (55) 386.
 exchangeable, availability in soils, (56) 416.
 exchangeable, in carbonate-free soils, (60) 708.
 exchangeable, relation to soil type, (60) 208.
 excitant effect on leaf activities, (57) 119.
 excretion, effect of potassium intake, (56) 465.
 excretion, factors affecting, (60) 289.
 fixation from burnt limes, limestone, and dolomite incorporations in soil, (56) 214.
 fixation, studies, (58) 893.
 fluosilicate, insecticidal value, (52) 555.
 glycerophosphate, respiratory exchange after ingestion, (51) 465.
 hexose phosphate, respiratory exchange after ingestion, (51) 465.
 hydroxide—
 effect on retention of sulfates by soils, (51) 321.
 effect on sulfate losses from soils, (56) 214.
 free, in calcium arsenate, (53) 110.
 on manured soil, effect, (54) Pa. 317.
 rôle in lead arsenate sprays, (54) 819.
 in animal body, distribution, (58) Mo. 460.
 in blood—
 determination, (55) 311, 615.
 effect of vitamin D, (60) 596.
 of birds, changes in during reproductive cycle, (56) 67.
 of chickens, variation, (58) 67.
 of dogs, effect of irradiation, (54) 293.
 of infants, seasonal variation, (58) 493.
 of pigeons, relation to sex, (53) 672.
 serum, determination, (53) 505; (56) 313, 896.
 serum, effect of irradiation, (59) 597.
 serum in cases of gout, (52) 465.
 in body, factors affecting, (54) 593.

Calcium—Continued.

- in human milk, relation to rickets, (51) 867.
- in milk, determination, (54) 411.
- in milk, utilization, (56) Kans. 896; (60) 593.
- in plants, relation to ability to feed on rock phosphate, (60) Ark. 804.
- in soil, relation to pH value, (51) 514.
- in soils and waters, (60) S.C. 708.
- in soils, studies, (53) Mo. 415.
- in sugar cane juice, determination, (58) P.R. 508.
- in tissues and other animal products, (55) 311.
- ion concentration, regulation, (52) 612.
- losses from limed soils, (56) 721.
- losses from soils, (51) Tenn. 320; (56) 213.
- magnesium, and phosphorus in diet, effect of variations in, (59) 862.
- metabolism, (59) 791.
 - effect of fresh and heated milk, (56) 292.
 - from human and cow's milk, (51) 664.
 - in avitaminosis, (52) 66.
 - in boys, (52) 160.
 - in cows, effect of protein in rations, (52) Mo. 478.
 - in dairy cows, (55) 167.
 - in infants and bone development, (59) 791.
 - in lactating animals, effect of cod-liver oil, (59) 571.
 - in laying hens, Ky., (51) 176; (52) 75.
 - in man, (51) 561.
 - in osteomalacia, (53) 460.
 - in poultry, (55) 868.
 - in rats, (56) 293.
 - in rats on rachitic diet, (54) 893.
 - in undernourished children, (60) 91.
 - studies, (53) 261.
 - with hydrochloric acid milk, (56) 393.
- micro estimation in pus, plasma, etc., (58) 510.
- monophosphate and soils, reactions between, (58) 519.
- nitrate—
 - effect on black alkali soil, (52) Calif. 21.
 - effect on phosphate and potassium availability, (60) Ala. 120.
 - fertilizing value, (52) 123, 422; (60) N.C. 719.
 - stimulation, toxicity, and antagonism, (60) 27.
- of cheese, (60) 490.
- of serum of rachitic rats under various treatments, (54) 893.
- of soil, relation to acidity and returns from liming, (51) 514.

Calcium—Continued.

- of spinach, utilization by adults, (58) 191.
 - oxalate crystals in plants, (52) 427; (57) 215.
 - oxalate crystals on leaves of Caryophyllaceae, (59) 323.
 - oxalate monohydrate and trihydrate in plants, (56) 628; (59) 427.
 - oxide—
 - effect on calcium and magnesium in soil, (51) 320.
 - effect on decomposition of organic matter in soil, (53) 219.
 - effect on microbiological activities in soil, (51) 16.
 - effect on soil acidity, (54) 20.
 - in native Philippine foods, (57) 688.
 - incorporated in two soil zones, fate, (58) 621.
 - transformation into calcium carbonate, (53) 516; (54) 20, 816.
 - phosphate—
 - effect on acid soils, (52) 621.
 - for dairy cows, (54) 571.
 - solubility, effect of proteins, (58) 507.
 - relation to—
 - forest productivity, (60) 236.
 - growth and composition with varying vitamin intake, (51) 69.
 - toxicity of carbon tetrachloride in dogs, (58) 578.
 - requirements of—
 - alfalfa, (59) 515.
 - animals, relation to calcium in feeds, (52) 671.
 - chicks, Ohio, (55) 164; (57) 173; (59) 263.
 - human body, (53) 161.
 - lower organisms, (57) 117.
 - plants and animals, (51) 274.
 - retention in growing rats, (51) 806.
 - salts, effect on starch formation in leaves, (59) 25.
 - silicate, effect on acid soils, (52) 621.
 - silicates, synthetic, as source of lime, (52) 818; (56) 215, 625.
 - soaps, solubility, (53) 205.
 - soluble, as indicator of returns from lime, (53) 819.
 - soluble, in cabbage, (56) 108.
 - soluble, in soil, factors affecting, (54) Mo. 716.
 - sucrate, effect on soil acidity, (54) 20.
 - sulfate, *see* Gypsum.
 - supply of hens, relation to hatchability of eggs, (53) 577.
 - transference from eggshell to embryo, (53) 878.
 - utilization, effect of vitamin D, (58) 91.
- Calcium-phosphorus ratio in poultry rations, (59) Wis. 71.
- Calendar, simplification, (52) U.S.D.A. 414.

- Calendra discolor*, life history, (52) 857.
Calendra granaria, see Granary weevil.
Calendra oryza, see Rice weevil.
 Calendrinae, generic characters, (53) 558.
 Calf—
 abnormal, bulldog type, description, (60) 530.
 blood, bactericidal properties, (53) Mo. 479.
 disease in Marico District, (60) 574.
 effect of diminished thyroids, (53) 369.
 liver, vitamin content, (53) Wis. 459.
 meal, feeding value, (53) N.Y.Cornell 675.
 meals, tests, (59) 571.
 pneumonia, notes, (52) Conn.Storrs 681.
 scours, notes, (51) West.Wash. 397; (52) Conn.Storrs 681.
 septicemia, notes, (60) 72.
 vibrios, (57) 673.
 viscera, composition, (52) 159.
 Caloriforage, preparation and antiscorbutic properties, (56) 296.
 California—
 Forest Experiment Station, notes, (55) 498; (56) 198.
 Station, notes, (51) 97, 198, 398, 695; (52) 300, 599, 697; (53) 97, 300, 498, 799; (54) 397, 699; (55) 496, 900; (56) 196, 699; (57) 98, 200, 797; (58) 697; (59) 299, 397, 696, 899; (60) 399, 698, 900.
 Station, report, (52) 97; (53) 496; (55) 394; (57) 298; (59) 796.
 University, notes, (51) 97, 198, 695; (52) 300, 599, 697; (53) 97, 300, 498; (54) 397, 699; (55) 496, 698, 900; (56) 196, 699; (57) 98, 200, 797; (58) 300, 697; (59) 299, 397, 696, 899; (60) 200, 399, 900.
Caligula japonica, egg masses, parasite of, (59) 160.
Callidium sp., notes, (52) 662.
Calliephialtes grapholithae, notes, (53) U.S.D.A. 54.
 Callimome, taxonomic and ecological review, (57) 862.
 Calliphora—
 erythrocephala larva, growth, (57) 657.
 erythrocephala, parasites of, (59) 660.
 spp. in Great Britain, seasonal frequency, (58) 862.
 Calliphorine myiasis in domesticated animals, (53) 159.
Calliptamus italicus, control, (56) 256.
 Callosities due to infection by fungi, (58) 543.
Calluna vulgaris, development of mycorrhiza in, (56) 726.
 Calocoris—
 bipunctatus, carrier of leaf roll, (51) 352.
 bipunctatus, feeding methods, (58) 455.
 bipunctatus, notes, (57) 645.
 fulvomaculatus, notes, (56) 58.
Calomel, anthelmintic value, (52) Ohio 84.
 Calonectria—
 graminicola, notes, (53) 44.
 sp., notes, (53) 147.
Caloptenus italicus in France, (51) 762.
 Caloric adjustment, use of term, (59) 793.
 Calorimeter—
 differential, description, (53) 315.
 differential, for metabolism determinations, (58) 189.
 for small animals, (53) 107.
 modern, treatise, (60) 111.
 Calorimeters, development, (58) 392.
 Calorimetry—
 animal, studies, (51) 265, 558.
 clinical, (51) 465, 556; (55) 955.
 indirect, application to ruminants, (51) 371.
Calosoma sycophanta, notes, (51) N.C. 854.
Calotermes spp., notes, (56) 462.
Calurea, fertilizing value, (60) N.C. 719.
 Calves—
 and vealers, market classes and grades, (59) U.S.D.A. 764.
 baby beef, fattening, (59) Wis. 66.
 baby beef, feeding, papers on, (57) 762.
 bacteriology of intestinal tract, (53) 182.
 Bacterium abortus antibodies in serum, (52) Mich. 882.
 beef, fattening, (52) U.S.D.A. 72; (58) Minn. 866.
 beef, feeding experiments, (60) Mont. 760.
 beef, growth as affected by protein, (53) 571.
 beef, producing and feeding, (58) 267.
 beef, type in, (57) Wyo. 267.
 beef, wintering, Mont., (53) 771; (55) 563.
 beef, wintering, effects of methods, (60) Wyo. 761.
 bones, mineral deposition in, (59) 366.
 buttermilk for, (51) 778.
 care and management, (54) Nebr. 68.
 congenital epithelial defects, (59) 823.
 cost of feed for pound of gain, (59) Wyo. 267.
 cost of production, (57) 459; (59) Idaho 772.
 dairy, management and feeding, (55) 872.
 dairy, raising, (56) 672.
 dairy, vitamin B requirement, (54) Pa. 373.
 economical rations for, (53) 571.
 effect of winter rations on pasture gains, (60) W.Va. 855.
 fattening, (54) 267, S.C., 664; (56) Ariz. 560; (60) 360, Ohio 462.
 fattening rations for, (55) Nebr. 664.
 fattening, roughages in rations for, (58) Tex. 65; (59) U.S.D.A. 66.
 fatty acids in intestinal tract, (53) N.Y.Cornell 378.
 feed requirements, (51) Minn. 677.
 feeding, (52) 676.

Calves—Continued.

- feeding and cost of raising, (57) Okla. 570.
 feeding and management, (59) U.S. D.A. 167.
 feeding experiments, (51) S.Dak. 468, Ind. 875; (52) Calif. 71, Can. 375, Kans. 467, Ohio 467, S.C. 567, S.C. 578, Wash.Col. 767; (54) 266, Can. 473; (56) Kans. 871; (58) Ohio 353, Ark. 354; (59) Wis. 73, Idaho 772, N.C. 773; (60) Wyo. 770.
 fetal, pigment formation in skin, (60) 811.
 finishing, (57) Iowa 266.
 grain as milk supplement for, (54) Mo. 759.
 growth and development, effect of sunlight, (56) Kans. 871; (57) 370; (58) S.Dak. 769.
 growth and nutrition, (52) 678.
 hand rearing, (60) 569.
 heifer and steer, gains, (59) Colo. 259.
 heifer, fattening, (54) Ohio 361.
 infection with *Ostertagia ostertagi*, (59) Calif. 775.
 inherited skin defects in, (59) Wis. 78.
 legumes for, (51) Ohio 475.
 lungs, protein in, nutritive value, (56) 290.
 maintenance requirements, (58) 870.
 management, (54) 564.
 milk feeding systems, (55) 674.
 milk products for, (57) Idaho 766.
 milk substitutes for, (53) Mass. 473.
 mineral deposition in bones, (60) Pa. 365.
 minimum protein requirements, (51) Mo. 777.
 mortality in, (58) 474.
 newborn, hydropic stages in intestinal epithelium, (53) 887.
 newborn, prevention of diseases, (55) 574; (59) 470.
 newborn, skin disease affecting, (53) Wis. 479.
 newborn, weight, (59) 366.
 over-term, sex of, (53) 428.
 percentage crop in range herds, factors affecting, (60) Calif. 360.
 production and prices, trends, (55) 786.
 protein requirements, (52) 268.
 raising, (51) Wis. 475, Iowa 677.
 raising, minimum milk requirements, (52) Minn. 579; (54) Ariz. 769; (57) N.J. 73; (59) N.J. 364.
 raising on calf-meal gruel, (53) N.Y. Cornell 675.
 rations for, (56) Wash.Col. 569, Wis. 772.
 Scindi, consumption and digestion of rations, (59) 162.
 self-feeders for, (51) 378; (52) 678; (56) S.Dak. 671.
 self-feeding, tests, (54) S.Dak. 167.

Calves—Continued.

- sex, relation to gestation period and birth weight, (59) Wash.Col. 73.
 skim milk v. grain for, Wyo., (53) 674; (54) 768.
 spotting, effect of growth, sex, and age of parents, (58) 826.
 statistics, (58) U.S.D.A. 81.
 steer and heifer, merits, (60) Ill. 254.
 steer, feeding experiments, (56) Ohio 261.
 suckling, *Bacterium abortum* from feces, (52) Calif. 83.
 susceptibility to rinderpest, (51) 285.
 v. yearlings, marketing, (52) Miss. 269.
 vitamin A requirement, (56) 169.
 vitamin B requirement, Pa., (56) 168; (58) 363.
 vitamin C requirement, (55) 871.
 western, fattening, (60) Ill. 254.
 wintering, (51) Wyo. 172; (52) 671.
 wintering, protein for, (55) Oreg. 665.
 yeast as supplementary feed, (53) 176.
- Camarosporium*—
abietis n.sp., notes, (56) 753.
hypericorum n.sp., description, (60) 29.
- Cambarus*—
blandingii acutus, notes, (55) Miss. 555.
hagenianus, life history and control, (55) Miss. 658.
- Cambium curculio*, studies, (52) 157.
Cambu, nutritive value, (57) 889.
Camel specialist, report, (56) 678.
Camelina sativa in grain seed, (53) 36.
- Camels—
 fumigation with sulfur dioxide, (57) 875.
 treatment with Bayer 205, (53) 583.
 trypanosomiasis in, diagnostic agent for, (60) 869.
- Camnula pellucida*, see Grasshopper, clear-winged.
- Camote vines, feeding value, (53) 575.
Campanulas, new disease of, (54) 549.
- Camphor—
 Borneo, root disease, (53) 148; (54) 150.
 cultivation from *Cinnamomum camphora*, (52) 142.
 scale, Japanese, summary, (53) 653.
 scale situation, (54) 156.
 scale, summary, (53) 51.
 thrips, life history and habits, (51) U.S.D.A. 454.
 thrips, notes, Fla., (54) 257; (56) 152.
 thrips, relation to fungus disease of *Cinnamomum camphora*, (53) 650.
- Camponotus maculatus*, notes, (55) 858.
- Campoplegidea*—
ellopiae n.sp., description, (60) 847.
 new genera and species, descriptions, (57) 264.

- Campoplex—**
bakeri n.sp., description, (54) 462.
ferrugineipes, notes, (53) 652; (59) Va.Truck 251.
frustranae n.sp., description, (57) 560.
phthorimacae, notes, (59) 354.
 spp., notes, (56) Va. 556.
- Campsomeris annulata**, notes, (56) U.S.D.A. 860.
- Camptoum curvatum**, life history, (60) 49.
 Canada Experimental Farms, reports, (52) 796.
- Canada Grain Act**, text, (55) 82.
- Canadian Council of Agriculture**, history and work, (55) 886.
- Canadian Seed Growers' Association**, report, (56) 738.
- Canal—**
 velocities, permissible, (54) 280.
 weeds, control, (54) 231.
 weeds, peculiar organs of, (52) 830.
- Canals—**
 irrigation, *see* Irrigation.
 loss of seepage water from, (53) 386.
 seepage losses in, measurement, (51) 386.
- Canaries—**
Bacterium aertrycke infection in, (55) 476.
 breeding, treatise, (52) 552.
 disease affecting, (57) N.J. 80; (58) 180.
 inheritance of characters, (60) 324.
 inheritance of white color in, (51) 429.
 sex-linkage and other genetical phenomena, (56) 818.
 Yorkshire, treatise, (53) 855.
- Cancer—**
 etiology, factor in, (60) 868.
 in domesticated animals, (59) 170.
 mammary, in mice, studies, (59) 726.
 nature of, genetic studies, (56) 225.
 not a simple Mendelian recessive, (60) 430.
 or crown gall of plants, (57) 541; (59) 341.
 Shaw-Mackenzie blood test in, significance, (58) 772.
- Cancers, abdominal**, in fowls, (58) 473.
- Candy—**
 and candy materials, fumigated, hydrocyanic acid absorbed by, (52) U.S.D.A. 561.
 consumption in United States, (59) 390.
 from fruit products, (52) Calif. 14.
 making, recipes, (56) 590.
 manufacture, relation to chemistry, (51) 808.
- Cane beetles—**
 climatic control, (52) 853.
 effect of chemotropism, (52) 853.
 paradichlorobenzene for, (59) 658.
- Cane—see also Sugar cane.**
 fruit anthracnose, control, (51) Wis. 655.
 improving by bud selection, (51) 32.
- Cane—Continued.**
 insects, control in Queensland, (51) 659.
 soils, management, (54) P.R. 615.
 sugar, *see* Sugar.
 Uba, as forage crop, (60) P.R. 731.
- Canker, European**, of fruit trees, fungi associated with, (58) 851.
- Cankerworm, fall—**
 in mountain forests, (53) N.C. 755.
 outbreaks in forests, (51) N.C. 854.
- Cankerworms—**
 in New London Co., (59) Conn.State 455.
 studies, (52) U.S.D.A. 254; (54) 555.
- Canna—**
 crosses, chromosome number, (60) 125.
 edible—
 breeding experiments, (59) Hawaii 626.
 carbohydrate metabolism, (57) Hawaii 329.
 characteristics, (51) Hawaii 834.
 culture and composition, (55) Hawaii 526.
 experiments, Hawaii, (51) 740; (59) 224.
 production tests, (57) V.I. 326; (60) Guam 814.
 studies, (57) Hawaii 326.
 ornamental, cytological studies, (54) 727.
 starch industry, status, (54) Hawaii 132.
 starch, studies, (59) Hawaii 626.
- Cannabis sativa—**
 cytokinesis in, (53) 27.
 flowers, abnormalities in, (55) 730; (57) 421.
- Canned—**
 apples, spoilage in, cause, (59) Can. 91.
 beets, discoloration in, (53) 208.
 corn, black discoloration in, (51) 508.
 corn spoilage, relation to processing, (51) 318.
 crustacea, can corrosion and blackening in, (55) 889.
 foods—
 bacteriological and toxicological studies, (51) 168.
 growth of paratyphoid-enteritidis organisms in, (52) 266.
 hydrogen sulfide in, (51) 713.
 inspection in Canada, (58) 472.
 perforation studies, (53) 208.
 relation to health, (51) 765.
 research work with, (53) 208.
 spoiled, examination, (55) 111; (57) 788.
 studies, (59) 389.
 thermal process time for, (52) 62.
 tin determination in, (51) 713.
 toxin production, (54) 795.
 vitamins in, (53) 566, 764; (55) 793; (59) 94.
 fruit, corrosion in, nature, (51) 766.

Canned—Continued.

- fruit, examination, (51) 261.
 fruit, vitamin C destruction in, (59) 94.
 meat, *Bacillus botulinus* in, (51) 766.
 peas, spoilage, relation to processing, (51) 318.
 peas, sulfide spoilage in, (59) 91.
 tomatoes, spoilage studies, (53) 209.
- Canning—*see also* Fruits and Vegetables, and preserving fruits and vegetables, manual, (57) 890.
 bacteriological field studies in, (60) 490.
 behavior of anthocyan pigments in, (57) 890.
 course in, (54) 87.
 crops, diseases, survey, N.Y.State, (58) 844; (59) 50.
 crops, insects affecting, (59) N.Y.State 56.
 crops investigations, (55) N.Y.State 197.
 crops production, better methods, (59) N.Y.State 232.
 factories, statistics, (53) 277.
 factory waste, disposal, (55) 884.
 fruits and vegetables, (55) U.S.D.A. 189.
 home, inadequacy of heat processes against botulism, (58) 897.
 home, methods, (54) 890.
 home, time-tables for, (51) U.S.D.A. 508.
 industry, microorganisms in, (59) Iowa 91.
 industry, scientific research for, (59) 389.
 manual, (54) 87.
 nonacid vegetables, (56) Fla. 894.
 of foods, theory and practice, (56) 413.
 operations, scalding, precooking, and chilling in, (52) U.S.D.A. 459.
 principles, (51) Calif. 808.
 processes, treatise, (53) 716.
 studies, (57) Ind. 688.
 treatise, (57) 890.
- Cantaloupes, *see* Muskmelons.
Cantharis andersoni, new, in Massachusetts, (60) 563.
 Canton flannel, measuring quantity of nap on, (60) 96.
- Capillaria—
aerophila in foxes, (60) 876.
annulata in turkeys, (55) 778.
annulata in turkeys and chickens, (59) U.S.D.A. 54.
annulata, notes, (58) 180.
columbae, description, (52) 361.
- Capira angustilineata*, notes, (53) 558.
Capnodium brasiliense, notes, (54) 254.
Capnodium citricolum, notes, (55) 346.
- Capons—
 production, (56) 769.
 v. cockerels, value, (52) Can. 570.
 value, (55) N.J. 367.

- Capparidaceae, evolution in, (52) 330.
 Capper-Ketcham Act, editorial, (59) 104.
 Caprifig seed, results from sowing, (53) 844.
- Caproic acid—
 derivatives for lysine synthesis, (53) 261.
 derivatives, preparation, methods, (53) 204.
 in butterfat, (59) 711.
- Capsella bursa-pastoris* in salted soil, seed anomalies, (53) 626.
 Capsid bug, studies, (60) 846.
 Carabao, *see* Water buffalo.
Carausius morosus, anatomy and life history, (58) 858.
- Carbamino acids, effect of ultra-violet light, (54) 23.
- Carbohydrate—
 alimentionation in cells, (57) 319.
 consumption of children, (56) Ohio 493.
 deficient diets, nutrition and growth on, (51) 557.
 diets, high, for treatment of diabetes, (55) 91.
 metabolism—
 and insulin, treatise, (55) 694; (60) 687.
 and muscular activity, (54) 292.
 in edible cannas, (57) Hawaii 329.
 in experimental scurvy, (53) 164.
 in leaves, (53) 821.
 in *Nicotiana tabacum*, (57) 23.
 inorganic substances in, (51) 863.
 nature of control, (51) 559.
 relation to blood phosphates, (53) 763.
 relation to phosphates, (52) 566.
 studies, (51) 558; (52) 764, 765; (56) 87.
 nitrogen relations, survey of investigations, (54) 536.
 splitting in plants, mechanism, (56) 425.
 storage in corn endosperm, (53) 421.
 synthesis, effect of fertilizers, (55) Mich. 836.
- Carbohydrates—
 acid-hydrolyzable, in green plant tissue, determination, (55) 610.
 and glucosides, treatise, (52) 108.
 and vitamin B, interdependence, (52) 863; (53) 265.
 as source of energy, efficiency, (51) 263.
 calories furnished by, and respiratory quotient, (51) 263.
 color reactions with carbazole and sulfuric acid, (58) 510.
 determination, (51) 801.
 determination, method, (53) 504.
 digestibility, (51) U.S.D.A. 60.
 distribution in cherry trees, (58) Mo. 436.
 effect on blood phosphate, (51) 366.
 effect on blood sugar, (51) 365.

Carbohydrates—Continued.

- effect on calcium and phosphorus absorption, (56) 192.
- energy yield during plant growth, (57) 216.
- formation in plants, bioenergetic law of, (58) 523.
- growth response to, (56) 25.
- in apples, seasonal changes, (58) Mo. 436.
- in corn and sorghum leaves, daily variation, (51) 626.
- in corn crosses, inheritance, (56) Iowa 519.
- in corn crosses, segregation, (57) 821.
- in corn, inheritance, (56) 29.
- in corn, variations, S.Dak., (56) 627; (58) 724.
- in developing flower and fruit of apple, (56) N.Y.Cornell 344.
- in diet, relation to refectation in rats, (59) 686.
- in grasses, studies, (60) 574.
- in leaves, variations during daylight, (59) 216.
- in peel of healthy and endoxerotic fruits, (58) 251.
- in plant tissue, effect of drying, (53) 803.
- in plants, colorimetric determination, (53) 108.
- in plants, effect of length of day, (51) 125.
- in plants, genesis, (58) 421.
- in plants, transformations, (59) 123.
- in tomato leaves, (52) N.Y.Cornell 45.
- in trees, rôle in, (54) 741.
- injection into pear trees, effect, (55) Oreg. 643.
- movement in yam stems, (57) 418.
- polymeric, chemistry of, treatise, (55) 502.
- relation to vitamin requirements, (51) 70.
- soluble, in growing wheat grains, (53) 725.
- studies, (54) 307.
- transformations in stored carrots, (58) 436.
- translocation in sugar maple, (52) 27; (53) 24.
- transportation in plants, (52) 27.
- upward transfer, effect of ringing, (52) 125.
- utilization by bees, (58) 264.

Carbolic acid emulsion for mealybug control, (52) Calif. 57.

Carbolineum, experiments with, (58) 451.

Carbolineum, use in orchards, (57) 358.

Carbon—

- accumulation rate and cost, (54) Mo. 716.
- activation, (51) 311.
- assimilation by green plants, (56) 424.
- bisulfide—
 - anthelmintic value, (55) 271.
 - as mosquito larvicide, (52) 155.

Carbon—Continued.

bisulfide—continued.

treatment of soil, effect, (51) 17.

use against Japanese beetle, (53) N.J. 258.

volatilizing for soil fumigation, (60) 557.

colloidal, intravenous injections, (58) 274.

compounds, action in manure, (60) 718.

compounds, pharmacology, treatise, (53) 309.

deposition in internal-combustion engine, (56) 78.

deposits from typical automobile oils, (56) 579.

deposits, relation to detonation tests of engines, (58) 375.

determination, (51) 612.

determination in organic compounds, (53) 805; (55) 804; (59) 414.

dioxide—

absorption by leaves, (55) 628; (57) 817.

absorption in photosynthesis, (52) 425.

accumulated, effect on plant respiration, (60) 807.

adsorption by coal, (55) 494.

as stimulant and fertilizer, (54) 817.

assimilation, (56) 628; (58) 624.

dioxide assimilation—

and chlorophyll, (57) 117.

by conifers, ecology, (55) 519.

by plants, mechanism, (54) 725.

in dead leaves, (57) 118.

in Norway spruce, relation to stomatal opening, (60) 442.

dioxide—

atmosphere, preparation in greenhouse, (52) 327.

binding capacity of plasma, effect of insulin, (51) 502.

concentration, effect on metabolism of *abortus-melitensis* group, (60) 267.

concentration, effect on root elongation, (53) 222.

consumption, apparatus for recording, (51) 806; (52) 806.

content of air over manured soil, (51) 724.

cycle in nature, treatise, (52) 320.

determination, (51) 111; (54) 22.

determination, apparatus for, (56) 13.

diffusion ratio in bread doughs, (53) 410.

distribution in greenhouses, (52) 234, 327.

dioxide, effect on—

action of respiratory insecticides, (60) 454.

Carbon—Continued.

- dioxide, effect on—continued.
 Bacterium abortum, (52) Mich. 383.
 butter and ice cream, Iowa, (55) 573, 676.
 dairy products, (56) 74.
 flower and fruit production in plants, (60) 806.
 germination of *Ustilago zeae* spores, (57) 49.
 grasshoppers, (53) 254.
 greenhouse cucumbers, (57) 336.
 lettuce, (53) Ohio 519.
 pH of soils, (56) Wis. 715.
 plant growth, (52) 424; (57) 137.
 tomatoes, (53) 640.
 tropic reactions of sunflower stems, (51) 332.
- dioxide—
 evolution, (51) 416.
 evolution, effect of alfalfa v. sweet clover, (54) 216.
 evolution from crop roots, measurements, (54) 818.
 evolution from soil and crop growth, (58) 18.
 evolution from soil, apparatus for study, (52) N.J. 724.
 evolved in soil, apparatus for measuring, (59) 113.
 excretions from roots, solvent action, (59) 209.
 fertilization, (51) 519; (54) 219; (55) 518, 519; (56) 41; (59) 320.
 for forcing tomatoes, (58) 138.
 from plant tissue, effect on spore germination, (55) Colo. 242.
 gas, fire protection by, (56) Colo. 881.
 generating in greenhouse, (57) 831.
 given off by eggs during incubation, (52) W.Va. 77.
 in air, effect on respiration of leaves, (55) 629.
 in air of houses, effect of plants, (52) 126.
 in bodies of plants, (59) 516.
 in greenhouse air, increasing, (51) 239.
 in greenhouses, effect on crops, (60) 320.
 in soil air, (51) 814; (53) 422; (58) 418.
 in soil air, effect, (57) Colo. 113.
 in soil air, effect on absorption of inorganic elements by plants, (54) 417.
 in soil, functions, (55) 318.
 nutrition of forest trees, (60) 343.
 nutrition of plants, value of manure and green manure, (55) 815.
 output and intake by leaves, measuring, (59) 618.

Carbon—Continued.

- dioxide—continued.
 output, apparatus for recording, (53) 206.
 production, (53) 418.
 dioxide production—
 and emission from soil, (54) 513.
 apparatus for, (55) 207.
 by streptococci, (60) N.Y.State 427.
 effect of adrenaline, (52) 626.
 effect of ethyl alcohol, (52) 626.
 effect of lactic acid, (52) 626.
 from organic acids, relation to iodine absorption, (52) 517.
 in soil, (51) 218.
 of roots, relation to plant feeding power, (52) 28.
- dioxide—
 ratio to heat production in cattle, (52) 168.
 reduction, (54) 23.
 requirements of *Bacillus abortus*, (52) 481.
 retarding effect on starch formation, (55) 817.
 rôle in crop rotation, (56) Colo. 810.
 solid, for refrigeration of fruits, (59) 138.
 solutions, limits of H-ion concentration, (51) 110.
 stimulation of spore germination, (53) 423.
 tension and free carbon dioxide in natural waters, (58) 610.
 use in fungicidal sprays, (59) 537.
- disulfide—
 action in plants, (55) 347.
 and paradichlorobenzene, comparison, (54) 257.
 as fumigant for nursery stock, (53) 453.
 concentrated emulsion, preparation, (55) 553.
 discovery of insecticidal property, (56) 554.
 effect on soil bacteria and plant growth, (52) 721.
 effect on sprouting of potato tubers, (57) 528.
 emulsion for Japanese beetle, (53) U.S.D.A. 455; (58) 560; (60) 840.
 emulsion, nonstratifying, (54) 202.
 grades, effectiveness, (60) Md. 842.
 industry in Brazil, (58) 346.
 toxic action, (52) 881; (55) 473, 874; (58) 473.
 toxicity to insects and diffusion in grain, (58) Minn. 756.
 use against bindweed, (55) Idaho 825.
 use against white grubs, (53) 155.

- Carbon—Continued.
- disulfide—continued.
 - vaporization, apparatus for, (58) U.S.D.A. 255.
 - disulfide-sulfur emulsion, preparation, (53) 452.
 - formation in automobile engines, (55) 279.
 - in soil, effect of manure and irrigation, (53) 218.
 - in soil, rate of accumulation and cost, Mo., (53) 414; (58) 419.
 - monoxide—
 - action on oxidizing enzymes, (59) 803.
 - and hydrogen mixtures, synthetic motor fuel, (56) 576.
 - burning in gasoline engines, (58) 483.
 - liberation, testing gas appliances for, (55) 95.
 - toxic effects on green plants, (57) 514.
 - nitrogen ratio in soil, effect of microorganisms, (53) 818.
 - nutrition in cultivated plants, (54) 220.
 - nutrition of *Penicillium glaucum*, (58) 217.
 - organic, determination by chromic acid method, (53) 714.
 - organic, in soil, (54) Tex. 315.
 - pigments, effect on oxidation of linseed oil, (55) 495.
 - semimicrodetermination, arrangement of apparatus, (53) 313.
 - sources for *Azotobacter*, (51) Tenn. 323.
 - tetrachloride—
 - absorption and excretion of the anthelmintic dose, (53) 585.
 - administration for liver fluke in sheep, (60) 373.
 - and chenopodium, anthelmintic value, (52) 776.
 - anthelmintic value, (52) 182, 885; (53) Calif. 477; (55) 271; (59) 171.
 - damage to liver, factors affecting, (56) 572.
 - effect on liver in dogs, (55) 876.
 - effect on puppies, (54) 174.
 - efficiency in liver rot of sheep, (55) 474.
 - for distomiasis in sheep, (57) 875.
 - for sheep parasites, (58) Ill. 367, 676.
 - intoxication, effect on blood fibrin and levulose tolerance, (55) 677.
 - intoxication, prevention and treatment, (58) 673.
 - poisoning, (51) 281.
 - poisoning, pathological histology, (53) 278.
 - properties and uses, (58) 274.
- Carbon—Continued.
- tetrachloride—continued.
 - toxicity, (52) 280.
 - toxicity, effect of diet, (52) 584.
 - toxicity in dogs, relation to calcium, (58) 578.
 - toxicity to insects and diffusion in grain, (58) Minn. 756.
 - treatment of sheep, (53) 584, 585. use, (59) 272.
 - transformations in cellulose decomposition, (56) 421.
 - trichloride, anthelmintic value, (53) 787.
 - Carbonate determination in bone, (56) 14.
 - Carbonate-bicarbonate titrations, mixed indicator for, (52) 203.
 - Carbonates—
 - comparative tests, (60) 720.
 - concentration in Minnesota soils, (56) 210.
 - in natural waters, (58) 610.
 - Carbonic acid—
 - in soil, determination, (51) 805.
 - reduction, (53) 26.
 - Carbons—
 - adsorption by, effect of pH, (59) 501.
 - decolorizing action, testing, (51) 804; (54) 112.
 - decolorizing, preparation and properties, (58) 203.
 - decolorizing, v. bone char for sugar refining, (55) 112.
 - decolorizing, water content, (54) 412.
 - vegetable, removal of microorganisms from juices and sirup, (51) La. 808.
 - Carboxyl, estimating, (51) 315.
 - Carburetor—
 - characteristics, ideal and commercial, (51) 86.
 - intake, location for, (53) 685.
 - Carburetors, dust encountered by, studies, (59) Calif. 781.
 - Carcinoma—
 - gastric, in albino rats, formation, (60) 291.
 - squamous cell, in bovine rumen, (60) 574.
 - Cardamine pratensis, anomalous and transitional plants, (53) 128.
 - Cardiochiles nigriceps, parasite of tobacco bud worm, (55) 561.
 - Cardiocondyla spp., notes, (55) 858.
 - Carex spp., chromosome numbers in, (60) 428.
 - Carmarthen Farmers' Cooperative Society, (55) 787.
 - Carnation—
 - leaf roller, parasites of, (60) 656.
 - leaf rot, cause, (60) 646.
 - rust, control, (55) 651.
 - rust resistance, (59) Ind. 748.
 - wilt, notes, (55) 243; (59) 534; (60) 246.
 - Carnations—
 - annual change of soil, effect, (60) Ill. 231.

Carnations—Continued.

- breeding, N.J., (51) 647; (57) 39, 735; (59) 333.
- culture, (52) N.J. 737.
- culture experiments, (54) Ill. 336.
- culture, outdoor and indoor, treatise, (56) 837.
- flower production, effects of phosphorus and sulfur, (58) Ill. 439.
- fresh v. old soil for, (58) Ill. 334.
- notes, (56) Ill. 234.
- sterility in, (58) 644.
- variety tests, (58) Can. 836.

Caroá fiber—

- as paper-making material, (55) 14.
- description and use, (55) 230.

Carophyllaceae seeds, morphological differences, (52) 639.

Carotin, preparation and properties, (53) 501; (59) 122.

Carotinoids and related pigments, (51) 27.

Carotinoids in fruits, (55) 325.

Carotins and anthocyanins, parallelism, (53) 627.

Carpelody in corn, (56) 29.

Carpentry and contracting, treatise, (51) 482.

Carpet beetles, summary, (57) Mich. 456.

Carpocapsa pomonella, *see* Codling moth.

Carpoxenia in citrus, (53) 729.

Carrion beetles of Minnesota, (58) Minn. 459.

Carrion poisoning and bone chewing, (59) 171.

Carrot—

- black rot, studies, (56) 545.
- blight, studies, (60) Mass. 643.
- crown rot, notes, (58) 651.
- decay, cause, (56) 350.
- disease, new, notes, (57) 843.
- leaf spot, notes, (59) 536; (60) Mass. 643.
- pest new in Iowa, (55) 560.
- Rhizoctonia crown rot, notes, (56) Kans. 842.
- rust fly, control, (56) 63; (59) N.Y. State 56.
- rust fly, notes, (59) Conn.State 455.
- seed-producing industry in California, (52) 640.
- seed production, (55) Idaho 536.
- storage rot, description, (51) 151.
- storage rot, notes, (54) 744.
- weevil, economic importance in Illinois, (55) 560.
- weevil, notes, (56) Iowa 855.

Carrots—

- analyses, Can., (53) 135; (60) 36.
- as supplements to white bread, nutritional value, (60) 191.
- culture, (59) Can. 432.
- culture experiments, (55) Alaska 433; (56) Can. 433; (57) Alaska 522.
- culture in British Columbia, (57) 34.
- culture on peat land, (55) Minn. 527.
- drying, air velocity and temperature in, (58) 486.

Carrots—Continued.

- effect of cultivation, (54) 137.
- effect of overhead irrigation, (58) Ill. 334.
- effect of preceding crop, R.I., (51) 746; (52) 23.
- effect on flavor and odor of milk, (58) U.S.D.A. 69.
- fertilizer experiments, (57) N.J. 40, N.J. 736; (58) Ill. 333; (59) N.J. 334, Guam 529.
- field, varieties and strains, (57) Can. 227.
- inbreeding studies, (59) Conn.State 28.
- open crates v. sand covered, loss of weight, (60) Pa. 337.
- pellagra-preventing action, (57) 295.
- proteins of, (56) 709.
- seeding experiments, (57) Calif. 225.
- standard descriptions, (57) 736.
- storage, relation to black rot, (56) 545.
- stored, carbohydrate transformations, (58) 436.
- thinning, (51) Can. 239.
- v. corn silage for beef cattle, (60) Wash.Col. 855.
- v. corn silage for lambs, (60) Wash. Col. 856.
- varieties, West.Wash., (51) 397; (60) 732.
- varieties in United States, (52) 640.
- variety tests, (51) Minn. 133, N.Dak. 833; (53) Minn. 130, N.Dak. 334, Can. 530; (55) Oreg. 637; (56) Can. 432; (57) Tex. 136; (60) N.Dak. 34, Minn. 132, Oreg. 731.
- vitamin A in, (57) Calif. 270.
- yields, (59) Mich. 524.

Casca chinensis, life history notes, (57) 365.

Casca sp., notes, (55) Calif. 352.

Casein—

- action of proteolytic bacteria of milk on, (60) N.Y.State 772.
- and caseinogen, identity of proteins, (51) 506.
- and dairy industry, (54) 6.
- basic amino acids from, (52) 708.
- chemistry, (52) U.S.D.A. 503.
- chemistry, manufacture, and industrial uses, (55) 709.
- commercial, fat determination in, (52) U.S.D.A. 506.
- commercial, methods of manufacturing, (57) Mich. 669.
- compounds, notes, (52) Del. 844.
- converting into state of colloidal solution, (57) 407.
- decomposition, (53) 310.
- hydrolysis, effect of pH and temperature, (55) 709.
- in milk, determination, (60) 613.
- industrial applications, treatise, (57) 610.
- papers on, (60) 662.
- pellagra-preventive action, (53) 662.

- Casein—Continued.
 phosphorus nucleus of, (56) 709.
 research studies, (60) N.Y.State 474.
 specific dynamic action, (52) 665.
 spreader in sprays, value, (51) 359.
 spreaders in insect sprays, studies,
 (60) Oreg. 752.
 v. egg white as source of protein, (54)
 691.
- Caseinogen—
 estimating tryptophan content, (51)
 504.
 phosphorus of, (59) 801.
- Cashew nut seedlings, wilt affecting, (51)
 46.
- Cassava—
 bitter, growth and transport of or-
 ganic matter, (54) 220.
 botanical study, (51) 531.
 leaves, vitamin A in, (52) 65.
- Cassavas—
 experiments in Philippines, (55) 434.
 feeding value, (60) Guam 858.
 seeding and topping tests, (52) 132.
 variety tests, (51) Hawaii 740; (52)
 132, Guam 226; (60) Guam 814.
- Cassia—
 hirsuta as green manure and cover
 crop, (52) 732.
 occidentalis seeds, toxicity, (52) 284.
 sophera, feeding value, (55) 677.
- Castor bean—
 black rot, description, (59) 646.
 seed, oil content, (51) 531.
 wilt in Philippines, (51) 246.
 wilt, notes, (54) Fla. 245.
- Castor beans—
 genetic studies, (60) 216, 217.
 in central Asia, (56) 433.
 insects affecting, (54) Fla. 257.
- Castor cake, decomposition, (56) 420.
- Castor oil—
 flavor in milk, (57) 668.
 plant rust, notes, (54) 648; (55) 346.
 production in Argentina, (52) 228.
- Castorstrongylus castoris n.g. of beaver,
 (53) 553.
- Castration—
 effect of age on size of organs, (60)
 811.
 effect on—
 ductless glands of rats, (52) 480.
 growth of horns in Rambouillet
 rams, (59) 29.
 horn development in Merino sheep,
 (56) 663.
 immature guinea pigs, (54) 562.
 metabolism, (53) 665.
 nutrition, (59) 362.
 pulling power and endurance in
 guinea pigs, (55) 860.
 roosters and hens, (60) 430.
 spontaneous activity and ability to
 learn, (59) 726.
 voluntary activity of rats, (53)
 733.
 nutrition, and growth, (53) 268.
- Casuarina root nodules and nitrogen fixa-
 tion, (54) 628.
- Casuarinas, culture experiments, (55) V.I.
 339.
- Cat fleas, control, (60) 266.
- Catalase—
 activity—
 and rice germination, (56) 725.
 determination in plant tissue,
 (56) 814.
 in bark of apple trees, (58) 235.
 in corn, (60) 522.
 in dormant apple twigs, (51)
 N.Y.Cornell 331.
 in pear tissue, (60) 440.
 in plant tissues, (57) Mich. 417;
 (58) N.Y.Cornell 214.
 in Xanthium, (51) 24.
 as indication of fruit tree response to
 soil treatment, (60) 43.
 content of codling moth larvae, (57)
 559.
 in germinating seeds, (60) 123.
 in tomato, relation to soil reaction,
 (60) 823.
- Catalpa plantations, (52) Idaho 842.
- Catalpa plantations, cuttings in, (56) Pa.
 142.
- Catalysis—
 industrial, monograph, (59) 713.
 rôle in analytical chemistry, (53) 8.
- Catalyzers, biochemical, study of effect of
 plant pulp, (53) 223.
- Cataphoresis—
 and electrical neutralization of colloi-
 dal material, (60) 410.
 bacterial, studies, (60) Pa. 321.
- Catarrh—
 chronic nasal, in horses, autogenous
 vaccines for, (56) 777.
 contagious nasal, in fowls, (53) 279.
 malignant, of cattle, (53) 279.
- Catenaria anguillulae, parasite of Fasciola
 hepatica ova, (60) 556.
- Caterpillar, Cyprus processionary, studies,
 (57) 261.
- Caterpillars—
 control, (55) 662.
 evolution of social life, (57) 553.
 forest tent, outbreak in Canada, (51)
 761.
 hairy, control, (59) 554.
 immunity to ichneumonid parasites,
 (58) 159.
 mistaken for European corn borer, de-
 scriptions, (57) Iowa 262.
 venomous, and urticarial affections,
 (52) 358.
- Catharosia varicolor n.sp., notes, (59) 561.
- Cathode rays, high voltage, effect on
 rickets and cholesterol, (57) 793.
- Cations—
 penetration capacity, (55) 729.
 replaceable in soil, availability, (60)
 509.
- Catnip, wild, relation to cucurbit mosaic,
 (52) 647.

Catorama sp. in Boston, (60) 166.

Catorama sp., notes, (59) 561.

Cats—

- cestodes from, (54) 874.
- chromosome number, (58) 823; (60) 725.
- cuterebrid larvae in, (53) U.S.D.A. 482.
- diseases, (54) 277.
- inheritance of characters, (59) 521.
- inheritance of coat color in, (58) 628.
- inheritance of white spotting in, (60) 725.
- new anthelmintic for, (57) 871.
- parasites of, (51) 184.
- races, breeding, and diseases, treatise, (56) 769.
- relation to human skin disease, (56) U.S.D.A. 776.
- Siamese, crosses with, (53) 228.
- tortoise-shell males and dominant black, (57) 27.
- tortoise-shell males, studies, (59) 521; (60) 32.

Catsup—

- preservative action of ingredients, (56) N.Y.State 711.
- preventing spoilage in, (58) N.Y.State 511.

Cat-tail seeds, germination, favorable effect of reduced oxygen, (58) 124.

Cattle—*see also* Cows, Calves, Heifers, Steers, *etc.*

- Aberdeen-Angus, history, treatise, (60) 565.
- administration of draughts to, (58) 676.
- Africander, characteristics and uses, (52) 169.
- Africander, paper on, (54) 265.
- age and quality of offspring, (56) 729.
- alkali poisoning, (55) 173.
- American, protozoan fauna of rumen and reticulum, (57) 771.
- and bison cross, paper on, (54) 265.
- Ansbach-Triesdorf, monograph, (54) 265.
- Auvergne, cranial structure, (54) 126.
- Ayrshire, correlation between milk yield and butterfat percentage, (58) 220.

baby beef—

- contest, (57) 763.
- cost of production, (53) Can. 667.
- fattening experiments, (51) Okla. 571.
- fattening for market, (58) Minn. 865.
- feeding, (53) Minn. 467.
- feeding and grazing experiment, (56) Tenn. 163.
- feeding experiments, (51) Nebr. 869; (53) Okla. 169; (56) Kans. 364.
- finishing, (52) Mich. 72; (53) 272, Mich. 773; (55) Mich.

Cattle—Continued.

baby beef—continued.

- finishing—continued.
 - 665; (57) Calif. 67, Mich. 865; (60) Mich. 68.
- minerals for, Ohio, (51) 468; (53) 574.
- production, (54) 859; (55) 465; (58) Ill. 355.
- production and consumption in United Kingdom, (58) 764.
- production on skim milk, (55) 862.
- selection of calves and rations for, (58) Minn. 763.
- stanchion-feeding v. group-feeding, (56) Ohio 262.

beef—

- body shape, studies, (59) Tex. 763.
- breeds, (54) 266.
- buying and feeding, (56) 863.
- cost of production, (52) Calif. 491; (53) Ind. 189; (55) Miss. 664.
- effect of age upon gain, (51) Nebr. 868.
- effect of winter rations on summer gains, (51) Kans. 74; (52) W.Va. 568.
- experiments, Ill., (58) 354; (60) 254.
- farming systems, (58) Va. 587.
- fattening, (51) Mo. 771.
- fattening in Corn Belt, (59) U.S.D.A. 161.
- feed requirements in winter, (53) 667.
- Feeders' Conference, notes, (51) 199.
- feeding, (59) U.S.D.A. 162.
- feeding and breeding experiments, Can., (59) 160; (60) 564.
- feeding and management in Corn Belt, treatise, (54) 859.
- feeding experiments, (51) N.Dak. 869; (52) Calif. 71, Miss. 269, Ill. 466, Wash.Col. 767; (53) Minn. 169, Mo. 466, Ariz. 769, Can. 867; (54) 266, Ill. 359, Nebr. 360, Mo. 759, 859; (55) Can. 358, Kans. 358, Minn. 359, N.Mex. 464, Iowa 562, Miss. 562, N.Dak. 564, Miss. 664, Nebr. 762, (56) Ill. 262, Wis. 762, Iowa 863, Kans. 863; (57) Calif. 265, Iowa 265, Kans. 458, Nebr. 563; (58) 64, Miss. 64; (59) Wis. 66, Colo. 259, Ill. 763, Nebr. 863, N.Dak. 864; (60) Okla. 256, Okla. 257, Mont. 759, Oreg. 760, Wyo. 761, Kans. 854, Wash.Col. 855.
- feeding, grading, and pasturing, (59) N.C. 763.
- feeding in California, (56) 863.
- grading up, (55) U.S.D.A. 862.
- herd management, (52) Wash.Col. 870.

Cattle—Continued.

- beef—continued.
 index numbers, (54) Ohio 184.
 industry, economic aspects, (60) Calif. 586.
 industry in Iowa, economic history, (60) 586.
 prices and production, (56) Iowa 887.
 production, (53) Mo. 494; (57) Mont. 68.
 production in Kansas, (56) U.S. D.A. 288.
 production in Missouri, (51) Mo. 794.
 production in range area, (52) U.S.D.A. 672.
 quality and palatability of meat, (57) N.C. 265.
 quality of meat, (59) N.C. 762.
 rations for, (53) Okla. 66.
 situation, (57) 660.
 wintering, (51) Ohio 468; (52) 369, S.C. 568; (54) S.C. 664; (58) U.S.D.A. 462.
- Bhagnari breed, description, (56) 763.
 Bhagnari, breeding, feeding, and management, (57) 170.
 blood composition, effect of phosphorus deficient rations, (57) 763.
 blue-gray, merits, (55) 863.
 brachycerous, of Montenegro, cranial structure, (54) 265.
 Brahman, characteristics, (59) 662.
 Brahman, double ears in, (51) 526.
 Brahman, twinning in, (51) 430.
 brands and branding, (58) 567.
 breeder's handbook, (57) 175.
 breeding, (51) Can. 677; (54) P.R. 672; (59) 221.
 and new views of heredity, papers, (53) 269.
 associations, use of scientific data, (53) 270.
 Baltic, history, (51) 670.
 Conference, Scottish, (57) 660.
 first principle, (52) 676.
 herd, maintenance, (56) Ill. 366.
 in India, (52) 269; (58) 567.
 papers on, (54) 265.
 percentage of blood and Mendelism, (58) 126.
 promotion by authorities, papers on, (53) 270.
 recent developments in, (54) 859.
 Simmentaler, in Hohenheim, history, (54) 474.
- breeds—
 and types in Dutch East Indies, (56) 70.
 distribution, relation to climate, (58) 571.
 in Lorraine, (54) 859.
 in Rumania, (55) 768.
 in Switzerland, (52) 877.
 papers on, (60) 662, 663.
 Breton, breeding in Finistère, (53) 67.

Cattle—Continued.

- British Dairy Shorthorn, development, (56) 817.
 calorimetry experiments, methods, (53) 573.
 carbon dioxide: heat ratio, (52) 168.
 characteristics of improvement, (53) 270.
 chromosome number, (58) 823.
 color-sided, description, (54) 27.
 cost of fattening, (51) Ind. 891.
 cost of production, (56) Ill. 285; (59) Nev. 885.
 cost of wintering, (53) 793.
 crossbred, dairy qualities, (55) Alaska 470.
 crossbred, qualities, inheritance in, (57) Tex. 124.
 crosses, hybrid atavism in, (54) 129.
- dairy—*see also* Cows.
 advanced registry testing, (55) Okla. 470.
 Arkansas, improvement project, (55) Iowa 570.
 balanced rations for, computing, (58) 169.
 bedding for, (57) N.J. 73.
 birth weight and gestation, (51) 876.
 breeding, (57) Tex. 176.
 breeding, papers on, (52) U.S.D.A. 576.
 breeds and management, (54) 274.
 breeds, history and characteristics, (53) U.S.D.A. 175.
 calcium and phosphorus balances, (55) 871.
 care and management, (55) U.S. D.A. 170.
 change of form during growth, (59) 873.
 cost of production, (59) Wis. 483; (60) Ohio 83.
 crossbreeding experiment, (54) Ill. 322.
 digestibility of total ration as affected by grinding, (58) Pa. 363.
 digestive process, effects of fasting and method of feeding, (59) 871.
 disease due to phosphorus deficiency, (57) Wis. 273.
 economic feeding, (54) 571.
 effect of environment, (59) 873.
 effect of feeding of concentrates, (55) Mich. 67.
 effect of hayless rations, (53) Mich. 780.
 effect of self-feeding, (56) Ill. 375.
 feeding, (51) 578; (53) Minn. 76; (56) 271; (57) N.J. 868; (58) Iowa 470; (59) 165, Wis. 468, S.Dak. 571; (60) 862.
- dairy, feeding—
 and breeding experiments, Can., (59) 160; (60) 564.

Cattle—Continued.

- dairy, feeding—continued.
 and management, (59) 571; (60) Miss. 862.
 and management at Dry-Land Field Station, South Dakota, (58) U.S.D.A. 363.
 and management, treatise, (59) 666.
 demonstrations, (56) 568.
 experiments, (51) 676; (52) Calif. 78, Mich. 80, Utah 80, 275, Fla. 275, Guam 275, Pa. 275, 276, Ill. 476, Kans. 477, Mont. 477; (53) Wis. 472, Va. 578, 579, Ohio 579, Wyo. 673, Can. 674, Iowa 779, Kans. 779, Can. 878, Can. 879; (54) Can. 472, Can. 474, Wyo. 768; (55) Ark. 66, Ind. 66, Ohio 169, Can. 368, Iowa 569, Miss. 570, N.Dak. 570, 673, Miss. 673, 861, Fla. 870; (56) Ill. 271, Ark. 375, S.Dak. 671, Wis. 771, Can. 772, Kans. 870; (57) Ga. 73, N.J. 73, Ohio 175, Calif. 273, N.Mex. 273, Ind. 665, Idaho 766, N.J. 767; (58) Ark. 362, S.C. 671; (59) Mich. 466, N.Dak. 872; (60) Ariz. 471, Oreg. 769, Ark. 862.
 for milk production, (55) 468.
 methods, (54) U.S.D.A. 167.
 principles, (55) 674, 870; (58) 169.
- dairy—
 feeds for, (56) Kans. 871.
 fly repellents for, (56) Kans. 871.
 free-choice feeding of minerals, (60) Ill. 568.
 genital diseases, (55) 574.
 growth standards, (54) Mo. 768.
 improvement, (54) 571; (56) Ind. 272.
 inheritance in, (52) Ill. 429.
 judging, (55) 368, 675; (57) U.S.D.A. 371.
 management and breeding, treatise, (51) 577.
 management, breeding, and feeding, (55) 368.
 mineral equilibrium during gestation, (55) 469.
 mineral metabolism, (54) 166.
 mineral requirements, (52) Mich. 71; (53) Mich. 379, Ohio 580.
 mineral supplements for, (56) Ariz. 771; (57) Mich. 666; (59) Iowa 72; (60) Pa. 365.
 phosphorus requirements, (59) Mich. 571.
 protein requirements, (56) Vt. 568.
 protein supplements for, (57) Del. 272.

Cattle—Continued.

- dairy—continued.
 surface area, estimation, (55) 675.
 surface area, estimation, use, (56) Mo. 161.
 treatise, (55) 66.
 weight, (51) Nebr. 877.
 weight growth and linear growth, (58) Mo. 767.
 demonstrations, (57) Iowa 762.
 depraved appetite in, cause, (53) 632; (54) Mont. 379; (55) Mich. 368.
 dimension-weight index for, (53) 571.
 disease—
 due to damaged sweet clover, (54) N.Dak. 775.
 fatal, on coastal plains of Texas, (52) Tex. 83.
 from damaged sweet clover, (51) 383.
 hemorrhagic, historical review, (58) Nev. 73.
 obscure hemorrhagic, (56) Nev. 278.
 piroplasmosis-like, in Sapporo, (55) 577.
 serious, cause, (54) 475.
 undiagnosed, in New York, probable cause, (57) 873.
 diseases, (52) U.S.D.A. 583; (58) 279; (59) 577.
 caused by protozoa, (58) 472.
 hematological studies, (60) 665.
 notes, (56) Utah 571.
 of reproductive organs, Mich., (52) 381; (54) 676; (55) 875; (59) 470.
 of reproductive organs, post-mortem findings, (51) Mich. 182.
 relation to milk supply, (53) 580; (55) 72.
 relation to public health, (55) 72; (60) 570.
 special report, (51) U.S.D.A. 84.
 treatise, (57) 871.
 dual-purpose, in Minnesota, (52) 672.
 East Prussian Black and White Inland, development, (54) 465.
 effect of wintering on pasture gains, (51) Kans. 275, U.S.D.A. 772; (52) 568; (56) U.S.D.A. 163.
 emaciated, composition of flesh, (54) 788.
 energy metabolism, relation to plane of nutrition, (58) 865; (60) 359.
 energy of growth and character of bone channels, (60) 464.
 epithelial defects in, inheritance, (60) Wis. 727.
 experiments, (58) Can. 565.
 exterior measurements, correlations in, (55) 469.
 farming in Japan, (54) 265.
 fat and bone in, estimating, (55) 159.

Cattle—Continued.

- fat production, inheritance and transmission, (57) Mo. 423.
- feces and intestines, acid-fast bacteria in, (60) 668.
- feed energy, utilization, (55) 772.
- feeding—*see also* Cattle, beef and dairy, Calves, Cows, and Steers.
- age as factor, (57) 169.
- and dairy control, congress for, proceedings, (56) 770.
- economic aspects, (54) Ill. 385.
- enterprise, economic study, (56) Iowa 886.
- experiments, (51) Kans. 274, Ind. 875; (52) 268, Ohio 467; (53) Ohio 96, 571, Iowa 770, N.C. 770; (54) Ariz. 358, Kans. 465, Wash.Col. 866; (55) Okla. 170; (56) Kans. 364, Minn. 559, Ariz. 762; (57) 367; (59) N.C. 773; (60) Ohio 464, Alaska 759.
- experiments, application of biometry to, (56) 863.
- experiments in Rhodesia, (51) 75.
- newer views on, papers, (53) 269.
- on contract in Northwest, (54) 267.
- relation to farm management, (53) Ill. 88; (57) 660.
- Finnish, inheritance of production characters, (57) 27.
- flies attacking, control, (55) Ind. 51.
- flies attacking, fly salt tests, (58) 262.
- food capacity, (57) 169.
- genital diseases, (53) 182.
- gestation period and birth weight, (52) Idaho 876.
- grass fed, finishing on grain, (51) Kans. 275.
- growth data, (57) Mo. 465.
- growth rate in embryonic and post-embryonic periods, (60) 463.
- growth rate of skull, (60) 464.
- growth weight speed, relation to size of growing mass, (60) 463.
- grubs—*see also* Hypoderma, Ox warble, Warble flies, etc.
- in North Wales, (53) 758.
- in Switzerland, (53) 758.
- summary, (55) U.S.D.A. 175.
- Guernsey, American or Island origin, productivity, (58) Me. 271.
- Guernsey and Holstein, crossbreeding experiment, (60) Ill. 218.
- Guernsey and Holstein, persistency of lactation in, (56) Ill. 375.
- Guernsey, increased milk and fat production, (55) 267.
- heat production, direct measurement and computation, (57) 564.
- heat production, effect of air temperature, (56) 161.
- hereditary notch in ears, (54) 127.
- Hereford, exceptional color inheritance in, (60) 32.

Cattle—Continued.

- Hereford, origin and development, (54) 563.
- hides, grubs in, origin and life cycle, (54) 260.
- Holstein, in northeast France, (55) 675.
- Holstein, twinning in, inheritance, (55) 225.
- Holstein, variations in color patterns, (56) 223.
- Holstein-Friesian, inheritance of milk production, (53) 72.
- horn growth in, (59) Wis. 28.
- horns in, studies, (58) 127.
- improvement with better sires, (54) U.S.D.A. 770.
- in eastern Asia, phylogenical studies, (60) 72.
- in India, relative susceptibility to tuberculosis, (55) 273.
- in North Wales, parasites of, (55) 271.
- industries of United States and Canada, (55) 184.
- industry—
- and tariff, treatise, (56) 486.
- effect of tariff, (52) 692.
- history, (57) N.Mex. 680.
- in Florida, effect of tick eradication, (59) 170.
- of Canada, (54) 265.
- ranch, in Oklahoma, history, (54) 485.
- survey in sand hills, (56) Nebr. 582.
- infestation with lice, (58) P.R. 574.
- inheritance—
- in, papers on, (54) 265.
- of abnormality in, (60) 630.
- of black and red coat colors, (53) 128.
- of characters in, (59) Me. 521.
- of hairlessness in, (59) 521.
- of horns in, (55) 732; (58) 628; (60) 725.
- of white markings on head, (57) 624.
- international trade in, (52) U.S.D.A. 583.
- interstate movement from quarantine area, (57) 377.
- Jersey, at Kentucky Experiment Station, history, (55) 68.
- Jersey, popularity in America, (57) 371.
- judging, treatise, (52) 174.
- Kuhländer and Spotted East Friesian crosses, (51) 100.
- lice, control, (56) 156.
- lymph glands, bacillus isolated from, (58) 477.
- maintenance and energy requirements, (55) 59; (57) 66.
- maintenance requirement for protein, (55) 870.

Cattle—Continued.

- maintenance requirements, (59) N.H. 259.
 management on the range, (57) 660.
 market classes and grades, U.S.D.A., (55) 562; (57) 170.
 marketing at Portland, Oregon, (58) Oreg. 286.
 metabolism during standing and lying, (53) 271; (58) 763.
 metabolism experiments, (54) 465.
 mineral deficiency in rations, (50) Minn. 366.
 mineral requirements, minimum, (58) 563.
 Murnau-Werdenfeler, growth and nutrient requirements, (55) 768.
 new anthelmintic for, (57) 871.
 night blindness in, (58) 127.
 nutritional diseases, (51) 781.
 of Ardennaise region, Belgium, (55) 260.
 of Campine region, studies, (52) 478.
 of Southern Rhodesia, characteristics, (59) 662.
 on milk and grain rations, pathological alterations in, (60) 871.
 on pasture, time used in foraging and resting, (52) 868.
 paranasal sinuses of, (53) 182.
 pasture values and methods for, (56) Kans. 865.
 photographing for study of development, (55) U.S.D.A. 170.
 physiology of stomach, (59) N.Dak. 358.
 pigmentation, (55) 368.
 pigweed poisonous to, (59) Colo. 272.
 plague, *see* Rinderpest.
 poisoning, *see* Livestock poisoning.
 Plants, poisonous, *and specific plants*.
 polled and horned, (58) 628.
 porosity of bones before and after birth, (60) 464.
 prices, (58) Ill. 380.
 prices, forecasting, (58) 588.
 prices, index numbers, (59) N.Dak. 885.
 production and prices, trends, (55) 786.
 production, textbook, (53) 67.
 protection against disease, advances in, (54) 871; (58) 472.
 protection from flies, (60) Md. 842.
 protein requirements for milk production, (52) 676.
 purebred, breeding efficiency in, (51) 781.
 purebred v. scrub, (56) N.Dak. 559.
 Pusa pedigree herd, (53) 175.
 range—
 economics of production, (57) N.Mex. 284.
 food of, (58) 166.
 normal growth, (54) U.S.D.A. 759.

Cattle—Continued.

- range—continued.
 production, (53) 268.
 production costs and methods, (52) 894; (54) 859.
 production, factors in, (57) N.Mex. 680.
 production in northern Great Plains, (59) U.S.D.A. 181.
 supplemental feeding, (57) N.Mex. 564.
 ratio of births and slaughter, (53) 167.
 rations for fattening, (52) Utah 767.
 Red German, characteristics, (52) 478.
 salting, value, (58) 167.
 shipment to Great Britain, profit, (54) Can. 664.
 shipping shrink, (55) N.Dak. 564.
 shipping to Britain from Canada, (56) 70.
 Shorthorn—
 coefficients of inbreeding and relationship, (54) 430.
 color inheritance in, (54) 27.
 Duchess family of, (51) 525.
 German bred, morphological studies, (56) 763.
 in Missouri, history, (51) 670.
 of Australia, milking, (54) 265.
 Pedigrees-Bates Duchesses, Mendelian analysis, (53) 571.
 Siberian, milk glands, histological structure, (60) 473.
 situation and prospects of world, (54) 265.
 stabling, relation to malaria reduction, (58) 262.
 statistics, (58) U.S.D.A. 81.
 statistics of New Mexico, (56) 70.
 sterility in, pathology and treatment, (59) 470.
 sterility in, problem, (56) Mich. 398.
 stomach worms in, (52) 280; (57) P.R. 468, La. 573.
 surface area, relation to body size, (60) Mo. 67.
 Texas Longhorn, preservation, (58) 567.
 ticks—*see also* Ticks.
 control in New South Wales, (51) 681.
 effect of vapors of antiseptics, (58) 562.
 eradication, (52) 280.
 in Australia, (59) 674.
 in North Auckland district, (51) 681.
 popular account, (58) U.S.D.A. 878.
 studies, (54) 59.
 tonics, composition, (55) Can. 260.
 tuberculin-reacting, skin lesions in, (59) 170.
 tuberculin-reacting though nontuberculous, (51) 585.

Cattle—Continued.

- twin births in, seasonal distribution, (53) Wis. 428; (57) 660.
- types in different countries, (55) 58; (56) 763.
- weighing for feeding experiments, (57) 762.
- weights, accuracy, (59) 563.
- Welsh and Shorthorn, as milk producers, (57) 465.
- working and dairy, feeding in Mauritius, (51) 572.
- Yaroslavl, variability of milk production, (59) 167.
- yearling, wintering, (60) Mont. 760.
- yearlings, finishing, (57) Iowa 266.

Cauliflower—

- bacterial rot, (56) 351.
- bacteriosis, notes, (56) 541.
- behavior of sulfur compounds in cooking, (59) 389.
- black rot, control, (56) N.Y.State. 242.
- black rot, studies, (57) 248, 843.
- blackleg, control, (59) N.Y.State 50.
- bud, nitrogenous constituents, (56) 9.
- culture under high altitude conditions, (55) Colo. 536.
- disease, correlation with strawberry red plant, (52) 748.
- diseases on Long Island, (51) N.Y. State 152.
- diseases, studies, (52) N.Y.State 543.
- fertilizer experiments, (51) Ind. 837; (55) N.J. 38; (57) N.J. 40; (59) N.J. 334.
- head, morphological nature, (53) 521.
- leaf spot, studies, (52) 747; (56) 145.
- mosaic, varietal resistance, (58) N.Y. State 844.
- plants, hotbed and greenhouse, (60) Mont. 737.
- ringspot, notes, (54) 843.
- seed beds, aphid control in, N.Y.State, (56) 253, 254.
- seed beds, corrosive sublimate treatment for, (56) N.Y.State 846.
- seed beds, insects affecting, (54) N.Y. State 552.
- seed beds, protection from aphids and thrips, (58) N.Y.State 857.
- seedlings, disease of, (58) 340.
- spot disease, studies, (55) 545; (59) 147.
- spring crop, (55) N.J. 439.
- storage studies, (58) 536.
- varieties, (60) N.Dak. 41.
- yellows, notes, (60) 348.

Caustic soda, *see* Sodium hydroxide.

Cavia, early development, (55) 432.

Cecal ablation in fowls, (56) 176.

Cecal worms of chickens, viability, (58) Ill. 368.

Cecidomyia destructor, *see* Hessian fly.

Cecidomyiidae, British, material for monograph, (58) 158.

Cedar—

- incense, mistletoe affecting, (58) 154.
 - interplanting with walnut, (59) Mich. 533.
 - oil as aid in finding parasitic ova in feces, (58) 574.
 - pencil, from East Africa, (57) 143.
 - pole borer, western, studies, (58) U.S.D.A. 862.
 - reforesting upon Shume Forest Reserve, (52) 444.
 - rust, control, (55) Va. 47.
 - rust of apples in Missouri, (54) Mo. 149.
 - rust, susceptibility of Ada Red apples to, (60) 55.
 - seed dissemination, (57) Calif. 242.
 - southern white, natural regeneration, (51) 541.
 - white, structure and growth, effect of site, (58) 239.
- Celanese, ultra-violet transmission, (57) 694.
- Celerio lineata lineata, notes, (51) 55.
- Celery—
- bacterial blight, control, (52) N.Y. Cornell 245.
 - blackheart, control, (51) 156.
 - blanching, (54) Minn. 137.
 - blanching, action of ethylene, (57) 336; (60) Pa. 338.
 - blanching experiments, (51) Can. 239.
 - blanching, new method, (52) 640.
 - blight control, (51) 156, N.J. 652; (53) Conn.State 442; (55) Conn. State 345, N.J. 444; (57) Ohio 144, 248; (59) Ohio 447, Mich. 542.
 - blight control in seed bed, importance, (58) 651.
 - blight, dusting v. spraying for, (57) 149.
 - blight, early, control, (51) 156, Mich. 449; (59) N.J. 337.
 - blight, late, notes, (51) 542; (53) 147; (57) 343.
 - blight, notes, (54) 144; (55) 346; (59) Ohio 447.
 - blight, studies, (51) Mich. 449; (57) 643.
 - breeding experiments, (59) Mich. 444.
 - catalase activity, (58) N.Y.Cornell 214.
 - changes during storage, (55) N.H. 833; (56) 439.
 - crown rot, description, (51) Ohio 849.
 - culture, (55) Mich. 536.
 - culture experiments, (56) Mont. 138.
 - damping-off, control, (56) Fla. 143.
 - disease-resistant varieties, (51) Mich. 148; (56) 549.
 - diseases in Florida, (52) Fla. 649.
 - effect of cultivation, (54) 137.
 - effect of overhead irrigation, (58) Ill. 334.
 - fertilizer experiments, (51) N.J. 642; (57) N.J. 40, Ohio 135, N.J. 736; (58) Ill. 333; (59) N.J. 334; (60) Fla. 139.

Celery—Continued.

- fly, notes, (55) 854.
- freezing studies, (58) 641.
- frost blister, (57) 50.
- golden self-blanching variety, (52) 99.
- heart rot, development, (58) 255.
- hypoglycemia-producing principle in, (52) 667.
- leaf spot, notes, (55) 346; (57) 643; (59) 534.
- leaf tyer in California, (59) 354.
- leaf tyer, notes, (53) 360; (55) Fla. 853.
- mosaic, notes, (51) N.J. 652; (53) 43.
- pink root, control, (51) 156.
- plants, nitrogen constituents in health and disease, (54) 345.
- premature seeding, (51) 143; (52) Mont. 640; (60) Mont. 737.
- prices and shipments from Florida, (59) 886.
- ripening, effect of ethylene, (60) 822.
- root, pectins in, (51) 709.
- roots, mycorrhizal fungus in, (58) 47.
- rust, control, (57) 643.
- seed-stalk development in, (52) 139; (58) 640.
- shipments and unloads, (53) U.S.D.A. 293.
- soft rot, notes, (57) 540.
- storage studies, (59) Colo. 228.
- varieties, systematic study, (56) 439.
- vitamin B in, effect of ethylene, (60) 294.
- yellows in Ontario, notes, (58) 41.
- yellows resistant strain, (52) Mich. 346; (53) 849; (54) Mich. 647; (55) Mich. 842.

Cell—

- artificial, with bicolloidal membranes, (53) 822.
- division activity, release of, (56) 814.
- division, studies, (56) 727.
- growth and cell division fundamentals, (57) 722.
- nutrition, vitamins and disease resistance, (60) 805.
- salts, effect on intermediary metabolism, (52) 161.
- sap, chloride behavior in, (51) 732.
- sap composition, relation to absorption of ions, (51) 731.
- sap density, relation to environment, (52) 424.
- sap in plants, concentration, alternation of, (57) 25.
- sap of salt desert plants, osmotic values, (58) 23.
- sap, pH value as affected by length of day, (51) 125.
- sap reaction and immunity, (57) 246.
- stimulants and theoretical bases, (55) 125.
- stimulants, physical, (55) 125.
- stimulation and fertilizers, (55) 126.

Cell—Continued.

- stimulation, studies, (57) 119, 319, 415.
- wall and external medium, (53) 220.
- wall composition at apical meristem, (51) 330.
- walls, chemistry, nature of middle lamella, (60) 123.
- Cellomass, digestibility, (56) N.Mex. 159.
- Cells—see also Plant cells.
 - and tissues, physical chemistry of, (56) 108.
 - changes in anatomy, composition, and permeability, (57) 814.
 - development and heredity, treatise, (53) 829.
 - distention, relation to acidity of solutions, (57) 817.
 - enzymes of, behavior, (51) 562.
 - internal pH of, (60) 202.
 - living, age of endurance, (57) 814.
 - living, effect of narcotics, (55) 627.
 - plant and animal, chondriomes in, (56) 427.
 - somatic and germ, relation, (53) 426.
- Cellulomonas folia n.sp., studies, (57) 18.
- Cellulose—
 - action of alkalis on, (60) 97.
 - and derivatives, (54) 6.
 - and wood, chemistry of, treatise, (56) 107.
 - as source of humus, (60) 512.
 - bacterial decomposition, studies, (51) 418.
 - chemical nature, (56) 123.
 - chemical products, (53) 718.
 - chemistry, textbook, (54) 7.
 - converting into state of colloidal solution, (57) 407.
 - copper number, determination, (54) 311.
 - cotton, chemistry and technology, (53) 412.
 - decomposition—
 - as index of soil fertility, (51) 416.
 - by bacteria, (53) Wis. 424; (56) 421; (59) 519, 717.
 - factors affecting, (52) 323.
 - in soil, (51) 415; (56) 211, 808; (57) N.J. 19.
 - in soil, effect of available nitrogen, (55) 623.
 - products as sources of energy for Azotobacter, (60) 421.
 - studies, (53) 25; (59) N.J. 380.
 - determination in feed, effect of fineness of grinding, (51) 317.
 - digestibility, (56) 261.
 - digestibility, effect of composition of ration, (54) 464.
 - distribution in Imhoff tanks, (57) 188.
 - effect of bacteria on, (56) 297.
 - effect on plant growth, (53) 121; (55) 511.
 - ester varnishes, (54) 707.
 - fermentation by thermophilic bacteria, (55) 203.

- Cellulose—Continued.
 fermentation in root zone of plants, (59) 118.
 fibers, structure, X-ray methods of study, (60) 397.
 in food, (55) 87.
 in wood, determination, (51) 114; (53) 110.
 membrane, chemical nature, (58) 818.
 microbiology, (59) 202.
 of barley, digestibility by fowls, (53) 172.
 of cotton and wood, (51) 8.
 of jute, studies, (53) 812.
 oxidation in soil, (60) 316.
 pentosans in, determination, (51) 715.
 sausage casings, (56) 291.
 solutions, viscosity, (57) 111.
 technical research in, (56) 193; (57) 95.
 white spruce, partial hydrolysis, (51) 9.
 X-ray investigations, (58) 196.
- Cement—*see also* Concrete.
 action of calcium chloride on, (56) U.S.D.A. 882.
 drain tile, use of sulfur for alkali resistance, (55) 682.
 high-alumina, curing and temperature in, (55) 682.
 high-alumina, description and uses, (56) 77.
 mortar bars, expansion during disintegration, (57) 186.
 mortar briquettes, device for measuring pressure, (55) U.S.D.A. 583.
 Portland, action of alkali on, (57) 880.
 Portland, action of sulfates on, (56) 281.
 Portland, disintegration in sulfate waters, (55) 377.
 Portland, prices, treatise, (53) 590.
 quality, effect on strength of concrete, (58) U.S.D.A. 78.
 requirements for concrete mixes, (58) 482.
- Cements—
 colloid theory, (58) 308.
 limes, and plasters, treatise, (60) 278.
 resistance to action of sulfate waters, (59) 178.
- Cemeteries, rural, survey, (60) Mich. 46.
- Cenangium—
 abietis, notes, (59) 537.
 abietis on western yellow pine, (56) 355.
 populneum, notes, (52) 152.
- Cenchrus—
 carthagicus as weed in Belgian Kongo, (53) 839.
 spp. as weed in Cuba, (54) 239.
 viridis, striped grass looper affecting, (52) 61.
- Centeter cinerea—
 notes, (56) U.S.D.A. 860.
 parasite of Japanese beetle, (60) 563.
- Centipedes—
 affecting asparagus, (52) Calif. 57.
 garden, control, (55) Calif. 352.
 garden, control by flooding, (53) Calif. 450.
 garden, habits and control, (59) 462.
 greenhouse, control, (60) 558.
 habits and injury from, (58) 855.
 notes, (52) 459; (55) Ark. 50, 758; (56) Calif. 256; (59) Ohio 249.
 venom of, effect, (53) 157.
- Centrosema spp. as green manure and cover crop, (52) 732.
- Centrosomal force, nature of, (53) 323.
- Centruroides vittatus, notes, (55) Ark. 50.
- Cepegilletta betulaeifoliae n.g. and n.sp., description, (60) 455.
- Cephaleia signata, parasites of, (51) 55.
- Cephaleuros—
 mycoidea, notes, (55) 245.
 virescens on rubber, (55) 49.
- Cephalobus—
 oxyuroides, notes, (60) 645.
 sp. on oats, notes, (58) 442.
 spp., notes, (57) 749.
 subelongatus, notes, (52) 551.
- Cephalolia elaeidis n.sp., description, (52) 359.
- Cephalosporium—
 acremonium, notes, (51) 151; (52) Ill. 245; (53) La. 850, Ill. 851; (55) 245; (59) Mo. 539.
 and associated fungi, notes, (60) 162.
 asteris, notes, (56) 541; (57) 540.
 bertholletianum n.sp., notes, (51) 156.
 lecanii, notes, (59) Guam 554.
 malorum n.sp., description, (56) 849.
 sacchari, notes, (55) 349; (56) Del. 348; (57) 540.
 sacchari on seed corn, (51) 850.
 sp., notes, (55) 757; (59) 453; (60) 241.
 spp. on mushrooms, (56) 847.
- Cephalothecium roseum, cause of pink rot, (57) 154.
- Cephenomyia sp. in wild deer, (60) 561.
- Cephenomyia trompe, life history, (56) 759.
- Cephus pygmaeus and Trachelus tabidus, morphological differences, (59) 861.
- Cephus pygmaeus, studies, (54) 855.
- Cerambycid larvae, North American, classification and biology, (56) 361.
- Cerambycini, Indian, identification of immature stages, (55) 764.
- Ceranium cells, form of protoplast in, (59) 620.
- Ceratitidis cosyra, parasite of, (58) 666.
- Ceratophygadeuon n.g. and n.spp., description, (51) 662.
- Ceratophyllus—
 fasciatus, notes, (54) 157.
 gallinae, *see* Hen flea, European.
 gibsoni, notes, (59) Mich. 455.
 spp., notes, (54) 659.
- Ceratopogon shimai, new midge affecting fowls, (59) 255.
- Ceratopogoninae, synopsis, (60) 249.

Ceratostomella—

- adiposum n.comb., notes, (58) 446.
- fimbriata, cytological study, (58) 50.
- fimbriata, notes, (58) 156.
- fimbriata, proposed name (53) 854.
- pini, studies, (59) 548.
- querci n.sp., description, (59) 324.

Cercaria gunnisoni, description, (54) 462.

Cercariae, furcocercous, comparative studies, (57) 160.

Cercospora—

- apii, see Celery blight.
- apii carotae, notes, (59) 536.
- beticola, control, (59) 642.
- beticola, notes, (55) 346; (57) 151, 444.
- cantuariensis n.sp., description, (55) 546.
- coffeicola, notes, (51) 45; (54) 254; (60) 344.
- concors, notes, (60) 242.
- cruenta, notes, (56) 351; (57) 640.
- cryptomeria, notes, (58) 752.
- diazu, notes, (55) 752; (59) 849.
- duddiae n.sp., description, (54) 651.
- gossypii, notes, (60) 241.
- gossypina, notes, (51) 248; (56) 351.
- humuli, description, (55) 546.
- in Philippines, taxonomic studies, (55) 748.
- lactucae n.sp., description, (54) 148.
- lactucae n.sp., notes, (57) 843.
- lactucae, notes, (59) Fla. 541.
- melonis, notes, (55) 244.
- musarum, notes, (60) 344.
- n.sp., notes, (52) 748.
- nicotianae, notes, (53) 148; (56) 452, 648.
- personata, notes, (55) 245, 346; (57) 443.
- sp., notes, (53) 152; (54) Fla. 245, 246; (56) Fla. 143; (59) 540.
- spp., notes, (54) P.R. 648; (57) 343, 639; (59) N.C. 749.
- vaginae, notes, (57) 443.
- violae-tricoloris, notes, (54) 449.
- viticola, notes, (55) 346.

Cercosporiella—

- albo-maculans, suggested name, (59) 344.
- antirrhini, notes, (53) 550.
- leaf disease in Ceylon, (54) 254.

Cereal—

- and flax mixtures, tests, (57) Minn. 226.
- and flax mixtures, yields, (55) Ohio 528.
- bacterial diseases, (57) 347.
- black stem rust, history, (55) 544.
- black stem rust, relation to barberry, (58) U.S.D.A. 545.
- chemistry, methods, (54) 613.
- chemistry, treatise, (52) 609.
- chemists, analytical methods of, criteria of validity, (60) 611.
- collar disease, notes, (52) 747.

Cereal—Continued.

- Dilophospora disease, description, (57) 247.
- disease susceptibility, (56) 648.
- diseases, (53) 246.
- diseases, epidemic, in Illinois, (59) 538.
- diseases in France, (57) 541.
- diseases in Manitoba, (56) 541.
- diseases, studies, (54) 449; (57) Calif. 246; (60) 149.
- experimental station at Rieti, Italy, (52) 633.
- food products, insects in, control, (52) 454.
- foods, vitamin B content, (51) 266.
- foot and root rots, notes, (60) 344.
- foot disease, Fusarium as cause, (59) 639.
- foot rot and associated fungi in Italy, (57) 840.
- foot rot, notes, (57) 541; (58) 340, 445.
- Fusarium blight, studies, (53) 43.
- Fusarium disease, (52) 645.
- gruel feeding, (53) 457.
- hay production, (54) Calif. 329.
- hays, feeding value, (54) Calif. 373.
- hybrids, rare, (58) 525, 526.
- hybrids, sterile, genetics and cytology, (60) 323.
- hybrids, tests, Alaska, (57) 522.
- leaf rusts, notes, (55) 243.
- mixtures and flax, tests, (55) Ohio 132.
- mixtures, comparison, (51) Minn. 133.
- mixtures, tests, (55) Minn. 735.
- nematode, disease, studies, (51) 848.
- pollen, preservation, (56) 230.
- products, chloropicrin as fumigant, (54) 551.
- products, fat extraction method, (53) 807.
- rust and barberry eradication in Wisconsin, (55) 348.
- rust at Grignon, (55) 748; (57) 543.
- rust, control, (54) 543; (60) 831.
- rust, control by high temperature, (52) 646.
- rust, effect of weather, (52) 646.
- rust in Australia, (55) 348.
- rust in Scotland, (57) 147.
- rust resistance or sensitivity, factors affecting, (58) 544.
- rust, studies, Ind., (55) 42; (59) 748.
- rust susceptibility, relation to nutrition, (60) 546.
- rusts at Skierniewice, (57) 840.
- rusts, control by dusting, (58) 144, 544.
- rusts, development and spread, (57) 543.
- rusts in Paris region, (57) 641.
- rusts in southern France, (57) 641.
- rusts in Spain, (57) 147.
- rusts in the Far East, (60) 49.
- rusts, occurrence and overwintering, (54) 145.

Cereal—Continued.

- rusts, species in, (59) 639.
- rusts, studies, (58) 43, 445; (59) 446.
- seeds, germinative energy, effect of pH, (58) 214.
- seeds, longevity, (60) 228.
- Septoria diseases, (52) 448.
- smut—*see also* Grain smuts, Smut, and specific hosts.
 - control, (54) 449, 543, N.Dak. 746.
 - dry treatment, review of literature, (54) 543.
 - New Zealand species, key, (57) 839.
 - stinking, relation to soil character, (56) 648.
 - X-rays for, (57) 840.
- smuts—
 - control, (60) Va. 149.
 - control, progress in, (58) 845.
 - in North Caucasus, (58) 647.
 - modes of infection, (58) 550.
- stem rust, physiological forms, (59) Nebr. 840.
- straw, physiological and chemical aspects, (56) N.Y.State 212.
- take-all diseases, studies, (53) N.Y. Cornell 348.

Cereals—*see also* Barley, Oats, Wheat, etc.

- and cereal products, analysis methods, (59) 503.
- and flax mixtures, tests, (59) Ohio 823.
- and legumes, production in Spain, (53) 396.
- and rickets, (57) 898.
- anticalcifying action, rat technique for demonstrating, (59) 292.
- as chief source of calories, effects, (58) 491.
- assimilation of nutrients, effect of soil inoculation, (54) 419.
- baking quality, effect of fertilizers, (51) 530.
- breeding experiments, methods, (51) 33.
- chromosome numbers, (56) 127.
- colloid chemistry of, (54) 6.
- culture—
 - ecological basis, (58) 829.
 - experiments, (52) Oreg. 436, U.S.D.A. 527; (53) Can. 530; (58) 429.
 - in Alaska, (55) Alaska 229.
 - in ancient Greece, (57) 525.
 - in Austria, (58) 632.
 - treatise, (51) 34.
 - under dry farming, (54) U.S.D.A. 30.
- developmental rhythm, quantitative estimation, (58) 526.
- disease resistance in, studies, (51) Wis. 446.
- electrocultural experiments, (54) 434.
- English, digestibility, (60) 659.

Cereals—Continued.

- English varieties, (60) 533.
- fat content, (56) 312.
- feed value as determined by eggs, (53) 375.
- fertilizer experiments, (51) Ohio 422; (54) 828.
- for forage, time of cutting tests, (54) Wash.Col. 827.
- fumigated, hydrocyanic acid absorbed by, (52) U.S.D.A. 561.
- Fusarium affecting, (58) 649.
- germination, enzymatic function of mitochondria, (60) 423.
- germination tests, (57) 517.
- inheritance studies, Wash.Col., (54) 822; (56) 543.
- insects affecting, (59) 855.
- lethal factors in, (51) 128.
- morphological variety studies, (55) 735.
- newly harvested, afterripening period, (59) 517.
- nursery trials, (52) Idaho 828.
- nutrient requirements, (53) R.I. 325.
- Philippine, nutritive value, (55) 294.
- physiological studies, (53) 501, 502, 712.
- production in France, (51) 692.
- quality, relation to seeding practices, (56) 33.
- rickets-producing effect, (56) 92.
- rotation experiments, (51) Ohio 434.
- seed certification in Germany, (57) 133.
- seed treatment, (55) Oreg. 637; (57) 517, 839.
- seeding experiments, (52) U.S.D.A. 827.
- selection experiments, (59) Wis. 47.
- size of seed experiments, (57) 826.
- starch in, genesis, (56) 325.
- strength of culms, factors affecting, (57) 327.
- summer and winter, differences, (57) 420.
- testing methods, (57) Ohio 125.
- tests in Philippines, (60) 327.
- tillage experiments, (54) Wash.Col. 827.
- time of plowing tests, (52) Mont. 435.
- time of seeding, effect on vegetative rhythm, (52) 625.
- treatise, (57) 825.
- value of top-dressing for, (58) 632.
- varieties for three regions of State, (58) N.C. 828.
- varieties, registration, (56) 433.
- variety tests, (52) U.S.D.A. 827.
- vitamin B in, (55) 294; (58) 390.
- weeds in, control, (57) 334.
- winter and spring, characteristics, (53) 231.
- winter and spring forms, physiological nature, (57) 33.
- winter resistance, (53) Ga. 230.
- yield, analysis, (54) 130.
- yields, (58) 830.

- Cerebella—
 cenchroidis, notes, (55) 245.
 cynodontis, notes, (57) 444.
 sorghi-vulgaris, notes, (53) 147; (57) 146.
- Cerebrospinal meningitis in horses, (53) 279; (60) 373.
- Ceresa bubalus, *see* Buffalo treehopper.
- Cereus, transpiration and stomatal movement, (53) 824.
- Cerocephala cornigera, notes, (58) 863.
- Ceromasia sphenophori, breeding, (58) 665.
- Ceromasia sphenophori, studies, (54) 58.
- Ceroplastes—
 destructor, destruction by predacious Helix, (53) 856.
 rubens, parasites of, (53) 160.
 rusci in Palestine, (60) 650.
 spp. in Japan, (53) 158.
 spp., notes, (54) 59.
- Cerostoma xylostella, notes, (53) 257.
- Ceratomya trifurcata, *see* Bean leaf beetle.
- Certified Milk Producers' Association of America, conference, (59) 575.
- Cervix of cows, secretions of, (55) 369.
- Cestodes—
 classification and keys, (58) 556.
 from domestic animals, (60) P.R. 774.
 in digestive tract of fowls in Natal, (57) 879.
 monograph, (59) 550.
 parasitic in fish, (53) 761.
- Cetoniinae, life cycles, (54) Kans. 461.
- Ceutorhynchus—
 erysimi in United States, (58) 264.
 pleurostigma, control, (56) 63.
 pleurostigma, notes, (57) 655.
 spp., notes, (57) 264.
- Chaerocampa elpenor, parasite of, (53) 55.
- Chaetexorista javana, parasite of Setora nitens, (52) 554.
- Chaetocampa—
 crotonella n.sp., description, (56) 257.
 new genus, erection, (56) 257.
- Chaetochloa spp. as weed in Cuba, (54) 239.
- Chaetodacus—
 spp., breeding in captivity, (58) 665.
 spp., notes, (55) 253.
 spp., studies, (51) 763.
 tryoni in Queensland, studies, (55) 763.
 tryoni, notes, (58) 857.
 tryoni, studies, (53) 362.
 tryoni, summary, (56) 361.
- Chaetomium spp., notes, (60) 347.
- Chaetophleps setosa, notes, (57) Ark. 63.
- Chaetoptelius vestitus, parasite of, (58) 863.
- Chafer beetles in Great Britain, summary, (59) 561.
- Chain-dot moth, notes, (54) 152.
- Chain-spotted geometer, studies, (59) Me. 558.
- Chalcid flies—
 in alfalfa seed, (56) Utah 553.
- Chalcid flies—Continued.
 new, (56) 65.
 North American, taxonomic and ecological review, (57) 862.
- Chalcidae, postembryonic forms, (55) 461.
- Chalcidoid parasites, new coccid-inhabiting, descriptions, (56) 362.
- Chalcidoidea—
 larvae, notes, (54) 558.
 new genera and new species, (57) 863.
- Chalcis—
 albotibialis, notes, (59) 355.
 femorata, parasite of cabbage butterfly, (51) 555.
 incerta, notes, (51) 856.
 obscurata, parasite of pink bollworm in Hawaii, (58) U.S.D.A. 457.
- Chalcogonatopus nigrus n.sp., description, (52) 859.
- Chalicodoma muraria, bucco-pharyngeal tract in, (57) 553.
- Chalk, colored, removal from yarns, (60) 599.
- Chamber of Commerce of United States, committee on agriculture, report, (60) 382.
- Chamiza—
 germination and growth, N.Mex., (59) 222; (60) 36.
 growth and reproduction, (57) N.Mex. 224.
 seeding experiments, (55) N.Mex. 434.
- Channels, curvature, relation to depth, (54) 479.
- Char filtration, factors affecting, (56) 806.
- Chara fragilis, effect on mosquito development, (59) 356, 859.
- Chara robbinsii, effect on mosquito larvae, (51) 256.
- Charadriiformes, bibliography, (54) 256.
- Charaxes genus, papers on, (57) 554.
- Charcoal—
 activated sugar, adsorption by, (52) 110.
 ash-free, preparation, (55) 10.
 feeding value, (55) Iowa 567.
 recovering adsorbed substances from, (51) 502.
- Charcoals—
 adsorbent, studies, (56) 110.
 identification, (54) 806.
- Charlesterus cuspidatus, notes, (52) 582.
- Charopsinae, revision, (57) 658.
- Chars, vegetable and bone, comparative ash adsorption, (51) 109.
- Chaulmoogra—
 and related oils, (51) 313.
 group oils, studies, (59) 501.
 oil treatment for John's disease, (59) 474.
- Chayote—
 fruit or leaves, vitamin A in, (52) 65.
 leaves, proteins, digestibility, (52) 63.
 recipes, (55) 291.
- Chayotes, pickling directions, (55) 693.
- Cheat grass, control, (53) U.S.D.A. 334.

- Cheat grass smut, notes, (60) Wash.Col. 830.
- Cheat hay, deficiency as roughage for heifers, (60) Oreg. 769.
- Cheese—
- American, effect on hemoglobin production, (56) 495.
 - American, pasteurization of curd for, (56) Wis. 773.
 - amylase in, (52) U.S.D.A. 503.
 - and butter making, treatise, (53) 276.
 - black spot in, (57) 870.
 - brands and standards, (52) U.S.D.A. 575.
 - calcium of, (60) 490.
 - Camembert—
 - manufacture from pasteurized milk, (58) 872.
 - microflora of ripening process, (59) 271.
 - salting, (53) 883.
 - Canadian, in world's market, (60) 661.
 - Cheddar—
 - composition, (57) 179.
 - effect of flash pasteurization of milk, (60) 265.
 - effect of pasteurization and cooling of milk, (55) N.Y.State 269.
 - effect of sweet clover feed, (51) 277.
 - factors affecting texture, (57) Calif. 277.
 - flavor, effect of streptococci, (55) N.Y.State 269.
 - making in Georgia, (51) 380.
 - manufacture from pasteurized milk, (57) N.Y.Cornell 374.
 - pasteurizing milk for, (59) 367.
 - colloidal chemistry of, (52) U.S.D.A. 503.
 - containing pimientos, gas formation in, (59) 670.
 - cottage, bacteriological study, (58) 872.
 - cottage, manufacture, (56) Mich. 275, Ill. 376, Nebr. 674; (57) 870.
 - cottage, manufacture and use, (53) U.S.D.A. 475.
 - cream, manufacture, new method, (57) 374.
 - effect of fat content of milk, (51) 277.
 - Emmental, manufacture and handling, (51) 877.
 - factories, cooperative, in United States, (53) 297.
 - factories, plans, (55) 584.
 - factory milk, production returns, (54) N.Y.Cornell 585.
 - freezing points, (58) 572.
 - freight rates, (56) Ohio 285.
 - fruity odor in, (53) 475.
 - fumigated, hydrocyanic acid retained by, (51) 759; (52) 561.
 - Gouda, making, (52) 177.
 - grading methods, (55) 69.
 - imports into United Kingdom, (52) U.S.D.A. 594.
- Cheese—Continued.
- industry, treatise, (58) 69; (60) 664.
 - Italian, manufacture, (57) 375.
 - Jack, manufacture from goat's milk, (52) Calif. 80.
 - Kingston, flora of, (53) 178.
 - Leicester, manufacture, (59) 469.
 - loaf and blended varieties, manufacture, (57) 466.
 - making—
 - curdling tests of milk for, (57) 179.
 - papers on, (52) U.S.D.A. 574.
 - relation to mammary microflora, (53) 581.
 - studies, (60) 366.
 - Swiss, test for acidity, (51) 317.
 - treatise, (52) 279; (54) 869.
 - use of calcium chloride in, (51) 780.
 - manufacture, legal requirements, (51) 581.
 - marketing, cooperative, (52) U.S.D.A. 593.
 - microscopic appearance, (56) 275.
 - moisture in, determination methods, (60) 313.
 - mold, characteristics, (52) 279.
 - Monterey, manufacture, (58) 170.
 - movement of substances through, (59) 469.
 - parings, feeding value, (56) Wis. 765.
 - pimento, defect of, (56) 674.
 - processed, manufacture and legislation relating to project, (56) 773.
 - production in Minnesota, (53) 277.
 - production in Spain, (55) 676.
 - quality, effect of clarification of milk, (52) Pa. 279, Utah 774; (53) 178.
 - quality, effect of freezing, (59) Wis 75.
 - quality, factors affecting, (54) 573.
 - ripening, rapidity of, factors affecting, (53) 581.
 - ripening rate, effect of *Streptococcus lactis*, (51) 179.
 - Roquefort, from goat's milk, (51) 96; (54) Calif. 475.
 - Russian, chemical analyses, (55) 270.
 - sale and advertising, (51) 179.
 - skipper in cured meats, (56) U.S.D.A. 859.
 - skipper larvae, tenacity, (58) 163.
 - soft, directions for making, (53) Iowa 76.
 - soft, manufacture, (55) 69; (58) 572.
 - soft, types, manufacture, (55) 676.
 - soft, yeasts in, (60) 570.
 - sour milk, production, (51) 780.
 - starter for, (51) 678.
 - stinker, studies, Wis., (53) 475; (56) 773.
 - Stinker Swiss, cause, (51) Wis. 477.
 - Swiss, abnormal fermentation in, cause, (60) 664.
 - Swiss, cost of production, (58) 187.

Cheese—Continued.

- Swiss, production, improved methods, (53) Wis. 474.
- treatise, (58) 572.
- varieties, vitamin A in, (56) 794.
- Weisslaker, fat, water, and salt content, (53) 277.
- Wensleydale, directions for making, (59) 576.
- Wensleydale, mold associated with ripening, (52) 879.
- Wisconsin foreign, marketing by federation, (55) Wis. 81.
- yield of milk, increasing, (58) 170.

Cheiloneurus—

- ceroplastis n.sp., notes, (53) 160.
- inimicus n.sp., notes, (53) 260.
- lineascapus, notes, (53) 260.

Cheilosporira spinosa, life history, (60) U.S.D.A. 876.

Cheimatobia brumata, notes, (60) 161.

Cheiopachys colon, notes, (58) 863.

Chelidonium cinctum—

- in Mysore, (53) 259.
- notes, (57) 655.

Chelloneurus pulvinariae n.sp., notes, (57) 856.

Chelonus—

- blackburni, parasite of pink bollworm in Hawaii, (58) U.S.D.A. 457.
- fissus, notes, (58) 60.

Chemical—

- analyses, volumetric, methods, (57) 707.
- analysis—
 - handbook, (52) 806.
 - inorganic quantitative, textbook, (55) 205.
 - methods of American Association of Cereal Chemists, (56) 13.
 - Methods of Association of Official Agricultural Chemists, (55) 11.
 - new reduction methods in, (54) 612.
 - standard methods, treatise, (54) 505.
 - technical, treatise, (51) 503; (57) 503.
 - treatise, (53) 503; (56) 110; (60) 112.
 - volumetric, (56) 804.
 - with membrane filters, (51) 503.
- dictionary, (52) 409.
- dictionary, German - English - French-Spanish, (54) 609.
- dusts for control of potato scab, (54) 652.
- elements in agriculture, rotation, Mich., (51) 96; (52) 24.
- products, international trade in, (56) 626.
- synonyms and trade names, appendix, (56) 309.
- synonyms and trade names, dictionary, (52) 108.
- synthesis, treatise, (52) 108.

Chemicals—

- as mosquito repellents, (54) 260.
- for destruction of mosquito larvae, (53) 859.
- for hastening sprouting of dormant potato tubers, (55) 829.
- injection into trees, (54) 454.
- purification for nutrient solutions, (60) 511.
- use in the apiary, (60) N.J. 847.
- war, insecticidal value, (55) 658.

Chemistry—

agricultural—

- official methods of analysis, (55) 11.
- studies, (52) Pa. 201; (59) Calif. 708.
- textbook, (58) 9.
- analytical methods, (51) 801, 803.
- analytical, review, (51) 710.
- and chemical technology, bibliography of bibliographies, (54) 707.
- and home economics, (56) 801.
- and progress in medicine, (55) 502.
- and the food industries, symposium, (60) 891.
- and the home, treatise, (57) 111.
- and the state in Great Britain, (53) 408.
- applied, progress in, (56) 309.
- applied, treatise, (55) 188, 709.
- biological, laboratory manual, (53) 711.
- biological, manual, (60) 610.
- colloid, *see* Colloid chemistry.
- dairy, manual, (56) 310.
- definitions of terms used in, (52) 409.
- dictionary, (52) 609.
- dispersoid, base exchange in, (55) 213.
- dispersoid, relation to soil science, (51) 399.
- food, textbook, (56) 201.
- for agricultural students, textbook, (56) 588.
- fundamentals, textbook, (53) 801.
- high energy, and vitamins, (54) 793.
- in agriculture, treatise, (55) 501.
- in America, half-century of, treatise, (56) 309.
- in industry, treatise, (52) 309; (54) 201.
- in modern life, treatise, (54) 407.
- in service of man, treatise, (54) 706.
- in twentieth century, treatise, (53) 801.
- industrial organic, treatise, (57) 501.
- industrial, treatise, (54) 407; (55) 501.
- inorganic and physical, recent advances in, treatise, (55) 502.
- inorganic, treatise, (57) 201.
- International Institute at Brussels, papers from, (58) 308.
- introduction to literature of, (53) 408.
- laboratory manual, (54) 6.
- neglected chapter in, (52) 109.
- of familiar things, treatise, (57) 801.

Chemistry—Continued.

- of food and nutrition, treatise, (55) 691.
- organic—
 - analysis, handbook, (57) 503.
 - methods, (53) 205; (54) 407; (55) 201.
 - textbook, (56) 309; (57) 201; (60) 201.
 - treatise, (59) 201.
- physical, treatise, (54) 6, 407, 706.
- physiological, textbook, (55) 801.
- physiological, treatise, (54) 692; (55) 306; (57) 291.
- progress in, (53) 711; (55) 609; (57) 201; (59) 108; (60) 10.
- quantitative agricultural, laboratory manual, (56) 408.
- relation to candy manufacture, (51) 808.
- relation to food, treatise, (52) 258.
- surface, introduction, treatise, (56) 501.
- theoretical, treatise, (59) 201.
- treatise, (51) 709; (60) 10.
- yearbook, 1924, (51) 501.
- yearbook, 1926, (55) 407.

Chemotropism—

- in plant roots, (54) 724.
- ovipositional, possible application, (60) 556.

Chenopodium—

- album, control, (54) 240.
- album in grain seed, (53) 36.
- ambrosioides v a r. anthelminticum, notes, (59) 577.
- murale, relation to sugar beet curly top, (56) 51.
- oil, anthelmintic value, (52) Ohio 84. 777.
- oil as vermifuge, (58) 275.
- oil, ascaricidal value, (54) 277.
- oil, intravenous administration to horses, (60) 274.
- oil, western, anthelmintic properties, (54) 475.

Cherimoya—

- culture experiments, (59) Hawaii 632.
- studies, (54) 42.

Chermes—

- abietis, control, (54) 455.
- on silver fir, control, (56) 360.
- spp. on ornamental conifers, (59) Mich. 59.

Cherokee rose, analyses, (52) Calif. 70.

Cherries—

- Barbados, culture experiments, (59) Guam 529.
- blooming data, (52) N.J. 738.
- blooming season, (57) Ohio 437.
- breeding experiments, (53) U.S.D.A. 141.
- breeding, value of homozygous species, (60) 528.
- canned, effect of sulfur spray residues, (60) Oreg. 790.

Cherries—Continued.

- carbohydrates in, distribution, (58) Mo. 436.
- cold storage studies, (56) 141; (58) 535; (60) 541.
- Compass, plum as stock for, (53) U.S.D.A. 536.
- Coryneum beijerinckii affecting, (56) 551.
- cracking injury, (60) Alaska 736.
- culture experiments, Alaska, (58) 435; (60) 736.
- culture on grass orchard principle, (60) 439.
- dwarfing and dropping, cause, (58) N.Y.State 448.
- dwarfing, shriveling, and dropping, (56) N.Y.State 850.
- fertilizer experiments, (52) Kans. 440; (58) N.Y.State 835; (60) Ill. 229.
- forcing, (58) 437.
- fruit bud formation date, (51) 240.
- genetic studies, (60) 125.
- handling, (54) 243.
- hardy, breeding, (57) Can. 236.
- harvesting and canning, (53) Oreg. 440.
- harvesting and storage, (55) Oreg. 643.
- hybridization studies, (57) 833.
- identification of nursery stock, (56) 837.
- in Ontario, (55) 837.
- insects affecting, (52) West.Wash. 56.
- Japanese flowering, propagation and culture, (59) U.S.D.A. 142.
- Japanese, witches'-broom of, (59) 247.
- mutations in, (60) 127.
- Nanking, value, (58) Ill. 333.
- new, tests, (60) Guam 820.
- nitrogen and carbohydrates in shoots, movement, (57) Mo. 435.
- nonsetting, cause and remedies, (52) Calif. 41.
- notes, (52) N.Y.State 46, Alaska 536.
- planting and care, studies, (53) Oreg. 643.
- pollination difficulties, (58) 236.
- pollination studies, (51) N.Y.State 40, 42; (52) 342, Calif. 839; (53) Oreg. 642, 643; (55) Oreg. 643, 742; (57) 140, 833; (58) 37; (59) Ohio 232, 440, Ohio 837; (60) 233, Wash.Col. 821, 824.
- pollinizers for, (54) 242.
- preservation by freezing, (52) Calif. 15.
- propagation by stem cuttings, (57) 238.
- propagation studies, (53) U.S.D.A. 141.
- pruning, (51) Kans. 40; (58) Ill. 333; (60) Ill. 229.
- quantity and size, effect of rootstock, (59) 835.
- reddening, (53) 521.
- rootstocks for, (57) N.Y.State 535, 536.
- self-fertile strain, (60) Oreg. 738.
- Seneca, description, (52) N.Y.State 46.

Cherries—Continued.

sour—

- culture, (52) West.Wash. 97.
- immature, dropping, (56) 536.
- response to fertilizers and pruning, (56) N.Y.State 742.
- winter injury, (55) Mich. 140.
- spray schedules for, (51) N.J. 144; W.Va. 240; (52) West.Wash. 56; (53) Mich. 37; (55) N.J. 38, Ohio 38.
- sprayed with lime-sulfur, effect on cans, (60) Oreg. 745.
- spraying directions for Japanese beetle, (51) N.J. 162.
- sterility in, (57) Mo. 434; (58) 739.
- stocks for, (56) N.Y.State 235.
- storage studies, (52) Calif. 41.
- sulfured or in brine, cost of production, (59) 385.
- sweet, fruit setting, (51) West.Wash. 96.
- time of pruning, (53) Can. 840.
- use in ice cream and ices, (58) Calif. 289.
- varieties for Iowa, (52) Iowa 442.
- varieties in Wyoming, (53) 536.
- varieties, synonymy, (51) 42.
- variety, new, (54) N.Y.State 643.
- variety, notes, (58) Ohio 138.
- variety tests, (60) Ill. 229.
- winter protection, (53) U.S.D.A. 141.
- yields, (59) N.Mex. 231.
- Zealand, self-sterility in, (58) 541.

Cherry—

aphid, black—

- control, (53) 358; (59) Wis. 56.
- life history, (54) 460.
- notes, (56) Wis. 755; (58) 451; 59 Ohio 154.
- bacterial disease, Colo., (51) 654; (53) 146; (55) 249.
- blossom wilt, notes, (56) 747.
- brown rot, control, (51) U.S.D.A. 155; (60) 345.
- brown rot, studies, (51) U.S.D.A. 757.
- die-back, notes, (56) 747.
- diseases, (52) West.Wash. 53.
- diseases and pests, (58) Mich. 336.
- diseases in Illinois, (53) 547.
- flowers, studies, (60) 823.
- fruit fly—
 - control, (55) Mich. 55; (58) N.Y.State 856; (59) N.Y.State 56.
 - forms, (53) Mich. 158.
 - life history and control, N.Y.State, (56) 252, 259.
 - notes, (52) Wash.Col. 852; (59) Mich. 455.
 - paper on, (51) 55.
 - status, in France, (59) 158.
 - summary, (59) 357, 860.
- fruit moth, life history notes, (58) 451.
- leaf beetle, notes, (52) Me. 661; (53) Mich. 557.

Cherry—Continued.

- leaf scorch, notes, (56) 747.
- leaf spot—
 - and apple scab, comparison, (55) 850.
 - control, (51) N.J. 654; (52) Kans. 450; (53) 241; (55) N.J. 444, 755; (56) Tenn. 145, Wis. 746, Kans. 833; (59) Wis. 47; (60) N.Y.State 449.
 - control, relation to spore discharge, (51) Wis. 451.
 - defoliation of trees by, (60) Mich. 56.
 - notes, (55) 242; (56) 647; (57) 343, 751; (59) 346.
 - residual effects and control, (53) Mich. 448.
- maggot, control, (59) N.Y.State 56.
- maggot survey, (60) Oreg. 753.
- morello, origin and characteristics, (53) 143.
- orchards, fruit flies affecting, (57) 853.
- orchards, management, (58) Mich. 38.
- pest in Willamette Valley, (60) Oreg. 753.
- pollen, longevity, (55) 325.
- sawfly, notes, (52) Wash.Col. 852.
- scale, parasites of from Delaware, (59) 358.
- seeds, germination, (52) N.Y.State 46.
- seeds, late stratification, effect, (53) 641.
- slug, notes, (52) West.Wash. 56.
- stocks behavior in nursery, (56) 44.
- stocks, domestic production, (58) 643.
- stocks, notes, (51) 240.
- stocks, tests, (58) N.Y.State 836; Can. 837.
- trees—
 - crown gall affecting, (56) 653.
 - defoliation, relation to winter injury, (60) N.Y.State 449.
 - disbudding experiments, (56) Kans. 833.
 - effects of sod in relation to moisture and nitrates, (53) N.Y.Cornell 642.
 - pollination studies, (56) Wis. 740.
 - sour, seasonal changes in, (58) Mo. 740.
 - young, pruning, (52) Wis. 538.
- Chestnut—
 - bark disease, case of resistance to, (53) 650.
 - black canker—
 - control, (56) 55.
 - distribution and control, (54) 255.
 - notes, (57) 354, 551.
 - outline, (51) 758.
 - recognition and control, (55) 350.
 - blight—
 - in Europe, (56) 55.
 - in Ontario, (56) 355.
 - in southern Appalachians, (55) U.S.D.A. 150.

- Chestnut—Continued.
 blight—continued.
 situation, silvicultural aspects, (56) 355.
 spraying experiments, (54) 654.
 spread, in Appalachians, (51) 52.
 studies, (57) 157.
 survival of young chestnut trees, (60) Conn.State 743.
 canker, notes, (53) 43.
 canker reported in Belgium, (56) 456.
 disease, Japanese, (57) 551.
 tree diseases, (54) 46.
 trees—
 blighted, persistent development of basal shoots, (55) 756; (58) 852.
 in southern Appalachians, future, (58) 852.
 resistance by roots to *Endothia parasitica*, (57) 743.
 surviving blight, (52) 550.
 wood in tanning industry, (51) 843.
- Chestnuts—
 blight-killed, natural replacement, (57) U.S.D.A. 342, 440.
 blight-killed, replacement studies, (59) U.S.D.A. 533.
 blight-resistant, search in foreign countries for, (55) U.S.D.A. 551.
 culture in Algeria, (55) 41.
 horse, *see* Horse-chestnut.
 insect-infested, treatment with boiling water, (57) 854.
 Japanese, *Schizophyllum commune* affecting, (52) 749.
 pollination studies, (55) Oreg. 643.
 varieties, (58) Ill. 333.
- Chiasmotype theory of Janssens, (58) 526.
 Chiestopsylla rossi, rôle in spread of plague, (57) 760.
 Chicago rate case, paper on, (52) 168.
- Chick—
 diseases in Michigan, summary, (60) 479.
 embryo grafted fragments, behavior, (55) 330.
 embryo grafted fragments, specificity, (57) 824.
 embryos—
 abnormal, relation to mortality during incubation, (60) 660.
 absorption rate of reserve yolk, (60) 566.
 development, effect of injections, (56) Conn.Storrs 869.
 effects of X-rays, (58) 528.
 growth rate, effect of temperature, (58) Mo. 352.
 mortality, (55) 166.
 studies, (54) 766; (55) 860; (56) 462.
 four-legged, description, (51) 176.
 Chick pea wilt resistance, notes, (60) 546.
 Chick peas in warehouses, fumigation, (52) 359.
 Chick soma, chromosomes of, (56) 816.
- Chicken—
 blood, antisheep amboceptor and complement in, (51) 679.
 diseases, cause, (51) Mich. 84.
 lice and mites, control, (51) Ohio 859; (54) 156.
 liver, effect on hemoglobin production, (56) 495.
 liver, vitamin content, (53) Wis. 459.
 louse, notes, (52) 355.
 mite, control, (51) U.S.D.A. 60; (56) 879; (60) 266.
 pox—
 and roup vaccine, use, (52) Ky. 485.
 control, (51) 179; (59) 370.
 immunization, (57) 878; (58) 179, Calif. 579; (59) 277; (60) Wyo. 775, 875.
 in Guam, (59) Guam 581.
 notes, (55) 777; (57) 674.
 summary, (55) N.J. 374.
 vaccine for, (51) Del. 185; (57) Can. 574; (60) West.Wash. 775.
 vaccine, preparation, (57) Calif. 277.
 vaccine tests, (51) Mich. 180.
 vaccine, value, (52) Calif. 82.
 specific dynamic action, (52) 665.
 tapeworm, life history, distribution, and control, (60) West.Wash. 756.
 tapeworm, notes, (60) West.Wash. 775.
 tissue as protection against rickets, (57) N.J. 71.
- Chickens—*see also* Chicks, Fowls, Hens, Poultry, *etc.*
 basal heat production, measurement, (54) Ill. 368.
 basal metabolism, (57) 663.
 body weight, relation to egg production, (59) 164.
 breeding, feeding, and management, (57) Idaho 71.
 breeding, for diarrhea resistance, (56) Ill. 276.
 broiler production, (56) Pa. 168, Ariz. 768.
 calcium in blood, variation, (58) 67.
 caponizing, directions for, (56) 769.
 Collyricium as parasites of, (51) 385.
 composition of gains, (56) Ill. 270.
 condemned, killing with calcium cyanide, (52) 782.
 cooked potatoes for, (60) Ohio 766.
 cost of production, (60) Ohio 83.
 critical temperature, (57) 368.
 cross breeding experiments, (54) 864.
 difference of sexes in, (59) 361.
 dry picking, (53) U.S.D.A. 878.
 effect of cod-liver oil, (52) 875.
 effect of time of hatch, (53) Okla. 173.
 experimental infection with *Bacterium tularense*, (60) 480.
 experimental, prevention of weak legs in, (52) 274.
 extension of black in, genes for, (52) 128.

Chickens—Continued.

- eye nematode in, (54) 778.
 fattening for broilers, (55) N.C. 266.
 feeding, (51) 77; (58) U.S.D.A. 669.
 green feed and direct sunlight for, (60) Wyo. 768.
 hen-feathering in, genetics, (57) 28.
 immunity or resistance to coccidial infection, (58) Oreg. 775.
 immunity to strychnine, (54) 773.
 in Japan, midge affecting, (59) 255.
 intestinal nodules in, (54) 381.
 intestinal roundworm of, (53) 586.
 kept in darkness, effect, (54) Ill. 367.
 Leghorn, variability in weight, (52) 172.
 Leghorn, variability of feed consumption, (57) N.J. 71.
 mineral mixture for, (52) Ohio 476.
 new anthelmintic for, (57) 871.
 nutritional requirements, (55) 867; (56) 768.
 Philippine, worm parasites of, (57) 579.
 poisoning by black nightshade, (54) 479.
 portions of body activated by light, (59) Wis. 70.
 preparing for market, (54) Can. 764.
 prices, (58) Ill. 380.
 prices, index numbers, (59) N.Dak. 885.
 producing green feed for, (59) Ohio 164.
 rachitic, enlarged parathyroids in, (54) 91.
 resistance to *Ascaridia perspicillum*, effect of repeated bleeding, (58) 481.
 Rhode Island Red, effect of skim milk on constants of growth curves, (59) 567.
 roundworm parasite, (52) Kans. 485.
 seasonal broiler production, Pa., (58) 361, 569.
 shade and green feed for, (59) Okla. 266.
 Single-Comb White Leghorn, postnatal growth, (52) 772.
 specific vestigial wing character in, (60) 811.
 spermatozoa production by, effect of feeds, (56) 167.
 standard breeds and varieties, U.S.D.A., (56) 470, 669.
 susceptibility to vaccine virus, (59) 375.
 toxicity of salt for, (55) Ill. 671.
 vitamin requirements, (51) 268; (58) 268.
 White Leghorn, growth of skeleton, (56) 669.
 White Leghorn, length and variability of bones, (52) 772.
 White Plymouth Rock, growth, (55) Ill. 669.

Chicks—

- all-mash ration for, (57) 463.

Chicks—Continued.

- animal proteins for, (59) Ind. 769.
 artificial brooding, directions, (51) 77.
 artificially brooded, management, (51) Calif. 77.
 baby, development of industry, (59) 361.
 baby, diseases, (51) N.J. 185.
 baby, rate of absorption of yolk masses in, (58) Ark. 370.
 basal heat production, (58) Ill. 360.
 brooder, care and management, (54) Idaho 66.
 brooding and feeding, Utah, (51) 473; (59) 464.
 brooding and pullet development, (56) 670.
 brooding on the farm, (59) Okla. 266.
 calcium and phosphorus content, factors affecting, (55) 868.
 calcium requirements, (57) Ohio 173.
 care and management, N.J., (51) 777; (56) 870.
 cecal contents, pH of, effect of milk products, Calif., (54) 277, 278.
 cod-liver oil for, (60) Guam 860.
 corn as feed for, deficiency, (56) 767.
 cost of feeding, (54) Can. 764.
 cost of raising in incubators, (54) Can. 66.
 dead in the shell, cause, (54) 570.
 development, effect of thyroid grafts, (52) 368.
 distribution, (59) 361.
 drinks for, comparison, (55) Minn. 365.
 early care and brooding, (59) 361.
 early embryology, (53) 577.
 early growth rates, effect of ultra-violet light, (56) 868.
 early rearing, (52) Mich. 773.
 effect of direct v. transmitted sunlight, (55) N.C. 266.
 effect of ultra-violet light, (57) N.J. 71.
 effect of various protein-carbohydrate ratios, (60) Pa. 364.
 effect of vitamins, (51) 576.
 effect of winter sunlight through glass substitute, (58) 670.
 embryonic, gonad grafts in, (53) 631.
 feed costs in brooding and rearing, (56) Can. 469.
 feed requirements, (53) Ohio 71.
 feeding, (51) N.Mex. 471; (53) N.Mex. 173, Mo. 273; (56) Can. 468, Can. 469; (57) Mo. 272.
 all-mash method, (54) Ohio 568.
 and cost, (53) Mo. 472.
 experiments, (51) Can. 276; (52) Can. 570, Wis. 573; (53) Minn. 472, 669; (55) N.C. 265, Can. 364, Tex. 366; (60) Del. 766.
 experiments and costs, (57) Mo. 462.
 from pullets and from hens, (51) Can. 275.
 gonad grafts in, (54) 826.
 grit requirements, (56) 166, Ohio 167.

Chicks—Continued.

- growth—
 affected by ration of hens, (51) Wis. 472.
 effect of cod liver oil, (52) 675.
 effect of feed, (52) 372.
 effect of light through glass and substitutes, (55) Ohio 671; (56) 868; (59) 265.
 effect of sunlight, (57) Ohio 173.
 rate, (53) Mo. 472, Iowa 778; (54) Mo. 762.
 rate, effect of minerals, (56) Wis. 767.
 rate, effect of time of hatch, Okla., (58) 468, 766.
 relation to feed consumption, (59) 566.
 studies, (55) 770.
 hatching and raising, (56) 671; (58) 68.
 incoordination of muscles in, inheritance, (58) Mo. 480.
 irradiation with cod-liver oil, (55) 867.
 leg weakness in—
 effect of sunlight and green clover, (53) 876.
 effect of ultra-violet light, (54) 670.
 factors affecting, (53) Ohio 576.
 prevention, (54) Ohio 396.
 studies, (51) 673.
 livability, inheritance, Pa., (58) 361; (60) 364.
 management and feeding, (59) N.J. 568.
 management to prevent diseases, (57) 464.
 milk for, value, (56) Iowa 869.
 mineral metabolism, (57) 664.
 mortality, effect of feeding methods, (54) Can. 272.
 mortality from bacillary white diarrhea, (59) 374.
 newly hatched, muscular incoordination, (57) Mo. 467.
 nutrient requirements, (52) 173; (53) 273; (56) Nebr. 767.
 nutrition experiments, brooder for, (55) 367.
 pedigreeing method, (51) 777.
 prevention of losses, (51) N.J. 277.
 protein requirements, (54) 866.
 rachitic, blood of, (53) 671.
 raised in confinement, (51) Ohio 277, Conn.Storrs 378; (53) 273, Ohio 576; (58) Pa. 670.
 raised in confinement, feeding experiments, (54) 271.
 raising, (57) 664; (58) West.Wash. 68; (59) Ill. 72.
 raising for profit, (53) Ill. 71.
 rapid growth on natural foodstuffs, (60) 261.
 ration and method of feeding, (56) N.J. 768.
 rations for starting, (51) Iowa 471.

Chicks—Continued.

- respiratory quotient, effect of vitamin D deficiency, (59) 870.
 rickets in, (56) 869.
 sex differentiation in, (54) 825.
 sex relation to shape and weight of eggs, (52) 629.
 starvation period, (56) Can. 468.
 synthetic rations for, (54) 270.
 synthetic rations for, adequacy, (54) Mo. 369.
 tail-feathering in, sex-linked inheritance, (59) 361.
 thyroid feeding effect, (54) 865.
 vitamin A requirements, (57) 368.
 vitamin B requirements, ration for, (60) 566.
 vitamin feeds for, (54) Can. 667.
 vitamin requirements, (51) 473, Ind. 874.
 X chromosomes in somatic cells, (52) 219.
 yellow corn for, (57) Ind. 662.

Chicory—

- culture, (58) Mich. 830.
 forcing, (54) Ill. 336.
 rust and endive rust, comparison, (57) 446.
 witloof, culture, (54) 643.
 witloof, culture and forcing, (54) 537; (59) Ill. 335.

Chiggers—

- and clover mites, (53) Ohio 899.
 birds as hosts, (60) 839.
 box turtle as host, (54) 758.
 native host of, (53) 656.
 North American, studies, (53) 656.
 protection from, (54) 758.
 studies, (53) 656.
 tree-toad, life history and biology, (56) 760.

Child—

- care, teaching to girls, (53) 695.
 development, research in, conference, (58) 593.
 health centers, conferences in, standards for, (55) 590.
 health program, (51) 599.
 labor in orchards and hop yards of northern Pacific coast, (55) 586.
 labor in sugar beet fields of Nebraska, (55) 485.
 labor in tobacco-growing areas, (55) 485.
 labor on New Jersey farms, (52) 591.
 labor on truck farms, (51) 690; (52) 492.
 nutrition, psychology of, (53) Mo. 495.
 welfare, relation to dairy industry, (52) U.S.D.A. 574.

Children—see also Boys and Girls.

- basal metabolism, (54) 291.
 basal metabolism, effect of sleep, (60) 290.
 blindness and other diseases due to deficient nutrition, (51) 267.
 blood of, amino acids in, (59) 891.

Children—Continued.

- carbon dioxide-combining capacity, effects of supplementary lunches, (57) 689.
- Chinese, development and diet, (54) 291.
- development and parental education, (56) 588.
- diabetic diets for, (56) 92, 93.
- diabetic, growth studies, (59) 893.
- energy metabolism, effect of small breakfast, (51) 556.
- feeding, (52) 64.
- feeding and care, treatise, (54) 693.
- feeding, menus and recipes, (60) 93.
- feeding principles, (57) 893.
- food requirements, (53) 263.
- growth—
 - and nutrition, permanent records, (60) 290.
 - and nutrition, photographic method of study, (52) 261.
 - effects of supplementary lunches, (56) 693.
 - rate, effect of milk consumption, (60) 192.
 - seasonal variation in, (58) 190.
 - studies, (52) 362.
- health in, clinical signs, (56) 90.
- health of, relation to dietary habits, (57) Va. 387.
- height-weight table, (52) 64.
- immunizing against tuberculosis, (53) 80, 887.
- in agriculture, (60) 889.
- in cotton-growing areas of Texas, welfare, (52) U.S.D.A. 791.
- iron in diet of, (57) 688.
- Japanese, constitutional and nutritive states, (57) 893.
- loss of appetite in, prevention, (57) 898.
- malnourished, improvement of condition, (60) 291.
- malnourished, treatment, (57) 898.
- malnourished, value of whole v. sweetened milk for, (51) 67.
- mental growth, effect of nutrition, (56) 897.
- mineral consumption, (56) Ohio 493.
- nature and needs, treatise, (51) 491.
- negro, health studies, (60) 787.
- negro, vital capacity of, (57) 893.
- nongaining preventorium, dietary and hygienic control, (60) 687.
- nutrition index, weight-height-age tables, (51) 663.
- nutrition of, (57) 292.
- nutrition of, mineral elements, (52) 160.
- nutrition studies, (58) 86; (60) 190.
- nutritional status, survey, (60) Fla. 190.
- optimum amount of milk for, (52) U.S.D.A. 563.
- pre-school age, health of, treatise, (54) 391.

Children—Continued.

- pre-school, minerals in diet, sources, (57) Ohio 487.
- respiratory exchange in, (55) 792.
- rural, public school dormitories for, (57) Mont. 686.
- school, *see* School.
- sun suits for, (59) U.S.D.A. 297.
- undernourished, fresh air camp for, (51) 164.
- undernourished, metabolism, (56) 395; (60) 91, 892.
- undernourished, nutrition classes for, (55) 789.
- underweight, tuberculosis survey, (56) 495.
- urban and rural, physique, (54) 689.
- weight variability for height, (54) 693.
- Children's—
 - diseases, progress in, (51) 459.
 - gardens, *see* School gardens.
 - teeth, decay, (58) 86; (60) 92.
 - teeth, effect of diet on caries in, (52) 763.
- Chili—
 - fruit diseases, (60) 644.
 - fruit rot, studies, (54) 545.
 - pepper diseases, (59) N.Mex. 237.
 - pepper stem and fruit rot, description, (52) 349.
 - pepper wilt, studies, N.Mex., (53) 146; (55) 444; (57) 244.
 - peppers, culture, (55) N.Mex. 439.
- Chilies—*see also* Peppers.
 - duty of water for, N.Mex., (54) 680; (55) 478.
 - Indian, studies, (60) 822.
 - varieties, (57) N.Mex. 236.
- Chilo—
 - loftini, notes, (56) 155.
 - simplex, effect of submergence, (59) 654.
- Chilocorus—
 - kuwanae, notes, (55) Calif. 352.
 - schiodtii, notes, (56) 756.
- Chilomastix gallinarum, studies, (55) 680.
- Chilomenes sexmaculata, color variations in, (52) 155.
- Chilosia morio, notes, (51) 55.
- Chilotrichia hyoscyamiellus n.sp., description, (54) 462.
- Chimneys for heating boilers, design, (51) 89.
- Chinch bug—
 - attacks, difference of susceptibility of sorgo and milo to, (52) Kans. 433.
 - barriers, (53) Kans. 453.
 - control, (51) Ill. 455, Mo. 759; (53) Mo. 451; (54) Nebr. 54, Fla. 352; (55) U.S.D.A. 458.
 - control on St. Augustine grass, (54) 53; (56) Fla. 555.
 - creosote-calcium cyanide barrier for, (55) 53.
 - false, notes, (55) 455.
 - false, on beets, (53) Utah 254.

- Chinch bug—Continued.
 feeding, injury to plant cells by, (60) 250.
 hibernation in Sudan grass, (60) 558.
 in Missouri, control, (51) 359.
 in Porto Rico, (53) 156.
 notes, (51) Ind. 853.
 on corn, campaign against, (52) Mich. 355.
 on grasses, effects, (54) 531.
 on sorghum varieties, (56) Kans. 822.
 on Sudan grass, (52) Kans. 466.
- Chinese—
 basal metabolism of, (54) 487.
 bush cherry, account, (51) 443.
 cabbage, clubroot of, (58) 548.
 cabbage drop, studies, (58) 47.
 cabbage leaf spot, notes, (56) 145; (59) 343.
 children, development and diet, (54) 291.
 diet, adequacy, (56) 793.
 foods, composition, (55) 592.
 girls, growth measurements, (54) 592.
 praying mantis, notes, (57) N.J. 57.
 trees and tree products, (54) 447.
 waterstrider, biology, (54) 754.
- Chionaspis—
 caryae, notes, (55) Miss. 658.
 citri, notes, (56) 552.
 euonymi, *see* *Euonymus* scale.
 pinifoliae, control, (54) Mich. 655.
 salicis nigrae, notes, (58) 256.
- Chir, volume table for, (53) 541.
- Chironomid, larva of, (51) 551.
- Chironomidae, synopsis, (60) 249.
- Chironomus quadripunctatus on pond lilies, (59) 559.
- Chitin, converting into state of colloidal solution, (57) 407.
- Chlamydozooids, formation in oak oidium, (52) 746.
- Chlorella—
 growth, relation to pH and iron, (60) 424.
 iron requirement, (60) 519.
 protein synthesis in, (51) 27.
 sp. and *Azotobacter chroococcum*, symbiosis, (54) 813.
 sp., iron availability, effect of pH, (59) 24.
- Chloretone, anthelmintic value, (55) 271.
- Chloride—
 absorption by cotton seedlings, (60) 425.
 metabolism on cow's milk and breast milk, (52) 362.
- Chloridea obsoleta—*see also* Bollworm and Corn ear worm.
 notes, (51) 55; (52) Va.Truck 44.
- Chlorides—
 action on plants and soils, (53) 21.
 aliphatic, fumigation tests with, (59) 57.
 behavior in cell sap, (51) 732.
 effect on orange trees, (52) Calif. 26.
- Chlorides—Continued.
 in air, distribution and transport, (59) 417.
 in canned sauerkraut, (57) 193.
 in leaf tissue fluids of Egyptian and upland cotton, (52) 327.
 in plant tissue fluids, determination, (52) 111; (59) 24.
- Chlorinated vegetable soil, fertilizing value, (54) 722.
- Chlorination of wool, (56) 596.
- Chlorine—
 concentration, effect on sugar cane development, (59) 136.
 determination in bleached flour, (58) 806.
 determination in foods, (56) 614.
 effect of variation in a wheat ration, (60) 168.
 excretion, effect of potassium intake, (56) 465.
 gas as insecticide, (51) 358.
 gaseous, as disinfectant for American foulbrood, (58) 62.
 in animal body, distribution, (58) Mo. 460.
 in grains, effect of irrigation water, (53) 735.
 in milk, behavior, (51) 316.
 in milk, determination, (51) 714.
 in rain and snow, (56) U.S.D.A. 321.
 in tobacco, effect, (56) 437.
 in water, effect on bread making, (53) 161.
 ions, selective absorption, (56) 724.
 o-tolidine test for, manganese interference in, (59) 14.
 toxicity to grapevines, (59) Calif. 738.
- Chlorita—
 facialis, notes, (59) 651.
 sp., transmission of virus diseases by, (60) 243.
- Chloroform—
 action on living matter, (59) 517.
 action on onions, (60) 215.
 effect on immunizing action of vaccine virus, (59) 580.
 effect on oxidation of organic acids, (52) 517.
 effect on respiration of dead and living tissue, (52) 516.
- Chlorophenol mercury compounds for brown patch control, (57) 444.
- Chlorophol for smut control, (54) 47.
- Chlorophol, fungicidal value, (55) 544.
- Chlorophyll—
 activity in plants, photo-electric currents of, (58) 216.
 and carotin pigments in corn, inheritance, (56) 30.
 and radiations, (59) 214.
 and vitamin A, (53) 10.
 assimilation, energy yield, (53) 827.
 assimilation in plants, (59) 214.
 decomposition in autumn, action of light, (59) 322.

Chlorophyll—Continued.

- decomposition in orange rinds, (60) Ala. 123.
- defects in corn, genetic study, (57) 721.
- deficiencies in sorghum, (53) 27.
- deficient leaves, chemistry of, (57) 514.
- deficient seedlings of cotton, (54) Tex. 428.
- destruction by lime-sulfur, (55) 543.
- determinations, colorimetric standard, (60) 624.
- development in corn, complementary genes and linkage relations, (53) 30.
- development in roots of plants grown in light, (58) 216.
- development in seedlings under different wave lengths of light, (60) 808.
- formation in darkness, (53) 727.
- in tree leaves, (60) 828.
- irradiated, effect, (53) 568.
- mutation in corn, (58) 824.
- photochemical activities, (57) 117.
- photosynthesis, energy yield, (55) 22.
- pigments in mosaic leaves, (53) Iowa 748.
- studies, (59) 24.
- synthesis, theory, (53) 826.

Chloropicrin—

- as fumigant for cereal products, (54) 551.
- as fumigant for mill and household insects, (55) 254, 554.
- bibliography of, (55) U.S.D.A. 554.
- for wax moth control, (58) 758.
- fumigation tests with, (58) 453.
- toxicity to insects and diffusion in grain, (58) Minn. 756.

Chloroplast pigments—

- function in carbon dioxide assimilation, (54) 725.
- measuring quantities, (58) 726.

Chloroplasts—

- behavior at low temperature, (54) 520.
- characters and behavior, (59) 819.
- degeneration, (59) 214.
- rôle in albumin formation in plants, (56) 814.

Chlorops taeniopus—

- in Poland, (59) 860.
- life history and control, (58) 458.
- summary, (53) 654.

Chlorosis—

- and acidity of nutritive solutions, (55) 426.
- in chestnut and elm, (59) 427.
- in grapevines, cause, (54) 221.
- in rice, cause, (60) 644.
- in southwest Europe, (55) 445.
- lime-induced, correction, (59) 721.
- of apple trees, control, (60) Mont. 749.
- of barley, (56) 724.
- of cottonwood trees, (60) Wyo. 750.
- of fruit trees, (59) 450.
- of fruit trees, cause, (55) 550.
- of spinach, control, (54) 450.
- of trees and shrubs, (57) Idaho 750.

Chlorosis—Continued.

- studies, (51) 46, N.Mex. 445; (59) Idaho 750.
- Choanephora—
- cucurbitarum on Amaranthus, (56) 456.
 - persicaria n.sp., description, (58) 151.
- Chocolate—
- as source of protein in diet, (56) 491.
 - candies, Clostridium spp. in, (57) 193.
 - creams, cause of bursting and prevention, (57) 891.
 - creams, Clostridium multifementans in, (54) 191.
 - ice cream, greenish discoloration in (58) Pa. 364.
 - manufacture, treatise, (54) 507.
 - milk, determination of butterfat in, (58) 12.
 - milk, methods of processing, effect, (58) Pa. 365.
 - milk, milk protein in, (57) 112.
 - milk, preparation, (56) Pa. 171.
 - nutritive value, bibliography, (55) 592.
- Choerostromylylus pudendotectus notes, (57) 876.
- Chokecherries, notes, (56) S.Dak. 532.
- Chokecherry, poisonous to livestock, Nev.. (53) 478; (55) 371; (59) 275.
- Cholam—
- leafhopper, life history, (54) 657.
 - nutritive value, (57) 889.
- Cholera—
- and typhus in poultry, vaccination against, (55) 177.
 - vibrio in Philippine foods, viability, (51) 364.
- Cholesteremia following mammary insufflation in cows, (58) 878.
- Cholesterol—
- action of ultra-violet rays, (57) 197.
 - activated, action of *n*-butyl nitrite on, (55) 308.
 - activation at liquid oxygen temperature, (59) 690.
 - activation by ultra-violet irradiation, (55) 794.
 - and rickets, (54) 195.
 - and vitamin D, (59) 690.
 - content of human milk, (51) 556.
 - derivative, antirachitic, catalytic formation, (55) 711.
 - derivatives, absorption spectra, (60) 897.
 - determination, new method, (55) 611.
 - distribution in rabbit tissues, (55) 767.
 - from different sources, properties, (57) N.Y.State 610.
 - in blood, determination, (54) 10; (56) 14.
 - irradiated—
 - antirachitic activation, (54) 92.
 - antirachitic value, (53) 568, 767; (55) 594; (56) 202; (57) 292, 792; (58) 195; (60) 96.
 - fractionation, (56) 203.

- cholesterol—Continued.
 irradiated—continued.
 relation between antirachitic activity and dielectric constant, (59) 596.
 metabolism in pregnancy, (55) 767.
 origin and destiny in animal organism, (54) 292.
 oxidation products, effect of irradiation, (57) 292.
 polymerization, (56) 10.
 purified, biochemical and spectroscopic studies, (58) 795.
 relation to vitamin D, (57) 393.
 synthesis in animal body, (55) 190, 191.
- Cholesteryl ethers, mixed, catalytic formation, (58) 10.
- Choline in yeast, (56) 9.
- Cholus wattsi n.sp., notes, (51) 59.
- Chomelia aslatica, bacterial nodules of, (51) 225.
- Chondriome, evolution during pollen grain formation, (57) 721.
- Chondriomes—
 fixators of, (59) 724.
 in animal and plant cells, (56) 427.
 in plants, (59) 428, 819.
- Chondriosomes, evolution in embryonic sac of Liliaceae, (53) 727.
- Chorea, hereditary in four generations, (53) 427.
- Choretum lateriflorum, root parasitism of, (57) 49.
- Christian ideals, application in rural communities, treatise, (54) 289.
- Christmas berry scab disease, (57) 852.
- Christmas tree—
 industry, (55) Ohio 183.
 plantations, (53) Mich. 345.
- Chromatin and cytoplasm, comparative morphology, (56) 516.
- Chromic acid, action on animal fiber, (60) 298.
- Chromium, diphenylcarbazide as test for, (60) 14.
- Chromogen, physiological significance, (58) 215.
- Chromolipoids, development, (51) 27.
- Chromomeres, physiological, (57) 323.
- Chromosomal mutants in *Datura*, primary and secondary, (53) 226.
- Chromosome—
 aberrations and improvement of animal forms, (60) 30.
 breakage by X-rays, (54) 432; (55) 327.
 complexes in somatic cells of fowls, (51) 826.
 studies in fruit breeding, value, (54) 629.
 third, of *Drosophila*, crossover modifiers in, (53) 30.
- Chromosomes—
 accessory, material for demonstrations, (53) 226.
 and genes, relation to sex, (53) 524.
- Chromosomes—Continued.
 and heredity, (53) 126.
 and species, symposium, (54) 726, 727.
 association between, relation to linkage phenomena, (57) 421.
 attachments of at reduction division, (57) 421.
 avian, fixation, (55) 224.
 behavior—
 during spermatogenesis, (51) 228.
 in a genus cross, (54) Me. 325.
 in *Acer platanoides*, (51) 734.
 in apples, (55) 731.
 in *Drosophila*, (54) 226; (60) 725.
 in *Oenothera*, (56) 727.
 in *Sciara*, (55) 819.
 in triploid wheat hybrids, (56) 633.
 in wheat and rye hybrids, (56) 634.
 distances and coincidence, standard errors of, (56) 126.
 due to a mutant, elimination, (55) 522.
 endocrines, and heredity, (53) 627.
 fixation in animals, (59) 623.
 fracture in rye, (54) 727.
 homologous, maturation divisions relation to segregation, (56) 327.
 homologous, segmental interchange, hypothesis, (58) 218.
 in *Avena*, (53) 829.
 in beets, types, (59) 621.
 in *Canna* and *Mercurialis*, (54) 629.
 in cats, (60) 725.
 in chick soma, determination, (56) 816.
 in citrus, (59) Calif. 737.
 in corn, supernumerary, (58) 526.
 in Cyperaceae, (60) 428, 429.
 in domestic animals, (58) 823.
 in domestic fowls, (51) 228.
 in *Drosophila*, constrictions in, (58) 823.
 in *Drosophila*, crossing-over in, (56) 816.
 in guinea pigs, number and behavior, (55) 819.
 in horses, (54) 525.
 in hyacinths, constitution and behavior, (60) 217.
 in India runner duck, (57) 820.
 in India runner duck embryo, (55) 819.
 in interspecific hybrids, (58) 824.
 in Liliaceae, survey, (53) 329.
 in *Linum*, number, size, and shape, (59) 621.
 in mammals, (53) 523; (54) 821.
 in marsupials, four species, (54) 226.
 in mice from Gates' strain, studies, (57) 820.
 in parthenogenetically produced *Tettigidae*, (55) 819.
 in pigeons, sexual difference, (58) 218.
 in plants, number and size, (56) 127.
 in potato varieties, variations, (59) 621.

Chromosomes—Continued.

- in *Prunus*, (60) 125.
- in rabbits, studies, (55) 818.
- in *Ranunculus acris*, (58) 218.
- in rat and mouse, (60) 219.
- in rice, differences, (53) 831.
- in rodents, (56) 727.
- in root tip cells of figs, (59) Calif. 737.
- in rye, characteristics, (58) 823.
- in rye, studies, (59) 821.
- in triploid *Daturas*, (53) 227, 328.
- in triploid *Oenothera* hybrid, (53) 126.
- in wheat hybrids, (59) 136.
- in wheat species, comparison, (58) 125.
- lengths in mammals, sex difference, (60) 634.
- morphological studies, (51) 525.
- morphology in several species, (56) 27.
- mutations in *Datura*, effect of radium, (56) 727.
- nature, (60) 428
- nonhomologous, attachment, (55) 224.
- number—
 - and individuality in *Crepis*, (55) 632.
 - and nuclear volume in clover, (57) 519.
 - and unequal pairs in plants, (59) 724.
 - in angiosperms, list, (56) 816.
 - in barley, (58) 628.
 - in buckwheat, (57) 31.
 - in *Canna* crosses, (60) 125.
 - in corn, (52) 328; (53) 523; (54) 525; (57) 122; (60) N.Y.Cornell 629.
 - in crop plants, (56) 327.
 - in *Delphiniums*, (58) 125.
 - in different species, (51) 333.
 - in *Draba*, (57) 120.
 - in eggplant varieties, (54) 127.
 - in flowering plants, (59) 219.
 - in *Fragaria*, (60) 125.
 - in mice, (59) 623.
 - in mixed strain of rats, (59) 725; (60) 323.
 - in *Nicotiana*, (60) 126.
 - in *Oenothera lamarckiana*, (57) 722.
 - in orchard grass, (57) 31.
 - in *Ribes*, (60) 630.
 - in Scirpoids, (59) 219.
 - in *Silene* and neighboring genera, (58) 525.
 - in Solanaceae, variation in, (57) 31.
 - in *Solanum* species, (57) 122.
 - in tobacco hybrids, increase of, (59) 219.
 - in *Trifolium*, (56) 28; (59) 429.
 - in *Vaccinium*, (58) 423.
 - rôle in systematic classification, (55) Calif. 327.
- photographing, (55) 522.

Chromosomes—Continued.

- rearrangement, induction by X-rays, (58) 423.
 - reptilian, studies, (58) 25.
 - selective segregation in *Sciara similans*, (60) 30.
 - sex, in fowls, topography, (57) 30.
 - sex, studies, (53) 731.
 - sex, treatise, (60) 325.
 - shape and behavior, correlation, (55) 731.
 - shape, in *Matthiola*, inheritance, (57) 722.
 - significance in strawberry classification, (55) 130.
 - somatic, of chicks, (52) 219.
 - type forms in plant families, (53) 328.
 - X, crossing-over variation in, (55) 733.
 - X, production of mutations and rearrangements of genes by, (59) 324.
 - Y, genetic factors in, (56) 27.
 - Y, inheritance, (58) 728.
- Chrysanthemum—
- aphid, toxicity of hydrocyanic acid for, (60) 454.
 - coronarium, host of *Bacterium solanacearum*, (54) 649.
 - crown gall, notes, (55) 244.
 - cuttings, diseases and parasites, (52) 746.
 - eelworm, notes, (59) 246.
 - gall midge, biology and control, (52) Md. 456.
 - gall midge, notes, (60) 248.
 - nema, notes, (52) 551.
 - spp. with insecticidal properties, (51) U.S.D.A. 158.
 - wild species, experiments to induce changes in, (57) 821.
 - yellows, control, (53) 98.
 - yellows in greenhouses, (53) 355.
 - yellows, studies, (55) Mich. 843.
- Chrysanthemums—
- culture, (53) 845; (59) Ohio 745.
 - in Moravia, nematode leaf disease, (58) 853.
 - notes, (60) Can. 639.
 - treatise, (58) 742.
 - under glass, insects affecting, (58) 158.
- Chrysobothris—
- mali, studies, (60) U.S.D.A. 850.
 - pubescens, notes, (60) West.Wash. 756.
- Chrysomphalus—
- aonidium, see Florida red scale.
 - aurantii, see Red Scale.
 - dictyospermi in California, (58) 160.
 - dictyospermi, status and synonymy (58) 559.
 - smilacis, notes, (55) Miss. 658.
 - spp., oriental parasites of, (57) 365.
 - spp., winter mortality, (52) 454.
- Chrysomyia—
- albiceps, introduction into France, (59) 657.
 - albiceps, studies, (58) 61.
 - macellaria, see Screw worms.
 - spp., notes, (58) 163; (60) 562.

- Chrysopa—
 californica affecting beet leafhopper, (52) Calif. 58.
 sp., notes, (56) 257; (60) 455.
 Chrysophlyctis endoblotica—
 notes, (55) 546.
 resting spores in soil, (53) 46.
 Chrysoplaticerus splendens, notes, (54) 559.
 Chrysopogon monticola, notes, (54) Fla. 230.
 Chrysops spp. transmission of surra by, (58) 262.
 Church—
 activities of farm families, (58) Okla. 788.
 and the agricultural crisis, (60) 590.
 rural, *see* Rural.
 windows, action of lichens on, (53) 50.
 Churches, united, field surveys, (58) 82.
 Churn for continuous production, (55) 676.
 Churns—
 care of, effect on butter produced, (56) 74.
 sterilization, (55) Mich. 873.
 Chymase in *Solanum elaeagnifolium*, (53) 324.
 Chymosin, effect on milk protein, (59) 110.
 Cicada, periodical, notes, (55) Miss. 555.
 Cicadas of New Jersey, key, (56) 59.
 Cicadella circellata, notes, (59) Calif. 754.
 Cicadellidae—
 of Ithaca region, synopsis, (52) N.Y. Cornell 758.
 of Virginia, (59) Va. 58.
 ovipositors of, (51) 551.
 Cicadidae, morphology, (60) 650.
 Cicadula sexnotata, notes, (60) 837.
 Cicadulina zeae n.g. and n.sp., description, (60) 559.
 Cider—
 alcoholic fermentation, effect of successive generations of yeast, (60) 111.
 apple, making, (53) Mich. 798.
 apple production, (57) 44.
 bottling, (55) 114.
 making and preservation, (56) Mich. 711.
 making, pasteurization in, (56) 413.
 sickness, fate of sugar during, (55) 202.
 studies, (54) Ill. 311.
 vinegar, production, (55) Wash.Col. 506.
 Cigarette beetle—
 control, (51) P.R. 855.
 notes, (51) 55.
 Cimex lectularius, *see* Bedbugs.
 Cimex rotundatus, parasite of, (53) 552.
 Cinchona—
 collar bark swelling and cracking, (57) 540.
 disease, notes, (58) 143.
 studies, (60) 546.
 Cingilia catenaria, notes, (54) 152.
 Cinnabar moth, notes, (56) 659.
 Cinnamic acid, small quantities, determination, (59) 807.
 Cinnamomum camphora, disease of, (53) 650.
 Cirphis latiuscula, studies, (55) 459.
 Cirphis unipuncta, *see* Army worm.
 Cirrhosis—
 hepatic, of horses, (55) 176.
 of liver in dogs due to carbon tetrachloride, (55) 876.
 Cirrospilus flavicinctus, notes, (51) 661; (52) Iowa 358.
 Cirsium arvense, control, (54) 240.
 Cirsium seeds, nutrient value, (54) 160.
 Cities, American, suburbs of, treatise, (53) 797.
 Citrate, test to show absence of, (55) 13.
 Citric acid—
 determination, Stahre reaction in, (60) 614.
 fermentation, (59) 12.
 in fruits, determination, (59) 505.
 in milk, (55) Iowa 203.
 in milk for infant feeding, (59) Wis. 92.
 in milk powder, (53) 505.
 manufacture from lime juice, (55) 14.
 Citricola scale—
 control, (56) 555.
 parasites of, (52) 556.
 Citron—
 curing and preserving, (58) U.S.D.A. 789.
 melons, pectic compounds, (58) 839.
 Citrus—
 ant of South China, (53) 656.
 aphid—
 black, life history studies, (53) 53.
 control, (52) Fla. 755; (53) 757; (54) 155, 554.
 control methods, (56) 60.
 diseases of, (60) Fla. 147.
 green, studies, (60) Fla. 159.
 in Cuba, (55) 855.
 insect enemies, (54) 54.
 ladybeetle predators, life history, (57) 456.
 life history notes, (56) Fla. 855.
 natural enemies, (53) 359.
 natural enemies and control, (55) Fla. 853.
 new, identity, (59) 857.
 new, paper on, (53) 856.
 on Spiraea, studies, (52) 753, 754.
 outbreak, factors affecting, (56) 555.
 papers on, (57) 260, 657.
 predators, life histories, (60) 653.
 situation, (59) 653.
 studies, (54) Fla. 352.
 aphids and the freeze in Florida, (57) 60.
 aurantium, culture experiments, (59) Guam 529.
 aurantium gummosis, control, (60) 155.

Citrus—Continued.

- bacteriosis in South Australia, (58) 555.
- bark diseases, (54) Calif. 351.
- bark diseases in Sicily, (57) 254.
- bark rot, notes, (57) 838.
- black spot on dried orange peel from China, (56) 851.
- blackfly parasites, (58) 666.
- blast and black pit, (53) 250.
- blight, studies, (54) Fla. 343; (55) Fla. 841; (56) Fla. 839; (57) 156; (59) 347.
- blossom-end rot, (54) Fla. 245.
- blue mold decay, (54) Fla. 245.
- blue mold rot, borax treatment, (52) 451.
- borer, notes, (57) 655.
- brown rot in Australia, (59) 548.
- brown rot, notes, (57) 56.
- canker—
- control in Japan, (51) 355.
- distribution, effects of weather, (54) 852.
- eradication in Florida, (51) 155; 156; (52) 550.
- eradication in South Africa, (51) 251.
- in Florida, (60) 835.
- infection studies, (60) Fla. 146.
- notes, (51) 155; (54) Fla. 342; (55) Fla. 841; (56) 549, 748; (60) 546.
- organism, life history, (52) Fla. 242.
- organism, roughness in colony form and agglutination, (60) 240.
- overwintering, (54) 852.
- scouting report, (57) 550; (58) 152.
- soil inoculated with, effect on citrus seedlings, (56) Fla. 839.
- susceptibility of citrus species and hybrids, (52) 54.
- chlorosis, effect of irrigation and fertilizers, (60) Ariz. 57.
- cuttings, solar propagating frame for, (51) U.S.D.A. 538.
- die-back—
- and fasciation in other plants, (55) 454.
- cause, (54) Fla. 351.
- nature of, (59) 529.
- notes, (53) 250.
- studies, Fla., (52) 248; (55) 850.
- disease control, (52) Calif. 54.
- diseases and control, treatise, (56) 751.
- diseases and pests, (58) 756.
- diseases, notes, (56) 748.
- diseases, physiological, cause, (53) Calif. 449.
- flavors, use of fatty oils in, (56) 310.
- flower thrips, studies, (54) Fla. 351.
- forms, value as rootstocks, (59) Calif. 736.

Citrus—Continued.

- fruit—
- anthracnose, studies, (57) 851.
- decay, new types, (57) Calif. 243.
- products, vitamin A and B in, (51) 666.
- rots, notes, (55) Calif. 344.
- scab, notes, (57) 640.
- stem-end decay, studies, (59) Calif. 452.
- fruits—*see also* Lemons, Oranges, *etc.*
- borax treatment, (53) 354; (57) 652.
- breeding experiments, (55) Calif. 338.
- carpothenia and bud mutations in, (53) 729.
- coloring, (51) 332; (55) U.S.D.A. 142, Fla. 841; (56) Fla. 814.
- constituents, (59) 93.
- cooperative marketing agency, (51) (U.S.D.A.) 596.
- culture, (51) 145; (55) Calif. 838; (57) 341.
- culture in Arizona, (55) U.S.D.A. 438.
- culture in Florida, economic aspects, (56) U.S.D.A. 583.
- culture in South Africa, (57) 45.
- culture in Southwest, (53) U.S.D.A. 643.
- culture, treatise, (55) 744.
- culture, variety and rootstock experiments, (56) 45.
- effect of arsenical sprays, (56) 751.
- experiments, (57) 335.
- fertilizer experiments, (53) 841.
- fertilizer experiments with green manure, (57) Calif. 234.
- industry in Philippines, (54) 540.
- keeping quality, effect of spraying, (57) U.S.D.A. 353; (59) 347.
- marketing agencies, operating methods and expense, (52) U.S.D.A. 93.
- new aphid attacking, (51) 660; (52) 754.
- new Phomopsis of, (52) 352.
- peel, oxidizing enzymes, (57) 489.
- spraying experiments, (52) Fla. 250.
- spraying, in Porto Rico, (55) 40.
- storage experiments, (51) 241.
- transportation from Porto Rico, (52) U.S.D.A. 539.
- vitamin C in, (57) 690.
- fumigation by dusting system, (55) 658.
- fumigation, studies, (54) 154, 753; (55) 760.
- fumigation with cyanide, (57) Calif. 257, 854.
- fungi, maintained growth rates in, (55) 747.

Citrus—Continued.

- grove, planting in Arizona, (51) Ariz. 538.
- groves, spraying, (54) 53.
- growers cooperative organizations of California, (60) 681.
- gummosis, control, (57) 156.
- gummosis, fungi of, (59) 646.
- gummosis, resistance to, cause, (57) Calif. 244.
- gummosis, summary, (53) 250.
- hybrids, sterile, seed production in, (58) 730.
- hybrids, studies, (57) Calif. 234.
- industry in South Africa, (56) 645; (57) 141.
- industry, orchard practices in, (51) Calif. 443.
- insects affecting, (55) 758; (59) 352; Guam 554.
- insects, control, (56) Fla. 659.
- insects, control, handbook, (56) 555; (58) 159; (59) 855.
- insects in Japan, (58) U.S.D.A. 256.
- leaf miner, control, (59) 554; (60) Guam 845.
- leaves, effects of desiccating winds, (60) 426.
- leaves, interval maculate chlorosis in, (58) 449.
- leaves, penetration and disposition of oil after spraying, (60) 649.
- maturity test, (59) 531.
- mealybug, *see* Mealybug, citrus.
- melanose and stem-end rot, (53) 650.
- melanose, control, (55) 454; (57) U.S.D.A. 449.
- melanose, perfect stage of fungus, (56) 152.
- melanose, studies, (60) 353.
- melanose, winter stage, (57) 156.
- miscellaneous tests, (57) Tex. 136.
- mite and deciduous fruit mites, (59) 64.
- mites, control, (53) 856.
- mottle leaf, studies, (57) Calif. 215.
- nematode, notes, (55) 556.
- nursery stock, scalding, (56) Ariz. 745.
- orchard growth and yield records, (59) Calif. 335.
- orchard management studies, (59) Calif. 736.
- orchard survey, results, (52) Calif. 39.
- orchards, effect of soil management, (53) Ariz. 740.
- pectin preparation, (53) U.S.D.A. 13.
- pests in California, distribution, effect of climate, (60) 453.
- pests in Rhodesia, (56) 57.
- pests, new, from India and South Pacific, (60) 61.
- Phytophthora blight, studies, (60) 553.
- Phytophthora rots, (59) 646.
- polyembryony, heterozygosis, and chimeras in, (55) Calif. 329.
- propagation by cuttings, (55) 240.

Citrus—Continued.

- propagation, importance of bud selection in, (52) 238.
- psylla in India, bionomics and control, (58) 859.
- psylla, spraying for, (59) 554.
- purple scale on, (54) V.I. 259.
- root diseases, notes, (60) 344, P.R. 746.
- rootstock studies, (57) Calif. 234.
- rootstocks, identification, (58) 238.
- rust mite, entomogenous fungus attacking, (52) 361.
- scab—
- cause, (56) 851.
- distribution, effects of weather, (54) 852.
- factors affecting, (52) 54.
- fungus, studies, (57) 852.
- in Japan, (54) 751.
- range of hosts, (53) 855.
- studies, (55) 551.
- scale insects control, fumigation v. spraying, (52) Calif. 60.
- scaly bark, studies, Fla., (55) 841; (56) 839; (60) 146.
- seed beds, damping-off in, (60) 353.
- seedlings—
- absorption of ions by, Calif., (56) 219; (59) 721.
- effects of calcium salts, (55) 23.
- growth studies, (57) 536.
- variability in, (52) Calif. 40.
- shoots, sprout growth in, (55) Calif. 423.
- stem-end rot, studies, (58) 53.
- stock and scion, degree of congeniality, effect on growth, (58) 238.
- stocks, studies, (52) Calif. 39.
- stocks, winter hardiness, (54) Fla. 340.
- thrips, notes, (54) Fla. 257.
- thrips, pest gauge for determining degree of occurrence, (57) 655.
- trees, borax injurious to, (60) Calif. 628.
- trees, calcium cyanide fumigation, (52) Calif. 56.
- trees, chemical composition, (59) Calif. 737.
- trees, distribution of roots, (56) Ariz. 738.
- trees, effect of hot drying winds, (55) Calif. 322.
- trees, epiphytic orchids injurious to, (57) 851.
- trees, fertilizer experiments, (53) Calif. 241; (54) 240; (56) 45.
- trees girdled by gophers, bridge-grafting, (51) Calif. 538.
- trees, growth and composition, effect of certain ions, (52) Calif. 820.
- trees, improvement by bud selection, (56) 45.
- trees in Egypt, insect pests, (52) 853.
- trees in Palestine, fumigation, (58) 859.
- trees, oil sprays for, (56) 254.

Citrus—Continued.

- trees, phosphoric acid for, sources, (54) Fla. 243.
- trees, propagation and culture in Egypt, (52) 344.
- trees, protection against cold, (53) Miss. 239.
- trees, pruning experiments, (55) Calif. 338.
- trees, root grafting, (55) 240.
- trees, root growth in, (55) Calif. 322.
- trees, sap concentration and growth, (55) 425.
- trees, windburning, (53) 152.
- trees, winter-injured, fruit from, (52) Calif. 39.
- types and origin, (60) 825.
- varieties susceptible to Gloeosporium limeticolum, (53) 549.
- white fly, *see* White fly, citrus.
- wilt or blight, studies, (59) 347.
- wilt, relation to moisture conditions, (60) Fla. 147.
- wilt, studies, (57) 652.
- wind injury, (57) Calif. 215.
- withertip, notes, (55) 346.

City and rural relations, (60) 590.

City planning, treatise, (55) 884.

Cladocera, sex determination in, (54) 229.

Cladosporium—

- album n.sp., notes, (53) 49.
- carophilum, control, (57) U.S.D.A. 353.
- carophilum, notes, (58) 852.
- citri, control, (51) 156.
- citri, notes, (56) 851; (57) 640, 852.
- cucumerinum, notes, (59) 644.
- effusum, notes, (60) 246.
- entoxylum, life cycle, (57) 745.
- fulvum, achromatic variations in, (60) 642.
- fulvum, biology and control, (58) 150.
- fulvum, description, (54) 548.
- fulvum, notes, (51) 353; (53) Ind. 146; (57) 548; (58) 442; (59) Ohio 449, 535; (60) 344.
- fulvum, studies, (57) 441.
- herbarum, cause, (58) 846.
- herbarum, notes, (51) 365; (57) 639.
- lauri, notes, (51) 762.
- paeoniae, notes, (54) 51.
- sp., notes, (55) 244; (56) 549; (59) 453.
- spp., notes, (54) 247.
- vignae n.sp., notes, (57) 343; (58) 49, Del. 441.

Clam shells as source of calcium carbonate for hens, (59) Iowa 71.

Clams, vitamins in, (59) 688.

Clasterosporium carophilum, studies, (58) 448; (60) 552.

Clastoptera obtusa on cultivated grapes, (53) Ariz. 754.

Clastoptera proteus, notes, (53) Conn.State 450.

Clausenia, new genus, erection, (53) 160.

Clay—

- action of alkalies on, (56) 510.
- calcium absorption by, effect of pH (58) 520.
- cohesion of, cause, (55) 476.
- colloidal, application of viscosimetry to study, (58) 207.
- colloidal, preparation of insecticide emulsions with, (54) 154.
- colloids, electric charge of, (52) Calif. 20, 811.
- compressive strength and permeability, (55) 477.
- content of soils, relation to moisture adsorption, (54) 810.
- determination, Robinson method, (56) 511.
- dispersity and base exchange in, (55) 213.
- effect of plant growth, (60) 514.
- emulsions for oil sprays, (54) 341.
- Fargo, physical properties, (59) N.Dak. 810.
- flocculation and sedimentation, (52) 121.
- fractions, properties, (52) 121.
- layer in level prairie soils, (58) Mo. 415.
- occurrence, properties, and uses, treatise, (58) 881.
- particles, shale-likeness of, proof, (58) 779.
- permeability, calculation of coefficient, (52) 619.
- role in mineral acidity of soils, (52) 22.
- separation into fractions, (56) 510.
- soil, tillage, effects of organic matter, (60) 508.
- soils—
 - acid, formation of hardpan in, (56) 717.
 - acidity, (54) Mo. 715.
 - character of colloids, (57) Mo. 411.
 - colloidal, saturation capacity, (60) 513.
 - critical pH for hardpan formation, (55) 214.
 - leaching, (52) Utah 719.
 - nitrogen determination in, (54) 709.
 - permeability, (56) 618.
 - relation to road subgrades, (54) U.S.D.A. 180.
 - under irrigation, alkali movement in, (52) 812.
 - underdrainage in, (58) Ill. 373.
- subsoils, water percolation through, (54) Mo. 717.
- suspensions, effect of electrolytes, (56) 416.
- suspensions, electrical neutralization, (60) 411.

Clay-lime complex, base exchange capacity, (56) 808.

- Clays—
 as soil colloids, (54) 211.
 chemistry and physics, treatise, (52) 811.
 determination of grit in, (55) 417.
 mineralogy, (60) 513.
 of Lake Agassiz basin, studies, (54) 117.
 properties, (55) 718.
 shrinkage coefficient, physical significance, (54) 117.
 treatment affecting gel or sol formation, (53) 418.
- Cleistogamy in grapes of Central Asia, (58) 741.
- Clemson College, notes, (52) 100, 399; (53) 499; (55) 398; (56) 900; (59) 698.
- Cleome spinosa, alternation of sexes, (52) 127.
- Cleonus punctiventris, paper on, (57) 553.
- Cleonus spp., notes, (57) 264.
- Cleridae of India, (55) 857.
- Clerodendron species, vegetative reproduction by root runners, (54) 523.
- Click beetle, notes, (59) N.Dak. 855.
- Climagraphs and biotic regions of Oklahoma, (56) 616.
- Climate—
 adjustment of agriculture to, (52) 114.
 Alpine, curative effects, (54) 695.
 Alpine, effect on floral morphology and anatomy, (53) 728.
 and cotton culture in Rhodesia, (54) 509.
 and crop risks in Williston area, (53) N.Dak. 509.
 and crop yields in Prince Edward Island, correlation, (57) 227.
 and meteorology of South Africa, (53) 813.
 and rain-grown cotton, (53) 14.
 as a weather combination, (60) 616.
 at Northern Great Plains Field Station, (53) U.S.D.A. 113.
 changes in western America, (55) 209.
 control factors, symposium on, (58) 511.
 effect on—
 clover crop, (54) 829.
 fruit industry of United States, (53) 111.
 fruiting of olives, (55) 646.
 fruits, (54) 210.
 plant life, (55) 811.
 quality of agricultural products, (52) 114.
 wheat, (57) 718.
 wheat rust development, (53) 543.
 in Sudan, relation to cotton culture, (57) 229.
 maps of North Dakota, (55) N.Dak. 508.
 of air near soil, (59) 416.
 of Alaska, features, (51) 718.
 of Alexandria, (54) 509.
 of Big Bend Country, Washington, (54) Wash.Col. 312.
- Climate—Continued.
 of British Columbia, (52) 115; (54) 615; (56) 16.
 of China, (59) U.S.D.A. 205.
 of cut-over lands, (53) Idaho 509.
 of Florida, (60) Fla. 801.
 of Greece, (54) 807.
 of Long Island, (57) N.Y.Cornell 207.
 of lower Rio Grande Valley, (52) Tex. 493.
 of Maryland and Delaware, (52) 316; (57) 612.
 of Mediterranean area and California and Chile, comparison, (53) 615.
 of Netherlands Indies, (51) 510; (52) 508; (53) 812.
 of New York State, (54) N.Y.Cornell 714.
 of North Queensland, adaptation of the white man to, (56) 393.
 of southeastern Pennsylvania, (59) U.S.D.A. 205.
 of southern Africa, (52) 616.
 of United States, treatise, (54) 508.
 periodic changes in China, (55) 414.
 relation to sheep production, (52) 870.
 relation to sugar production in Java, (53) 509.
 significance for agricultural entomology, (56) 856.
 study, importance of field work in, (54) 508.
 tropical, effect on man, (53) 764.
 tropical, physiological effects, (57) 291.
- Climates—
 classification and climatological studies, (58) 716.
 of California, (56) 207.
 relation of climaxes to, (54) 820.
- Climatic—
 changes, (55) 313.
 control, factors in, (53) 508.
 cycles and rainfall, (54) 25.
 cycles and tree growth, (60) 417.
 cycles, studies, (53) 825.
 elements of earth, extremes of, (54) 209.
 factors, effect of local influences, (56) U.S.D.A. 712.
 factors from study of redwoods, (53) 614; (54) 24.
 factors from study of tree growth, (55) 209.
 laws, treatise, (52) 808.
 periods of Europe, (54) 13.
 regions of North America, (58) U.S.D.A. 205.
 rhythm, unlike response of plants to, (54) 13.
- Climatological—
 history of Ohio, (52) 316.
 normals for Egypt and Sudan, (51) 14.
- Climatology—
 and applications, (60) 505.
 and meteorology of Pinheiro, (56) 207.
- Climax formations, (54) 25.

- Clitocybe—
 monadelphia parasitism on privet and fruit trees, (55) Ark. 42.
 tabescens, notes, (53) 354.
- Clitoria cajanifolia as green manure and cover crop, (52) 732.
- Closterium acerosum, rate of reproduction, factors affecting, (56) 517.
- Closterocerus tricinectus, notes, (51) 661; (52) Iowa 358.
- Clostridium botulinum—
 differential staining, (51) 167.
 effect of *C. sporogenes* on, (53) 609.
 growth and toxin production, effect of temperature, (55) 390.
 growth in fermented vegetables, (51) 271.
 in canned foods, toxin production, (54) 794.
 notes, (56) 589.
 pathogenicity, (53) 784.
 spores, dormancy, (51) 168; (59) 292.
 spores, resistance to heat, (55) 390.
 spores, thermal death time, (51) 167, 168; (55) 194.
 toxin, destruction by milk bacteria, (60) 571.
 type C, antitoxin for, (54) Ill. 381; (56) 276.
 type C in poultry, (51) 682.
- Clostridium—
 butyricum, notes, (56) 674.
 chauvei and *C. edematis*, differentiation, (53) 884.
 chauvei, increasing virulence, (55) 272.
 chauvei, notes, (56) Kans. 875; (60) 872.
 chauvei strains, comparative study, (55) 373.
 edematis and *C. chauvei*, differentiation, (53) 884.
 hemolyticus bovis n.sp., description, (54) 677; (56) Nev. 278.
 hemolyticus bovis, notes, (55) 798; (59) 879.
 multifementans in chocolate creams, (54) 191.
 paratubulinum equi, notes, (57) 877.
 pastorianum, notes, (59) 516.
 pastorianum, rôle in nitrogen fixation, (54) 718.
 spp., differentiation, (60) 275.
 thermocellum end-products, effect of molecular complexity, (56) 109.
 thermocellum, suggested name, (55) 204.
 welchii strain causing abnormal fermentations in Swiss cheese, (60) 664.
- Cloth, action of atmosphere on, (56) 194.
- Clothes moths—
 breeding for insecticide tests, (60) 158.
 effects of cold storage, (57) 657.
 new insecticide for, (52) 554.
 protection of animal fibers against, (60) 557.
 summary, (57) Mich. 456.
- Clothing—
 and dressmaking, courses in, (51) 494.
 and textiles, (54) 189.
 and textiles, Government publications, list, (53) U.S.D.A. 299.
 and textiles, textbook, (56) 790.
 children's rompers, designs, (58) U.S.D.A. 395.
 choice, care, and cost, treatise, (56) 397.
 club manual, (54) Ill. 788.
 club work, courses, (54) 189.
 clubs, organization and direction, (51) Ill. 796.
 clubs, reorganization and direction, (59) Ill. 298.
 construction, treatise, (58) 395.
 delousing, (53) 557.
 fabrics, protective value, (56) Kans. 898.
 for women, treatise, (53) 398.
 handbook for club members, (52) 696.
 oiled slicker, manufacture, (54) 796.
 place in extension program, (54) 189.
 selection and construction, score cards for judging, (56) U.S.D.A. 597.
 selection, principles, textbook, (54) 389.
 selection, teaching problems, (53) 398.
 Cloud forms, (51) U.S.D.A. 616.
 Clove tree diseases, (51) 752.
- Clover—
 alsike—
 effect on following crop, (54) N.Y.Cornell 829.
 growth in artificial light, (51) 25.
 growth, relation to soil acidity, (58) 17.
 seed and hay yields, (56) Ill. 230.
 seed production, (58) Ill. 327.
 yield and nitrogen in, (55) Ohio 32.
 Atlaswede red, characteristics, (52) 831.
 and alfalfa hay, assimilation by cows, (58) 469.
 and grass combinations for hay, (60) West.Wash. 732.
 and grass mixtures, comparisons, (56) Can. 432.
 anthracnose caused by *Colletotrichum trifoli*, (59) U.S.D.A. 51.
 anthracnose, notes, (51) Tenn. 349; (55) Miss. 541.
 anthracnose, studies, (58) 340, 548.
 aphid, notes, (54) Ohio 155.
 as affected by sulfur, (51) Wash.Col. 123.
 behavior, (52) Mich. 334.
 bird's-foot, seed production, (52) 334.
 breeding experiments, (51) Mich. 133; (53) 230; (56) Can. 432; (60) Oreg. 731.
 bud weevil, studies, (52) 858.
 bur, in corn middles, seeding, (51) Ga. 133.

Clover—Continued.

- bur, leaf spot, notes, (58) 47.
 bur, variety tests, Ga.Coastal Plain, (54) 130; (58) 732; (60) 132.
Caenurgia erectea affecting, (51) 362.
 canker, notes, (59) 640.
 chromosome number and nuclear volume in, (57) 519.
 controlled pollination in, (54) 433.
 cost of production and profit, (58) Ill. 379.
 crimson—
 breeding experiments, (52) Mich. 334.
 green manuring value, (55) 511; (57) Ga. 414.
 proteins of, (56) 708.
 seed production, (52) U.S.D.A. 135.
 seed sources, N.C., (53) 735; (57) N.C. 226.
 varieties, (55) N.C. 228.
 culture experiments, (51) 36, Mich. 436; (53) La. 528, Ohio 529; (55) Alaska 433.
 Danish and foreign strains, tests, (54) 434.
 diseases and control in Egypt, (52) 745.
 diseases in Manitoba, (56) 541.
 diseases, studies, (52) Ky. 446.
 economic species in New Zealand, (51) 36.
 eelworm diseases, notes, (52) Idaho 844.
 effect of sulfur, (56) Mont. 123.
 effect of sulfur and gypsum, (54) Wash.Col. 122.
 Egyptian, *see* Berseem.
 energy value for sheep, Ill., (56) 367; (60) 659.
 failure, causes, (51) U.S.D.A. 138; (56) Ky. 750.
 feeding value, (54) Can. 764.
 fertility in, (58) 132.
 fertilizer experiments, (51) Minn. 119, Wis. 421, Ohio 422, Oreg. 529; (54) Ohio 123; (56) Ky. 132, Iowa 811; (59) 20, 21.
 foreign, subject to disease, (56) Ohio 148.
 germination and growth, effect of sulfur, (52) 423.
 green, effect on leg weakness in chicks, (54) Ohio 396.
 hard-coated seed, growing experiments, (52) 831.
 hay, antirachitic properties, (56) 464.
 hay, effect of mulching, (59) Ohio 223.
 hay, feeding value, (52) Ind. 169; (53) Ohio 879.
 hay for laying hens, (51) Can. 276.
 hay ration, protein and mineral metabolism and digestibility, (59) N.Y. Cornell 365.
 hay, United States grades for, (52) U.S.D.A. 92.

Clover—Continued.

- hay v. alfalfa for cattle, Wis., (51) 468; (53) 466.
 Hubam, as green manure, effect on crop yields, (60) Ark. 803.
 in crop rotations, value of crops, (58) Ill. 619.
 in grain stubble on sandy soils, (60) Mich. 431.
 in New York, (55) 736.
 in rotation, effects, (57) Colo. 113.
 in sterile cultivation, absence of *Bacillus radicola* bacteriophage, (60) 809.
 in western Washington, (51) West. Wash. 96.
 inoculation experiments, (52) 797; (56) Wis. 734.
 Japan, breeding experiments, (51) 338.
 Japan, characteristics and culture, (59) Ohio 131.
 Japan, fertilizer experiments, (58) Ky. 31.
 Japan, growth and distribution in Ohio, (59) 131.
 Japan, in America, (51) 236.
 Japan, variety and strain tests, (51) 338.
 Korean, characteristics and culture, (59) Ohio 131.
 leaf bacteriosis, propagation and control, (54) 650.
 leaf curculio, egg studies, (56) 458.
 leaf spot, studies, (53) 849.
 leaf weevil, control, (55) U.S.D.A. 258.
 leaf weevil, life history, (52) 355.
 leaf weevil, notes, (52) Kans. 452, Idaho 851.
 leafhopper injury, (59) 344, 845.
 mammoth red, proper Latin name, (60) 36.
 mildew, control with sulfur, (59) Calif. 747.
 mite, control, (58) U.S.D.A. 864.
 mites and chiggers, (53) Ohio 899.
 mixed hay, United States grades for, (52) U.S.D.A. 92.
 mosaic disease, relation to temperature, (52) 350.
 mosaic, protozoa associated with, (53) 646.
 mosaic, temperature studies, (53) 646.
 nitrates in soil following, (51) 724.
 pasture, feeding value, (54) Can. 270.
 powdery mildew, differences in susceptibility to, (52) 546.
 powdery mildew, notes, (54) 144; (55) 243.
 problems, (51) 34; (57) 329.
 productivity, effect of height of water table, (57) 227.
 rate-of-manuring experiments, Minn., (51) 119, 120.
 red—
 American strains, susceptibility to mildew, (52) Tenn. 528.

Clover—Continued.

red—continued.

- anthracnose and mildew susceptibility, (56) 48.
 anthracnose, cause of clover failure, (56) U.S.D.A. 244.
 anthracnose resistance, (56) Va. 528.
 artificial self-pollination, (53) 229.
 assimilation of phosphorus from phytin, (58) 16.
 breeding experiments, (55) Oreg. 637; (59) 430; (60) Ky. 239.
 comparison of strains, (55) Pa. 32.
 culture experiments, (52) N.J. 732; (55) Oreg. 637.
 culture in Russia, (57) 35.
 disease affecting, (55) 545.
 effect of acid soil, (54) 213.
 effect of mowing the first year, (60) Ill. 224.
 effect on following crop, (54) N.Y. Cornell 829.
 fertilizer experiments, (55) Oreg. 637; (57) N.C. 214.
 foreign, seed behavior, (53) Wis. 432.
 germination of old seeds, (56) 39.
 growth in artificial light, (51) 25.
 hard seeds and broken seedlings in, (52) 831; (56) 826; (58) 430.
 hardiness and manuring value, (54) 31.
 hay yields, (56) Va. 528.
 importance of strain in, (51) 396.
 in Wales, insects affecting, (56) 57.
 inferiority of foreign seed, (59) Mo. 525.
 mosaic, notes, (58) 148; (59) 536.
 nurse crops for, (58) Ill. 327.
 optimum soil reaction for, (53) 320.
 origin, (52) 737.
 pasture, (53) N.C. 776.
 pasture for pigs, (55) Ohio. 163.
 pollination by bumblebees, (54) 757.
 pollination, fertilization, and breeding, (53) 836.
 productivity, (59) Ohio 222.
 propagation by cuttings, (57) 728.
 proteins of, (56) 708.
 purity of strain in, (57) 526.
 relative hardiness of strains, (59) N.H. 222.
 root development, effect of soil types and thickness of stand, (59) Mich. 17.
 rotation experiments, (54) Ill. 330.
 seed and hay yields, (56) Ill. 231.
 seed, impurities and determination of origin, (60) 539.

Clover—Continued.

red—continued.

- seed of different origins, adaptability, (59) N.Y.Cornell 225.
 seed production, (52) 334; (56) Ill. 336.
 seed, stored, viability of legume bacteria on, (56) Can. 513.
 seed tests, (56) U.S.D.A. 231.
 seed treatment, (51) 34.
 seeding experiments, (51) Idaho 830; (58) Ark. 322; (60) Ill. 223.
 self-fertilization studies, (58) 130; (60) Ky. 223.
 source of seed tests, (52) Ohio 733; (54) 238, Del. 634, Mich. 634; (55) Mich. 825, 827; (57) N.J. 727; (59) Ind. 728.
 strain tests, (59) Ohio 433, 628.
 strains and nationalities, productivity, (52) 135.
 studies, (58) 430.
 tests, (60) Ohio 636.
 variety tests, (51) N.H. 135; (52) Idaho 828; (53) Can. 530; (54) 530; (55) Oreg. 637; (56) Can. 432; (57) Idaho 726; (59) N.J. 325, Mich. 432; (60) Ill. 223, Oreg. 731.
 winter hardiness, (51) 234; (60) Pa. 327.
 winterkilling, (51) 39.
 yield and nitrogen in, (55) Ohio 32.
 residues, effect on nitrate depression, (55) N.Y.Cornell 120.
 rôle in soil improvement, (59) 117.
 root borer, life history notes, (56) 458.
 root borer, studies, (56) U.S.D.A. 158.
 root mealybug, internal anatomy, (54) 457.
 root rot, studies, (56) 48.
 rot, studies, (57) 149.
 rotation experiments, (52) N.Y.Cornell 526; (59) Ind. 728.
 rust resistant varieties, (51) Ind. 844.
 rusts, studies, (55) 545.
 rusts, summary, (55) 847.
 seed—
 certified, (54) Ohio 598.
 characteristics, (55) 740.
 determination of origin, (55) 534.
 distinguishing, (56) 337.
 for Indiana farms, (54) Ind. 830.
 from southern France, characteristics, (52) 733.
 growing, (57) Idaho 330.
 hard, germination, (60) 137.
 longevity, (51) 140.
 midge, notes, (57) Idaho 755.
 origin determination, (58) 433.
 planting depth, (55) 736.
 production, (53) Can. 530.
 production and preparation, (60) 815.

Clover—Continued.

- seed—continued.
 production in Michigan, (51) Mich. 436.
 Russian, Carophyllaceae in, (52) 639.
 source tests, (56) Iowa 822.
 worm, studies, (52) N.Y.Cornell 255.
 seeding experiments, (53) Ind. 431, Can. 530; (54) Ky. 327; (56) Ind. 132.
 selection experiments, (51) Conn.State 127.
 sitones, notes, (52) Kans. 452.
 solar energy used by, (53) 508.
 species, geographical distribution, (55) 827.
 species of ochroleuca group in Ukraine, (58) 433.
 spray irrigation for, (52) 287.
 subterranean, behavior, (51) N.C. 832; (52) Fla. 224.
 subterranean, characteristics and culture, (55) Tex. 33.
 subterranean, notes, (52) 134.
 subterranean, studies, (58) 32.
 sweet, *see* Sweet clover.
 Tifton bur, description, (51) Ga. Coastal Plain, 531.
 Tifton bur, variety tests, (56) Ga. Coastal Plain, 523.
 v. alfalfa hay for milk production, (52) Pa. 275.
 v. oats, sprouted, for hens, (54) Can. 273.
 varieties, (57) Tenn. 126.
 varieties in Russia, geographic distribution, (58) 225.
 varieties, resistance to low temperatures, (56) 735.
 varieties, seed yields, (54) Ill. 330.
 variety tests, (51) Oreg. 529; (54) Mich. 634; (58) Ark. 321; (60) Alaska 728.
 weevil, lesser, life history notes, (54) 153.
 white, as cover crop for apple orchards, (60) Mont. 738.
 white, hybrids, (60) 127.
 white, studies, (54) 132.
 white, treatise, (52) 832.
 white, variation in, (53) 233.
 white, variety tests, (53) Can. 530; (56) Can. 432; (60) Ill. 223.
 wild white, nematodes affecting, (55) 749.
 winter injury, (53) Ga. 231.
 Wood, as orchard cover crop, (57) 833.
 Wood, root-nodule bacteria, (56) 734.
 worm, green, biology, (54) U.S.D.A. 56.
 yields, (51) Ohio 488.
 yields, effect of climate, (54) 829.
 yields, effect of precipitation and temperature, (56) 413.

Clovers—

- bladder, studies, (57) Calif. 225.
 hay yields, (55) Minn. 527.
 nomenclature, (52) 227.
 Club work, *see* Boys' clubs and Girls' clubs.
 Clubroot—*see also special hosts*.
 infection, factors affecting, (55) 847.
 little-known form, (58) 748.
 Clumina, new fertilizer, (54) 722.
 Cluster flies, dead, as hosts of dermestids, (60) 653.
 Cluster fly—
 and earthworms, (51) 458.
 rearing records, (51) 256.
 studies, (58) 350.
 Clysia ambiguella, varying abundance, (58) 755.
 Clytocybe tabescens, notes, (59) 348.
 Cnethocampa pityocampa, parasite of, (57) 451.
 Coal—
 adsorption of carbon dioxide by, (55) 494.
 bituminous, v. coke for generating steam, (54) 897.
 fields of Virginia, forests of, (53) 145.
 formation, theory, (60) 511.
 spontaneous heating, effect of moisture, (54) 898.
 v. coke for open fireplaces, (57) 477.
 Coal-tar—
 food colors, certification, (54) U.S.D.A. 710.
 pitch for waterproofing and damp proofing, master specification, (53) 389.
 Cobaea scandens, new disease of, (57) 653.
 Cobalt—
 general presence in soils of Europe, (54) 210.
 in Kentucky bluegrass, (56) 804.
 occurrence and function, (53) 310.
 Coccaceae, studies, N.Y.State, (52) 519; (55) 326; (59) 269; (60) 426.
 Cocci, acid-proteolytic, types, (60) N.Y. State 428.
 Cocci, motility, (60) N.Y.State 427.
 Coccid bug, external morphology and life history, (60) 650.
 Coccid fauna of Baden, (55) 854.
 Coccidae—*see also* Scale insects.
 biology and classification, (56) 858.
 classification, (53) 359.
 Egyptian, new species, descriptions, (54) 755.
 from China, list, (58) 59.
 in Pusa collection, list, (52) 155.
 notes, (53) 652.
 of Cuba and host plants, (55) 855.
 of Egypt, studies, (53) 53, 653; (57) 164.
 of Formosa, (60) 250.
 of Jamaica, (51) 456.
 of Japan, diaspine, (54) 55, 554.
 of Japan, new genera and species, (60) 559.
 of Palestine, (53) 157; (57) 260.

Coccidae—Continued.

- parasites of in Porto Rico, (58) 863.
 South African, intracellular symbionts of, (51) 660.
 South Indian, notes, (52) 155.
Coccidocyrtus poutiersi n.sp., description, (52) 663.
 Coccidia—
 and coccidiosis of rabbits, (54) 479.
 bovine, pathogenicity, (58) 472.
 in calves, types of oocysts of, (59) 171.
 in cattle in India, (58) 472.
 in goats and coccidium cyst staining method, (58) 473.
 in mammals, host parasite specificity in, (57) 378.
 in poultry, species and strains, (57) 381.
 in rabbit, effect of acridine, (53) 889.
 in rats, morphology and biology, (53) 280.
 in sheep and goats in Java, (58) 277.
 transmission from rabbit to chicks, (55) 777.

Coccidiosis—

- account, (58) N.J. 879.
 and bacillary white diarrhea in chicks, (56) 679.
 and coccidia of rabbits, (53) 280, 587; (54) 479.
 avian, and blackhead in turkeys, comparison, (55) 679.
 avian, control, (54) 74.
 avian, summary, (54) 74.
 bovine, (55) 776.
 bovine, epizootology, (59) 878.
 bovine, in India, (57) 574.
 bovine, in Southern Rhodesia, (55) 73.
 bovine, treatment with ichtargan, (58) 277.
 control, powdered skim milk for, (58) Ill. 372.
 control, value of feeds in, (54) Tex. 579.
 effects, (55) 177.
 immunity of rabbits to, rôle of gastric juice in, (55) 272.
 in Australian rabbits, (59) 272; (60) 480.
 in animals, changes in blood in, (58) 172.
 in cattle, (55) N.Dak. 575.
 in chicks, (51) N.J. 185; (53) Calif. 477, 786; (55) Ohio 177; (57) N.C. 280; (60) West.Wash. 775.
 in chicks, effect of quinine sulfate, (59) Mich. 470.
 in feeder cattle, (56) 678.
 in mammals, (58) 277.
 in poultry, (52) Ill. 86; (53) Ohio 798; (54) Calif. 579; (55) Oreg. 677; (56) Wis. 774; (58) Oreg. 775; (59) N.H. 81, N.H. 277, N.H. 370, N.H. 780; (60) Oreg. 773.
 in poultry, basic factors in, (57) 773.
 in rabbits, treatment, (58) 679.
 in sheep, (59) Colo. 271; (60) 478.

Coccidiosis—Continued.

- in South Australian sheep, (59) 171.
 in swine in Russia, (58) 677.
 in willow grouse, (58) 679.
 notes, (56) Colo. 878.
 significance in India, (58) 472.
 studies, (52) Calif. 82.
 Coccids—
 case of association of, (53) 652.
 embryology, (54) 156.
 from Japan, descriptions and biology, (53) 157.
 of Baden, (56) 856.
 of Soledad, list, (56) 858.
 parasites of, from Africa and California, (59) 358.
Coccinella 11-punctata, life history notes, (58) 164.
Coccinellids of South India, (52) 154.
Coccobacillus—
acridiorum, immunization of wax moth caterpillar against, (58) 759.
acridiorum, notes, (59) 253.
 virulence for European corn borer, effect of pH of culture media, (59) 253.
Coccomyces—
hiemalis, notes, (53) Mich. 448; (60) N.Y.State 449.
hiemalis, studies, (59) 346.
prunophorae, notes, (54) Can. 149.
Coccophagus—
lecanii, life history and bionomics, (53) 160.
modestus, establishment in California, (57) 168.
modestus, parasite of, (57) Calif. 257.
modestus, parasite of black scale, (59) Calif. 756.
 n.sp., notes, (60) 455.
 spp., notes, (52) 557; (53) Calif. 449; (55) Calif. 352.
Coccus hesperidum, notes, (56) 552.
Coccus pseudomagnoliarum, parasites of, (52) 556.
Cochliomyia macellaria, notes, (55) 558.
Cochylis—
ambiguella, control in Switzerland, (54) 55.
 enemies of grapevine, (59) 553.
 natural enemies, (51) 762.
 Cock, hen-feathered, testis and thyroid in, (58) 221.
 Cockchafer—
 gray-back, notes, (56) 358.
 larvae, attack on grassland, (58) 158.
 night activity, causes, (60) 247.
 Cockchafers, studies, (60) 249.
 Cockerel, keelless, (53) 331.
 Cockerels—
 caponizing, (57) Idaho 272.
 effects of freezing combs, (57) 369.
 hen-feathered, luteal cells of, (51) 132.
 immature, fattening, (52) 876.

Cockerels—Continued.

- in confinement, corn products for, (54) 271.
- purebred, effect on hatchability of eggs, (56) Minn. 567.
- standardbred, improving flocks with, (52) Ohio 474.
- v. capons, value, (52) Can. 570.
- wide and narrow ration for fattening, (51) Can. 276.

Cocklebur—

- poisonous to cattle, (54) Mont. 379.
- poisonous to livestock and chickens, (52) U.S.D.A. 178.
- poisonous to swine, Ind., (55) 69; (59) 776.
- studies, (55) 642.

Cockroach—

- American, intermediate host, (58) 663.
- American, notes, (52) 156.
- Australian, notes, (52) 361.
- Australian, physiology of digestion in, (59) 250.
- Surinam, control, (56) 256.

Cockroaches—

- control, (59) Mich. 250.
- destruction and devitalization of eggs, (54) 154.
- in buildings, destruction, (59) Iowa 761.
- night activity, causes, (60) 247.
- of Coachella Valley, California, (56) 251.

Cockscomb gall aphid of elm, notes, (54) Ohio 155.

Cocksfoot moth, structure, life history, and distribution, (58) 457.

Cocksfoot, response to fertilizers, (55) 335.

Coccoa—

- as source of protein in diet, (56) 491.
- by-products as fertilizing material, (55) U.S.D.A. 615.
- fumigated, hydrocyanic acid absorbed by, (52) U.S.D.A. 561.
- insects in Gold Coast, (58) 663.
- meal, effect on dairy cattle, (56) Vt. 569.
- meal, feeding value, Vt., (52) 677; (58) 765, 770; (60) 663.
- nutritive value, bibliography, (55) 952.
- Pods, dead, danger from, (51) 251.
- v. chocolate flavor in ice cream, (58) Pa. 364.

Coconut—

- and tea gray blight, comparison, (54) 254.

bud rot—

- control, (56) 751.
- description, (53) 549.
- eradication, (56) 748.
- fungus, new host, (57) 550.
- in Porto Rico, (52) 151; (55) 150.
- infection studies, (59) Guam 548.
- notes, (54) Fla. 342, P.R. 648; (59) 637.

Coconut—Continued.

bud rot—continued.

- studies, (53) 49; (55) Fla. 841; (56) Fla. 840; (57) P.R. 442; (60) Fla. 147, Guam 835, Fla. 836.

surveys, (58) P.R. 542.

- caterpillar, control, (58) 451, 455.
- disease at Cedros, Trinidad, (57) 353.
- diseases and pests, (53) 153; (59) 646.
- diseases, eradication, (57) 838.
- diseases in British Guiana, (56) 842.
- diseases, notes, (53) 148; (54) 144; (55) 243, 345; (57) 145, 639; (60) 344.

fire blight, description, (60) Guam 835.

gray blight, studies, (60) 646.

gummosis, notes, (58) 241.

husks, splitting, (57) 145.

industry in Indo-China, (52) 540.

industry, Portuguese India, (52) 540.

industry, Trinidad, geographic factors, (55) 240.

leaf beetle, two-colored, (51) 554.

leaf break disease, (59) 453.

leaf moth, notes, (52) 853.

Mahali disease, (57) 852.

meal and fresh coconuts, feeding value, (59) Guam 565.

meal, feeding value, (55) Guam 160; (56) Guam 265; (60) Ohio 461, Guam 858.

meal, fertilizing value, (59) Guam 529.

meal, insect-infested, feeding value, (54) 570.

mealybug control, (53) 653.

moth, biological control, (57) 160.

moth, parasite of, (53) 257.

oil and palm kernel oil mixtures, examination, (56) 615.

oil, deodorization, (57) 8.

oil, Hanus iodine values, (52) 205.

oil soap, germicidal properties, (54) 393.

oil, sulfuric index, (52) 411.

palm, animal pests, (55) 854.

palm diseases, (56) 541; (58) 152; (59) 452.

palm, new moth affecting, (51) 661.

palm pests, (56) 58, 458.

palm, replacement of terminal bud, (52) 328.

palm root disease, studies, (59) 536.

palm wilt, control, (51) 156.

palms, fertilizer experiments, (60) P.R. 740.

palms, injury by sugar cane borer, (60) Guam 845.

palms, lightning injury, (57) P.R. 442.

palms, physiological disease, (60) Guam 836.

palms, variation in yield, (53) 242.

pests and parasites in Dutch East Indies, (58) 558.

pollen mother cells, studies, (60) 826.

press cake, vitamin A in, (52) 65.

red ring disease, (56) 454.

Coconut—Continued.

- root disease, (57) 852.
 scale, control, Guam, (55) 151; (59) 554; (60) 844.
 scale, life history and control, (56) Guam 251.
 scale, notes, (52) 853; (56) 756; (60) Guam 844.
 seedling bud rot, notes, (55) 244.
 shells, ash-free charcoal from, (55) 10.
 slug caterpillar, studies, (54) 659.
 thread blight, (54) 548.
 trees, fertilizer experiments, (57) P.R. 435.
 trees, high, spraying, (58) 858.
 trees, insects affecting, (55) 758.
 trees, pollination in, (57) 738.
 water, sugars in, isolation and identification, (54) 7.
 wilt, notes, (57) 443.
 zygaenid, Malaysian, notes, (57) 261.
 zygaenid, Malaysian, parasite of, (57) 264.

Coconuts—

- culture experiments, (52) Guam 232.
 effect of kunai grass and control, (60) 138.
 fertilizer experiments, P.R., (51) 837; (58) 537.
 foliar transpiring power, (51) 520.
 germination, (51) Hawaii 744.
 in Brazil, insects affecting, (51) 551.
 insects affecting, (52) 356, 853; (59) 352.
 little known pest of in Java, (60) 554.
 nut fall of, (52) 151.
 premature leaf and nut fall, (53) 147, 250.
 purple leaf moth affecting, (53) 859.
 varieties, (52) 346.

Codfish—

- insulin from, (52) 804.
 red rock, formaldehyde in, (55) 307.
 specific dynamic action, (52) 665.

Codiaeum variegatum, bud variations in, (51) 632.

Codling moth—

- activity, relation to temperature, (60) 848.
 affecting cherries, (56) 258.
 band experiments, (60) 63.
 banding materials, (59) 857.
 bands as cocooning traps, chemical treatment, (58) 348.
 bionomics and control, Del., (56) 356; (58) 456; (60) 750.
 clean-up campaign, (59) Ind. 656.
 control, (51) 252, 760, N.J. 658; (52) 554; (53) Mo. 451, 856; (54) 555, Mo. 753; (55) 255, Va. 257, Calif. 355, 761; (56) 258, 660, 758, Colo. 855; (57) 57, 262, Mo. 362, 454, 853; (58) 256; (59) 61, Calif. 756, Ind. 760, 853, Nebr. 854; (60) Ky. 251, 456, 560, Oreg. 754, 848.

Codling moth—Continued.

- control—continued.
 arsenical requirements for, (53) 360.
 breeding cages for, (58) Mo. 457
 calyx spray for, (57) 657.
 cooperative, (58) 61.
 double v. single strength arsenate of lead for, (60) Oreg. 754.
 in Australia, (58) 860.
 in Georgia, (59) 459.
 in Idaho, (58) 557.
 in Missouri, (55) 54.
 in New Jersey, (53) 253.
 in Northwest, (51) U.S.D.A. 159.
 in South Africa, (59) 355.
 in Western Australia, (59) 656.
 oils for, (60) Wash.Col. 843.
 papers on, (59) 552.
 recent developments, (60) 165.
 relation to arsenical sprays, (60) 165.
 dust formulas for, (57) Mo. 451.
 effect of low temperatures, (55) Idaho 853.
 egg parasite, (53) 861.
 emergence, (58) S.C. 662.
 experiments, interpretation, (51) 356.
 habits, (52) N.Y.State 552.
 hibernation studies, (59) 459.
 in apricot orchards, control, (54) 156; (57) 166.
 in Arkansas Valley, (56) 858.
 in British Columbia, (53) 155.
 in Delaware, life history, (58) U.S.D.A. 860.
 in eastern Washington, suppressing, (51) 457.
 in walnuts, control, (52) Calif. 56; (53) 858; (55) Calif. 156, Calif. 352.
 in walnuts, variations in seasonal development, (57) 858.
 in Yakima Valley, control, (59) 459.
 in Yakima Valley, life history, (52) U.S.D.A. 456.
 larva, break-up of hibernation in, (59) 157.
 larva, longevity, (59) 455.
 larvae, catalase content, (57) 559.
 larvae, tropic responses, (60) 165.
 life cycle studies, (57) Idaho 755.
 life cycle, variation in, (51) Mo. 760.
 life history and control, (56) 556; (57) Mo. 451.
 life history notes, (52) Calif. 57; (55) Mass. 256; (56) 61.
 life history studies, (56) N.Y.State 252, Ark. 356; (59) Idaho 757; (60) Va. 165, Oreg. 752.
 light attraction, (60) 560.
 notes, (51) 157, 763; (52) Mich. 355; (53) N.C. 755; (55) Iowa 554, 555; (57) N.J. 57, Ohio 162, Mich. 654; (58) 857; (59) N.H. 248, N.Mex. 249, Mich. 455, 652.
 oil spray for, (56) 61.

Codling moth—Continued.

- outbreaks in Kentucky, (57) 657.
- ovicides, notes, (53) 154.
- papers on, (53) 154; (55) 455; (57) 451; (60) 59.
- relation to weather and climate, (57) 559; (59) 655.
- response to colored lights, (60) 848.
- second brood, notes, (57) Calif. 256.
- side worms, timing of sprays for, (57) N.J. 755.
- situation in Iowa, (59) 552.
- spraying service, (59) Iowa 55.
- sprays for, (55) N.J. 51.
- spring brood emergence, determination, (60) 456.
- strains, resistance to arsenical poisoning, (59) 459.
- studies, (52) N.J. 750; (55) N.J. 51; (57) Mass. 165; (59) Ohio 249, N.J. 349; (60) N.Y.State 452.
- summary, (58) Colo. 160.
- trap baits for capturing, (58) 260.
- traps, (57) Wash.Col. 361.

Codling worm, life history for Ohio and control, (51) 553.

Codling worm sprays, time for applying, (51) 362.

Cod-liver—

- meal as source of vitamins, (59) Wis. 71.
- meal, vitamin A in, (59) 362, 465, 792.
- meal, vitamin D in, (59) 362, 465, 792.
- meals, antirachitic properties, (59) 761.

Cod-liver oil—

- action of light, (56) 110.
- and butter fat, comparative amounts of vitamins, (56) 490.
- and malt extract, vitamin content, (51) 565.
- and marine animal oils, antirachitic value, (60) 198.
- and meal, antirachitic value, (59) N.H. 771.
- and products, feeding value, (58) Iowa 465.
- antirachitic and antirachitic properties, non-precipitability, (54) 490.
- antirachitic constituent and activated cholesterol, identity, (55) 309.
- antirachitic factor, effect of mixing with grains and storing, (55) 861.
- antirachitic factor, studies, (58) 90.
- antirachitic properties by irradiation, (55) 867.
- antirachitic properties, variation in, (56) 478, 869.
- biological assay, (60) 296.
- characteristics, (58) 896.
- chemistry of, (51) 312; (52) 263.
- chemistry of, effect of hydrogenation, (53) 765.
- color reactions of, (53) 810.
- concentrate, antirachitic potency, effect of feeds, (58) 196.

Cod-liver oil—Continued.

- concentrate, clinical experience, (52) 263; (53) 767.
- concentrate, intramuscular injections for rickets, (57) 198.
- concentrate, standardization, (57) 691.
- concentrate, value, (57) 93, 691.
- contaminants, detection, (58) 715.
- durability of vitamin A in, (52) 462.
- effect of heat and oxidation, (57) 487.
- effect of ultra-violet irradiation, (56) 503.
- effect on calcification of bones, (58) Pa. 391.
- effect on calcium and phosphorus assimilation, (51) 374.
- effect on calcium and phosphorus metabolism of lactating animals, (59) 571.
- effect on calcium and phosphorus metabolism on deficient diets, (58) 690.
- effect on calcium assimilation, (51) 374; (57) 177.
- effect on calcium balance in humans, (58) 896.
- effect on egg production, (53) 670; (57) Ohio 173.
- effect on eggshells, (56) Can. 469.
- effect on flavor in poultry meat, (56) 670.
- effect on metabolism in rats on rachitic diet, (54) 893.
- effect on poultry, (55) 166, 866; (58) 268; (60) N.J. 173.
- extract, so-called, assay, (59) 492.
- fed during pregnancy, antirachitic effect on young, (51) 267.
- feeding to cows, effect on milk, (52) 774.
- feeding value, (54) 666; (55) Ind. 64.
- for dog distemper, (54) 174.
- for improving corn and tankage for pigs, (59) Ohio 262.
- for laying hens, (52) 273.
- for pullets, value, (58) Minn. 869.
- for rabbits and guinea pigs, (58) 481.
- for reproduction, (60) 395.
- for treatment of leg weakness in chicks, (54) Can. 668.
- growth-promoting property, (56) 592.
- hardened, potency of vitamin A in, (52) 461.
- in diet of mother, effect on rickets in infants, (58) 90.
- in diet of mother, effect on vitamin D in milk, (56) 796.
- in milk formula for infants, (60) 688.
- injected, growth-promoting and antirachitic value, (53) 265.
- irradiated, growth-promoting value, (58) 90.
- irradiation, effect on antirachitic potency, (58) 496.
- manufacture and by-products, (52) 805.
- meals, antirachitic properties, (57) Ohio 663.

Cod-liver oil—Continued.

- metabolism by diabetics, (51) 668.
optimum amount for laying hens, (59) Wis. 71.
oxidized, value, (53) 661.
pharmacological action of antirachitic principle, (51) 464.
preserving vitamin potency, (51) 368.
routine administration, value, (56) 495.
selection for medicinal use, (54) 390.
spectroscopic observations, (54) 409.
stability in feed mixtures, (55) Ohio 164.
studies, (59) Conn.State 891.
therapeutic uses, (53) 661.
ultra-violet energy in, (55) Ind. 64.
v. irradiated ergosterol in rickets treatment, (59) 596.
v. wheat oil as sources of vitamin E, (57) 897.
value for chicks, (51) Ohio 277; (53) Can. 875; (56) Minn. 566; (57) Okla. 568; (60) Guam 860.
vitamin A assay of, criticism, (60) 894.
vitamin A in, (51) 566; (52) 65; (55) 13.
vitamin D in, typical assay, (59) 689.
vitamin fraction, new process for separation, (60) 895.
vitamin potency, (53) 864; (55) 694, 770; (57) 894.
vitamin potency, effect of cold-pressing, (55) 386.
vitamin potency, effect of storage of livers, (51) 864.
vitamins in, effect of heat, (55) 490.
Coelaenomenodera elaeidis on oil palms, (54) 461.
Coelinidea meromyzae, notes, (54) S.Dak. 555.
Coelopisthia scutellata n.sp., description, (57) 365.
Coenurus serialis in rabbits, production of specific antibodies, (54) 575.

Coffee—

- berry beetle borer in Dutch East Indies, (56) 856.
berry beetle, disinfection of coffee seed attacked by, (58) 164.
berry borer—
 bionomic data, (53) 759.
 cinematographic campaign against, (58) 351.
 control, (54) 58; (57) 862; (58) 346, 863.
 in Brazil, (54) 662.
 in Uganda, summary, (56) 362.
 life history and control, (51) 554.
 notes, (55) 854.
 studies, (58) 351.
berry disease, (53) 147, 246; (57) 145.
berry disease in Kenya Colony, (57) 156.
black rot, hibernating stage, (52) 544, 545.

Coffee—Continued.

- black rot or koleroga, control, (56) 455.
black rot or koleroga in Mysore, (53) 152.
black rot organism, hosts, (55) 542.
borer, control, (54) 757.
borer, notes, (52) 554; (57) 655.
borer, studies, (54) 558.
bran v. wheat bran for cows, (58) 68.
brown eyespot, notes, (51) 45; (60) 344.
bug egg parasites, sex ratio, (52) 333.
bush, spraying experiments, (58) 156.
dieback, notes, (52) 545.
diseases and pests in Africa, (58) 241.
diseases, control, (59) 548.
diseases in Africa, (53) 152.
diseases in Kenya, (56) 455.
diseases in Uganda, (54) 253.
diseases, notes, (52) 653; (53) 147; (57) 145, 146, 639.
diseases of South India, control, (55) 755.
drinking habits of school children, (58) 291.
effect of length of day, (60) P.R. 740.
fertilizer experiments, (51) P.R. 838; (54) P.R. 642; (56) P.R. 345; (57) P.R. 435; (58) 537; (60) P.R. 740.
germination experiments, (57) 438.
in Brazil, second centennial, (60) 641.
industry of Kenya Colony, (53) 844.
insects affecting, (54) 553; (55) 758; (56) 553; (57) 759.
insects affecting in Trinidad and Tobago, (56) 659.
investigations, (52) 642.
leaf disease, notes, (57) 444.
leaf miner, white, bionomics, (51) 553.
Liberian, fungus affecting, (52) 151.
making, studies, (55) 86.
mealybug in Kenya Colony, (58) 57.
mealybug, life history and habits, (59) 354.
mealybug root disease, (57) 443.
monograph, (53) 644.
new disease of, (52) 249.
of British Empire, (51) 896.
Omphalia disease, notes, (55) 243.
pink disease, notes, (53) 147; (57) 444.
pollination, (51) 855.
pruning principles, (59) 531.
root disease, notes, (56) 851; (57) 145.
rust, notes, (57) 640.
seed disinfection, (57) 862.
seedling blight, notes, (57) 443.
seedling damping-off, notes, (57) 145.
seeds, effect of moisture on viability, (54) 140.
shade plantings for, (58) P.R. 537.
tests, (57) 336.
tree, deformations, diseases, and enemies in Venezuela, (54) 254.
varieties, (51) P.R. 749.

Coffee—Continued.

- variety test, (58) 537.
 - wilt, notes, (56) 843; (57) 443.
 - yield, effect of topping, (59) P.R. 744.
- Cohesion in colloidal soils, (54) 581.
- Coke v. bituminous coal for generating steam, (54) 897.
- Coke v. coal for open fireplaces, (57) 477.
- Colaspidema atrum, studies, (57) 63.
- Colaspis brunnea, hibernation studies, (59) 460.
- Colaspis hyperchlora, studies, (57) 263.
- Colchicum culture and botanical characters, handbook, (52) 344.
- Cold—*see also* Temperature, low.
resistance by plants, (60) 214.
- Cold storage—
and refrigeration, bibliography, (54) U.S.D.A. 587.
effect on bean weevil, (51) 58.
experiments with fruits, (54) 643.
for fruit fly control, (51) 661.
holdings, U.S.D.A., (52) 693; (55) 686.
in Twin Cities, (58) 589.
of Florida grapefruit, (54) U.S.D.A. 644.
on the farm, (52) 889.
plants for fruit, survey, (60) 676.
plants in Australia and New Zealand, (52) 890.
problems, researches on, (58) 212.
studies, (58) 140.
- Coldframes, construction and management, (59) Colo. 41.
- Colds, prevention by ultra-violet radiation, (58) 896.
- Coleophora fabriciella in New Zealand, (60) 456.
- Coleoptera—
in syllabus of insect biology, (56) 860.
Nearctic, index to keys of, (58) 61.
- Coleoptiles, whole and halved, growth and incurvation in, (57) 618.
- Coleosporium—
solidaginis, notes, (56) 54.
tussilaginis, notes, (56) 542.
- Coles—
acidity of medium and root production in, (57) 620.
root formation, effect of pH of media, (60) 543.
- Coli bacteria, *see* Bacillus coli communis.
- Colitis in man, iodine solution for, (54) Mich. 675.
- Collards, vitamins in, (59) 191.
- Collargol for destruction of Bacterium abortus, (52) Mich. 382.
- College instructors' conferences on teaching methods, (51) 597.
- Collembola from Italy, list, (52) 753.
- Colletotrichum—
allii n.sp., notes, (58) 652.
and Vermicularia, comparison, (58) 550.
atramentarium, studies, (58) 50, 550.
biologicum n.sp., description, (56) 124.

Colletotrichum—Continued.

- cajani, notes, (57) 349, P.R. 442; (58) P.R. 542.
 - camellieae, notes, (57) 443.
 - carica, notes, (54) 449.
 - coffeanum, notes, (51) 45; (53) 147; (54) 254; (57) 145, 156.
 - coffeanum, strains, (56) 629.
 - falcatum, notes, (51) 450; (52) La. 548; (55) 244, 547; (56) 51; (57) 152, 540, 647; (59) 543.
 - gloeosporioides, notes, (55) 346; (56) 455; (57) 851, 852; (58) 250, 449, 555; (59) Calif. 747; (60) P.R. 746, 835.
 - gloeosporioides on lemon, effect on manganese sulfate, (60) 831.
 - gossypii, notes, (51) 248; (53) S.C. 750; (56) 750; (60) 241.
 - graminicolum, notes, (55) 245; (57) 639.
 - hibisci, notes, (59) 246.
 - lagenarium, control, (51) 156.
- Indemuthianum—
achromatic variations in, (60) 642.
in beans, control, (59) 50.
in Canada, physiological study, (56) 148.
notes, (51) 247; (54) 345; (55) 652; (57) 51; (59) 635.
spore production, effect of lactic acid, (52) 346.
studies, (60) 642.
varietal forms, (57) 441.
- lini and Fusarium lini, comparison, (57) 640.
- lini, notes, (54) 847.
malvarum, notes, (57) 343.
necator, notes, (57) 249.
nigrum, notes, (54) 545; (60) 644.
omnivorum, outbreak and spread in Italy, (57) 159.
omnivorum, parasitism and development, (58) 844.
phomoides, notes, (51) 353.
pisi, control, (51) 152.
pisi, notes, (54) Wis. 248.
sp., notes, (52) 151; (53) 152; (55) 249; (56) Fla. 143; (57) 640; (59) 152.
sp. on figs., (51) 46.
sp. on peppers, (55) 750.
spp., cultural characteristics, (56) 148.
spp. on cacao, (55) 244.
tabificum, notes, (53) 641.
trifolii cause of clover anthracnose, (59) U.S.D.A. 51.
trifolii cause of clover failure, (56) U.S.D.A. 244.
trifolii, notes, (51) Tenn. 349; (55) Miss. 541; (57) 443; (58) 340.
trifolii, studies, (52) Miss. 242; (55) Miss. 649; (58) 548.

Colloidion—

sack method for study of water-soluble constituents of soil, (56) 408.
sacks, use in soil investigations, (60) 509.

Colloid chemistry—

and capillary chemistry, treatise, (56) 201.
applications, (52) 609; (54) 6.
applied, treatise, (58) 9.
elements, treatise, (54) 407.
foundations, treatise, (53) 802.
laboratory manual, (55) 201; (56) 501; (58) 801.
manual, (55) 407.
monograph, (51) 407.
national symposiums on, (54) 801, 802.
new conceptions, treatise, (56) 501.
of milk and dairy products, (52) U.S.D.A. 503.
of soils, (55) 718.
of the protoplasm, treatise, (53) 309.
present status, treatise, (57) 501.
relation to agriculture, (51) 607.
textbook, (60) 201.
theoretical and applied, treatise, (60) 410.
theory and methods, treatise, (55) 709.
treatise, (52) 609; (54) 407; (60) 201.

Colloid—

constituents of soils, effect of dehydration, (58) 614.
particle size, measurement, (59) Ohio 208.
symposium monograph, (54) 801, 802; (56) 408.

Colloidal—

alumina and silica of soil, possible index, (60) 509.
behavior of soils and fertility, (56) 808; (57) N.J. 19; (60) 23.
behavior of soils, studies, (59) N.J. 315, 716.
behavior, theory and application, treatise, (54) 6.
cell, constructed, activities, (58) 818; (59) 723.
clay, application of viscosimetry to study, (58) 207.
clay, chemical nature, (53) 816.
fibers, hygroscopic properties, (55) 794.
fraction of soils, studies, (58) 16.
material in soils, properties, Mo., (54) 715; (58) 416.
materials for mixing oils and hard water, (52) U.S.D.A. 441.
phenomena in alkali soil formation, (51) 617.
preparations, use in fungicidal sprays, (59) 537.
problems of milk and dairy products, (52) 10.

Colloidal—Continued.

properties of winter wheat plants, (51) 237.
soil material, electro dialysis and exchangeable bases, (56) 115.
soil material, nature of, (55) 718.
soil material, properties, (56) U.S.D.A. 208.
soils, cohesion in, (54) 581.
soils, maximum water-retaining capacity, (54) 14.
soils, measurement of suction forces in, (58) 117.
soils, percolation, relation to swelling and cohesiveness, (55) 16.
soils, unusual properties, (55) 117.
solutions, stability, effect of hydration, (55) 117.
sulfur as spray material, (56) 47.
sulfur, fungicidal value, (53) 847.
sulfur, preparation, (53) 452.
sulfur, preparation and toxicity, (55) 651.
swelling, physicochemical basis, (55) 627.
systems, effect of ions in, treatise, (54) 108.

Colloids—
action of ions on, (54) 320.
adsorption and absorption, (51) 514.
and soluble iron in clays, relation, (55) 511.
decomposition of neutral salts by, (52) 509.
effect on physical properties of soils, (53) 816.
electrical neutralization and cataphoresis, (60) 410.
electrolytic, dispersion, relation to cellular exchange of mineral substances, (57) 319.
fungicidal, action and effects, (59) 48.
heat of wetting, effect of replaceable base, (55) 213.
hydrophilic, in plant saps, (51) 26.
importance in soil, (57) 16.
in biology and medicine, treatise, (51) 407.
in sugar manufacture, (53) 613.
metallic, rôle in suppression of detonation, (56) 883; (60) 780.
physical chemistry, (57) 707.
physics and chemistry of, treatise, (55) 10.
removal, effect on soil properties, (52) 419.
rôle in soil moisture, (55) 718.
rôle in soil productivity, (60) 509.
soil, and base exchange in, (56) 416; (59) Ala. 613.
soil, and tillage, (53) 589.
soil, binding power, (52) 211.
soil, climatic agencies in relation to, (53) 719.
soil, composition, (52) U.S.D.A. 508.
soil, current definitions, (59) 511.

Colloids—Continued.

- soil, determination, (57) 710; (58) 513.
- soil, effect of drying, (59) 418.
- soil, electrokinetic behavior, relation to base exchange capacity, (56) 415.
- soil, estimating, (52) 619; (53) 319.
- soil, heat of wetting, (52) 418; (53) 317.
- soil, nature of, (56) 208.
- soil, quantity and quality, determination, (60) 115.
- soil, relation to plant nutrition, (56) 723.
- soil, retention of phosphorus by, (58) 615.
- soil, studies, (53) 510; (56) 18; (57) 711.
- soil, suction force as index, (54) 417.
- soil, symposium, (51) 799.
- swelling, measurements, (59) 723.
- textbook, (57) 501.
- variations in typical soil areas, (59) 418.
- water binding capacity, relation to winter hardness of insects, (57) 451.

Collybia dryophila—

- notes, (58) 248; (59) N.C. 749.
- parasitic on dewberry, (60) 553.

Cellyricium as parasites of fowls, (51) 385.

Colocasia—

- corm rot, (53) 43.
- spp., new food plants for the South, (52) U.S.D.A. 340.

Colonization—*see also* Agricultural colonization and Land settlement.

- French, in Africa and Asia, (51) 91.
- group settlement plan, in Western Australia, (57) 784.
- in Argentina, need for, (52) 394.
- in Chile, (52) 91.
- on farms in Western Australia, (52) 91.

Colon-typhoid group of bacteria, classification, (57) 472.

Colopha eragrostidis, parasite of, (52) N.Y.Cornell 360.

Colopha ulmicola, notes, (54) Ohio 155.

Color—*see also* Pigmentation, Pigments, etc.

- analyzer, K. and E., use, (54) 110.
- black dominant in cats, relation to tortoise shell males, (57) 27.
- black, inheritance in swine, (56) 729.
- blindness, incidence in, (52) 524.
- chemical constitution, treatise, (52) 201.
- comparator, new type, (54) 110.
- determination, device for, (60) 598.
- effect on internal temperature of plants, (52) 139.
- factors, new, in guinea pigs, (55) 820.
- food, development of industry in United States, (56) 590.
- genes, activating, in albinos, (53) 526.

Color—Continued.

- genes of rabbits, relation to dopa reaction, (55) 27.
- in alfalfa seed, studies, (55) 735.
- in foods, studies, (57) 203.
- in sugar industry, (59) 713.
- indicators for blight disinfectants, (52) 746.
- inheritance—
 - and pattern characters of poultry, (52) 430.
 - black, in swine, (56) 729.
 - exceptional, in Hereford cattle, (60) 32.
 - in a poultry cross, (56) Kans. 817.
 - in beans, Me., (52) 430, 431.
 - in cats, (58) 628.
 - in cattle, (53) 128.
 - in cattle crosses, (54) 129.
 - in cotyledons of soy beans, (57) 822.
 - in Dachshunds, (56) 129.
 - in ducks, (59) 361.
 - in fowls, (52) 128.
 - in goats, (56) 224.
 - in greyhounds, (59) 822.
 - in grouse locust, (54) 428.
 - in guinea fowl, (55) 165.
 - in horses, (51) 229; (56) 728.
 - in pigeons, (51) 334; (56) 818.
 - in pigs, (54) 27.
 - in potatoes, (52) 32; (56) 338, 429; (57) 520.
 - in poultry, (58) Iowa 425.
 - in poultry, Vriesendorp's theories, (57) 27.
 - in rabbits, (57) 323.
 - in Rhode Island Reds, (55) 820.
 - in rice, (59) 219.
 - in rodents, (54) 824.
 - in seed of sorghum crosses, (51) 29.
 - in sheep, (53) 228; (56) 818; (60) 324.
 - in Shorthorn cattle, (54) 27.
 - in skin of poultry, (58) 629.
 - in turkey crosses, (54) Mo. 728.
 - of earlobe in poultry, (60) 632.
 - of shanks in fowls, (55) 820.
 - of soy bean seed coat, (58) 424.
 - unusual, in pigs, (55) 327.
- knowledge essential to costume, (53) Mo. 496.
- of aleurone and endosperm in corn, factors for, (56) 519.
- of animals, studies, (57) 222, 423.
- of food, relation to vitamin A in, (60) 291.
- of hair of Himalayan rabbits, changes in, (54) 429.
- of hair, spectral analyses, (58) 732.
- of hydrangea blossoms, studies, (52) 143.
- pattern inheritance in grouse locust, (55) Kans. 26.
- problems in woolen and worsted industries, (56) 95.

Color—Continued.

- reactions associated with vitamin A, (55) 712.
- reactions of vitamin A, (56) 10, 410.
- science of, treatise, (52) 201; (59) 297.
- tests for vitamin A, (57) 690.
- tests for vitamins, (52) 313.

Coloradia pandora, notes, (53) 857.

Colorado—

- College, notes, (51) 496; (52) 300; (57) 698; (59) 599, 899.
- pure seed law, text, (54) Colo. 37.
- River basin, bill for protection and development, (53) 587.
- River problems, discussion, (52) Ariz. 685.
- River silt, studies, (55) Ariz. 376.
- Station, notes, (51) 496; (55) 396; (56) 196; (57) 698; (59) 599, 899.
- Station, report, (51) 694; (53) 194; (55) 298; (56) 899; (59) 298.

Colorimeter—

- correction curves for sugar, (56) 204.
- description, (58) 804.
- Dubosq-Pellin, modification, (51) 313.
- new, for small amounts of liquid, (56) 504.

Colorimetry, improvements in, (51) 10.

Coloring matter—

- from tar, fungicidal action, (53) 148.
- use in food, (53) 160.

Colors—

- and varnishes, treatise, (53) 891.
- dyes on cotton, action of light on, (60) 696, 697.

Colostrum—

- and ewe's milk, dispensibility for lambs, (58) 577.
- antibody transmission in, (52) Mo. 679.
- effect of heat, (54) Mo. 776.
- effect of pasteurization, (57) Mo. 469.
- fat in, (59) 168.
- fat of, chemical and physical constants, (53) 203.
- fermented milk as substitute, (57) Mo. 465.
- human, composition, (57) 391.
- in milk, law governing changes, (53) 380.
- ingestion, effect on newborn calf, (53) 571.
- mineral constituents, (52) U.S.D.A. 576.
- pasteurization, effect, (58) Mo. 469.
- production, (56) 473.
- studies, (53) 203.
- value in disease prevention, (53) 785.

Colpoda cucullus development, effect of sunlight, (54) 120.

Colts—

- corn v. oats for, (55) 769.
- cost of raising, (51) 176.
- draft, feeding, Mo., (53) 470; (54) 762.
- draft, growth in, (58) Mo. 466.
- draft, raising, (57) Mo. 462.

Colts—Continued.

- draft, soy bean hay and sweet clover pasture for, (57) Ill. 462.
- feeding, method of equivalent feeds, (52) 874.
- gastrophilus sensitization, (51) N.Dak. 883.
- rations for, (56) Ill. 371.
- soy bean hay for, (56) Ill. 270.

Colza, genetic studies, (55) 224.

Comandra—

- parasitism in, (55) 44.
- semiparasitic habit and host plants, (59) 637.

Combine—

- harvested grain, cleaning, (60) 881.
- harvesting in Idaho, new developments in, (60) 880.
- harvesting, windrow method, (60) 880.
- studies in Pennsylvania, (60) 481.

Combines—

- advantages and disadvantages, (59) U.S.D.A. 480.
- and furrow drill, use, (60) Mont. 778.
- cost and power needs, (60) Ill. 281.
- cost of operating, (59) Mich. 85; (60) Mont. 785.
- for harvesting soy beans, (58) Ill. 373.
- for harvesting wheat, value, (57) U.S.D.A. 581.
- grain loss tests, (60) 880.
- harvesting and threshing tests, (56) Wis. 778.
- harvesting grain with, (58) Tex. 883.
- in Canada, (57) 187, 778.
- in Great Plains region, (59) U.S.D.A. 84.
- in Illinois, (57) Ill. 476.
- in prairie provinces of Canada, (60) 880.
- in Saskatchewan, (60) 880.
- on Oklahoma farms, (58) Okla. 283.
- on wheat farms, cost of using, (56) U.S.D.A. 785.
- operation tests, (56) 282.
- results of experiments with, (59) Can. 883.
- use, (59) Ohio 281, N.Dak. 881; (60) N.Dak. 81, Ill. 276.

Combustion, spontaneous, of haystacks, (59) 282.

Commerce and industry, treatise, (59) 789.

Commercial statistics of Japan, (52) 793.

Commercial survey of Southeast, (58) 889.

Commodity—

- cooperative association, (51) 189.
- groups, cooperation between, (60) 682.
- market terms, (55) 184.

Commonwealth Club of California, transactions, (54) 680.

Community—see also Rural community.

- clubs, constitution and by-laws for, (53) 695.
- enterprises in Louisiana, (51) 895.
- organization for country life program, (52) 194.
- organization in Missouri, (57) 88.

Community—Continued.

- organization, textbook, (56) 187.
- score card, (51) 95.
- service institutions, (55) 84.
- settlement in New South Wales, (51) 91.

Comperiella bifasciata—

- life history notes, (57) 365.
- notes, (55) Calif. 352; (57) Calif. 257; (60) Guam 844.
- parasite of Florida red scale, (59) Calif. 757.

Comperiella spp., description, (57) 168.

Complement—

- fixation by different methods, variation in interpretation, (60) 665.
- fixation test, technique, (58) 771.
- preservation, (58) 874.
- variation, during scurvy, (52) 264.

Compositae, akenes of, (60) N.Dak. 41.

Compost rotation experiment, La., (53) 514; (55) 420; (57) 512.

Composts, nitrogen losses from, (51) 422.

Compsilura concinnata—

- dispersion, (58) 349.
- host relations, (54) U.S.D.A. 756.
- host selection, (57) 357.
- notes, (59) 654.

Comstockiella sabalis, notes, (55) Miss. 658.

Concrete—

- action of sulfate water on, (58) U.S.D.A. 482.
- aggregates, slag, coke, breeze and clinker for, (60) 582.
- alkali action on, test, (51) U.S.D.A. 684.
- alumina cement, effect of sulfate water, (55) 880.
- and hollow tile, bond between, (58) 779.
- and steel, bond between, (55) 781.
- and timber in flexure, studies, (56) 680.
- arch, load test, (60) 878.
- arch, reinforced, analysis, (60) U.S.D.A. 779.
- arch, reinforced, load tests, (60) U.S.D.A. 673.
- arches, analysis, (57) U.S.D.A. 677.
- beams, reinforced, web stresses in, (58) 181; (59) 177.
- block fire test, (57) 880.
- blocks, cinder, in piers, tests, (52) 183.
- blocks, L-shaped, Iowa, (53) 788; (59) 183.
- bridge, *see* Bridge.
- broken stone, permeability tests, (53) 185.
- cinder, nail-holding power, (53) 483.
- columns, helically reinforced, stresses in, (55) 77.
- compressive strength, factors affecting, (55) 780.
- compressive strength specimens, capping square for, (58) U.S.D.A. 78.

Concrete—Continued.

- consistency, new test for, (53) U.S.D.A. 789.
- constituents, proportions, (59) U.S.D.A. 679.
- construction on the farm, (55) U.S.D.A. 584.
- cores, preparation for compression tests, (54) U.S.D.A. 180.
- cracks in, instrument for measuring length, (58) U.S.D.A. 582.
- cradles for large pipe conduits, (57) 676.
- crushed brick aggregate for, (52) 585.
- crushed-stone and gravel, comparative tests, (58) U.S.D.A. 881.
- curing in semiarid climate, (55) 178.
- curing methods, tests, (56) U.S.D.A. 480.
- curing with calcium chloride, (53) U.S.D.A. 84.
- dams, reinforced, (54) 681.
- designers' manual, (56) 780.
- deterioration in alkali soils, (57) 186.
- disintegration by alkali water, acid water, and frost, (55) 780.
- disintegration, cause, (53) 590.
- drain tile, curing conditions, (52) 87.
- drain tile, research in, (54) 681.
- effect of beet pulp, (54) Colo. 780.
- effect of bulking of moist sands, (51) U.S.D.A. 886.
- effect of calcium chloride, (56) 77.
- effect of moisture, (53) U.S.D.A. 84.
- effect of sulfate water, (54) U.S.D.A. 180.
- failure under combined compressive stresses, (60) 376.
- feeding floor, value for pigs, (53) Kans. 371.
- fence posts, reinforcing, (51) Ind. 884.
- fence posts, studies, (51) Iowa 485.
- houses, cork lined, (54) 482.
- houses, plans, (56) 782.
- impervious, treatise, (51) 587.
- in soil under improvement, destruction, cause, (60) 513.
- in sulfate waters, effect of curing, (56) 178.
- in tension, tests, (55) U.S.D.A. 479.
- line posts, construction, (52) Mich. 488.
- mixed in standard pavers, effect of mixing period, (59) U.S.D.A. 882.
- mixes, cement requirements, (58) 482.
- mixtures, design and control, (57) 474.
- nonuniformity, causes, (52) U.S.D.A. 184.
- of high alumina and Portland cements, effect of high temperatures, (59) 376.
- on sub-bases, friction tests, (51) U.S.D.A. 887.
- pavement slabs, impact tests, (51) U.S.D.A. 484.
- pavements—
 - curing, (60) U.S.D.A. 278.

Concrete—Continued.

- pavements—continued.
 - curing tests in Tennessee, (60) U.S.D.A. 481.
 - design, (52) U.S.D.A. 184.
 - design, water-cement ratio method, (59) U.S.D.A. 882.
 - hair cracks in, tar paper for, (53) U.S.D.A. 790.
 - hexagonal slab design, (54) 480.
 - lip curb for, (59) U.S.D.A. 882.
 - reinforced, survey, (52) U.S.D.A. 783.
 - stresses in, (51) 289; (55) U.S.D.A. 278.
 - tests, methods, (52) 87.
 - wear tests, (51) U.S.D.A. 588.
- paving operation, organization and equipment, (54) U.S.D.A. 780.
- permeability, (55) 780.
- plain and reinforced, treatise, (56) 882; (60) 674.
- popular mechanics handbook, (52) 585.
- porous, water flow through, (58) 482.
- Portland cement, resistance to sulfate waters, (59) U.S.D.A. 678.
- products precast, manufacture and uses, (59) 376.
- protection against alkali, U.S.D.A., (51) 587; (54) 681; (58) 78.
- quality, effect of damp sand curing, (52) 87.
- quality, factors affecting, (51) Mich. 587.
- reinforced, construction, treatise, (58) 582.
- reinforced, design, (53) 284.
- reinforcing bars, tests, (55) U.S.D.A. 583.
- research in, (55) 584.
- roads—
 - analysis of stresses in, (57) U.S. D.A. 475.
 - construction, efficiency in, U.S. D.A., (54) 384, 580, 681, 780; (55) 76.
 - construction, losses in, (56) U.S. D.A. 480.
 - cores from, modulus of elasticity, (60) U.S.D.A. 378.
 - cracks in, (53) U.S.D.A. 789.
 - curing period, reducing, (51) 85.
 - strength of cores drilled from, effect of capping, (53) U.S.D.A. 284.
 - white joint filler for, (51) U.S. D.A. 589.
- rollers, construction and use, (55) 782.
- specimens exposed to alkali soils and waters, data, (59) 178.
- static and impact strains in, (55) U.S. D.A. 583.
- strength, (55) U.S.D.A. 583.
- strength characteristics, (60) U.S.D.A. U.S.D.A. 177.
- strength, effect of grading sand, (56) 278, 481.

Concrete—Continued.

- strength, effect of quality of Portland cement, (58) U.S.D.A. 78.
- strength, effect of shape and character of aggregate, (59) 83.
- strength, effect of temperature, (60) 674.
- strength in tension and compression, (52) 687.
- strengthening and indurating with sulfur, (56) 77.
- structures, design, textbook, (51) 187.
- structures, design, treatise, (58) 375.
- structures, formwork for, design and construction, treatise, (58) 482.
- textbook and laboratory manual, (60) 779.
- thermal conductivities, (60) 583.
- tile, studies, (51) Wis. 483.
- transverse and compressive tests, (55) U.S.D.A. 278.
- use on New Zealand farms, (58) 681.
- v. timber for bridge floors, (56) U.S. D.A. 177.
- virolithic, tests, U.S.D.A., (55) 278; (58) 283.
- waterproofing compounds for, (60) 583.
- waterproofing, methods, (58) Mich. 482.
- wear tests, (59) 584.
- work, water gain and allied phenomena, (56) 882.
- yearbook, 1924, (51) 388.
- Condensation, amylogenic—
 - estimating level of threshold, (58) 524.
 - in plant cells, variations of threshold, (59) 217.
- Condensed milk, *see* Milk.
- Condenser for distilling oils of wide boiling range, (52) 11.
- Conferences in child health centers, standards for, (55) 590.
- Congress for feeding of cattle and dairy control, proceedings, (56) 770.
- Congresses, prospective, notes, (56) 500.
- Conidia, photographing on agar mounts, (59) 842.
- Coniferous—
 - disease, notes, (60) 647.
 - heart rot, studies, (55) 250.
 - leaves, dehydration rates, relation to pentosans in, (57) 420.
 - nursery stock, shading, (52) 643.
 - rots, control, (55) 351.
 - seed extraction, improved practices in, (55) 443.
 - seed, germination, stimulating, (59) 838.
 - seedlings—
 - and transplants, water content, (58) 841.
 - damping-off, control, (51) 540; (57) Ohio 144, Ohio 254.
 - inoculation with damping-off fungi, (53) 356.
 - key to identification, (53) 41.

- Coniferous—Continued.
 seedlings—continued.
 light requirements, (54) 142; (56) 627; (59) 336; (60) 624.
 management, (59) 839.
 seeds, time for sowing, (57) 537.
 timber lands, cleared, low productivity in, (60) 511.
 timber soils, fertility, (57) Idaho 709.
 timber soils, studies, (52) Idaho 816.
- Conifers—
 Australian, anatomy, (60) 444.
 behavior, (55) Can. 835.
 breakage loss in logging, (60) 48.
 carbon dioxide assimilation by, (55) 519.
 cleavage polyembryony in, (55) 241.
 cold resistance in, pentosan theory, (57) 420.
Cryptoporus volvatus on, relation to insects, (59) 348.
 damage from red squirrels, (58) 646.
 damping-off of taproots, (54) 549.
 defoliation, cause, (57) 354.
 deposits in stomatal pits, (56) 27.
 exotic, in Sweden, hardiness, (53) 644.
 growing on the farm, (54) U.S.D.A. 43.
 growth, effect of position, (56) Mich. 899.
 growth rate, (59) Mich. 45.
 hardy, treatise, (52) 841.
 in Arboretum at Oxford, handbook, (55) 840.
 in raw humus, development, (60) 215.
 in seed beds, control of damping-off, (59) 348.
 junipers, and yew, treatise, (57) 143.
 leaf structure, relation to light and moisture, (60) 122.
 mycorrhiza fungi of, importance in Swedish forests, (55) 351.
 mycorrhizas of, effect of pH, (55) 350.
 natural regeneration, insolation as factor, (53) 539.
 northeastern, seed destruction by squirrels, (52) 240.
 nuclear degeneration in wood, (53) 423.
 of United States, beetles affecting, (54) 662.
Phomopsis disease of, (57) 450, 551.
 reproduction in, factors affecting, (55) 343.
 resin formation in, (52) 427.
 roots, mycorrhiza affecting, (51) 227.
 susceptibility to *Armillaria mellea*, (59) 646.
 transpiration studies, (52) 345.
 value on sand ridge, (51) Mich. 540.
- Coniophora cerebella—
 cultural characters, (54) 255.
 notes, (57) 552.
- Coniosporium gecevi, notes, (53) Iowa 749.
- Coniothyrium—
 diplodiella, notes, (51) 542; (52) 549; (55) 453; (59) 547.
 diplodiella on grape in Japan, (53) 151.
- Coniothyrium—Continued.
 diplodiella, studies, (52) 849; (53) 250.
 fruit spot, notes, (53) 547.
 fückelii, notes, (57) 540; (60) 553.
 olivaceum, notes. (56) N.Y.State 850
 werusdorffiae, notes, (58) 41.
- Connecticut—
 College, notes, (51) 496; (54) 300; (55) 396; (56) 196; (57) 98, 495; (59) 397, 696; (60) 796.
 Dairymen's Association, proceedings. (52) 676; (54) 571.
 State entomologist, general index to reports, (55) 898.
 State Station, notes, (52) 398; (53) 697; (54) 699; (55) 396; (57) 395; (60) 200.
 State Station, report, (53) 96; (54) 598; (55) 394; (59) 98, 99; (60) 498, 794.
 State Station, report of director, (51) 196; (53) 496; (59) 99.
 State Station, report of Tobacco Station, (65) 298.
 State Station, semicentennial celebration, 1875-1925, (55) 898.
 State Station semicentennial, editorial, (53) 601.
 Stations, notes, (51) 496, 695.
 Storrs Station, notes, (54) 300; (55) 396; (57) 98, 495; (59) 397, 696; (60) 99.
 Storrs Station, report, (51) 694; (53) 299; (55) 96, 898; (56) 899; (59) 498; (60) 599.
 transportation survey, (55) U.S.D.A. 583.
- Conopidae, North American, list, (57) 760.
- Conotrachelus—
 anaglypticus, studies, (52) 157.
 nenuphar, *see* Plum curculio.
 psidii n.sp., notes, (51) 59.
 seniculus, studies, (53) 159.
- Constipation, high fat diets for, (56) 895.
 Consumption, economics of, (60) 884.
- Contarinia—
 nasturtii, notes, (58) 162; (59) 536.
 pisi, new damage to peas by, (58) 162.
 pyrivora, *see* Pear midge.
 sorghicola, *see* Sorghum midge.
 tritici and Sitodiplosis mosellana, differentiation, (60) 850.
 vaccinii n.sp., description, (54) 756.
- Contracecum spp., notes, (56) 56.
- Convolutulus arvensis in grain seed, (53) 36.
- Cook book, California, (55) 291.
- Cookery—
 and foods textbook, (56) 491, 690.
 courses of Woman's Institute, (56) 86.
 research, bibliography, (58) 386.
- Cooking—
 and serving, art of, treatise, (56) 792.
 appliances, electrical, for domestic purposes, (58) 395.

Cooking—Continued.

- electric, effect on load condition of power system, (54) 95.
- electric, load factor, (59) 695.
- principles, treatise, (55) 693.
- recipes of New England, (56) 491.
- school and home, textbook, (54) 86.
- treatise, (60) 89.
- with electricity, cost, (59) 585.

Coolidge, L. H., obituary note, (55) Mich. 97.

Cooperation—

- bibliography, (56) 485.
- Community Settlement, and Credit Act in New South Wales, (53) 297.
- in livestock and meat industry, (57) 762.
- papers on, (53) 598.
- place in social movements, (54) 588.

Cooperatives—

- Association, Staple Cotton, operation, (55) U.S.D.A. 689.
- associations, financing, papers on, (60) 682.
- associations in Palestine, (60) 683.
- associations in South Wales, (58) 890.
- associations, joint use of sales organization by, (58) U.S.D.A. 890.
- associations, membership relations, (60) U.S.D.A. 486.
- associations, surplus control and business methods, (60) 683.
- credit in Finland, (57) 684.
- marketing, *see* Marketing.
- movement in Russia, treatise, (52) 95.
- movements in Illinois, (55) 886.
- organizations in United States, (56) 690.
- organizations of agricultural producers, relation to consumers in France, (58) 685.
- organizations of producers and consumers, (60) 590.
- societies, ideals and problems, (56) 388.
- societies in New South Wales, organization, (53) 297.
- societies in Punjab, (52) 790.
- societies in Wales, (55) 689.
- societies of producers and consumers, (55) 587.
- societies of Wales, control of credit, (58) 888.
- societies, organization, (53) 392.
- societies work in devastated regions of France, (53) 94.

Cooperia bisonis, new nematode from buffalo, (53) 553.

Cooperia oncophora in a calf, description, (58) 878.

Copidyra cosyra, enemy of cactus, (60) 556.

Copper—

- absorption from artificially colored vegetables, (52) 259; (54) 891.
- acetates as nonstaining sprays for grapes, (52) 549.

Copper—Continued.

- acetates for grape ripe rot, (55) 454.
- and lime-sulfur sprays, anticryptogamic values, (52) 746.
- as supplement to iron for hemoglobin building, (59) 893.
- association with vitamin A, (53) 864.
- biological function in animal metabolism, (56) 793.
- carbonate—
 - dust, advantages for smut control, (57) 446.
 - dust for oat smut, efficiency, (55) 845.
 - dust for smut control, cooperative experiments, (51) 650.
 - dust, fungicidal value, (55) 544.
 - duster, miniature, (52) 746.
 - dusting machines, (54) Calif. 78.
 - for smut control, (52) Kans. 445; (54) 46, 47, 146, 147, 845.
 - for wheat smut control, (51) Wash.Col. 149.
 - for wheat smut, equipment, (55) 180.
 - for wheat stinking smut, (51) 247; (52) Kans. 50, Mich. 50; (56) U.S.D.A. 48.
 - fungicidal value, Oreg., (55) 650, 651.
 - grain treatment, directions, (55) U.S.D.A. 652.
 - high grade, for smut control, (60) Mont. 747.
 - on treated wheat, effect on mice, (56) 457.
- chloride action on respiration, latent period in, (59) 25.
- chronic poisoning, relation to hemochromatosis, (53) 267; (55) 492.
- contamination in foods, (57) 891.
- content of apricots, (52) Calif. 62.
- deposits on eating apples, (54) 258.
- determination in foods, (56) 505.
- determination in mold-proofed fabrics, (57) 611.
- dust for vegetable diseases, (58) Ill. 339.
- dust, insecticidal value, (60) Ill. 231.
- dusts and sprays, relative efficiency, (56) N.Y.Cornell 351.
- dusts for wheat stinking smut, (51) Ohio 247.
- dusts, tests, (56) Del. 348.
- effect on vitamin C of milk, (51) 568.
- fungicides and hydrocyanic acid fumigation, incompatibility, (58) 845.
- fungicides, effect on hydrocyanic acid gas fumigation, (56) 658.
- fungicides, modifications in, (51) 548.
- fungicides, toxicity studies, (51) N.H. 47.
- hydroxide as substitute for Bordeaux, (53) 241.
- hydroxide, colloidal, as fungicide, (51) 47.
- in human and cow's milk, (51) 64.

Copper—Continued.

- in Kentucky bluegrass, (56) 804.
 - in milk, (60) 491.
 - in milk, relation to copper in food products, (59) 168.
 - in milk, relation to vitamin potency, (53) 580.
 - in nutrition, (59) 893.
 - in tissues, estimation, (53) 206.
 - indispensability in fungicides, (52) 148.
 - injury to cabbage, (56) Del. 324.
 - lime dust for apples, (55) 53.
 - lime dust for potatoes, results, (54) 747.
 - number for glucose, (58) 115.
 - number of cellulose, determination, (54) 311.
 - number of cotton cellulose, determination, (51) 715.
 - occurrence and function, (53) 310.
 - plating, solution by milk and whey, (53) 277.
 - powders, studies, (58) 444.
 - relation to disease among Koreans, (53) 659.
 - relation to hemoglobin in rat blood, (60) 491.
 - salts, effect on blood regeneration, (60) 695.
 - salts, effect on crucifer seedlings, (57) 416.
 - salts, value in viticulture, (52) 746.
 - seed treatment experiments, (60) Miss. 747.
 - solutions, reduction by glucose, effect of sodium trichloroacetate, (51) 505.
 - sprays, chemistry of, (58) 852.
 - sprays, composition and action, (58) 250.
 - sprays, modification of leaf-surface conditions by, (52) 746.
 - sulfate, anthelmintic value, (52) Ohio 84.
 - sulfate, effect on plant growth in peat soils, (58) Fla. 209.
 - sulfate, effect on unproductive muck soils, (59) 339.
 - sulfate, fertilizing value, (53) 517.
 - sulfate for smut control, (57) 446.
 - sulfate for wheat stinking smut, (51) 247.
 - sulfate, fungicidal value, (55) 544, Oreg. 651.
 - sulfate toxicity to *Tilletia tritici* spores, (53) 542.
 - sulfate treatment for stomach worms, (52) Ohio 483.
 - sulfates, basic, preparation and effectiveness, (56) 146.
 - toxic action on *Nitella*, (59) 25.
 - toxicity, (52) 746.
 - toxicity for fungi, (53) 542.
- Copperas, chlorinated, a new coagulant, (60) 277.
- Copra—
 manufacture in Philippines, (54) 264.

Copra—Continued.

- meal as supplement to camote vines for pigs, (53) 575.
 - meal, fertilizing value, (56) Guam 236.
 - meal, sugars in, isolation and identification, (54) 7.
 - meal, toxicity, (55) 464.
 - value for hens, (53) 577.
- Coprinus micaceus*, notes, (56) N.Y.State 140.
- Coprology, microscopic, treatise, (59) 550.
- Coproplagy as factor in rat nutrition, (59) 490.
- Coptosoma ostensum* and its enemy, (54) 754.
- Coptotermes formosanus*, notes, (57) 654.
- Coraeus rubi*, on roses, (59) 158.
- Cordyceps barberi*, notes, (56) 557.
- Cordyceps*, notes, (60) 162.
- Cordyline* spp., culture in New Zealand, (56) 334.
- Corecoris batata*, studies, (56) 552.
- Corecoris diffusus*, notes, (57) 856.
- Coriolus* spp., notes, (54) 150.
- Cork formation, cause, (51) 329.
- Cork lined concrete houses, (54) 482.
- Cork oak of Morocco, insects affecting, (59) 154.
- Corn—
 absorption of aluminum and iron by, (53) 247.
- acre of, sampling, (56) 227.
- agronomic characters, (58) Ill. 323.
- albinism in, (57) 519.
- aleurone color inheritance, (51) 335.
- and alfalfa hay, feeding value, (60) Ill. 69.
- and beet tops pasture for lambs, (53) U.S.D.A. 370.
- and corn growing, textbook, (57) 89.
- and corn growing, treatise, (60) 433.
- and corn products, foreign trade in, (60) U.S.D.A. 485.
- and hog prices, forecasting, (52) 892.
- and hog ratio, Ohio, (55) 684; (59) 180.
- and Italian rural life, (58) 632.
- and oil meal, feeding value, (56) Ohio 261.
- and peas, hogging down, (60) N.Dak. 69.
- and products, nutritive value, bibliography, (53) Ill. 168.
- and products, uses, (53) U.S.D.A. 614.
- and protein supplement v. corn for pigs, (60) Miss. 363.
- and soy beans, culture, (52) Mo. 436; (53) Minn. 130, Miss. 131.
- and soy beans, feeding value, (54) Ill. 326.
- and soy beans for silage, (54) Conn. Storrs, 436.
- and soy beans, hogging down, (51) Ohio 469, Mo. 773, Ohio 872; (53) Mo. 70, Minn. 170; (55) N.C. 263.

Corn—Continued.

- and soy beans mixture, tests, (56) Wis. 732, Iowa 822, Kans. 822; (59) N.Dak. 825.
- and soy beans mixture, yield, (55) N.Dak. 528.
- and soy beans, value, (54) Ky. 327.
- and tankage v. barley and tankage, feeding value, (53) Minn. 171.
- and tankage v. corn, feeding value, (53) Minn. 171.
- and teosinte hybrids, inheritance in, (51) 430.
- and velvet beans, hogging down, (54) S.C. 666.
- anomalies in, (56) 815.
- as orchard intercrop, (58) Can. 837.
- as sugar crop in Russia, (52) 736.
- as supplement to camote vines for pigs, (53) 575.
- A-Tester Yellow Dent strains, breeding, (59) Mich. 622.
- bacterial leaf spot, (55) Iowa 541.
- bacterial stalk rot, (55) Ark. 847; (56) Ark. 347; (58) 650.
- bacterial wilt resistance in inbred strains, (59) 847.
- beetle in Rhodesia, (55) 460.
- Belt, agricultural readjustment in, (53) 896.
- Belt Meat Producers' Association, proceedings, (52) 168; (56) 70.
- Belt, 1927 season in, (58) U.S.D.A. 413.
- billbug, studies, S.C., (56) 553; (60) 754.
- black-bundle disease, (51) 151.
- Borer Act in operation, (60) 843.
- borer, European—
 - account, (59) 655.
 - accumulation, effect of soil type, (58) Ohio 664.
 - and related species in Ohio, (57) 361.
 - area, farm management in, (58) Mich. 487.
 - bacterial diseases of larvae, (59) 252.
 - behavior, (53) 361.
 - bibliography, (54) 55.
 - biology, (57) N.H. 262.
 - biology and control in Germany, (60) 560.
 - caterpillars mistaken for, (57) Iowa 262.
 - clean-up campaign in New York State, (60) 456.
 - clean-up campaign, results, (59) 60.
 - clean-up work in 1926, (57) Conn.State 161.
 - clean-up work in 1927, (57) U.S.D.A. 61.
 - conditions, crop substitutes for corn under, (59) Ohio 222.
 - conditions, farm practices under, (59) U.S.D.A. 87.

Corn—Continued.

- borer, European—continued.
 - conferences, reports, (59) 655.
 - control, (52) 855; (55) Ohio 152; (57) Ohio 161; (59) Conn. State 455; (60) Pa. 356.
 - control and quarantine regulations, (54) 755.
 - control by machinery, (60) Ill. 276.
 - control by plowing, (58) Mich. 456.
 - control in Ontario, (51) 160.
 - control, machinery for, (56) 179, Mich. 398.
 - control program, (56) 556.
 - controlling factors in Europe, (59) U.S.D.A. 354.
 - decrease in New England, cause, (53) 653; (56) 61.
 - defense against, (60) Ill. 222.
 - description, (55) Wis. 558.
 - dormant period, (56) 859.
 - ecological habitats, (57) 858.
 - effect of submergence during hibernating period, (58) 260.
 - egg laying, effect of light, (55) 762.
 - environmental studies, (51) 160.
 - food preferences, (58) 758.
 - food preferences, corn v. mugwort, (60) Mich. 456.
 - hibernation, (58) 162.
 - host selection in, (60) 251.
 - imported parasites of, (58) U.S.D.A. 265.
 - in America, (53) 256.
 - in Argentina, (54) 56.
 - in Canada, (51) 761; (57) 858; (58) 158; (59) 60; (60) 843.
 - in Connecticut, Conn.State, (51) 852; (53) 450; (55) 252.
 - in Guam, (56) Guam 251.
 - in Indiana, (57) Ind. 165.
 - in New England, winter mortality in, (53) 256.
 - in Ohio, (51) 160; Ohio 255, Ohio 453; (57) 165; (58) 754.
 - in Old World and Canada, (54) 755.
 - in Ontario, (52) 355; (55) 54.
 - in Pennsylvania, (54) 56; (58) 345.
 - in Quebec, (59) 552.
 - in South Africa, (54) 455; (55) 555.
 - in South Germany, (60) 844.
 - in weeds and truck crops in Ohio, (57) 858.
 - in Wisconsin, status, (59) Wis. 56.
 - infection by entomogenous fungi, (59) 459.
 - infestation and fertility, (59) 60.
 - infestation and livestock industry, (57) 763.
 - infestation, effect of soil type, (59) Ohio 252.

Corn—Continued.

- borer, European—continued.
 infestation, relation to date of corn planting, (53) Ohio 556.
 infestation, status in 1924, (54) 152.
 international investigations, reports, (60) 651.
 International Organization, conference, (60) 651.
 legislation in Canada, (51) 160.
 lepidopterous larvae resembling, (53) 559.
 life history, (51) N.H. 159.
 life history and bionomics, (57) U.S.D.A. 164.
 life history and habits, (53) N.H. 451.
 life history studies, (55) N.H. 853.
 mechanical control, (58) 883.
 menace in Ohio, (54) 755.
 methods of combating, (56) U.S.D.A. 61.
 migratory habits, (52) 456.
 mortality of larvae in early instars, (54) 152.
 new experiments in control, (60) 652.
 new protozoan parasites, (58) 260.
 notes, (59) N.H. 248; (60) Guam 844.
 number of generations in America, (54) 157.
 overwintering larvae, destruction by birds, (53) 757.
 papers on, (56) 458.
 parasite of, (59) Guam 555.
 parasite of, life history, (58) 561.
 parasites of, (51) 160; (60) 843.
 parasites of, introduction into Ontario, (54) 152.
 popular account, (54) 755.
 problem, status of, (59) 355.
 progress of work, (60) 651.
 quarantine, (59) Conn.State 99.
 quarantine 43, operation, (51) 161.
 reduction in standing corn, (54) 152.
 research, fundamental phases, (59) 60.
 research projects and results, (51) 159.
 research, trend, (58) Ohio 664.
 resistance of larvae to submergence, (56) N.H. 360.
 scouting, quarantine, and control, (58) U.S.D.A. 559.
 seasonal history in various climates, (57) 658.
 situation in 1925, (55) 357.
 situation in Ontario and Ohio, (60) 165.
 situation, summary, (60) 357.

Corn—Continued.

- borer, European—continued.
 spread and control, (56) Ill. 556; (58) Ill. 663; (60) Conn.State 751.
 spread and infestation, (57) U.S.D.A. 165.
 spread in Ohio, (52) Ohio 756.
 status and methods of control, (58) U.S.D.A. 259.
 status in Michigan, Mich., (54) 458, 555.
 status in 1924, (53) 361.
 studies, (57) 361; (59) Ohio 249.
 summary, (53) 51; (54) 458; (55) Iowa 155, U.S.D.A. 459, 761; (57) 61, Mo. 858.
 two generations of, factors affecting, (60) 560.
 two-year study, (55) 459.
 v. corn ear worm, (51) 56.
 Borer Substation, (55) Mich. 395.
 bran, feeding value, (55) 163.
 breeding, (53) 230, Conn.State 434; (58) U.S.D.A. 735.
 breeding, at Bergamo, Italy, (51) 234.
 breeding, ear-row system (54) Ill. 526.
 breeding experiments, (51) Mich. 133, Miss. 134, N.J. 636, Hawaii 740, N.Dak. 832, P.R. 833, V.I. 833; (52) Mich. 334, S.C. 528, Tenn. 528, N.J. 732; (54) Tenn. 231, Nebr. 328, Mich. 634; (55) N.J. 31, Minn. 227, Minn. 228, N.C. 228, V.I. 333, La. 433, U.S.D.A. 433, Miss. 527, N.Dak. 527, Miss. 636, Nebr. 636; (56) Ark. 332, Ill. 333; (57) Ohio 125, Mo. 424, P.R. 425, La. 522, Nebr. 522; (58) Miss. 31, Ark. 321, Ill. 322, Mo. 428, P.R. 531; (59) Ga. 221, Ohio 222, N.J. 325, Mich. 432, Hawaii 626, N.C. 728, Tex. 729; N.Dak. 825; (60) Ill. 222, P.R. 731, Ark. 812.
 breeding for productiveness, (59) Ill. 433.
 breeding methods, (52) Minn. 31; (55) U.S.D.A. 25; (56) 128.
 breeding results, (54) Ind. 332.
 breeding work and genetic studies, (58) 218.
 brown pericarp color in, (55) 633.
 Burr-Leaming, description, (57) 526.
 Burr-Leaming, yields, (51) Conn.State 127.
 canned, black discoloration in, (51) 508.
 canned, bulletin on, (59) 389.
 canned, discoloration in, Ill., (56) 234, 393.
 canned, spoilage in, (59) Iowa 91.
 canning, thermophilic contamination in, (60) 490.
 cans, special enamel for, (51) 508.
 carbohydrate formation in, (51) 626.
 carbohydrates in, variation, (56) 627; (58) S.Dak. 724.

Corn—Continued.

- carpellody in, (56) 29.
 catalase activity and respiration, (60) 522.
 characters, biometrical analysis, (51) Va. 735.
 check-row planting, (52) 832.
 chinch bug resistant types, (56) Ill. 229.
 chlorophyll characters in, inheritance, (53) 229.
 chlorophyll defects in, (53) 29.
 chlorophyll deficiencies, frequency of appearance, (53) 226.
 chlorophyll deficiencies, genetic study, (57) 721.
 chlorophyll in, maternal inheritance, (53) 229.
 chlorophyll mutation in, (58) 824.
 chlorophyll variation and its linkage relations, (58) 220.
 chop, feeding value, (52) Kans. 477.
 chops v. rice meal for cows, (55) Ark. 66.
 chromosome VIII in, (56) 328.
 chromosome numbers in, (52) 328; (53) 523; (60) N.Y.Cornell 629.
 chromosomes in, (54) 525; (57) 122.
 chromosomes in, supernumerary, (58) 526.
 close-bred types, experiments, (51) Del. 124.
 club members, studies and demonstrations for, (51) 493.
 cob pink mold, notes, (57) 145.
 cold-resistant, breeding experiments, (51) Wis. 434.
 competition between adjacent rows, (58) 829.
 composition and maturity, (54) N.Dak. 330.
 composition and yield, effect of early planting, (60) Conn.Storrs 534.
 composition, effect of irrigation water and manure, (54) 331.
 composition, effect of plant injury and root rot, (56) Ill. 546.
 composition, effect of soil temperature and moisture, (53) 748.
 constricted ears in, (56) 429.
 continuous cropping, effects, (57) Ohio 114.
 cost of cultivating, (59) Ohio 284.
 cost of production, (52) W.Va. 589; (53) U.S.D.A. 489; (54) Mo. 782; (55) 182; (56) Ohio 82, Ill. 385; (57) 480; (58) Ark. 378; (59) Wis. 483.
 cost of production and profit, (58) Ill. 379.
 cost of production in South Africa, (54) 80.
 cost of production on demonstration areas, (51) La. 891.
 crop, bumper, surplus, (55) Iowa 687.
 crosses, characteristics, (60) Conn. State 728.

Corn—Continued.

- crosses, inheritance of chemical characters, (53) Iowa 730.
 crosses, inheritance studies, (59) Iowa 39.
 crosses, linkage in, (54) 825.
 crosses, reciprocal, equality of kernel row numbers, (60) 327.
 crosses, studies, (59) Tex. 729.
 crosses, yields, (54) U.S.D.A. 526.
 crossing for hybrid vigor, (54) Conn. State 636.
 crossing-over in, (58) Mo. 428.
 crossing-over in, variability, (56) 330; (57) Mo. 425.
 cultivation experiments, (53) Ill. 32; (54) Ill. 326; (56) Wis. 778; (57) Ark. 629.
 cultivation methods, (56) Ark. 332.
 cultural and planting tests, (56) Kans. 822.
 cultural methods, (53) Okla. 31.
 culture, (53) Ariz. 433; (59) N.Mex. 731.
 culture and climatic conditions in Argentina, (59) 417.
 culture, continuous, with green manure crops, (55) N.J. 19.
 culture experiments, (51) Miss. 134; (52) Miss. 226, Kans. 433; (53) U.S.D.A. 132, Miss. 231, U.S.D.A. 333; (54) U.S.D.A. 132; (55) U.S. D.A. 132, Miss. 527, Miss. 636; (56) Mont. 133; (57) Alaska 522; (58) 429; (59) Wis. 33, Tex. 729; (60) Ohio 636, Ark. 812.
 culture experiments in Philippines, (60) 327.
 culture in Red River Valley, (53) Minn. 136.
 culture in Rumania, (54) 441.
 culture on irrigated land, (56) Mont. 434.
 culture under dry farming, (58) U.S. D.A. 324.
 culture with legume and nonlegume green manure crop, (52) N.J. 721.
 culture with legume green manure, (51) N.J. 622.
 cutting boxes and shredders, factor in borer control, (54) 153.
 defective endosperm in, (51) 229.
 defective endosperm in, inheritance, (55) W.Va. 129.
 deficiency in growth-promoting vitamins, (55) Ind. 64.
 degerminated, feeding value, (53) Ind. 173.
 development, effect of hail injury, (59) 132.
 digestibility for pigs, (53) 373; (54) 467.
 Diplodia disease, studies, (55) 848.
 disease resistance, relation to pentosan content, (59) Wis. 47.
 disease, unknown, (57) 543.

Corn—Continued.

- diseases near Nanking, control, (57) 640.
 diseases, notes, (51) Ind. 844; (57) Tenn. 639.
 diseases, seed treatments for, (58) 549.
 diseases, seed-borne, control, (60) Miss. 51.
 diseases, seed-borne, studies, (56) Ill. 348.
 diseases, studies, (54) Ill. 346; (56) 449; (59) 539, Ind. 748.
 dominant mutation in, (52) 628.
 downy mildew, studies, (59) 342.
 drought resistant strains, (54) P.R. 634.
 dry rot, notes, (52) 649; (53) Iowa 749.
 dry rots, control, (56) 544; (58) Iowa 748; (59) Iowa 51.
 drying, studies, (58) Ill. 373.
 duty of water for, N. Mex., (54) 680; (55) 478.
 ear characters, effect of fertilizers, (52) 531.
 ear rot, notes, (56) 846.
 ear rot, studies, (56) S.Dak. 545, S.Dak. 649; (57) 348, 443; (58) Ill. 338, S.Dak. 748; (60) Ill. 238.
 ear worm, control, (51) Mo. 760; (57) Calif. 256.
 ear worm, control, relation to time of planting, (51) 361.
 ear worm in Iowa, (59) 552.
 ear worm, notes, (51) La. 853; (55) 555; (56) 155, Kans. 856; (59) Iowa 55.
 ear worm on tomatoes, (55) Tenn. 154; (58) 858.
 ear worm, studies, (52) Kans. 452.
 ear worm v. corn borer, European, (51) 56.
 earliness in, tasseling and silking as criteria, (57) 526.
 ears, silkless, inheritance, (54) 630.
 effect of acid soil, (54) 213.
 effect of borax, (51) N.J. 625.
 effect of continuous selection for ear type, (53) U.S.D.A. 830.
 effect of cowpea green manure, (57) Tenn. 128.
 effect of defective endosperm, (58) 27.
 effect of fertilizers and hybridization, (61) Va. 742.
 effect of fertilizers on maturity and yield, (59) Ohio 434.
 effect of foreign pollen on kernel weight, (52) 336.
 effect of length of day, (60) P.R. 740.
 effect of lime, (54) Fla. 326.
 effect of methods of cultivation, (60) Ark. 812.
 effect of preceding crop, (52) R.I. 23; (59) Iowa 31.
 effect of sulfur, (59) Tex. 730.
 effect of temperature on phosphorus content, (55) Ind. 42.

Corn—Continued.

- effect of varying moisture supply, (54) Mo. 233.
 effects of lethal factor on heterozygote in, (59) 126.
 electroculture experiments, (51) 232.
 endosperm and chlorophyll characters, genetic relation, (56) 29.
 endosperm character, relation to water absorption, (57) 728.
 endosperm characters in, (55) Conn. State 428.
 endosperm, phytosterols of, (52) 110, N.Y.State 708.
 endosperm removal, (54) 522, 523.
 endosperm, removal and restoration, (58) 819.
 experiments, (56) Miss. 135.
 experiments in Philippines, (55) 434.
 experiments on dry land, (56) Mont. 434.
 factor essential for reproduction in, (53) 62.
 fall irrigation experiments, (54) Wash.Col. 875.
 fall plowing for, (57) U.S.D.A. 524.
 fall seeding experiments, (52) 633.
 false polyembryony in, (56) 30.
 fasciated kernels and related abnormalities in, (56) 29.
 feeding, hogging down v. dry lot, (58) Ill. 358.
 feeding value, (52) Mo. 369; (53) Can. 878; (54) 864; (55) Nebr. 60; (57) 69; (60) Ohio 461.
 fertilizer applications to hill, (60) Oreg. 731.
 fertilizer experiments, (51) Minn. 119, Miss. 134; Wis. 421, R.I. 741; (52) 132, S.C. 528; (53) Miss. 131, Miss. 333, Mo. 431, La. 514, Can. 530, N.C. 735, Ohio 735; (54) Ohio 123, Ga.Coastal Plain 131; (55) Miss. 228, Ohio 434, Miss. 636, Nebr. 636, Del. 827; (56) Ga.Coastal Plain 523, S.C. 525, Wis. 715, Miss. 731, Iowa 811, Fla. 821; (57) N.C. 214, Ga. 225, Mo. 411, Mo. 412, Mich. 614; (58) Ill. 333, S.C. 632, Ga.Coastal Plain 732; (59) Ala. 35, Miss. 131, S.C. 131, Ohio 223, Ala. 624, Miss. 824; (60) Ga.Coastal Plain 132, Oreg. 731, S.C. 732, West.Wash. 732, Ark. 812.
 fertilizer experiments, triangular, (53) Ga. 230.
 fertilizers, methods of applying, (58) Mo. 419.
 field, determination in canned sweet corn, (58) 807.
 flakes, irradiated, effect, (53) 568.
 flint, hogging down, (60) Mont. 764.
 following alfalfa, yield, (51) U.S.D.A. 135.
 for hominy purposes, studies, (55) 412.
 for North Dakota, (58) N.Dak. 328.
 for silage, quality, (56) Ill. 363

Corn—Continued.

- for silage, secondary crops with, (51) Wis. 435.
- for silage, seeding experiments, (56) Conn.Storrs 821.
- for silage, time of plowing and manuring, (56) Utah 525.
- for silage, variety tests, (51) N.H. 135; (52) Utah 732.
- forage and seed yields after other crops, (59) Wash.Col. 32.
- forage value, (59) 130.
- Fusaria on, (51) 543.
- gametophyte, expression of Mendelian factors in, (58) 26.
- genetic analysis, (53) Mo. 426.
- genic disturbance of meiosis in, (60) 323.
- germ meal, feeding value, (53) Wis. 470.
- germinating, effect of paradichlorobenzene, (51) N.J. 631.
- germinating, histological and chemical changes in, (55) 630.
- germination and growth, effect of eosin and erythrosin, (57) 416.
- germination and yield, effect of broken pericarp, (52) 649.
- germination, effect of carbon bisulfide, (58) 430.
- germination, maturity, and yield, (57) Va. 127.
- germination, maturity, and yield, correlation, (51) 828.
- germination tests, (55) Ohio 132.
- germs, antineuritic properties, (54) 865.
- germs, vitamin B in, (51) Ind. 874.
- gigas type, (54) 632.
- glossy seedlings in, (59) 126.
- glutelins of, (60) 202.
- gluten feed as protein supplement for dairy cows, (59) Iowa 73.
- gluten feed, feeding value, (56) Iowa 266.
- golden plant color, gene for, (56) 428.
- green manuring experiments, (57) Ohio 212; (59) N.J. 319; (60) Ga.Coastal Plain 132.
- ground, v. cottonseed meal for fattening steers, (56) Kans. 364.
- ground yellow, feeding value, (56) Ariz. 764.
- growing enterprise, management, analysis, (53) 495.
- growing enterprise, operative jobs, analysis, (58) 82.
- grown in Java, nutritive value, (59) 492.
- growth, effects of method of applying fertilizers, (57) Iowa 526.
- growth in different soils, (54) Ky. 344.
- growth rate, (56) Kans. 813.
- growth, relation to climatic conditions, (52) 632.
- growth, relation to environment, (53) 134.

Corn—Continued.

- growth, relation to seed weight, (53) N.J. 23.
- harvesting, (59) Iowa 81.
- head smut, notes, (52) Idaho 844; (57) 48, 443.
- head smut, studies, (60) 150.
- heritable characters, (51) 335, 828; (53) 29; (54) 629, 630; (56) 518; (58) 320, 527; (59) 821.
- hernious seeds in, (58) 430.
- high ear and long husk strains, (55) Miss. 527.
- hog ratio in Ohio, (53) Ohio 895.
- hogging down, (51) Minn. 174, N.Dak. 872; (52) Mich. 74, Kans. 469, Ky. 470; (53) U.S.D.A. 372, U.S.D.A. 373, Ohio 575, Iowa 774, 870; (54) U.S.D.A. 163, Iowa 860; (55) N.J. 62, U.S.D.A. 162, Mich. 361, Iowa 466; (56) Ohio 371, S.C. 565, Iowa 864; (57) N.J. 69, N.C. 269, Mo. 461, U.S.D.A. 566, N.J. 764; (59) Iowa 67, N.Dak. 867.
- hogging down, mineral mixture as supplement, (53) 571.
- hogging down, profits, (57) Mich. 867.
- hogging down with lambs, (51) N.Dak. 870.
- homegrown, feeding value, (60) Wyo. 765.
- hybrid, correlated characters in, (54) 824.
- hybrids, inheritance of chemical characters, (55) Iowa 526.
- hybrids of inbred strains, yields, (59) Iowa 31.
- hybrids, segregation of waxy and starchy carbohydrates in, (57) 821.
- hybrids, studies, (57) Hawaii 326.
- hybrids, testing method, (56) 519.
- hybrids, variety tests, (56) Can. 432.
- hybrids, yields, (51) N.Dak. 432; (56) Iowa 822.
- immature, feeding, (54) Ohio 197.
- improvement, (51) Nebr. 831; (52) Ill. 227; (53) N.C. 735; (56) Miss. 530, Kans. 822; (57) Okla. 226, Tenn. 628.
- improvement by inbreeding, (59) Wis. 40.
- improvement, effect of genetic research, (56) 29.
- improvement, methods, (54) Minn. 30.
- improvement studies, (59) Iowa 31.
- improvement work, cooperative, (60) Tenn. 133.
- in mixtures, yield, (55) Miss. 228.
- in storage, insects affecting, (59) Tex. 759.
- inbred strains, homozygosity in, (53) 128.
- inbred strains, nutrient requirements, (51) Ind. 845.
- inbred strains, production, (53) Conn. State 629.

Corn—Continued.

- inheritance—
 of brown aleurone in, (52) N.Y. Cornell 727.
 of carbohydrates and fat in, (56) 29.
 of chemical characters in, (58) 424.
 of lethal pale green seedling character, (51) N.Y.Cornell 229.
 of pigments in, (56) 30.
 of protogyny in, (51) 129.
 of white seedlings in, (52) 429.
 of xantha seedlings in, (52) N.Y. Cornell 727.
 of yellow endosperm, relation to vitamin A content, (60) 810.
 studies, (59) 223, Tex. 729.
 inherited chlorotic types, (53) 128.
 insects affecting, (52) Kans. 452; (56) 553.
 insects and mites affecting, (54) 257.
 internal cob discoloration, effect, (57) 248, 445, Md. 445.
 interplanting test with soy beans and cowpeas, (57) Tenn. 129.
 interplanting test with soy beans and velvet beans, Miss., (56) 731; (60) 34.
 interplanting tests, (58) Ark. 321.
 interplanting with legumes, (60) Ark. 812.
 Iodent, behavior and characteristics, (51) Iowa 432.
 irradiated, effect, (53) 568.
 irrigation experiments, (52) Calif. 33.
 Jala, characteristics, (52) 733.
 Jala, production tests, (59) Guam 523.
 jassid enemy in Kenya Colony, (60) 558.
 kernel, nutritive value of layers, (55) 57; (56) 68.
 kernel, polypeptides and amino acids in, (53) 502.
 kernel rows, productiveness, and deleterious characters, (54) 322.
 kernel, vitamin B in, (54) 793.
 kernel weight, factors affecting, (56) Nebr. 736.
 leaf aphid, grass hosts of, (57) 260.
 leaf aphid, notes, (57) 52, Okla. 556.
 leaf aphid, transmission of sugar cane mosaic by, (53) 147, 649; (57) 845; (59) 643.
 leaf blight, studies, (53) 348.
 leaf rust, inheritance, (59) Ind. 748.
 leaf spot, cause, (54) 544.
 leaf spot, notes, (57) 248.
 leaf stripe, notes, (57) 640.
 leafhopper, transmission of corn stripe by, (60) 241.
 leaves, protein from, (52) 802.
 liming, (60) Ga.Coastal Plain 132.
 linkage and crossing-over in, (54) Mo. 728.

Corn—Continued.

- linkage groups in, distinguishing, (51) 335.
 linkage in, (55) 526.
 linkage in, variation in intensity, (54) 28.
 listed, cultivation, (60) Mont. 778.
 lodging, factors affecting, Ill., (53) 434, 444.
 lyng, studies, (55) 615.
 manuring experiments, (53) Minn. 119, U.S.D.A. 334; (54) U.S.D.A. 132,
 manuring rate, Minn., (51) 119, 120; (53) 119; (57) 213.
 many flowered spikelets in, (56) 29.
 market, London, historical account, (53) 594.
 maternal inheritance of chlorophyll in, (58) 219.
 maturity, factors affecting, (55) N.Dak. 528.
 maturity in Iowa and weather, (58) U.S.D.A. 808.
 meal, analyses, (52) U.S.D.A. 78.
 meal and rice meal, comparison, (59) 162.
 meal, digestibility, (53) 373; (54) 689.
 meal, feeding value, (55) 163.
 meal v. breadfruit for cows, (56) 568.
 Mendelian ratios in, factors affecting, (57) 720.
 mildew disease, studies, (56) Iowa 846.
 miniature germ in, (51) 828.
 moisture in, relation to humidity and temperature, (56) 826.
 moisture in under varying humidity, (54) 636.
 mosaic disease, effect on growth and yield, (58) U.S.D.A. 241.
 mosaic disease in Arkansas, (51) 543.
 mosaic of Hawaii, (59) 341.
 mosaic pericarp in, (54) 26.
 moth borers, studies, (59) 554.
 Neal Paymaster, merits, (51) Tenn. 337.
 net-energy value, (57) 663.
 New England, waxy endosperm in, (52) 427; (53) 29.
 nitrogen fixation by, (54) 525, 718.
 nodal tissues, fungi in, (60) 51.
 nutrient requirements, determinati , (56) Ind. 220.
 oil content, effect of selection, (56) Ill. 229.
 oil, phytosterols of, (56) 310.
 origin, (53) 837; (55) 633.
 pale green seedlings in, inheritance, (54) 823.
 paper on, (54) 732.
 parasitic weed of, (56) 449.
 pasturing with sheep, (57) U.S.D.A. 565.
 pericarp colors, inheritance, (52) 222.
 pericarp studies in, (59) 125.

Corn—Continued.

pericarp, variegation patterns in, effect of environment, (56) 630.
 phosphorus in, (60) 204.
 photoperiodism of, (60) 625.
 pigment formation, relation to leaf area and dry weight, (57) N.J. 24.
 plant, elemental composition, (51) 741.
 plant, feeding value, (53) N.C. 770.
 planters, wear and accuracy of drop, effect of seed treatments, (58) 883.
 planting date, relation to ear worm injury, (51) 361.
 planting rates, (54) Ark. 33.
 planting tests, (51) Tenn. 337; (52) Kans. 433; (53) Ohio 529; (56) Ark. 332; (57) Idaho 726; (59) N.Dak. 825; (60) Mont. 730.
 plat tests, (51) Hawaii 740.
 plowing tests, (51) Ohio 434, Mo. 741.
 polkadot leaves, inheritance of, (53) 29.
 pollen dimorphism in, (56) 329.
 pollen, food stored in, (51) 435.
 pollen, nitrogenous constituents, (58) 203.
 pollen, preservation, (56) 230.
 pollen, starch and erythro-dextrin in, (55) 328.
 polyploidy in, (55) 129.
 predisposition to seedling blight, (55) 844.
 preparation and fertilization of soil for, (56) Mich. 899.
 preparation for yearling brood sows, (59) Iowa 69.
 prices, (58) Ill. 380.
 prices and index, (56) Ohio 285.
 prices, index numbers, (54) Ohio 184.
 prices, relation to transportation costs, (53) 593.
 primitive sporophyte in, (52) 31, 32.
 production and shipments, (59) Iowa 885.
 production, effect of climate, (57) 612.
 production in Kansas, (56) Kans. 337.
 production in Montana, extension type, (53) Mont. 136.
 production, labor requirements, (56) Ohio 581; (57) Ky. 284; (58) Ky. 79.
 production, motorizing in Ohio, (53) 688.
 production on irrigation projects, (54) Wash. Col. 434.
 production, power and labor requirements, (60) 79.
 productiveness, relation to seed-ear characters, (53) U.S.D.A. 32.
 products, feeding value, (54) 271.
 products, vitamin B in, (58) Ill. 390.
 profits and costs of storing, (55) Iowa 182.
 protection from freezing by fertilizers, (54) 436.
 protein and oil percentage in, Ill., (52) 433; (60) 222.
 protein, biological value, (56) Ill. 363.

Corn—Continued.

protein in, effect of selection, (56) Ill. 229.
 protein in, relation to specific gravity, (56), Can. 435.
 proteins, utilization by hens, (56) 166.
 Pythium injury, (60) 447.
 Pythium seedling blight, (58) 548.
 quality in, (57) 337.
 quantitative characters, correlation, (52) 521.
 rate of nitrogen utilization, (57) 128.
 ration, sodium deficiency, (57) 366.
 ration, value of sodium chloride in, (56) 666.
 rations, rate of digestion, (56) Ill. 372.
 removal of suckers, (53) 233.
 resistance to seedling blight, studies, (56) Wis. 745.
 resistance to sodium chloride, age of seedlings as factor, (54) 522.
 resistance to weevil damage, (58) Ga.Coastal Plain 732.
 root and ear rot, studies, (52) N.J. 744.
 root and stalk diseases, studies, (56) Ill. 240.
 root aphid, notes, (54) Ohio 155.
 root behavior and yield under irrigation, (54) 130.
 root diseases, longevity, (56) Del. 348.
 root rot, a soil-borne disease, (55) 749.
 root rot, cause, (51) 850; (56) Ky. 143; (59) Ohio 239.
 root rot, notes, (52) Del. 844; (57) 343; (58) Ky. 48, 548; (59) N.J. 337.
 root rot, reducing by seed selection, (53) 247.
 root rot, relation to preceding crop, (51) 752.
 root rot resistant strains, (57) Ind. 638.
 root rot, studies, (51) Minn. 151, Mo. 151, Mo. 751, La. 845; (52) Ky. 446; (54) Ky. 346; (56) Ky. 144; (58) Mo. 442; (59) Mo. 539.
 root, stalk, and ear rot diseases in New South Wales, (60) 832.
 root, stalk, and ear rot, studies, (53) 850.
 root systems, anchorage and extent, (51) 36.
 roots penetration and water level in peat soil, (53) 18.
 rootworm, control, (51) N.C. 855; (60) Ark. 841.
 rootworm in Connecticut, (52) 454.
 rootworm, notes, (59) N.C. 758.
 rootworm, southern, notes, (51) La. 853; (60) Ala. 159.
 rotation and tillage experiments, (53) U.S.D.A. 528.
 rotation experiments, (52) U.S.D.A. 827; (53) Wyo. 133; (54) 31; (57) Ohio 125, N.C. 213, U.S.D.A. 524;

Corn—Continued.

- rotation experiments—continued.
 (58) Ala. 427, U.S.D.A. 531; (59)
 N.C. 326, Ind. 728, N.C. 728, N.C.
 823.
- rots, causes and control, (53) Ill. 349.
 rots, causes and symptoms, (52) Ill.
 245.
- rust in Philippines, (52) 148.
 rust in Quebec, (59) 539.
 rust, notes, (55) 346, Iowa 541.
 rust pustules, parasite on, (57) 444.
 rust resistance, studies, (56) 49.
Sclerospora graminicola affecting (58)
 48.
 sclerotial disease, studies, (59) 447.
 scutellum rot, studies, (59) 845.
 seed bed preparation, (51) Mo. 740.
 seed characters, variability in linkage,
 (57) U.S.D.A. 29.
 seed coat, permeability to mercury
 compounds, (59) 342.
 seed, curing, Wis., (53) 443; (59) 33.
 seed, curing and storing, Mich., (54)
 532; (56) 35.
 seed, defective, (54) 147; (55) Conn.
 State 428.
 seed development, lethal mutation af-
 fecting, (58) 219.
 seed, diseases in, (53) Ill. 850.
 seed, effect of immaturity, (56) 231.
 seed, effect of temperatures to kill in-
 sects on vitality, (54) 657.
 seed, effects of high temperatures, (53)
 623.
 seed, experiments, (56) Ill. 333.
 seed, fungi infecting, (53) La. 850.
 seed, germination, cabinets for, (56)
 Ill. 229.
 seed, germination, notes, (56) 48.
 seed harvesting tests, (58) Ill. 322.
 seed infected with dry rots, effect on
 crop, (56) Iowa 840.
 seed infection and ear types, (55) 848.
 seed, mature v. immature, (54) Ill.
 326.
 seed, moisture content and viability in
 low temperature, (52) 634.
 seed molds, relation to yield, (56) 48.
 seed, production in Maryland, (57) 32.
 seed, selection based on ear characters,
 (53) 233.
 seed shortage in Illinois, (52) Ill. 136.
 seed, storing small quantities, (57)
 728.
 seed studies, (55) N.J. 31.
 seed, temperature coefficient of absorp-
 tion, (52) 624.
 seed testing for fungi infection, (51)
 Tenn. 349.
 seed, testing method, (55) 736.
 seed, testing, paper on, (55) Mich. 97.
 seed, time of picking, (58) Ill. 323.
 seed treatment, (56) 48, Ill. 241; (57)
 Nebr. 445; (60) 151.
 seed treatment with mercury com-
 pounds, (59) U.S.D.A. 242.

Corn—Continued.

- seed treatment with tar and Paris
 green, (51) 257.
 seed, water absorption and germina-
 tion, (52) 335.
 seeding and spacing experiments, (59)
 N.Y.State 233.
 seeding experiments, (51) N.Dak. 833;
 (53) Minn. 130, Nebr. 433, Can. 530;
 (54) Mich. 634; (55) Minn. 332;
 (56) Kans. 822; (57) 227.
 seedling blight, factors affecting, (53)
 748.
 seedling vigor and diastatic activity,
 factors affecting, (59) 225.
 seedlings, albinism in, (55) 225.
 seedlings, *Diplodia* infection, effect of
 environment, (53) 850.
 seedlings, effect of glucokinase and in-
 sulin, (55) 817.
 seedlings, effect of plant protectors,
 (53) Mich. 341.
 seedlings, etiolated, nitrogen metabo-
 lism in, (54) 724.
 seedlings, etiolated, organic nitrogenous
 compounds in, (57) 408.
 seedlings, green and albino, growth
 rate, (52) 625.
 seedlings, growing free from seed-borne
 organisms, (55) 446.
 seedlings, leaf color studies, (57) P.R.
 425.
 seedlings, smut resistance in, (55) 146.
 seedlings, twisted types, inheritance,
 (54) 630.
 selection experiments, (51) 232.
 selection for exhibit purposes, (52) Mo.
 227.
 selection method, (54) Ill. 326.
 selfed lines and crosses, reaction to
Ustilago zeae, (58) 48.
 selfed lines and first generation crosses,
 comparison, (58) 27.
 selfed lines and hybrids between, (57)
 519.
 selfed lines and hybrids, water econ-
 omy, (56) 30.
 selfed lines, convergent improvement,
 (58) 126.
 selfed lines, differences in functioning,
 (56) 30.
 selfed lines, disease resistance and me-
 tabolism, (58) 548.
 selling v. storing, (60) Iowa 888.
 seminal root development, (57) 128.
 semisterility, (57) 823.
 shelled, feeding value, (52) Ind. 169;
 (55) 163.
 shelled, ground oats as substitute, (60)
 Ohio 169.
 shelled v. shock, (58) Ohio 353.
 silage, *see* Silage.
 silage merits, U.S.D.A., (53) 132, 334.
 single crossed seed production for
 double crossing, (60) 323.
 sirup, analyses, (54) 610.
 situation, (52) Mich. 497.

Corn—Continued.

- situation, relation to pork production, (52) U.S.D.A. 595.
- size of cob, relation to number of fertilized ovules, (54) 823.
- smooth type, yield, (55) Nebr. 637.
- smut at Akron, Colorado, (58) 847.
- smut, control, (52) Kans. 445.
- smut infection, studies, (53) Iowa 746.
- smut, inheritance of resistance or susceptibility to, (59) Minn. 241.
- smut, life history and ecologic relations, (53) 349.
- smut, notes, (55) 546; (56) S.C. 539.
- smut resistance, (59) 342.
- smut resistant, susceptibility when artificially inoculated, (59) 51.
- smut resistant varieties, studies, (56) 244.
- smut spores, ashing methods, (56) 13.
- smut, studies, (56) Kans. 842.
- soft, chemical characteristics, (52) S.Dak. 267.
- soft, drying, (56) Ill. 280.
- soft ear, preserving, (51) Iowa 868.
- soft, feeding value, (52) Mich. 497; (55) S.Dak. 360; (56) Ill. 262, Ill. 264; (59) Ill. 763.
- soft, siloing, (58) Ill. 355.
- soft, storing, (52) Ill. 369.
- soft, use and preservation, (52) U.S. D.A. 531.
- soft, yields, (52) Calif. 33.
- spacing and yield data, (51) Ga. 133.
- spacing experiments, (51) Miss. 134, N.Mex. 433; (52) Tenn. 528; (53) 527; (54) U.S.D.A. 132, Mich. 634; (55) 229; (60) N.Dak. 34.
- stability of chemical composition, (58) 829.
- stacked green, feeding value, S.Dak., (56) 667; (59) 564.
- starchiness in, causes, (57) Ill. 216.
- stem rot, notes, (54) Fla. 245.
- sterility in, (57) 823.
- stomata in, inheritance of length and number, (58) 526.
- storing costs, (57) Ill. 783.
- stover, fertilizing value, Minn., (51) 120; (53) 119; (56) 513; (57) 213.
- stover silage, digestibility, Ill., (54) 357; (57) 459.
- strains, comparison, (57) P.R. 425.
- strains, physiological activity, comparison, (57) N.J. 22.
- strains, studies, (56) Ill. 333.
- streak disease, notes, (56) 748; (57) 443; (58) 241.
- streak disease, transmission, (56) 649.
- stripe disease distinct from sugar cane mosaic, (60) 240.
- substitutes for pigs, (52) Ohio 473.
- sucker production, (60) Ark. 812.
- sugar, uses, (55) 615.
- sugary and waxy genes in, relationship, (57) 721.

Corn—Continued.

- sugary gene, as modifier of waxy ratio, (58) 218.
- supplements for pigs, (52) Del. 871.
- supplements for pigs on alfalfa pasture, (54) U.S.D.A. 162.
- susceptibility to *Gibberella saubinetii*, (57) 748.
- sweet, *see* Sweet corn.
- Teopod, inheritance of, (53) 29.
- thinning, removal of plant food in, (56) 827.
- time of planting, relation to various factors, (55) 828.
- time of planting tests, (58) Ill. 322.
- tolerance for alkali, (53) 320.
- topping and spacing tests, (57) 727.
- total production and December price, (54) 286.
- tuckahoe on, (57) 748.
- types for silage, (56) Conn.Storrs 870.
- under dry land culture, (55) U.S.D.A. 132.
- under irrigation, yields, (59) Nebr. 824.
- unequal fertilization and aberrant ratios in, (59) 624.
- utilization of phosphorus by, (57) 728.
- v. barley for milk production, (57) Mich. 868.
- v. barley for pigs, Can., (51) 375; (53) 871, 872.
- v. grain sorghum for lambs, (59) Tex. 260.
- v. kafir for hogging down, (52) Kans. 469.
- v. oats for work horses, (52) N.Y.Cornell 771.
- v. oats for work mules, (52) Mo. 272.
- v. sorghum as forage crop, (53) Nebr. 433.
- v. sorghum for grain and forage production, (58) Mo. 428.
- v. sorghum silage for milk production, (58) S.C. 671.
- v. sunflowers for silage, (56) N.Y.Cornell 336.
- v. wheat, heating effect on chickens, (60) Ill. 260.
- variegated pericarp in, two types, (56) N.Y.Cornell 519.
- variegation in, (53) Mo. 426.
- varieties, (51) Ga. 132, Wash.Col. 136, Oreg. 739; (52) U.S.D.A. 827; (53) U.S.D.A. 132, Mo. 431; (55) N.C. 228, N.Mex. 434; (56) Ind. 132; (57) Tenn. 126, La. 522, Ark. 629; (59) Ala. 31; (60) Mont. 729.
- analyses, (51) N.Dak. 832.
- and hybrids, (55) W.Va. 529.
- and requirements, (58) 632.
- classification, (56) Can. 432.
- comparison, (52) Conn.State 633, Conn.Storrs 633.
- earliness of maturity in, (55) N.Dak. 527.
- for hogging down, (59) N.C. 767.

Corn—Continued.

- varieties—continued.
 for Kansas, (53) 528.
 for Minnesota, (55) Minn. 132.
 for peat lands, (55) Minn. 527.
 for pigs, comparison, (54) U.S.D.A. 162.
 for silage, (55) Me. 434, N.H. 826; (60) S.C. 732.
 for silage, milk-producing value, (52) Conn.Storrs 174.
 forage value, (53) U.S.D.A. 132. in New South Wales, (55) 230.
 late-maturing, for silage, (60) Ill. 262.
 productiveness, (57) Ill. 428.
 relative susceptibility to smut, (52) Calif. 49.
 resistant to chinch bugs, (52) Ill. 433.
 standard, (58) N. C. 830.
 yields, (51) Va. 35; (54) Ill. 326; (55) Mo. 132.
 variety tests, (51) Minn. 133, Minn. 134, Miss. 134, 232, Tenn. 337, N.Mex. 433, Ohio, 433, 636, Minn. 636, La. 830, N.Dak. 832, N.Dak. 833; (52) Ga.Coastal Plain 224, Ind. 226, Kans. 433, Mont. 435, S.C. 528, N.J. 732, Wash.Col. 829; (53) Ind. 130, Minn. 130, Minn. 131, Miss. 131, N.Mex. 131, Wyo. 133, Ga. 230, N.Dak. 334, Ind. 431, Wis. 432, La. 528, U.S.D.A. 528, N.Dak. 529, Can. 530, Ariz. 733, N.C. 734, U.S.D.A. 834; (54) Ga.Coastal Plain 130, Hawaii 131, U.S.D.A. 132, Fla. 325, Mont. 328, S.C. 635, Wash.Col. 827; (55) Ark. 30, Ohio 132, U.S.D.A. 132, Minn. 227, Miss. 228, Minn. 332, Tex. 332, La. 433, U.S.D.A. 433, Md. 526, Miss. 527, N.Dak. 527, Miss. 636, Oreg. 637, Minn. 734, Minn. 735, Fla. 824, Del. 828; (56) Mont. 133, Ark. 332, Ill. 333, Can. 432, Ga.Coastal Plain 523, Minn. 524, S.C. 525; Utah 525, Wash.Col. 525, Ariz. 731, Miss. 731, Fla. 821, Kans. 822; (57) Ohio 125, Okla. 125, Tex. 126, N.Mex. 224, Minn. 226, Okla. 226, 227, Alaska 522, Okla. 523, U.S.D.A. 524, Ind. 628; (58) Miss. 31, Ark. 321, Ill. 322, U.S.D.A. 532, S.C. 632, Ga. Coastal Plain 732, Okla. 734, Minn. 828, Okla. 828; (59) Wash.Col. 31, Miss. 131, S.C. 131, Ga. 221, N.Mex. 222, Ala. 625, N.C. 728, Tex. 729, Miss. 824, N.Dak. 825; (60) Miss. 34, N.Dak. 34, Fla. 130, Ga.Coastal Plain 132, Ill. 222, Ohio 636, Alaska 728, Oreg. 731, S.C. 732, Ark. 812, Wash.Col. 814.
 variety-date tests, yields from, (59) Tex. 729.
 vetch as green manure for, (59) 437.
 virescent seedlings in, (52) N.Y.Cornell 727.

Corn—Continued.

- vitamin A in, (52) 65.
 vitamin B complex, proportions of F and G in, (59) 689.
 water requirements, (51) Nebr. 831; (54) Nebr. 328; (58) Can. 223.
 waxy, rare carbohydrate in, (52) 329.
 weevil damage relation to husk, (52) Ga.Coastal Plain 225.
 white and yellow, comparison, (56) Ill. 667.
 white, feeding value, (53) 571.
 white seedlings, genetical analysis, (54) 26.
 white v. yellow, as poultry food, (51) 176; (53) Okla. 174; (57) Mo. 462.
 white v. yellow, for fattening pigs, Nebr., (54) 365; (56) 564.
 worm, new, from Peru, (54) 755.
 Wyoming, for pork production, (56) Wyo. 269.
 X-ray treatment, (58) 730.
 yellow, location of vitamin A in, (60) Ill. 291.
 yellow pigments in, genetic factors, (55) 329; (56) 631.
 yellow, v. rice polish, feeding value, (58) Ark. 362.
 yellow, v. rolled barley, (60) Ariz. 472.
 yellow v. white, for poultry, (51) 176; (53) Okla. 174; (57) Mo. 462.
 yellow, value for chicks, (57) Okla. 568.
 yellow, vitamin A in, (59) Ind. 761.
 yellow, vitamin E in, (54) 561.
 yield and growth rate as affected by weather, (52) 114.
 yield, relation to cob-breaking strength, (56) 135.
 yield, relation to internal cob discoloration, (56) 49.
 yield, relation to rainfall, (54) 115; (56) U.S.D.A. 15.
 yield, relation to stand, (60) 434.
 yield tests of Iowa, (59) 226.
 yields, (51) U.S.D.A. 135, Ohio 488, Nebr. 831; (52) U.S.D.A. 527; (55) Ohio 528, Nebr. 636.
 yields, effect of interplanted legumes, (60) Ark. 36.
 yields, effect of planting date, (58) Ark. 32.
 yields, effects of fertilizers, (52) 531.
 yields, factors affecting, (57) Va. 426.
 yields, on muck lands, (56) Mich. 823.
 yields, trend in, (56) U.S.D.A. 685.
 Corncobs—
 adhesives and furfural from, (51) 114.
 composition and digestibility, (51) Tex. 467.
 feeding value, (55) 163.
 furfural manufacture from, (51) 809.
 lignin from, preparation and examination, (58) 802.
 utilization, (55) 413.
 Cornell University, notes, (51) 98, 198, 497, 697; (52) 100, 300, 599, 699; (53) 197, 697; (54) 496, 794; (55) 99, 699;

Cornell University, notes—Continued.

- (56) 300, 600, 798; (57) 99, 496, 900;
 (58) 397, 798, 900; (59) 499, 697, 799;
 (60) 699, 900.

Cornstalk—

- beetle, rough-headed, notes, (60) Ark. 841.
 borer in South Africa, control, (56) 858.
 borer, lesser, notes, (56) 552.
 borer, lesser, on sugar cane in Cuba, (59) 460.
 borer, notes, (53) 559; (55) 555; (59) Iowa 55.
 rot, cause, (52) 448.
 rot, notes, (55) Ark. 42.
 sirup, studies, (52) Minn. 205, 207.

Cornstalks—

- barren, morphological characteristics, (54) 532.
 breaking strength, relation to fungi affecting, (57) 843.
 composition and rate of decomposition, (59) 719.
 fungi from nodes, (59) 342.
 harvesting, (60) 280.
 infested, burning, (53) Ohio 599.
 smut-infected, effect on sap concentration, (58) 242.
 sugar in, effect of smut, (57) 49.
 testing for nutrient requirements of soil, (56) Ind. 220, Ohio 323; (59) Ohio 218.

Cornstarch—

- by-products, feeding value, (55) 861.
 gelatinization temperatures, (53) 410.
 irradiated, effect, (53) 568.

Corpora lutea—

- effect on behavior of rats, (52) 525.
 extracts and ovulation in rabbits, (53) 833.
 hormone, effect on pelvic ligaments of guinea pigs, (60) 727.
 human, secretion of follicular hormone, (53) 834.
 in mice, factors affecting number, (55) 824.
 in ovaries of pregnant mice, counting, (52) 631.
 in successive mouse pregnancies, (55) 226.
 mammalian, and "luteal" cells in fowls, (55) 331.
 of oestrous cycle in cows, (52) 631; (53) 631.
 physiology, (60) 32.
 production, effect of alcoholization, (54) 230.
 relation to menstruation and pregnancy, (59) 624.
 studies, (54) 171.

Correlation—

- coefficients, meaning and uses, (56) 330.
 ratios, distribution, (55) 522.

Corrodentia from Italy, list, (52) 753.

Corrosive sublimate—

- for potato seed treatment, (51) N.H. 149, Wash.Col. 150, Wash.Col. 153, Kans. 248; (52) Kans. 446, Mont. 447.
 for potato seed treatment, loss of strength, (56) 50.
 fungicidal value, (55) Oreg. 650.
 injury to seed bed, (52) N.Y.State 553
 method of applying, (51) 54.
 solution, field test for strength, (57) 844.
 treatment, effect on Rhizoctonia and clubroot of cabbage, (55) 847.
 use against soil-infesting fungi, (51) 351.
 v. organic mercury compounds for potato seed disinfectants, (59) Mich. 542.

Corticium—

- evolvens, notes, (55) 351.
 javanicum, notes, (57) 540.
 koleroga, notes, (53) 152; (60) 344.
 penicillatum n.sp., description, (54) 548.
 salmonicolor, notes, (53) 147, 148, 153; (54) 150; (55) 49, 249; (56) 851; (57) 158.
 sp., notes, (55) 542.
 spp. causing tea black rot, (54) 254.
 spp., studies, (56) 456; (59) 54.
 stevensii, control, Fla., (54) 342; (55) 841.
 stevensii, notes, (57) Fla. 839.
 vagum, control, (59) 842.
 vagum, notes, (53) N.Y.Cornell 44; (54) 48, 549, Fla. 651; (56) 750; (57) 749; (59) Fla. 541.
 vagum on pine roots, (51) 356.
 vagum on potatoes, (52) 350.
 vagum solani, control, (58) 49.
 vagum solani, notes, (51) 248; (55) 546; (57) 843; (59) Va.Truck 241.

Corylus americana, intercellular parasite of, (55) 251.

Corynebacterium—

- equi in a mare, (59) 272.
 pseudotuberculosis, selective localization, (54) 72.

Corynelia clavata, notes, (57) 444.

Corynespora melonis, notes, (59) 644.

Coryneum beijerinckii—

- control, (59) 245.
 notes, (53) 43; (58) 448; (60) 552.
 on stone fruits, (54) 750.

Coryneum—

- blight of stone fruits, (56) 551.
 canker of cypress, studies, (59) 646.
 negundinis, notes, (56) 355.
 new, cause of chestnut disease, (57) 551.

- ruborum, ascogenous stage, (58) 554.
 ruborum, notes, (54) Wash.Col. 841.

Coryza, contagious, description, (52) 285.

Cosmopepla bimaculata, egg parasite of, (56) 862.

Cosmophorus henscheli, notes, (55) 854.

- Cosmopolites sordidus*, see Banana root borer.
- Cosmos**—
bacterial disease, notes, (57) 744.
bacterial wilt, (53) 153.
- Cost of living**—
among colored farm families, (52) U.S.D.A. 791.
and farm labor wages, 1906-1925, (55) 885.
in rural communities in Sweden, (51) 692.
in small factory town, (52) N.Y. Cornell 296.
on farms, (51) Mo. 691, Mo. 794, Mo. 795; (53) 297, Iowa 797; (54) Mo. 783; (56) Iowa 82, Iowa 83, Wis. 784; (57) Ohio 188; (58) Mo. 487; (59) Ohio 284.
studies, (52) Ky. 490.
- Cost of production**—
and farm organization, studies, (52) U.S.D.A. 190.
average, (59) 586.
data, interpretation to farmer, (51) 189.
data, testing, (51) U.S.D.A. 190.
on farms, (58) Ark. 378.
projects of South Dakota, (52) 390.
route in Jones County, (60) Miss. 885.
studies, (52) Kans. 489, Ky. 489; (54) 181; (55) Miss. 181; (56) Ky. 181, Ill. 385, Miss. 784, Kans. 885; (59) Miss. 87.
studies in United States, (60) 885.
supply, and demand, and tariff, (57) 382.
surveys, (54) Ill. 385.
- Costume design, history**, (54) 494; (56) 597.
- Costumes**—
folk, treatise, (55) 95.
of different periods and countries, (55) 95.
of eastern Europe, treatise, (55) 94.
- Cotalpa lanigera*, notes, (54) Kans. 461.
- Cothonaspis rapae*, notes, (58) 458; (59) 660.
- Cotinus nitida*, see June beetle, green.
- Cottages**—
for rural districts in England, (57) 779.
heating, (54) 395.
- Cotton**—
abscission in, (60) 809.
Acala, community production, (57) U.S.D.A. 130.
Acala, merits, (58) U.S.D.A. 431.
Acala, off-type plants, (56) U.S.D.A. 135.
Acala, production, (54) U.S.D.A. 233.
Acala, spacing experiments, (52) 531.
acreage, (60) N.C. 783.
acreage, forecasting, (53) 592.
action of sunlight on, (58) 94.
affinity for dyes, effect of heat, (60) 598.
- Cotton**—Continued.
affinity for dyes, increasing, (60) 598.
American, fumigation in India, (59) 651, 794.
American, marketing in England, (59) U.S.D.A. 785.
American, marketing in Europe, (60) U.S.D.A. 86.
American, production, British colonial competition, (57) 784.
American upland, taxonomy, (53) 337.
analysis, (51) 715.
and folded yarns, luster, (54) 696.
and the cotton market, treatise, (51) 192; (58) 286.
angular leaf spot, effect of alkali, (56) Ariz. 745.
angular leaf spot, notes, (55) Ark. 41; (56) S.C. 539; (59) 447.
angular leaf spot, relation to soil temperature, (60) 832.
anthracnose boll rot, (53) 148; (56) 750.
anthracnose, control, (53) N.C. 747, N.C. 847; (54) N.C. 147; (56) 49; (57) N.C. 245.
anthracnose, studies, (52) S.C. 544.
anthracnose, varietal resistance, (55) Miss. 650.
aphid infestation, predicting, (60) 455.
aphid infestations, effect of calcium arsenate, (58) 558.
aphid, insect enemies and hyperparasites, (54) 55.
aphid, new preparation for, (52) S.C. 553.
aphid, notes, (52) 853; (58) Miss. 57.
aphid, productivity, (58) Ala. 450.
aphid, wing production, (57) Tex. 360.
areas in Texas, child welfare in, (52) 791.
areolate mildew, notes, (53) 148.
Arizona wild, angular leaf spot on, (54) 649.
Ascochyta blight, (51) 544.
Ascochyta canker, S.C., (52) 544; (54) 648.
ash content and ash alkalinity, (55) 596.
bacteria and fungi on, effect, (51) 413.
bagging for shipping, (58) U.S.D.A. 831.
bales, weather damage, (56) U.S.D.A. 36.
beetle, new, notes, (60) S.C. 754.
belt, black land, farm survey, (53) Tex. 893.
belt, 1927 season in, (58) U.S.D.A. 413.
blackarm disease, (53) Ariz. 745.
blackarm disease, epidemiology in the Sudan, (56) 846.
blankets, thermal insulating value, effect of laundering, (57) 899.
blooming and shedding studies, (56) Ariz. 731.

Cotton—Continued.

- blooming, boll formation and dehiscence, (53) 136.
 boll disease, internal, in Burma, (60) 151.
 boll growth, relation to weevil injury, (56) 158.
 boll rots, fungi causing, (55) 759.
 boll rots, relation to *Tectocoris lineola*, (56) 459.
 boll shedding, (53) Okla. 150.
 boll soft rot in West Indies, (58) 340.
 boll studies, (53) La. 528.
 bolls, *Aspergillus* decay of, (58) 548.
 bolls, bacterial infection, (51) 152.
 bolls, decays of, (58) 242.
 bolls, development and gossypol formation, (59) 434.
 bolls, nonopening and decay of, (57) 51.
 bolls, size, effect of fertilizers, (60) 328.
 bolls, toughness, factors affecting, (60) 37.
 bolls, wound parasite of, (54) 48.
 bolls, yield and size, effect of spacing, (59) 435.
 botany and culture, treatise, (59) 434.
 branched hairs in, (57) 630.
 breeding, defruiting as aid in, (58) 431.
 breeding experiments, (51) Miss. 134; (53) Okla. 133; (54) Tenn. 231; (55) N.C. 228, Tex. 332, U.S.D.A. 433, Miss. 527, Miss. 636; (56) Ark. 332, Fla. 821; (57) Okla. 523; (58) Miss. 31, Ark. 321; (59) Tex. 732; (60) Fla. 130, Ark. 812.
 breeding, importance, (57) 630.
 breeding in Egypt, (54) 125.
 breeding in South Africa, (54) 234.
 bud and boll shedding, cause, (51) 732; (54) 722.
 bug, red, anatomy and bionomics, (51) 762.
 bug, red, notes, (59) 652.
 burs, composition and economic possibilities, (60) 328.
 California, tensile strength, (57) Calif. 225.
 Cambodia, locular composition, (60) 534.
 cellulose, chemistry and technology, (53) 412.
 cellulose, cuprammonium solutions, viscosity, (56) 594.
 cellulose, specific volume, (56) 698.
 cellulose, swelling, (53) 312.
 changing uses, (60) U.S.D.A. 497.
 characters, new, from Colombia and Ecuador, (59) 328.
 chemical analysis, (55) 208; (57) 806.
 chemical products, (53) 718.
 chemical technology, (60) 96.
 classification by microscopy, (55) 295.
 cloth, mildewed, examination, (54) 298.

Cotton—Continued.

- cloth, oiled, strength, (59) 497.
 Committee, Indian Central, activities, (53) 137.
 Committee, Indian Central, report, (55) 736; (58) 634.
 communities, one-variety, (52) U.S.D.A. 336.
 Congress in Egypt, International, (57) 828.
 constituents, soluble, effect of removal, (56) 594.
 cooperative marketing, U.S.D.A., (54) 784; (56) 587.
 cost of production, (53) U.S.D.A. 489; (54) Mo. 782; (58) Ark. 378.
 cost of production on demonstration areas, (51) La. 891.
 crazy-top, factors affecting, (57) U.S.D.A. 643.
 crinkle and soil moisture constants, (53) 335.
 crop, forecasting volume and value, (59) 483.
 crop reporting system, Government, (60) 680.
 crop, unimproved, constitution, (57) 129.
 crops, world's, treatise, (52) 194.
 cultivated and wild, classification, (57) 130.
 cultivated and wild, in Royal Botanic Gardens, (59) 525.
 cultivation tests, Okla., (53) 133; (57) 523.
 culture—
 dry land, in French West Africa, (57) 630.
 effect of large-scale production in Texas, (59) 482.
 experiments, (51) N.Mex. 138; (52) 634; (53) Miss. 231; (55) V.I. 333, U.S.D.A. 433, Miss. 527, Miss. 636; (57) Okla. 226, Okla. 523; (59) V.I. 432, Tex. 730, Tex. 732; (60) Ga.Coastal Plain 132.
 factors affecting earliness, (51) S.C. 234.
 in Argentina, (52) 734; (54) 830; (55) 736.
 in Arizona, (51) Ariz. 532; (52) U.S.D.A. 136.
 in Australia, (51) 338.
 in Egypt and Sudan, relation to climate, (53) 112.
 in Egypt, perennial, (59) 226.
 in Illinois, (51) Ill. 37.
 in Illinois and Missouri, climatic aspects, (55) 210.
 in India, (57) 628.
 in Madagascar, (52) 137.
 in Morocco, (54) 532.
 in Nigeria, (55) 637.
 in Rhodesia and climate, (54) 509.
 in St. Vincent, (53) 336.
 in Salvador, (52) 832.

Cotton—Continued.

- culture—continued.
 - in South Africa, (51) 235.
 - in southern Africa and Rhodesia, (58) 532.
 - in United States, (53) 137.
 - on southwestern irrigation projects, (53) 136.
 - relation to climate in Sudan, (57) 229.
- damping-off, control, (55) Ga. 145.
- Delfos, origin and characteristics, (52) Miss. 136.
- detergent experiments, (60) 13.
- deterioration during damp storage, (54) 234; (57) 694.
- disease, notes, (52) S.C. 544.
- diseases—
 - control, (59) Miss. 846.
 - in Australia, (51) 247.
 - in Egypt, (52) 745; (55) 346.
 - in Nigeria, (60) 241.
 - in Porto Rico, (56) 351.
 - in Southern Nigeria, (57) 644.
 - in Tennessee, control, (60) Tenn. 832.
 - in West Africa, (53) 350.
 - near Nanking, control, (57) 640.
 - notes, (54) 449; (55) Fla. 842; (57) 146, Tenn. 639.
 - obscure, in Nigeria, (58) 847.
 - seed-borne, studies, (59) Ga. 236. N.C. 749; (60) Miss. 51.
- drag tests, (59) N.C. 731.
- dusting with calcium arsenate, (55) Ala. 857.
- duty of water for, N.Mex., (54) 680; (55) 478.
- dyed, differences in shade, (54) 297.
- dyed with vat dyestuffs, action of light, (60) 696.
- dyeing, (56) 898.
- dyes, identification, (57) 694.
- effect of—
 - concentrated fertilizers, (60) N.C. 719.
 - cultivation, (54) Tex. 329.
 - light on, (55) 393.
 - organic acids, (57) 899.
 - root cutting, (59) Calif. 727.
 - soil temperature, (60) Fla. 151.
 - sulfur, (59) Tex. 730.
 - water, (53) 837.
- Egyptian—
 - and upland, comparison, (54) 522.
 - and upland, hybrids, (52) 32.
 - branched lint hairs in, (57) 96.
 - development, (57) 429.
 - growth, bud shedding, etc., (57) 828.
 - leaf tissue fluids, (54) 723.
 - moisture tests, (59) 628.
 - preservation of quality, (57) 130.
- elastic properties, effect of humidity, (53) 33; (56) 898.
- electrification in, (53) 634.
- experimental work in Egypt, (52) 136.

Cotton—Continued.

- experiments, (54) S.C. 734; (58) S.C. 632; (59) Miss. 827.
- experiments in Belgian Congo, (59) 435.
- experiments in British Empire, (59) 132.
- experiments in Philippines, (55) 434.
- experiments in Queensland, (55) 435.
- export shipments, routing, (53) 295.
- exposed to light, loss of strength, (59) 296.
- fabrics—
 - action of caustic soda on, (54) 196.
 - and yarns, mercerization, (54) 493.
 - detergency tests, (59) 297.
 - dyed, action of light on, (51) 716; (58) 695.
 - effect of laundering, (54) 597; (60) 97.
 - imperfections in, (54) 493; (57) 695.
 - impregnation with rubber latex, (54) 298.
 - mildew in, (56) 93.
 - mildew prevention, (56) 595; (59) 897.
 - selection, (55) U.S.D.A. 94.
 - shrinkage, (60) 597.
 - sized, China clay in, (60) 97.
 - sized, deliquescent substances in, (55) 796.
 - sized, identification of fatty ingredients, (55) 209.
 - thermal properties, (55) 795.
 - uses, (59) 795.
- factors inhibiting development, (53) 335.
- farms, organization and cost of production, (52) S.C. 588.
- fertilizer and planting tests, (58) Okla. 734.
- fertilizer experiments, (51) Ga. 133, Ark. 725; (52) 132, S.C. 531; (53) Miss. 33, Miss. 131, Miss. 136, 218, Ga. 230, Miss. 231, Miss. 234, Mo. 234, Miss. 333, Ark. 435, La. 514, La. 528, Ariz. 733; (54) Ga.Coastal Plain 131, Tenn. 231, Mo. 732; (55) Miss. 33, Ga. 131, Mo. 133, Miss. 228, Miss. 334, La. 433, Miss. 527, Miss. 636; (56) Miss. 135, 223, N.C. 435, Ga.Coastal Plain 523, Ariz. 731, Miss. 731, Miss. 736, 827; (57) Miss. 36, Okla. 125, Ga. 212, N.Mex. 224, Ga. 226, N.C. 228, Miss. 229, La. 522; (58) Miss. 31, Ark. 321, Mo. 428, S.C. 633, Ga.Coastal Plain 732, Okla. 828; (59) Ala. 30, S.C. 35, 36, Ga. 221, Ala. 624, N.C. 732, Tex. 732, Miss. 824, Miss. 827; (60) Miss. 34, Ala. 129, Ga.Coastal Plain 132, S.C. 733, Miss. 816, Ark. 813.
- fertilizer experiments, cooperative, (58) Ark. 322.

Cotton—Continued.

- fertilizer experiments, triangular, (53) Ga. 230.
- fertilizer placement studies, (60) S.C. 733.
- fertilizers and rotations, (54) S.C. 637.
- fiber—
- breaking load, effect of sulfuric acid, (52) 227.
 - cell walls, microchemical study, (59) N.C. 721.
 - convolution of, (54) 297.
 - distribution on seed coat, (57) N.C. 228.
 - internal structure, (52) 437.
 - salt content, (52) 35.
 - strength relation to yarn strength, (54) 196.
 - weight per centimeter, relation to quality, (55) 795.
- fibers—
- effect of bacteria on, (56) 297.
 - estimating, Balls sledge sorter for, (53) 337.
 - length, determination, (56) U.S. D.A. 496.
 - length, from bolls at different heights, (52) 227.
 - length v. stapling length, (51) 235.
 - measuring drag, (60) N.C. 793.
 - preparing sections of, (60) 597.
 - qualities, method of evaluating, (55) 392.
 - stress strain relationships, (53) 33.
 - studies, (53) N.C. 736; (55) 596.
 - swelling, (56) 297.
 - swelling during mercerization, (54) 94.
 - swelling in solutions of alkali metal hydroxides, (54) 94.
- bea hopper—
- control, (55) Tex. 458; (56) 857; (57) Tex. 360; (59) Tex. 556, Tex. 759.
 - distribution and host plants, (55) 53.
 - hibernation, (59) Tex. 58.
 - in the South, (56) 60.
 - life history studies, Tex., (55) 353, 458; (57) 162.
 - notes, (52) 454, S.C. 553; (55) U.S.D.A. 660; (56) Ark. 355, S.C. 552; (57) Ga. 257, Okla. 556; (60) Ala. 159, S.C. 455, S.C. 755.
 - spring emergence, (57) Tex. 360.
 - summary, S.C., (57) 163; (58) 662.
 - flowering and bolting in, (54) 231.
 - flowering curves, calculating formulas, (53) 837.
 - flowers and bolls, development, relation to branching, (57) U.S.D.A. 35.
 - flowers, bagging, (56) 635.
 - fruiting studies, (54) S.C. 636; (57) 129; (59) 434.

Cotton—Continued.

- fumigation, (55) 764; (57) 597.
- fungus diseases, (60) 241.
- futures market in Europe, (57) 382.
- futures, treatise, (51) 892.
- Garo Hill, growth of fruiting parts in, (57) 827.
- genetic studies, (60) Ark. 812.
- germination, effect of fertilizers, (57) 229.
- gin operation in Texas, practices and costs, (58) U.S.D.A. 80.
- ginning, (54) U.S.D.A. 283; (59) Tex. 732.
- green manure tests, (60) Ga.Coastal Plain 132.
- Growing Association, British, report, (54) 234; (58) 634; (60) 534.
- Growing Corporation, Empire, activities, (53) 532; (56) 135.
- Growing Corporation, Empire, report, (57) 828; (59) 628.
- growing countries, production, trade, and consumption, (56) 635.
- growing enterprise, management, (55) 284.
- growing in Brazil, impetus to, (56) Tex. 183.
- growing manual for club members, (51) 599.
- growing policy, paper on, (58) 94.
- growth and development, (56) U.S.D.A. 529.
- growth disorder in, (52) 348.
- growth in India, (58) 215.
- Gujarat, studies, (51) 339; (55) 828; (57) 828; (60) 134.
- hair disruption, effect on extraction of fat, wax, and resin, (57) 806.
- hair, weights and measures, (53) 737.
- hairs, breaking, (56) 194.
- hairs, damaged, microscopical examination, (55) 695.
- hairs, reversing spiral in, measurements, (54) 795; (55) 295.
- handling, avoidable losses in, (53) U.S.D.A. 293.
- hybrid, Asiatic and American, (53) 129.
- hybrid, inheritance of rate of shedding, (57) 622.
- improved, maintenance of purity, (57) 630.
- improvement, (52) Miss. 226; (53) N.C. 735, N.C. 835; (55) 736; (57) Tenn. 628; (60) 434.
- improvement in China, (52) 734.
- improvement in Nigeria, (53) 335.
- improvement research problems, 435.
- in Australia, treatise, (52) 634.
- in Brazil, statistical data, (51) 597.
- in Kansas, (54) 732.
- in Mozambique, (60) 37.
- in paper pulp, determination, (55) 14.
- in South Africa, (53) 736.
- Indian, characteristics, (54) 638.

Cotton—Continued.

- Indian, fiber length and ginning percentage, (57) 230.
 Indian, spinning tests, (55) 392, 736.
 Indian, types, demand for, (51) 235.
 industries, testing and standardization in, (54) 596.
 industries in British colonies, (52) 137.
 industry in Nigeria, (56) 36.
 industry in Union of Socialistic Soviet Republics, (59) 679.
 industry, Lancashire, geographical basis, (58) 695.
 industry, research in, (53) 530; (55) 695; (60) 495.
 inflammability test, (54) 298.
 inheritance of fuzzy seed coat, (57) N.C. 228.
 inheritance of lint length, (52) 132.
 inheritance of number of boll locks in, (57) 520.
 inheritance of petal spot in, (51) 429.
 inheritance of seed and lint characters, (53) 331.
 inheritance studies, (57) Tex. 126; (59) N.C. 731, Tex. 732.
 insects—
 affecting, (51) 357; (52) 853; (54) 533; (55) Ark. 50, 758; (56) S.C. 552, 553; (57) 759; (59) 352, 554.
 in central Peru, (60) 161.
 in New South Wales, (56) 58.
 in Nigeria, (55) 759; (58) 662.
 in Papua and New Guinea, (60) 649.
 in Queensland, (58) 255, 662.
 in Rhodesia, (51) 551.
 reduction of loss from, (55) 552.
 insulation resistance, effect of humidity, (60) 696.
 internal boll disease, (56) 750.
 irrigated, cultivation experiment, (54) 735.
 irrigation experiments, (55) N.Mex. 434; (56) 35; (59) U.S.D.A. 628.
 jassid, control, (59) 651.
 jassid in South Africa, (57) 452.
 jassid-resistant, (54) 233, 234, 637.
 late defoliation, effects, (57) S.C. 630.
 leaf and stem feeding beetle, (53) 258.
 leaf bug, notes, (56) Ark. 356.
 leaf curl, notes, (58) 847.
 leaf roll, notes, (55) 637; (58) 847.
 leaf shape in, inheritance, (59) 429.
 leaf spot, notes, (57) 640.
 leaf tissue fluids, chloride in, (52) 327.
 leaf tissue fluids, properties, (51) 331; (54) 26; (55) 126.
 leaf tissue fluids, sulfate in, (54) 522.
 leaf worm, notes, (57) Tenn. 654.
 length of staple, relation to yield and value, (57) 827.
 lessons for elementary schools, (54) U.S.D.A. 85.

Cotton—Continued.

- liming, (60) Ga.Coastal Plain 132.
 lint and seed characters, (54) Tex. 427.
 lint characters, variation in, (57) Tex. 36.
 lint, effect of wetting, (57) 493.
 lint length, statistical analysis, (53) 337.
 linters, American, official standards for, (53) U.S.D.A. 634.
 linters, standard grades for, (58) U.S.D.A. 634.
 locks, location of notes in, (60) 328.
 long and short staple, yields, (53) Ariz. 734.
 low-grade, cleaning, (59) U.S.D.A. 733.
 luster and sheen, measurement, (59) 795.
 luster, factors determining, (51) 339; (54) 895.
 Maarad, characteristics, (59) 628.
 manufacturers manual, (55) 696; (57) 899.
 map of Peru, 1926 crop, (59) 132.
 marketing, (52) U.S.D.A. 294; (56) S.C. 581; (60) Ala. 183.
 marketing, cooperative, (57) Okla. 583.
 marketing, evolution, (55) U.S.D.A. 784.
 marketing for export, (53) 293.
 marketing, services in, (56) U.S.D.A. 484.
 mechanical harvesting, (60) Tex. 675.
 mercerization, (53) 531; (60) 97, 496.
 mercerization, theory and science in, (54) 298.
 mercerized, test for, (55) 696; (56) 297.
 mercerized with and without tension, water absorption, (56) 595.
 mill fungi, occurrence and identity, (54) 255.
 moisture relations, (51) 235; (52) 532; (54) 93, 696.
 Morocco, qualities, (55) 392.
 moths, flight of, (51) Conn.State 852.
 mutant in, (57) 323.
 natural crossing in, (57) Miss. 827.
 neppiness in, cause, (59) 694.
 neps, studies, (54) 132.
 new species from Mexico, descriptions and key, (57) 729.
 nitrogen and potassium carriers for, (59) Miss. 824.
 nitrogen sources for, (55) Miss. 624.
 noncellulosic constituents, chemistry of removal, (59) 795.
 North Carolina, spinning tests, (56) U.S.D.A. 194.
 of Salt River Valley, survey, (51) Ariz. 338.
 of South Atlantic States, spinning qualities, (57) 95.

Cotton—Continued.

- oiled in picker room, penetration of dyes, (60) 297.
- oiling process, (54) 596.
- oiling tests, (55) 94.
- Old and New World, chromosome numbers, (52) 824.
- pests, biological control, (59) 651.
- pests, control in north India, (53) 554.
- pests in French West Africa, (56) 756.
- pests in Nigeria, (59) 132.
- pests in Rhodesia, (56) 57.
- pests, report, (58) 57.
- picking by machinery, (58) 485.
- Pima and Acala, water and dry matter in leaves, (59) Ariz. 35.
- Pima, and upland varieties, comparison, (52) 437.
- Pima, ginning in Arizona, (53) U.S.D.A. 234.
- Pima, variation in seed fuzziness, (60) 434.
- plant—
 - alkaline reaction, (52) 427, 519; (53) 159.
 - * alkaline reaction of dew on, (54) 221.
 - bacteria in Armenia, new, (56) 750.
 - chemistry of, (54) 707.
 - cytology of, (52) 823.
 - lint hairs, function, (53) 633.
 - louse, control, (55) La. 455.
 - mineral constituents, (57) 130.
 - nonvolatile constituents, (56) 311.
 - odorous constituents, (54) 803
 - pH of sap as affected by weevil attack, (58) 760.
 - polyembryony in, (57) 518.
 - reaction, (53) 626.
 - roots, hypertrophied lenticels on, (57) 321.
 - storage product of photosynthesis in, (60) 519.
- planter attachment, (55) U.S.D.A. 279.
- planting and spacing experiments, (57) Okla. 125.
- planting date experiments for weevil control, (53) U.S.D.A. 336.
- planting experiments, (53) Ariz. 733.
- plants, abnormal behavior due to handling, (55) 828.
- pollen grains, differences in size, (55) 27.
- pollen, medium for germination, (52) 529.
- potash and phosphorus requirements, (53) Ga. 230.
- prices and markets, (56) U.S.D.A. 586.
- prices, factors affecting, (59) U.S. D.A. 183.
- prices, relation to quality, (60) Tex. 186.
- prices, relation to transportation costs, (55) 785.
- problem in French West Africa, (55) 335.

Cotton—Continued.

- problems in Africa, (57) 630.
- production—
 - among negroes of French West Africa, (60) 534.
 - and distribution, 1924–25, (55) 787.
 - 1899–1925, (55) 787.
 - in British Empire, (53) 530, 532.
 - in Khandesh, (59) 628.
 - in Louisiana, (52) 336.
 - in Peru, (60) 816.
 - in Texas, (55) Tex. 483.
 - in Virginia, (52) 336.
 - large-scale, in Texas, (58) Tex. 79.
 - studies, (59) Miss. 827.
 - treatise, (56) 36; (57) 129.
 - use of machinery in, (58) Ark. 373.
- products, distribution of stresses in, (54) 195.
- publications in English, list, (55) U.S.D.A. 530.
- pyralids in French West Africa, (54) 259.
- quality and yield, effect of fertilizers, (60) N.C. 735.
- quality in, studies, (59) 897.
- rain-grown, and climate, (53) 14.
- rate of absorption of sodium nitrate, (56) 213.
- ratoon, in Egypt, (54) 132.
- ratoon, quality, (52) 136.
- ratooned Queensland, quality, (53) 137; (55) 335.
- raw, constituents, (54) 93.
- raw, iron in, (57) 899.
- red plant color in, inheritance, (58) Ark. 27.
- refraction of light by, (54) 394.
- relation to temperature and rainfall, (51) U.S.D.A. 810; (53) 317.
- reports from British experiment station, (57) 330.
- research in Egypt, (55) 828; (60) 224.
- research in India, (55) 736.
- roller-ginned and saw-ginned, spinning tests, (55) 295.
- root disease, notes, (59) 846.
- root rot, control, (54) 846; (55) Tex. 345, U.S.D.A. 446.
- root rot hosts, (55) Tex. 345.
- root rot, relation to pH of soil, (60) Tex. 747.
- root rot, studies, Tex., (57) 149; (59) 751; (60) 548.
- root systems, (58) 132.
- rotation experiments, (58) Ala. 427; (59) N.C. 326.
- Sea Island—
 - characteristics and spinning qualities, (54) 637.
 - culture experiments, (54) 830.
 - fertilizer experiments, (52) 132.

Cotton—Continued.

- Sea Island—continued.
 inheritance of corolla color, (55) 429.
 microspore formation in, (52) 823.
 or other long staple, in southeastern States, (57) U.S.D.A. 330.
 spot disease, studies, (54) 846.
 sterile dwarf rogue in, (51) 29.
 seed, *see* Cottonseed.
 seed bed preparation, (55) Tex. 332.
 seeding experiments, S.C., (54) 637; (60) 734.
 seedling, heritable chlorophyll deficiencies in, (54) Tex. 428.
 seedling stand problem, (59) 525.
 seedlings, chloride and sulfate absorption, (60) 425.
 seedlings, damping-off, (52) 747; (58) 48.
 seedlings, toxicity of high concentration nitrogenous fertilizers, (59) N.C. 828.
 selection experiments, (58) Ark. 322.
 selections, behavior, (54) 231.
 selective fertilization in, (51) 437.
 sewing thread, data, (59) 497.
 shedding experiments, (52) 132.
 shedding in, heritability of different rates, (56) 128.
 sheetings, deterioration due to laundering, (59) 196.
 sheetings, wide, analysis, (60) 198.
 shoot die-back, notes, (53) 148.
 sizing, heavy, uniformity, (57) 96.
 sludded and snapped, merits, (57) 493.
 smalling or stenosis, new disease in Haiti, (52) 650.
 smooth seeds in, inheritance, (58) 225.
 snapped and picked, spinning tests, (55) U.S.D.A. 896.
 softeners, (57) 493.
 soil temperature studies, (58) Fla. 225.
 sore shin, control tests, (57) 348.
 sore shin, relation to soil temperature and moisture, (59) Fla. 846.
 sore shin, use of term, (59) 147.
 spacing and thinning tests, (57) Tex. 527.
 spacing and time of planting tests, (53) Miss. 33.
 spacing experiments, (52) 132, S.C. 531; (53) Miss. 131, Ga. 230, 527, N.C. 835; (54) S.C. 636; (55) Ark. 30, Mo. 133, Miss. 228; (56) 36, Ga.Coastal Plain 523, S.C. 528, Miss. 731; (57) U.S.D.A. 129; (58) Ark. 321, 735, N.C. 831, Tenn. 831; (59) Ala. 30, N.C. 731, Miss. 824; (60) Miss. 34, 133, S.C. 734, Ark. 813, Ark. 816.
 species in Nigeria, factors inhibiting development, (59) 132.
 spinning and weaving industry in Japan, (57) 96.
 spinning, effect of temperature and humidity, (58) 95.

Cotton—Continued.

- spinning tests, (56) S.C. 529.
 spinning tests, effect of different spindle speeds, (59) 794.
 spinning tests, effect of unbalanced drafts in, (59) 794.
 spotting fungus, notes, (57) P.R. 442.
 square dauber, studies, (58) U.S.D.A. 58; (59) 455.
 square weevil, Peruvian, biology and habits, (58) 351.
 stained in Fiji and causes, (60) 557.
 stainer, African, notes, (53) 254.
 stainer new to United States, (54) 754.
 stainer on citrus, (54) Fla. 257.
 stainers in Nigeria, (55) 759; (59) 652; (60) 846.
 stainers in the Sudan, (59) 250.
 stainers, notes, (51) 856.
 stand, relation to soil salinity, (60) 328.
 standard Indian, (57) 694; (58) 596; (59) 693.
 staple, effect of opening processes, (52) 336.
 staple quality, effect of climate, (58) 94.
 stem borer, parasite of, (56) 362.
 strainer, bacteria in, (52) Calif. 80.
 strength tests, (56) 396, U.S.D.A. 496.
 studies, (53) N.C. 736; (56) S.C. 528.
 studies in Russia, (57) 629.
 studies in South Africa, (54) 637.
 subjected to repeated blow-room treatment, effect, (58) 695.
 survey of Salt River Valley, (53) Ariz. 234.
 tare in Egypt, standardized, (60) U.S.D.A. 636.
 Technical Research Laboratory for India, notes, (52) 800.
 technology, research in India, (59) 794.
 terminal bud abortion in, noninheritance of, (52) 448.
 Texas root rot, life history, (51) 544.
 Texas root rot, studies, (54) Tex. 346.
 Texas, spinning tests, (56) U.S.D.A. 193.
 Textile Institute, report, (58) 392.
 textiles, hospital and institutional, (59) 497.
 thermal conductivity, effect of humidity, (54) 795.
 topping and stripping squares, effect, (52) S.C. 532.
 topping test, (53) Ariz. 733.
 trade guide and student's manual, (51) 494.
 treatise, (56) 387; (57) 227; (58) 695.
 types of Burma, (58) 132.
 upland, boll studies, (51) Ariz. 531.
 used in mail bags, wearing qualities, (53) 737.

Cotton—Continued.

- value, relation to land value, (58) S.C. 684.
- varieties, (51) Ga. 132, Mo. 741; (53) Miss. 33, Okla. 133, Miss. 234, Mo. 234; (54) S.C. 637; (55) 230, N.Mex. 434; (56) Miss. 736; (57) Tenn. 126, Mo. 229, La. 522; (58) Tex. 32; (60) Tex. 134, Miss 734.
- for east central area, (58) Tex. 735.
- for Oklahoma, (59) Okla. 327.
- for three regions of State, (58) N.C. 828.
- in red prairies, (58) Tex. 735.
- mixing, (57) 230.
- standard, (58) N.C. 831.
- variability in staple length, (60) 37.
- yields, (54) Ky. 327; (57) Mo. 425.
- variety—
- demonstrations, results, (60) N.C. 735.
- new, from China, (58) 634.
- tests, (51) N.Mex. 138, Tenn. 337, N.Mex. 433, La. 830; (52) Calif. 33, Ga.Coastal Plain 224, 336, Tenn. 528, Tex. 532; (53) Miss. 131, N.Mex. 131, Ga. 230, Miss. 332, Okla. 435, La. 528, Ariz. 733; (54) Ark. 33, Ga. Coastal Plain 130, Fla. 230; (55) Miss. 33, Ga. 131, Mo. 133, Miss. 228, Tex. 332, La. 433, U.S.D.A. 433, Miss. 527, Miss. 636; (56) Miss. 135, Ark. 332, Ga.Coastal Plain 523, Ariz. 731, Miss. 731, Fla. 821, Kans. 822; (57) Okla. 125, Tex. 126, N.Mex. 224, Ga. 225, Okla. 226, Mo. 424, Okla. 523, Tex. 527; (58) Ark. 321, Mo. 428, Ga.Coastal Plain 732, Okla. 734, Okla. 828, S.C. 830; (59) Ga. 221, N.Mex. 222, Ala. 625, Tex. 732, Miss. 824; (60) Miss. 34, Ga.Coastal Plain 132, Ga. 815.
- tests, cooperative, (55) Ark. 638.
- tests in Egypt, (54) 132.
- vetch as green manure for, (59) 437.
- Wagad, history, characteristics, and districts, (55) 828.
- wax examination, methods, (51) 715.
- weed in India, eradication, (57) 234.
- weevil, new, from Peru, (55) 663.
- wetting, (54) 93.
- white grades, spinning tests, (57) U.S.D.A. 198.
- wilt fungus, notes, (56) 545; (58) 143.
- wilt fungus, pathogenicity, (60) Ark. 829.
- wilt fungus, relation to pH of soil, (60) Tex. 747.

Cotton—Continued.

- wilt in India, (53) 247, 350; (57) 543, 748; (58) 241.
- wilt, notes, (51) 156; (53) 44; (55) Ark. 41; (56) S.C. 539; (57) 639; (60) 546.
- wilt, relation to soil temperature, Ark., (59) 640; (60) 829.
- wilt resistance, studies, (55) 445.
- wilt resistant varieties, (54) Ga. Coastal Plain 131; (56) Ark. 347; (59) Ala. 30.
- wilt, studies, (57) 348; (58) Ark. 336, 548; (60) Miss. 151.
- worm, Egyptian, notes, (55) Guam 152.
- worm, Egyptian, on taro, (60) Guam 844.
- worm, notes, (51) 157, P.R. 855, 856; (52) Ky. 452.
- yarns—
- action of heat on, (55) 393.
- breaking strength, relation to twist, (52) 533.
- effect of humidity, (56) 595.
- quality, relation to fiber properties, (60) N.C. 793.
- removal of colored chalk from, (60) 599.
- sized, physical tests on, (51) 235.
- sizing on experimental tape frame, (57) 96.
- strength, effect of twist, (60) 397.
- tensile properties, (51) 37.
- tensile tests for, (55) 392.
- yearbook, (57) 297.
- yellow stain, notes, (55) 245.
- yield, (52) Ga.Coastal Plain 225.
- yield, effect of potassium, (60) S.C. 717.
- yield, effect of rainfall, (55) 716.
- yield, effect of spacing, (56) Tex. 35.
- yield in Egypt, effect of sharāqi period, (56) 36.
- yield, relation to weather, (53) 813.
- yields, methods of comparing, (55) 736.
- Cottons, primitive, in Mexico, (57) 230.
- Cottonseed—
- acre yields after different crops, (56) Miss. 731.
- and products, (55) 802.
- anthracnose infection in, (53) S.C. 750.
- breeding for oil and nitrogen, (56) Ark. 332.
- bug, Egyptian, studies, (52) 356.
- bug, notes, (51) 762.
- cake, cold-pressed, feeding value, (57) Mo. 267.
- cake, feeding value, (57) 69; (59) Idaho 764.
- cake in rations, amount, (51) Kans. 274.
- cake v. alfalfa hay, (51) Kans. 74.
- chemical analyses, (58) Tex. 831.
- coat, density of fiber, determining, (51) N.C. 832.

Cottonseed—Continued.

- composition, N.Mex., (57) 224; (59) 222.
- composition and gossypol content, (57) 609.
- delinted v. untreated, (56) Fla. 821.
- delinting, (56) Tenn. 435; (57) Tenn. 628, 729; (58) S.C. 633; (59) N.C. 731, 846; (60) S.C. 734.
- delinting and recleaning, (51) U.S.D.A. 339.
- delinting machine, (54) Ariz. 34.
- deterioration through moisture, (58) 225.
- detoxication, (59) 12.
- diseased, from Queensland, (58) 242.
- effects of heat treatment, (53) 234.
- feeding value, (51) Mo. 776; (57) N.Mex. 273.
- fiber, and boll characters, correlations, (56) 135.
- fungi isolated from, (54) 746.
- germination, (52) 34, 737; (57) 517.
- germination, effect of various treatments, (54) N.C. 147.
- hull bran, composition, (60) 358.
- hulls as roughage for calves, (59) U.S.D.A. 66.
- hulls, composition and digestibility, (51) Tex. 467.
- hulls, digestibility as affected by sodium hydroxide, (51) 372.
- increasing yields, (55) N.C. 228.
- injury, pathology, (51) 180.
- meal—
- amount for fattening calves, (60) Okla. 256.
 - analyses, (52) U.S.D.A. 78.
 - and hulls, feeding value, (51) N.C. 876.
 - and linseed meal, comparative nutritive value, (58) 864.
 - as corn supplement, (60) 361.
 - composition and digestibility, (51) Tex. 467.
 - composition and nutritive value, (52) 364.
 - decay, effect of organic acids, (51) Tenn. 323.
 - effect on butter, (56) S.Dak. 671.
 - feeding to poultry, effect on eggs, (57) N.Mex. 271.
 - feeding value, (52) Ind. 169, Miss. 169, Ill. 466, Ill. 476, S.C. 567, Tex. 572, 671; (53) Va. 578, Ariz. 769, N.C. 770; (54) S.C. 664, Mo. 762; (55) 163, Tex. 362, N.Mex. 467, Fla. 864; (56) Wis. 762; (57) Tex. 172, Mo. 267, N.C. 267, Okla. 568, 762; (58) Ill. 358, Mo. 467; (59) Wis. 66, N.Mex. 260, N.Mex. 263, N.Mex. 267, Wyo. 267, N.C. 767, Tex. 768, N.C. 772.

Cottonseed—Continued.

- meal—continued.
- fertilizing value, (51) Miss. 134; (55) Ark. 18, Miss. 237; (56) Tex. 22; (57) Tenn. 115.
 - gossypol and *d*-gossypol in, (55) 109.
 - nutritive value for different animals, (59) Ohio 258, 862.
 - poisoning and iron deficiency, (52) 271.
 - poisoning in animals, (52) 364; (57) Ohio 867.
 - prices and index, (56) Ohio 285.
 - properties, (57) Tenn. 115.
 - raffinose from, preparation, (54) 804.
 - toxicity elimination, (56) 762; (58) 865.
 - toxicity, relation to *d*-gossypol, (60) 868.
 - v. ground corn for fattening steers, (56) Kans. 364.
 - v. soy bean meal for beef cattle, (54) Ill. 359.
 - value for egg production, (53) Mo. 471.
- oil—
- adulteration with rapeseed oil, detection, (55) 905
 - and ammonia content, (52) 410.
 - and protein content, changing, (55) Ark. 30.
 - color, cause, (54) 707.
 - crude, composition, (53) 9; (54) 707; (56) 108.
 - export shipments, routing, (53) 295.
 - from upland type, composition, (57) 203.
 - Hanus iodine values, (52) 205.
 - industry, improvements, (55) 802.
 - irradiated, antirachitic properties, (52) 762.
 - pellagra-preventive action, (60) 793.
 - percentages in, (55) Ga. 131.
 - production in Argentina, (52) 228.
 - refining, (51) 614.
 - sulfuric index, (52) 411.
 - pedigreed, cooperative distribution, (51) 37.
 - products, gossypol in, occurrence and destruction, (60) 575.
 - products, properties, composition, and uses, (56) Tex. 68.
 - proteins of, (54) 202.
 - pure, maintaining supply, (60) N.C. 636.
 - registration and certification act of Texas, (55) 736.
 - source tests, (51) Tenn. 337.
 - sterilizing against pink bollworm, effect, (51) La. 804.
 - storage, bibliography, (56) U.S.D.A. 436.

- Cottonseed—Continued.
 storing value, (57) N.C. 228.
 sulfuric acid treatment for, (56) Ariz. 745.
 toxicity, relation to gossypol in, (51) 880.
 treatment, (51) 762; (53) 55.
 treatment, machine for, (54) N.C. 147.
 treatment with superphosphate paste, (51) 37.
 weight, effect on germination and vigor, (59) N.C. 731.
 yield, effect of cultivation, (55) Ga. 131.
- Cottonwood—
 in Iowa, growth, returns, and uses, (52) Iowa 644.
 petiole gall, notes, (54) 155.
- Cottonwoods, oyster-shell scale affecting, (53) Colo. 154.
- Cottony cushion scale—
 notes, (59) Guam 554.
 Vedalia situation in Florida, (54) 53.
- Couch grass, destruction, (55) 438; (57) 734.
- Councilmania lafleuri, notes, (53) 553.
- Country.—*see also* Rural.
 and town, interdependence, (54) 588.
 and town population, social and economic relations, (56) 890.
 and town, service relations, (53) Wis. 487; (60) Mich. 488.
 homes, *see* Farm homes *and* Rural homes.
 life and school, treatise, (52) 795.
 Life Commission, International, proceedings, (59) 288.
 Life Commission, International, report, (56) 889.
 life, English, social and economic problems, (51) 490.
 life movement in United States, (51) 297.
 Life Week at Michigan State College, editorial, (57) 401.
 newspaper, improving, (51) 194.
 planning, treatise, (51) 690.
 theatre movement in Connecticut, (52) 696.
- Cover crops—
 comparison, (55) Guam 131.
 culture experiments, (52) Guam 226.
 fertilizing value, (52) Ohio 23.
 for apple orchards, (52) Wash.Col. 837.
 for coconut trees, (52) Guam 232.
 for orchards, (54) Wash.Col. 835; (56) Colo. 831.
 for orchards, function and value, (53) Mich. 536.
 for soil improvement, (60) S.C. 718.
 hardy, for orchards, (56) 344.
 in citrus orchards, (51) Hawaii 745.
 leguminous, effect on tea, (56) 45.
 notes, (60) 327.
 studies, (51) P.R. 833; (57) 33.
- Cover crops—Continued.
 tests, (56) S.C. 525, Wash.Col. 525, Miss. 731, Fla. 821; (59) Miss. 325; (60) Fla. 130.
 use on grapefruit, (57) Tex. 136.
 value, (51) Ind. 836.
 value for pecans, (53) 538.
 winter, culture experiments, (55) Miss. 228.
 winter, for citrus orchards, (53) Calif. 242.
- Coverlets, handwoven, treatise, (56) 397.
- Cow—
 barns, *see* Dairy barns.
 dairy, and her progeny, records, (54) Ohio 571.
 manure, nitrogen in, conservation and transformation, (54) 421.
 manure, plant foods recoverable from, (53) 780.
 pox, paper on, (52) West.Wash. 598.
 tester's handbook, (52) U.S.D.A. 478.
 testing associations in New York State, accomplishments, (52) 174.
 testing associations in Virginia, operation, (53) 380.
 testing associations, organization and results, (53) U.S.D.A. 676.
- Cowpea—
 and soy bean wilt fungus, comparison, (59) N.C. 749.
 bacterial spot, (54) 650.
 Cladosporium spot, (58) 48.
 crop, effect of weevily seed cowpeas, (52) 858.
 diseases, (51) Del. 148; (58) Del. 441.
 group, nodule organism of, (55) 828.
 hay v. alfalfa hay for heifers, (55) Ark. 66.
 mosaic, transmission by bean leaf beetle, (52) 546.
 rust, studies, (55) 346; (56) 245.
 wilt, cause, (55) N.C. 243.
- Cowpeas—
 and corn, yields, (57) Tenn. 129.
 and soy beans, comparative yields, (54) Mo. 732.
 as cover crop for peaches, (60) Del. 737.
 as cover crops, (51) Hawaii 745; (59) Guam 523.
 as forage crop, (60) P.R. 731.
 as green manure, effect on corn, (57) Tenn. 128.
 as green manure, effect on crop yields, (60) Ark. 803.
 as pasture crop, (52) Kans. 466.
 Brabham, yields, (52) Fla. 224.
 breeding experiments, (51) Hawaii 740, P.R. 833; (59) Ga. 221.
 culture experiments, (51) Wash.Col. 136.
 electrocultural experiments, (54) U.S.D.A. 732.
 fall seeding experiments, (52) 633.
 green, effect on flavor and odor of milk, (53) U.S.D.A. 879.

Cowpeas—Continued.

- hybrid vigor in, (56) 330.
- in mixtures, yield, (55) Miss. 228.
- irrigation experiments, (52) Calif. 33.
- nematodes affecting, (52) Calif. 50.
- pellagra-preventive action, (58) 297.
- phosphorus in, (60) 204.
- plat tests, (51) Hawaii 740.
- resistant to nematodes, production, (55) Miss. 228.
- seeding experiments, (51) Mo. 741; (52) Calif. 33.
- segregation ratio, variation with age, (56) 728.
- spacing experiments, (53) 230.
- sunburn and aphid injury, (53) Ariz. 746.
- v. soy beans for seed and hay, (53) Mo. 431.
- varieties, (51) V.I. 833; (55) Ark. 30; (57) Tenn. 126; (59) Guam 524.
- varieties as cover crop, (56) Guam 228.
- varieties for seed and hay, (55) Ark. 638.
- varieties, yields, (51) Va. 35.
- variety tests, (51) Miss. 134, N.J. 636; (52) Guam 226, Miss. 226, Kans. 433; (53) 133, Wyo. 133; (54) Fla. 230, Mo. 732; (55) Tex. 332; (56) Ark. 332, Ga. Coastal Plain 523, 525, Kans. 822; (57) Okla. 125, Tex. 126, Okla. 226, Okla. 523; (58) 32, Ark. 321, Okla. 734, Okla. 828; (59) Tex. 729; (60) Ark. 812.
- vitamin A in, (52) 65.
- vitamin B in, (51) 666.
- yields, effect of liming, (55) Tenn. 724.

Cowpox—

- and avian variola, (57) 574.
- notes, (57) 278.
- seed virus, rabbits as culture media for, (60) 72.

Cows—see also Calves, Cattle, and Heifers.

- age, relation to milk production, (53) 176.
- ante-mortem and post-mortem records, (60) S.C. 770.
- assimilation of calcium and phosphorus, (58) 469.
- average production, calculating, (54) 68.
- beef, feeding experiments, (53) W.Va. 770.
- beef, wintering, (55) Mont. 562; (58) Ill. 354; (59) Mont. 66; (60) Mont. 759.
- blood of, bactericidal properties, (53) Mo. 479.
- blood of, extractives, (55) 371.
- blood of, in Switzerland and Netherlands, (59) 777.
- body form and production, (55) 571.
- breeding, maintenance, (60) Ohio 462.
- breeding, winter rations, (52) Miss. 269; (56) Mont. 162.

Cows—Continued.

- breeding, wintering in Montana, (60) 360.
- breeds, relation to milk production, (51) 577.
- calcium and phosphorus metabolism, (55) 167.
- care at calving time, (58) U.S.D.A. 870.
- change of form with age, (52) Mo. 679.
- changes in diet, effect on composition of blood and milk, (52) 877.
- changes in reproductive organs following parturition, (53) 385.
- conformation, relation to milk yield, (51) Me. 577; (53) 781.
- cost of maintaining, (56) Ill. 385.
- costs and returns, (51) Mich. 191.
- dairy, daily activity and behavior, (60) N.H. 173.
- dairy, depreciation on, (57) Ohio 188.
- dairy, fall freshening, (60) Okla. Pan-handle 795.
- dairy, feeding, liberality and economy in, (56) Ohio 271.
- dairy, raising, (55) 68.
- dairy, treatise, (57) 766.
- digestibility of low protein rations, (54) 570.
- digestion experiments, effect of length of trial and variations in ration, (58) Vt. 769.
- digestion trials, effect of exercise, (57) Vt. 74.
- dry, heat production, (56) 162.
- dry, maintenance requirement, (54) 769.
- effect of breed and stage of lactation on milk, (56) 872.
- effect of ultra-violet irradiation, (60) 863.
- energy requirements, (54) 66; (56) 470, 471.
- fat production, inheritance and transmission, (58) Mo. 425.
- feeding, (54) Nebr. 68; (56) Ohio 195; (57) 176; (60) Mont. 769.
- feeding experiments, (51) Kans. 74, Kans. 77, Ind. 177, Iowa 474, Can. 578, N.C. 876; (52) Can. 374, 375, 376, 677, Vt. 677; (53) Ind. 175, Kans. 377; (54) S.Dak. 66, 167, 168, Fla. 372, Ind. 373, Pa. 373, Kans. 769; (55) Va. 67, Wyo. 468, Miss. 674, 772; (56) 374, 472, 871; (57) Mich. 868; (59) Ohio 466.
- feeding for milk production, (55) 368.
- feeding in summer, (58) U.S.D.A. 271.
- feeding, papers on, (60) 660.
- feeding, principles and practices, (56) W.Va. 569.
- frequency of calving in Philippines, (55) 464.
- Friesian, measurements, coefficients of correlation, (51) 777.

Cows—Continued.

- genital disease, clinical diagnosis, (59) 473.
 genital organs, diseases of, (53) 680; (55) 574.
 genitalia, changes during oestrous cycle, (52) 631.
 gold medal, in station dairy herd, (59) Ohio 498.
 grain requirement, (53) Ohio 798.
 Guernsey, weight according to age, (60) 263.
 highly specialized, beef and dairy type, comparison, (60) 758.
 Holstein-Friesian, transmitting qualities for fat production, (52) Del. 877.
 inception of lactation in, (55) 368.
 increased production due to test conditions, (56) 170.
 interval between calvings, (56) 872.
 irradiated, antirachitic properties of milk from, (55) 90.
 Jersey, fat production, one-day and two-day tests, (55) 268.
 Jersey, inheritance of butterfat percentage in, (58) 127.
 lactation, effect of gestation on, (52) 478.
 lactation, measuring persistency, (57) 274, Ill. 274.
 low and high producing, profitableness, (60) Ohio 199.
 maintenance requirements, (52) Pa. 274; (56) Vt. 569.
 measure of performance, deferred short-time test, (58) 271.
 metabolism experiment, (52) U.S.D.A. 577.
 methods of stabling, (56) Wash.Col. 569.
 milk producing feed requirements, (55) 367.
 milk production, *see* Milk production.
 milk yields, effect of pregnancy, (52) 773.
 milking by machinery, (54) 878.
 milking rate, (58) Ill. 362.
 milking rate, new device for study, (60) Ill. 262.
 mineral balance, effect of previous feeding and water, (55) Ohio 169; (56) 73.
 mineral metabolism, (51) Wis. 475, 675; (56) Kans. 870.
 mineral requirements, (59) Ohio 267.
 mineral supplements for, (57) 762.
 minerals for, value, (60) Ala. 173.
 mucous secretion of cervix, (55) 369.
 oestrous cycle in, effect of ovarian extracts, (55) 29.
 on official test, feeding, (52) 676.
 on pasture, feeds for, (55) Ohio 697.
 ovulation and corpora lutea formation, (52) 631.
 pasturing experiments, (54) U.S.D.A. 187.

Cows—Continued.

- physiological studies, N.H., (57) 370; (59) 266.
 protection from flies, (53) Okla. 155.
 protein requirements, (54) 471, Ohio 768; (57) Ohio 175.
 purebred and grade, comparison, (59) U.S.D.A. 74.
 purebred Jersey, growth and senescence, (58) Ill. 768.
 purebred, testing in New South Wales, (54) 770.
 range, supplemental feeding, N.Mex., (51) 468; (53) 369.
 rations for, (53) Okla. 66.
 rations for, computing, (53) 473.
 records, *see* Dairy herd records.
 Red Danish, growth and senescence, (60) 263.
 reproduction in, physiology, (57) 460.
 reproductive functions in, (54) 265.
 selecting, (60) Utah 473.
 self-feeding experiments, (57) Ill. 272.
 Shorthorn, breeding records, (55) W.Va. 58.
 skeletal growth in, (54) Mo. 374.
 sterility in, (53) 278; (57) 182; (60) 574.
 sterility in, cause, (54) 161, 874.
 sterility in, control, (52) 676.
 sterility in, prevention, (59) 473.
 succulent feeds for, in summer, (54) Iowa 867.
 supplementary summer feeding, effect, (60) 568.
 testing for production every 2 months, (58) U.S.D.A. 169.
 testing in different countries, (54) 571.
 tethering on vetch and oats, (56) 471.
 twinning tendency relation to milk production, (52) 174.
 udders, *see* Udder.
 ultra-violet irradiation, effect on, (57) N.J. 767.
 uterus affections, diagnosis and treatment, (57) 673.
 value of pasture for, (58) Miss. 68.
 winter feeding and use of forage crops, (60) 569.
 Coyocutena Agricultural College of Honduras, establishment, (59) 200.
 Coyote, albino, description, (55) 330.
 Coyotes—
 susceptibility to tularaemia, (56) 56.
 susceptible to salmon poisoning, (57) 877.
 trematode affecting, (55) 373.
 Coyotillo, poisonous to livestock, (59) U.S.D.A. 171.
 Crab apple seedlings, French, nutrient requirements, (54) N.Y.State 537.
 Crab apples—
 breeding experiments, (56) S.Dak. 641.
 culture experiments, (58) Alaska 435.
 culture under irrigation, (57) U.S.D.A. 534.

- Crab apples—Continued.
 native American, behavior in breeding, (59) Ill. 634.
 varieties in Wyoming, (53) 536.
 variety, notes, (51) S.Dak. 440.
 variety tests, (57) N.J. 735.
- Crabs—
 damaging paddy in Burma, (52) 154.
 fresh-water, of South India, (52) 154.
 land, as agricultural pests in India, (54) 53.
- Cracker dough fermentation, organic acids produced during, (55) 408.
- Cracker dough fermentation, studies, (54) 108.
- Crackers, pH value, (56) 204.
- Cranbus—
 genus, paper on, (57) 554.
 sp., notes, (58) Ohio 434.
 trisetus, studies, (58) U.S.D.A. 455.
- Cranberries—
 canned, discoloration, (57) 591.
 Cape Cod, iodine in, (60) 687.
 culture, Wash.Col., (54) 852; (60) 822.
 culture experiments, (59) Wash.Col. 40.
 effect on urinary acidity, (51) 64.
 fertility and acidity studies, (51) N.J. 645.
 fertilizer experiments, N.J., (55) 39; (57) 45, 737; (59) 335.
 flower-bud differentiation and growth, (55) 744.
 frost injury, (52) Wash.Col. 837.
 growth, effect of water level, (57) N.J. 717.
 harvesting and handling, (51) U.S.D.A. 646.
 high bush, value and possibilities, (52) 142.
 insect survey and control, (55) 252.
 insects affecting, (52) Wash.Col. 853; (55) Oreg. 659; (56) Wash.Col. 553; (57) N.J. 59; (60) Wash.Col. 845.
 keeping qualities, incubator tests, (58) 39.
 nonvolatile acids of, (58) 711.
 on Cape Cod, insects affecting, (59) Mass. 651.
 pollination by bees, (54) 158; (55) N.J. 51.
 protection from frost, (54) U.S.D.A. 115.
 spotted cutworm affecting, (52) 61.
 storage rots, (51) Wash.Col. 155.
 studies, (56) Wash.Col. 533.
- Cranberry—
 bog peat, nature, (57) N.J. 714.
 bogs, spraying machinery for, (51) N.J. 685.
 bogs, use of bees as pollinators, (59) 358.
 bogs, weed killers for, (56) Wash.Col. 534.
 bogs, weeds infesting, (52) N.J. 737.
 diseases, dusts v. spray for, (57) N.J. 650.
 diseases, studies, (56) U.S.D.A. 453.
- Cranberry—Continued.
 false blossom disease, distribution in Wisconsin, (58) 658.
 false blossom disease, notes, (57) 54, 849; (58) N.H. 248; (59) 347, N.J. 351, 645.
 false blossom disease, relation to insects, (59) 250.
 fields, establishing, (51) U.S.D.A. 646.
 fields, managing, (51) U.S.D.A. 646.
 fireworm, control, (54) Wash.Col. 854.
 fruit rot, notes, (54) 745.
 fruit worm, control, (54) Wash.Col. 854.
 fungi in Massachusetts, (56) 249.
 girdler, control, N.J., (52) 751; (53) 256.
 industry in Massachusetts, (54) 838.
 industry of Oregon, (57) Oreg. 45.
 insects, studies, (51) Wash.Col. 158; (53) 555; (59) 249.
 picking, studies, (52) 640.
 plant, injurious effect of submergence, (54) N.J. 741.
 problems, (51) N.J. 658.
 production, effect of height of water table, (53) 143.
 root weevil, control, (54) Wash.Col. 855.
 rootworm beetle, paper on, (55) 253.
 rootworm on blueberries, (57) 860; (59) N.J. 351.
 rot, control, N.J., (57) 753; (59) 347.
 rots, (54) 751.
 scale, notes, (56) 460.
 soils, fertility and acidity studies, (52) N.J. 740.
 toad bug, notes, (60) Miss. 163.
 weevil, life history and control, (56) 861.
- Crane fly—
 larvae on tobacco, (55) Conn.State 253.
 life history, relation to oat crop, (58) 349.
- Craspedonotus tibialis, notes, (56) U.S.D.A. 860.
- Crassisoma urosulatum, notes, (57) P.R. 468.
- Crataegomespili, studies, (58) 825.
- Crataegus, cytological studies, (56) 327.
- Crawfish—
 life history and control, (55) Miss. 658.
 studies, (55) Miss. 555.
 systematic and biological study, (52) Miss. 252.
- Crayon, removal from yarn and roving, (60) 599.
- Cream—
 acid, neutralizing, (53) Wis. 475.
 acidity in, development, (51) 278.
 acidity, neutralizers for, (56) Ill. 273.
 acidity reduction for butter making, (54) 868.
 acidity, relation to acidity of milk, (51) 278.

Cream—Continued.

- and milk contests, suggestions for, (55) U.S.D.A. 370.
 bacterial count, relation to that of milk and skim milk, (54) 572.
 boric acid determination in, (51) 112.
 care on the farm, (51) 179.
 centrifugal separation, effect of temperature, (60) 264.
 cheese, manufacture, new method, (57) 374.
 colloidal chemistry of, (52) U.S.D.A. 503.
 cooling, (51) 581.
 cooling, for butter making, (53) Ind. 177.
 effect of freezing on marketability, (54) Mo. 772.
 effect of homogenization, (59) Iowa 74.
 effect of pasteurization temperature and neutralization on butter, (53) 178.
 effect on hemoglobin production, (56) 495.
 enzymes in, effect of heat, (53) 882.
 factory treatment for butter making, (53) Mich. 781.
 fat content, variations in, (55) Mo. 268.
 fat globule, effect of pasteurization and separation, (59) 168.
 fat in, Babcock test for, (56) Okla. 171.
 fat percentage, methods of determining, (56) N.Y.State 773.
 fat test, effect of souring, (57) 869.
 feathering, (59) 875.
 feathering and heat stability, (59) 669.
 foreign fats in, turbidity test, (51) 208.
 formation and fat in, factors affecting, (59) 668.
 frozen, as source of fat in ice cream, (58) Pa. 364.
 frozen, effect on butter quality, (54) S.Dak. 170.
 frozen, effect on marketability, (57) Mo. 466.
 grading methods, (55) 69.
 gravity, distribution of fat in, (60) 570.
 handling, effect on grade, (53) 474.
 irradiated, effect, (53) 568.
 layers, volume, on Holstein and Jersey milk, (60) 571.
 line formation, studies, Pa., (56) 171; (58) 365.
 line formation, studies, correction, (56) Pa. 872.
 marketing in New England, (58) U.S. D.A. 286.
 microscopic appearance, (55) N.Y. State 268.
 neutralization for butter making, (53) 581; (56) 474.

Cream—Continued.

- neutralizers for butter making, effect, (60) Ark. 865.
 number of cells in, (56) N.Y.State 274.
 pasteurization methods, (55) 472.
 pasteurization, papers on, (53) 580.
 pH values, measurement, (53) 12.
 plug, cause and prevention, (53) Wis. 475; (58) 871.
 pools, organization and operation, (56) Idaho 84.
 production, (51) 780.
 production on the farm, (56) W.Va. 569.
 production, physicochemical factors, (55) 872.
 properties, effect of freezing, (58) Mo. 471.
 quality, factors affecting, (56) Vt. 570.
 reconstituted, tests, (59) 807.
 removal of volatile off-flavors, (54) 70.
 removing from milk, Friesian method, (51) 678.
 rising, effect of blood serum and skim milk, (52) 278.
 rising on milk, effect of different operations, (51) 581.
 rising on milk, studies, (52) 479.
 ropy, (51) 280.
 samples, composite, accuracy, (59) Minn. 774.
 sampling and testing, (55) N.J. 172.
 sour, for table uses, (58) 572.
 sour, starter for, (51) 678.
 supplies, proposed control basis, (55) 471.
 sweet, butter manufacture from, (52) Utah. 774.
 testing and handling, (57) Colo. 571.
 testing, Babcock method, (52) Colo. 879.
 testing, directions, (51) Mo. 579.
 tests for whipping, (51) 278.
 tests, reading the fat in, (51) 613.
 tests, Roese-Gottlieb v. Babcock, (51) 207.
 tests, variation in, causes, (58) Idaho 572.
 undescrivable flavors in, (51) Mich. 178.
 viscolizing or homogenizing process, (58) Pa. 365.
 viscosity, (60) 573, 661.
 viscosity, factors affecting, (55) 873.
 viscosity, surface tension, and whipping properties, (54) N.Y.State 376.
 vitamin A in, effect of copper, (51) 569.
 whipping, directions, (52) N.Y.State 580.
 whipping qualities, (59) 670.
 yeasts in, (60) 570.
 yeasty, cause, (51) Mich. 178.
 Cream of wheat, irradiated, effect, (53) 568.

- Creameries**—
and shipping stations, (52) N.Dak. 592.
cooperative, papers on, (52) U.S.D.A. 593.
country, financial records for, (58) Iowa 188.
metallic surfaces in, types of coating materials, (59) Calif. 781.
Minnesota, statistics, (53) 277.
operating costs, (53) Wis. 487.
Oregon, marketing problems, (55) Oreg. 382.
organization, economic aspects, (53) Minn. 489.
plans, (55) 584.
- Creamery**—
and testers' license laws, (52) U.S.D.A. 575.
churn, methods of cleaning, (51) Ind. 877.
cooperative organizations of California, (60) 681.
efficiency, judging, (56) 483.
inspection, N.J., (55) 69, 268; (57) 76; (59) 76.
license division, report, Ind., (52) 177; (54) 377; (56) 569; (58) 272.
operation, statistical study, (57) 885.
waste bacteria, proteolysis by, (58) 186.
wastes, bacteria in, (58) 782.
wastes, purification, (53) 86; (58) 185.
- Creatine**—
and creatinine, reciprocal transformation, (51) 557; (54) 792.
excretion, effect of light, (56) 191.
in rat tissue, effect on growth, (58) 388.
in urine, determination, (51) 165.
metabolism in brains of starving and polyneuritic pigeons, (59) 394.
metabolism in experimental scurvy, (53) 164.
rate of transformation to creatinine, (51) 665.
transformation into creatinine by male and female subject, (59) 592.
- Creatinine**—
and creatine, reciprocal transformation, (51) 557; (54) 792.
excretion, effect of light, (56) 191.
excretion of women, (51) 165.
in blood of children, (51) 265.
in tissues, determination, (58) 509.
rate of transformation from creatine, (51) 665.
transformation from creatine by male and female subject, (59) 592.
- Credit system, Federal intermediate, treatise, (57) 481.**
- Creeping bent grass, possibilities, (51) West.Wash. 638.**
- Creeping eruption, cause, (56) U.S.D.A. 776; (60) 579.**
- Creeping plants, studies, (53) 623.**
- Cremastobombycia lantanaella, notes, (52) 356.**
- Cremastus confluens, notes, (56) 361.**
- Cremastus sp., notes, (53) U.S.D.A. 54.**
- Crematogaster scutellaris, notes, (59) 154.**
- Creonectria coccinea, notes, (57) 743.**
- Creontiades debilis, notes, (59) 455.**
- Creosote, low temperature coal-tar, in wood preservation, (60) 879.**
- Crêpe fabrics, causes of damage in, (54) 299.**
- Crepe myrtle**—
new disease, (54) S.C. 648.
plant louse, notes, (56) 256.
powdery mildew, (58) S.C. 646.
- Crepidodera atriventris, notes, (56) 157.**
- Crepis**—
capillaris, inheritance in, (55) 224.
capillaris, triploid and pentaploid mutants, (55) 819.
capillaris, varietal studies, (53) Calif. 425.
crosses, chromosome number, (55) Calif. 327.
genetic studies, (52) Calif. 29.
haploids in, (59) 126.
hybrids, cytology, (58) 824.
spp., chromosome number and individuality in, (55) 632.
spp., interspecific hybrids in, (52) 330.
- Cresol**—
crude, *m*-cresol in, (53) 506.
saponified, as larvicide, (56) 458.
soap mixtures, bactericidal efficiency, (54) 394.
solutions saponified, methods of control, (52) U.S.D.A. 506.
- Cress, garden, damping-off, relation to temperature, (54) 48.**
- Cricket**—
coulee, notes, (53) 756.
field—
control, (55) N.Dak. 555.
distribution, life history, and control, (56) S.Dak. 555.
economic importance and control, (55) 355.
food preferences, (58) 257.
in South Dakota, (56) S.Dak. 659.
studies, S.Dak., (54) 152; (58) 755.
house, notes, (51) Conn.State 852.
Italian, in France, (51) 762.
Mormon, control, (51) 253; (59) 58; (60) 558, Mont. 752.
Mormon, notes, (57) Mont. 258.
snowy tree—
affecting prunes, (58) Idaho 58.
effect of low temperatures, (55) Idaho 853.
in prune orchards, (55) 556.
life history and control, (59) Calif. 754.
physiological variation in, (54) 657.

Cricket—Continued.

tree—

- injury to prunes, (52) 658.
- mutilation of twigs by, (57) Mich. 554.
- notes, (55) Iowa 554; (60) Fla. 160.
- of Oregon, (55) Oreg. 659.

Crickets—

- as household pest, (57) 163.
- attacking sugar cane, (54) 257.
- destruction, (53) 52.
- poison bait for, (51) S.Dak. 453.

Crioceris asparagi, see Asparagus beetle.*Crocidolomia binotalis* in Union of South Africa, (54) 259.*Crocidosema lantana*, notes, (52) 356.

Crocus culture and botanical characters, handbook, (52) 344.

Cronartium—

- asclepiadeum, notes, (56) 542.
- occidentale and *C. ribicola*, differences, (53) 347, 651.
- occidentale, notes, (54) 549.
- ribicola—see also White pine blister rust.
- and *C. occidentale*, comparison, (57) 356.
- potential sporidia production, (51) 549.
- telia, viability, (51) 356.
- spp., inoculation of *Ribes* with, (60) 749.

Crop—

- acreage and yields, revised estimates, (55) U.S.D.A. 283.
- adaptations to soil types, (59) N.C. 718.
- characters, regression, (58) 631.
- conditions on Belle Fourche Project, (53) U.S.D.A. 390.
- estimating, problems in, (59) 482.
- experiments, rôle of pot cultures in, (60) 635.
- failure, cause, (59) 454.
- growth and soil reaction, (53) 320.
- growth, effect of paper mulch, (59) Calif. 717.
- growth, effect of straw, (54) 420.
- growth, relation to meteorological conditions, (60) 709.
- increases, biological possibilities, (57) 119.
- insurance, relation to farm credits, (56) 686.
- plant problems, research fundamental to solving, (52) 526.
- plants, chromosome numbers in, (56) 327.
- plants, genetics, (58) 525.
- records, uniformity of descriptive terms, (51) 33.
- report regulations, U.S.D.A., (53) 92; (54) 883; (57) 88; (59) 90.
- reporting, British methods, (55) 887.
- reports, U.S.D.A., (51) 193, 394, 491, 692, 795, 893; (52) 192, 296, 493,

Crop—Continued.

reports—continued.

- 595, 693, 789, 895; (53) 92, 392, 491, 691, 794; (54) 81, 183, 388, 484, 686, 786; (55) 82, 186, 383, 588, 685, 785; (56) 185, 289, 387, 789, 888; (57) 288, 484, 686, 885; (58) 188, 287, 490, 589, 787, 889; (59) 89, 286, 486, 684, 886; (60) 87, 187, 385, 485, 680, 785.

residues, effect on soil reaction, (59) Colo. 117.

residues, fertilizing value, (58) 720.

residues organic matter in, (58) 616.

rotation, see Rotation.

studies, growth-equation constants in, (54) 731.

variation, studies, (52) 526; (58) 632.

varieties, adaptation, (57) 524.

yield trials, principles and practice, (56) 431.

yields—

and area in India, (54) 887.

and climate in Prince Edward Island, correlation, (57) 227.

and fertilizer consumption in France, (57) 813.

correcting for soil heterogeneity, (51) 33.

effect of drainage, (59) Md. 478.

effect of legumes, (60) Ark. 803.

effect of potash, (57) Mass. 20.

effect of rotation and soil treatments, (59) N.C. 823.

effect of soil moisture, (55) 719.

effect of sulfur as fertilizer, (59) Md. 425.

effect of weather, (56) 207.

effects of drying the soil, (58) 723.

forecasting, (55) 806.

from soil experiment fields, Ill., (55) 624; (57) 813.

in Prussia, effect of precipitation and temperature, (56) 413, 807.

in Ukraine, factors affecting, (57) 524.

increase through stimulation, (58) 625.

on large estates in Hungary, (53) 796.

on soil experiment fields, (52) Iowa 322.

papers on, (54) 130.

per acre in India, (52) 395, 396.

physiology of, symposium, (54) 130.

relation to microorganisms in soil, (59) Iowa 210.

relation to precipitation in Great Plains area, (56) U.S.D.A. 730.

relation to soil and air temperatures, (58) 14.

under irrigation, (59) 626.

variations in, (51) Ohio 488.

- Crops—
- absorption of nutrients, effect of microorganisms, (56) 20.
 - aluminum tolerance, (58) 121.
 - and markets, monthly supplement, U.S.D.A., (51) 194, 395, 491, 692, 795, 895; (52) 194, 297, 493, 594, 694, 789, 895; (53) 92, 392, 488, 691, 794; (54) 81, 183, 388, 485, 686, 786; (55) 82, 186, 383, 588, 685, 785; (56) 185, 289, 586.
 - and weather conditions, Minn., (53) 113; (55) 313; (56) 507; (58) 808.
 - and weather in plains region, relation, (60) Mont. 16.
 - artificial drying in the stack, (56) 482.
 - botany of, treatise, (54) 722.
 - bumper, and a droughty season in Ohio, (55) 210.
 - composition, effect of geographical factors, (58) 631.
 - cost and profitableness, (60) Ill. 281.
 - cost of production, (53) U.S.D.A. 489; (55) Ill. 380; (56) Ohio 82, N.Dak. 484; (60) Ky. 283.
 - cost of production on demonstration area, (51) La. 891.
 - destruction by wind on muck land, prevention, (54) Mich. 511.
 - drought resistance, (56) Kans. 813.
 - drying in the stack, (56) 180.
 - dry-land cultural methods, (60) 730.
 - dry-land, pasturing with hogs, U.S.D.A., (54) 162; (55) 161.
 - effect of concentration of nitrate nitrogen, (56) 119.
 - effect of fertilizers on seeds, (58) 530.
 - effect of magnesium oxide dust, (56) 27.
 - effect of soil cultivation, (55) 619.
 - effect of tillage, (54) Wash.Col. 809.
 - effect of weather, (54) 510.
 - effect on each other, (52) R.I. 23; (54) 31; (55) R.I. 220; (59) N.C. 735.
 - effect on those following, (58) R.I. 222.
 - emergency, for flooded lands in Mississippi Valley, (57) U.S.D.A. 327.
 - for marsh soils, (57) Wis. 20.
 - forecasting in India, (53) 192.
 - form of nitrogen for, (53) 20.
 - from peat soils, phosphoric acid content as index of fertilization, (56) 120.
 - Georgia grown, vitamins in, (59) Ga. 293.
 - growth in different soils, (54) Ky. 344.
 - growth, relation to alkali content of soils, (52) 812.
 - hogging down value, (53) N.C. 775.
 - improvement, manual, (56) 728.
 - in rotations, fertilizer experiments, (59) Tex. 729.
- Crops—Continued.
- in storage, change in weight, factors affecting, (59) 313.
 - injury from arsenical compounds, (57) 50.
 - insects affecting, (60) 161.
 - intertilled, culture, (60) Mont. 729.
 - losses due to weather, (56) 207.
 - losses from various causes in France, (54) 510.
 - losses on storage, (59) 626.
 - nutrition, treatise, (60) 119.
 - of Arkansas, labor requirements, (51) U.S.D.A. 90.
 - of Bombay Presidency, statistics, (59) 626.
 - of British Empire, (51) 896.
 - of Sind, geography and statistics, (60) 431.
 - on peat or muck land, cultivation, (53) 589.
 - on prairie sod, methods of handling, (52) U.S.D.A. 828.
 - planting dates and rates, (57) Tenn. 126.
 - planting directions, (51) West.Wash. 96.
 - production—
 - and ecology on Great Plains, (58) 116.
 - and soil fertility, treatise, (55) 508.
 - and soil management, treatise, (52) 696.
 - chemistry, (53) 16.
 - data for use as teaching material, (55) 187.
 - extension program in, (52) U.S.D.A. 597.
 - farm costs and practices in, (59) Wis. 483.
 - handbook, (60) 221.
 - in arid regions, (56) 15.
 - in British Isles, treatise, (54) 529.
 - in India, treatise, (53) 335.
 - in southwestern Kansas, (58) Kans. 129.
 - man and horse labor in, (57) Ky. 284.
 - textbook, (54) 290.
 - quality, control, (56) 34.
 - quality, effect of time of cutting, (56) 432.
 - quality, relation to potassium, (58) 620.
 - quality, relation to seeding practices, (56) 33.
 - recommended for Minnesota, (55) Minn. 132.
 - residual effects of different irrigation treatments, (58) 223.
 - response to fertilizers, (55) Ohio 528.
 - response to phosphorus carriers, (57) R.I. 615.
 - response to potassium, (53) 724; (58) 620.

Crops—Continued.

- response to various treatments, (60) Ohio 636.
- root development, effect of soil types and thickness of stand, (59) Mich. 17.
- root development, treatise, (57) 415.
- self-fertilization studies, (60) Ky. 223.
- semidefoliation, effect, (54) 818.
- spacing experiments, (53) 527.
- spring, fall seeding, (52) 633.
- standardization, (60) Mont. 729.
- stimulation with paper mulch, (59) U.S.D.A. 528.
- subduing weeds, (56) 40.
- transpiration ratio, (60) 430.
- tropical, treatise, (60) 46.
- utilization experiments, (55) U.S.D.A. 161.
- variety tests, significance of seeding rate and spacing in, (57) 727.
- water requirement and value in rotation, (57) 726.
- water requirements, (55) 582; (60) 214, 635.
- yearbook statistics, (51) U.S.D.A. 795.
- Crossbills, food habits, (52) U.S.D.A. 354.
- Crossbreeding, papers on, (57) 761.
- Crossing-over—
- and radium radiations, (51) 130.
- cytological evidence for, (55) 732.
- effect of X-rays, (51) 230; (52) 129.
- in corn, variability, (56) 330.
- in first chromosome of *Drosophila*, factors affecting, (56) 816.
- in rats and mice, variations in, (52) 128.
- in sex chromosomes of fowls, (57) 30.
- theory, (55) 732.
- unequal, at bar locus in *Drosophila*, effects, (54) 225.
- Crossocephalus spp. parasitizing equines, (52) 85.
- Crotalaria—
- as soil building crop, (58) 431.
- bug, life history and parasites, (59) 353.
- bug, notes, (59) 653.
- for cover crop in citrus groves, (54) Fla. 352.
- meal v. alfalfa meal for dairy cows, (60) Fla. 174.
- planting tests, (56) Fla. 821.
- species, behavior, (52) Fla. 224.
- species for cover crops, (57) P.R. 425.
- species for green manure and cover crop, (52) 732.
- species, variety tests, Fla., (55) 824; (56) 821.
- striata as green manure, (56) Fla. 811.
- usaramoensis, notes, (52) 634.
- Crown gall—
- and hairy root, studies, (60) 445.
- and wound overgrowth, studies, (58) 246.

Crown gall—Continued.

- control by soil germicides, (58) Ill. 339.
- development, factors affecting, (54) 842; (57) 253.
- disease, strands and secondary tumors in, (58) 42.
- early stages, (54) 653.
- experiments, (55) 849; (60) Tenn. 148.
- of apple nursery stock, (54) U.S.D.A. 653; (58) 245, 247.
- of fruits, (60) 245.
- of nursery apple trees, effect of sulfur soil treatment, (57) 847.
- of nursery stocks, (51) Tenn. 349; (54) 452; (56) 653; (58) 150.
- of plants, anatomy, (59) 341.
- on rosaceous hosts, (58) 245.
- or plant cancer, notes, (57) 541; (58) 543.
- organism, isolating method, (58) 245.
- organism, location in host tissues, (53) 645.
- organism, morphological notes, (59) 240.
- organism, morphological responses of host tissues, (53) 645.
- relation to temperature and moisture, (55) 850.
- resistance, experiments with Paris daisy and rose, (53) 855.
- resistance in *Prunus*, (56) 248.
- studies, (52) 146; (53) Wis. 443, Iowa 747; (54) 144, 750; (56) Iowa 841; (57) 640; (60) 240.
- tissue, cytological studies, (57) 252; (60) 545.
- tissue of plants, *Bacterium tumefaciens* in, (58) 647.
- Crown rust, alternate hosts, (56) 446.
- Crows—
- economic control, (56) 456.
- economic status and control, (53) Okla. 155.
- of France, (59) 648.
- Cruciferae, evolution in, (52) 330.
- Cruciferous—
- blackleg, control, N.Y.State, (56) 242; (60) 444, 445.
- crops, diseases, control, (54) N.Y. State 543.
- plant diseases, (56) U.S.D.A. 749.
- ringspot, studies, (54) 843.
- white rust and downy mildew, (60) 51.
- white rust hosts and control, (53) 544.
- Crucifers—
- diseases of, seedbed treatment, (58) N.Y.State 444.
- seedlings, effect of copper salts, (57) 416.
- storage and transportation diseases, (57) Mich. 642.
- Crude fiber, *see* Cellulose.
- Crustacea, canned, formaldehyde in, (55) 307.

- Cryolite, insecticidal value, (52) Tenn. 555.
- Cryoscopic work, correction for undercooling, table, (55) 730.
- Cryptocephalus pini, biology, (55) 854.
- Cryptococcus fagi, notes, (58) 160, 558.
- Cryptogonus—
nigripennis, notes, (60) Guam 844.
orbiculus nigripennis, notes, (59) Guam 554.
- Cryptohypnus nocturnus, notes, (60) 654.
- Cryptolaemus montrouzieri—
biological studies, (60) 654.
notes, (52) 855; (59) Guam 554.
parasite of citrophilus mealybug, (52) 455.
- Cryptomyces maximus, notes, (57) 158.
- Cryptoporus volvatus on conifers, relation to insects, (59) 348.
- Cryptorchidism—
artificial, experiments, (58) 630.
pseudo, in an albino rat, (54) 858.
- Cryptorhynchus—
gravis, notes, (58) 863.
lapathi, control, (57) N.J. 757.
lapathi, notes, (54) Mich. 655.
mangiferae, life history, (57) 562.
- Cryptotermes—
brevis, notes, (53) 156.
brevis, resistance of woods to, (52) 657.
hermsi, intestinal flagellates, (56) 462.
piceatus, notes, (57) 654.
- Cryptothrips floridensis, *see* Camphor thrips.
- Crystalline substance with properties of bios, isolation, (52) 110; (53) 204.
- Crytognus orbiculus nigripennis, notes, (56) Guam 251.
- Ctenocephalus canis, *see* Dog fleas.
- Ctenocephalus felis, *see* Cat fleas.
- Cucumber—
angular leaf spot, control, (51) 156.
angular leaf spot, notes, (53) 43; (56) Fla. 840; (59) 536.
anthracnose, control, (52) Kans. 449.
aphis, control, (51) Iowa 449.
aphis, transmission of mosaic by, (54) 346.
bacterial wilt, control, (60) N.Y.State 444.
bacterial wilt, notes, (55) 242.
beetle, banded, life history studies, (60) Ala. 159.
beetle, banded, notes, (58) Ala. 450.
beetle, control, (58) Ky. 57.
beetle, notes, (59) N.Mex. 249.
beetle, spotted—
cooperative studies, (57) La. 556.
life history studies, (55) 559.
notes, (56) U.S.D.A. 449; (57) Mich. 654; (60) Tenn. 161.
beetle, striped—
control, (51) Md. 454; (52) N.Y.State 553; (54) 58; (55) Tenn. 157; (56) Ill. 357; (57) Ky. 561, Ind. 654; (58) Ark.
- Cucumber—Continued.
beetle, striped—continued.
control—continued.
344, N.Y.State 857; (59) Ind. 758.
dust mixtures for, (54) N.Y.State 533.
life history, habits, and control, (57) Ark. 63.
life history in Iowa, (54) 661.
method for life history studies, (59) 555.
notes, (51) Iowa 659; (53) Iowa 755; (55) Ark. 50, Va.Truck 253, Iowa 554; (56) U.S.D.A. 449; (57) Mich. 654.
paper on, (56) 458.
summary, (54) Ohio 661.
- beetles—
control, (51) P.R. 855; (52) Va. Truck 43; (56) N.Y.State 253; (57) Calif. 256; (60) N.Y.State 452.
notes, (59) Mich. 455.
striped and spotted, control, (53) Mo. 450.
transmission of mosaic by, (54) 346.
chlorosis, notes, (55) 244.
cottony leak, description, (53) 851.
damping-off, notes, (59) 535.
disease, notes, (59) 535.
diseases, control, (54) Iowa 148, Fla. 746.
diseases, experiments with sulfur for, (55) Tex. 345.
downy mildew, control, (51) 156; (54) Fla. 342; (60) Fla. 148.
downy mildew, notes, (53) 43; (55) Fla. 841.
flower types, inheritance, (59) Calif. 633.
flowers, sex ratios in, (59) 741.
fruit and leaf disease, control, (59) 644.
fruit rot, notes, (54) Fla. 245.
leaf spot, notes, (59) 534.
mildew, control, (56) Guam 245.
mildew, spraying and dusting experiments, (56) Colo. 839.
- mosaic—
control, (56) 49, U.S.D.A. 449; (57) 150, 544.
in greenhouse, control, (52) U.S.D.A. 50.
notes, (51) Iowa 449; (58) 647.
overwintering, relation to Physalis species, (58) 147.
resistant variety, (59) 344.
spraying for, (59) 847.
studies, (55) 243.
transmission, (54) 346.
- pickles, fermentation, (56) 413.
plants, young, pests of, (60) 248.
powdery mildew, control, (56) Fla. 840; (60) Mass. 644.
root borer, notes, (60) 651.
root rot, notes, (59) 535.

- Cucumber—Continued.
 seed, germination studies, (53) Colo. 146.
 seed, effect of fruit maturity, (55) 835.
 seed, treatment, (55) Fla. 841.
 seedling disease, (57) 544.
 soils, sterilization, (53) 640.
 strains, selection for market demand, (58) Ill. 333.
 wilt, control, (58) N.Y.State 844.
 wilt, spraying for, (59) 847.
- Cucumbers—
 cause of failure, (59) Colo. 236.
 cold storage studies, (60) 541.
 culture, (55) Mich. 139; (59) U.S.D.A. 742.
 culture and marketing, (57) V.I. 335.
 culture experiments, (55) V.I. 339.
 culture in greenhouse, studies, (57) 831.
 culture, treatise, (53) 640.
 effect of carbon dioxide, (57) 336.
 effect of increased carbon dioxide, (60) 320.
 effect of radium treatment, (60) 338.
 effect of seed treatment, (59) 343.
 fertilizer experiments, Ohio, (52) 23; (59) 835.
 greenhouse—
 cause of large losses, (52) 234; (60) Mass. 644.
 effect of increasing carbon dioxide of air, (51) 239.
 effect of varying the water supply, (53) 537.
 pruning and training, (54) 643.
 yellow pickle in, (55) Mass. 147.
 liming experiments, (51) 143.
 pollination studies, (59) 834.
 prices and shipments from Florida, (59) 886.
 ripening, effect of ethylene, (60) 822.
 shape and size, relation to environment, (59) 834.
 soil sterilization for, (52) Kans. 449.
 value of steam sterilization for, (56) 41.
 varieties, (52) Utah 739.
 vitamin A in, (52) 65.
- Cucurbit—
 and physalis mosaic intertransmissible, (56) 49.
 diseases, control, (52) Del. 843; (56) Guam 245, Del. 348.
 downy mildew, control, (59) Ga. 237.
 downy mildew, initial source, (60) Del. 744.
 downy mildew, source of infection, (58) Del. 441.
 fruit rot, notes, (58) 143.
 leaf blight, initial source, (60) Del. 744.
 leaf blight, studies, (54) 48.
 mosaic, control, (56) 49.
 mosaic, overwintering and dissemination, (54) 346.
- Cucurbit—Continued.
 mosaic, relation to wild catnip, (52) 647.
 pollination, studies, (55) Calif. 339.
- Cucurbita—
 inheritance in, (60) 526.
 parthenogenesis and hermaphroditism in, (54) 431.
 species crosses in, (60) 810.
- Cucurbitaceae, cytological studies in, (56) 27.
- Cucurbitaria sambucina n.sp., description, (60) 216.
- Cucurbits—
 characteristics of species, (56) 440.
 forage value, (59) 130.
 insects affecting, (52) 356.
- Culex—see also Mosquitoes.
 larvae, effect of Paris green, (59) 559.
 pipiens, control, (59) 552.
 quinquefasciatus and dengue fever, (53) 654.
 quinquefasciatus larvae, food of, (58) 861.
- Culicid observations, (53) 652.
- Culicidae—see also Mosquitoes.
 of Argentina, (60) 849.
 of Australia, (52) 557.
 of India, catalogue, (51) 54.
- Culcooides, review, (53) 860.
- Culcooides variipennis outbreak in Texas, (57) 560.
- Culiseta incidens, studies, (59) Calif. 755.
- Cultivation—
 of soils, studies, (54) 177, 179.
 ridge, in lower Gujarat, (56) 76.
- Cultivator—
 riding, requirements, (60) Ala. 182.
 spring tooth, wedge share for, (55) 481.
- Culture media—see also Nutrient solutions.
 adequacy for different types of plants, (60) 511.
 adjustment of pH under sterile conditions, (54) 204.
 amino nitrogen determination in, (52) 312.
 changes in pH values, (52) 409; (56) 324.
 composition, relation to growth of microorganisms, (60) 411.
 containing pectin, pectic fermentation in, (54) 648.
 fungi growth on, (52) 216.
 fungi succession on, (55) 24.
 iron solubility in, (52) N.J. 725.
 preparation, use of papain in, (58) 474.
 reactions, alterations by plants, (57) 215.
 staling, cause, (54) 524.
 to separate and identify Bacillus spp., (55) 877.
- Culvert pipes—
 earth pressures on, (56) U.S.D.A. 680.
 supporting strength, (56) 178.

- Culverts—
 corrugated metal pipe, standard specifications, (54) U.S.D.A. 282.
 flow of water through, (55) U.S.D.A. 781.
 static and impact loads, determination, (57) 475.
 static and impact loads transmitted to, (58) U.S.D.A. 78.
 water flow through, (56) 383.
- Cup grease consistency, measurement, (55) 279.
- Cuprammonium sulfate, toxicity studies, (51) N.H. 47.
- Cuprous oxide determination in sugar analysis, (57) 205.
- Curculio—
 control, dusting v. spraying, (58) Ill. 351.
 problem in Connecticut, (55) Conn. State 251; (57) 860.
- Curculionidae—
 injurious Neotropical, (51) 59.
 larvae, studies, (57) 264.
 new genus and species, (60) 851.
 new injurious, (60) 655.
- Curd—*see also* Cheese making.
 effect of working on the flat and on edge, (51) 278.
- Curinus coeruleus, notes, (53) 653.
- Curinus zonatus, notes, (58) 159.
- Curly top host plants, (59) Calif. 642.
- Curly wing in *Drosophila*, genetics, (51) 129.
- Currant—
 anthracnose, notes, (57) 343.
 aphid, control, (52) N.Y.State 455.
 aphid, susceptibility to dust mixtures, (54) N.Y.State 552.
 aphid, variable, notes, (57) Me. 163.
 borer in Tasmania, (56) 660.
 borer, notes, (60) 651.
 cane blight fungus on other hosts, (51) 757.
 fruit fly, notes, (58) 158; (60) Oreg. 753.
 gall mite, control, (57) 366.
 gall mite, life history, (60) 852.
 leaf roller in Nova Scotia, (54) 152.
 leaf spot, notes, (56) 747; (58) 442.
 seeds, germination, (52) N.Y.Cornell 46.
 stem girdler, notes, (54) Mich. 656.
- Currants—
 black—
 big bud and reversion disease, (51) 52; (52) 653.
 breeding experiments, (55) 836; (60) 41.
 eradication in Oregon, relation to blister rust spread, (57) 551.
 fertilizer experiments, (54) 643.
 in France, (55) 837.
 leaf spot disease, notes, (57) 849.
 relation to white pine blister rust, (59) U.S.D.A. 754.
- Currants—Continued.
 black—continued.
 reliability of variety tests, (53) 643.
 reversion, means of infection, (55) 656.
 reverted, structure, (52) 654.
 reverted, water conductivity, (58) 439.
 spraying for big bud mite, (56) 559.
 culture, (53) Mo. 241, 343.
 culture and relation to white pine blister rust, (52) U.S.D.A. 343.
 culture experiments, (58) Alaska 435.
 culture in Ontario, (55) 837.
 history, varieties, and classification, (51) Ohio 42.
 notes, (52) Alaska 536.
 of New York, (55) N.Y.State 39.
 pruning, (51) Kans. 40.
 taxonomic study, (53) N.Y.State 424.
 variety tests, (56) Ill. 343; (60) Minn. 140, Alaska 736.
 wild black, improved forms, (56) S.Dak. 532.
 yield records, (58) Can. 836.
- Current meters, rating apparatus, (53) 682.
- Curry leaf beetle, life history and habits, (56) 64.
- Curtaining the home, principles of, (56) U.S.D.A. 298.
- Curtiss, C. F., papers on, (57) 762.
- Cuscuta, *see* Dodder.
- Cuterebra cuniculi, notes, (60) 276.
- Cuterebra in western Canada, (56) 759.
- Cut-over lands—
 clearing, Mo., (57) 473; (58) 481.
 farming, Idaho, (53) 511, 514, 599.
 hardwood, regeneration, (52) Mich. 48.
 natural regeneration, (59) 142.
 plowing, (52) 386.
 pulpwood, reproduction on, (60) 146.
 reclamation, salvaged war explosives for, (51) 387.
 replanting and protection for, (60) 441.
 reproduction on, (59) U.S.D.A. 533.
- Cutworm—
 baits, tests, (59) 456.
 black army, history and distribution, (57) Me. 559.
 black, parasite of, (57) 451.
 black, studies, (54) 555.
 bronzed, notes, (56) 758.
 dark-sided, abnormal abundance, (60) Mont. 752.
 dark-sided, optimum feeding temperatures, (59) 656.
 moths, light traps as indicators of, (59) 656.
 pale western, effect of weather, (52) Mont. 453.

Cutworm—Continued.

- pale western, outbreaks, relation to weather, (54) 554; (59) U.S.D.A. 760; (60) Mont. 752.
 pale western, studies, N.Dak., (51) 855, 856.
 red-backed, control in Canada, (55) 855.
 red-backed, effect on diversified agriculture in Canada, (56) 859.
 spotted, on cranberry, (52) 61.
 Tachina fly, variegated, life history, (55) 157.

Cutworms—

- army, forecasting outbreaks, (60) 844.
 army, outbreaks, (60) Mont. 752.
 bacterial disease in Russia, (59) 858.
 climbing, (57) Ohio 162.
 climbing, control, (51) Mo.Fruit 856.
 collecting and rearing, (58) 560.
 control, (55) Oreg. 356; (57) Iowa 165; (59) N.Dak. 855.
 control in Iowa, (59) 552.
 damage from, (53) N.C. 755.
 European, parasite in Massachusetts, (51) 662.
 growth and metabolism of larvae, effects of alternating temperatures, (58) 559.
 in the garden, (57) U.S.D.A. 760.
 in Utah, parasites of, (54) 458.
 Montana, ecology, (57) 559.
 notes, (55) Iowa 554; (58) 256; (59) Iowa 55, Mich. 455.
 on cotton, control, (51) P.R. 855.
 on tobacco, control, (51) 55; (55) Conn.State 253; (59) 656, Wis. 56.
 outbreak, (60) Oreg. 753.
 poison baits for, (55) Miss. 255; (57) Mich. 558; (60) 457.
 sodium fluoride as bait for (53) 256.
 trapping experiment, (60) 165.

Cyanamide—

- as soil fungicide, (59) N.Dak. 841.
 detection when added to nitrogenous material, (57) 9.
 determination, (54) 9.
 effect on bacteria in soil, (52) 513.
 effect on nitrates in soil, (57) 414.
 fertilizing value, (52) 123; (55) S.C. 420; (56) 510; (59) 22.
 transformation in soil, (51) 816.

Cyanide—

- C dust, tests for cucumber beetle, (53) Mo. 450.
 dust fumigation, (57) 854.
 forcing plants with, (57) 831.
 fumigation and copper fungicides, incompatibility, (58) 845.
 fumigation of cheese, effects, (51) 759.
 fumigation, slow process method, (54) 554.

Cyanogas calcium cyanide—

- for fumigation of flour mills, (59) 352.
 tests, (58) 261.

Cyanogen—

- chloride gas mixture, new fumigant, (51) 659.
 compounds, effect on plants, (56) 125.
 products, fumigation with, (60) 841.
 Cyathostoma—
 brantae in wild geese, (59) U.S.D.A. 54.
 spp., notes, (53) 553.
 Cycas revoluta roots, contraction and anomalies in, (54) 424.
 Cyclamen—
 mite control, new test, (60) Ill. 253.
 persicum in Italy, gloeosporiose of, description, (57) 852.
 wilt disease, (57) 245, 254.
 Cyclocephala—
 immaculata, parasite of, (52) 62.
 villosa, notes, (54) Kans. 461.
 Cyclones, tropical—
 and sun spots, (52) 114.
 effect on weather of mid-latitudes, (52) 808.
 Cyclopeans, mammalian, causes of, (51) 29.
 Cydia nigricana, notes, (56) 659.
 Cydia pomonella, see Codling moth.
 Cylas formicarius, see Sweet potato weevil.
 Cylinder and engine lubrication, (53) 685.
 Cylindrocarpon angustum n.sp., notes, (58) 851.
 Cylindrocladium—
 pteridis n.sp., description, (57) 159.
 scoparium, notes, (56) 648.
 Cylindrocoturus jatrophae, new economic insect, (52) 458.
 Cylindroma, notes, (53) 279.
 Cylindropharynx ornata from zebra, (52) 385.
 Cylindrosporium—
 padi, control, (51) N.J. 654.
 pomi, notes, (55) 451.
 pomi, perfect stage, (55) 748.
 Cylene robiniae, see Locust borer.
 Cylonea sanguinea immaculata, life history, (60) 653.
 Cynodon dactylon—
 as weed in Belgian Kongo, (53) 839.
 smut, notes, (57) 444.
 Cynomys gunnisoni zuniensis, life history and control, (55) 351.
 Cyperus—
 difformis, control, (53) 133.
 rotundus as weed in Cuba, (54) 239.
 rotundus, eradication, (53) 638.
 rotundus, life history studies, (52) 830.
 Cyphella sp., notes, (53) 153.
 Cypress—
 Arizona, culture experiments, (55) U.S.D.A. 438.
 canker, studies, (59) 646.
 moth, notes, (53) 158.
 Cypresses, swamp, of China and America, (55) 840.
 Cyprus processionary caterpillar, studies, (57) 261.

- Cyrtogaster liqueatus*, notes, (60) 562.
 Cysteine, oxidation, in animal body, (53) 59.
 Cysticercosis of Korean calf, (60) 72.
Cysticercus—
 cellulosae in Texas swine, (55) 73.
 inermis in Korean calves, (58) 473.
 pisiformis, notes, (55) 657; (60) 276.
 Cystine—
 colorimetric estimation, (58) 12.
 deficiency in lentils, (51) 665.
 deficient diets, supplementing agents, (60) 687.
 determination, (55) 791.
 effect on endogenous nitrogen of molting birds, (56) 165.
 excess in diet, effect on kidneys, (56) 591.
 feeding in small doses, effect, (54) 292.
 from kidney stones, (56) 109.
 in diet, replacement, (58) 389.
 in proteins, (52) 802.
 in proteins, determination, (56) 13.
 in ration of molting hens, effect, (59) 869.
 of jack bean, globulin content, (54) 309.
 oxidation in animal organism, (51) 561; (53) 59.
 replacement by dipeptides, (57) 487.
 replacement by taurine in nutrition of rats, (57) 194.
 rôle in nutrition, (53) 562; (55) 791.
 solutions, effect of Roentgen radiation, (60) 502.
 synthesis in dogs, (51) 862.
 toxic action on kidneys and liver, (58) 293.
 two forms, derivatives of, (58) 10.
 Cystitis—
 of cows, (54) 380.
 of cows, organism associated with, (55) 374.
 specific infectious, of cows, (58) 878.
 Cystopus—
 candidus, notes, (53) 544; (58) 442; (60) 51.
 portulacae, notes, (55) 346.
 tragopogonis, biology, (60) 831.
Cytospora batata—
 control, (55) N.J. 43.
 notes, (51) Del. 147; (57) 252.
 Cytochrome, studies, (60) 26.
 Cytokinesis, meiotic, of *Cannabis*, (53) 27.
 Cytology—
 general, treatise, (51) 631.
 introduction to, (52) 823.
 progress in, (56) 327.
 relation to genetics in *Oenothera*, (58) 525.
 treatise, (55) 730.
 Cytoplasm and chromatin, comparative morphology, (56) 516.
Cytospora—
 chrysosperma, notes, (53) 43; (55) 551.
 Cytospora—Continued.
 leucostoma, notes, (56) 747.
 pinastri, notes, (55) 250.
 sp., notes, (57) Mo. 442; (58) 448.
 sp., notes, (57) 649.
 Cytosporina septospora, naming, correction, (57) 653.
 Dacnusa stramineipes, notes, (58) 458.
 Dactylis glomerata, *see* Orchard grass.
 Dactylopius—
 calceolariae—*see also* Mealybug and *specific hosts*.
 identity, (54) 456.
 longispinus, feeding methods, (58) 455.
 sp., studies, (56) 58.
 Dacus oleae—
 campaign against, (52) 660.
 control, (57) 63.
 control in Portugal, (54) 460.
 control, international conference on, (52) 856.
 in Palestine, (53) 654.
 Dacus sp., hibernation and parasitism, (54) 57.
 Dadap—
 caterpillar pests, (54) 458; (57) 857.
 die-back disease, (56) 852.
 Fusarium disease, (60) 646.
 Daedalea confragosa—
 growth reaction toward acidity, (53) 224.
 notes, (54) 150.
 Daffodil names, classified list, (53) 845.
 Daffodils, culture from seed, (57) 141.
 Dahlem Experimental Station, history and activities, (52) 639.
 Dahlia—
 cuttings, root formation and flowering, (60) 826.
 cuttings, stimulation, (52) 239.
 *Dahlia*s—
 culture, treatise, (53) 242.
 disease of, (54) 151; (58) Del. 441.
 diseased and dwarfed, x-bodies in, (59) 348; (60) 156.
 enemies and pests, (59) 555.
 Entyloma parasitic on, (58) 555.
 fasciation in, (57) 753.
 fertilizer experiments, (57) N.J. 39.
 handbook, (60) 641.
 history, development, and culture, (58) 645.
 sterility and seed production in, (57) 835.
 treatise, (57) 439.
 varieties, list, (51) 145.
 “Daily dozen,” energy expenditure in, (51) 72.
 Dairies—
 and dairy products, rating, score cards for, (60) 570.
 control, papers on, (56) 770.
 cooperative, organization in Switzerland, (51) 490.
 Dairy—
 analysis, laboratory manual, (53) 808.

Dairy—Continued.

- and factory management, (52) U.S.D.A. 574.
- and milk inspection, papers on, (58) 672; (60) 569, 570.
- and Milk Inspectors Association of Pennsylvania, papers, (57) 666, 667.
- and milk plant equipment, report, (60) 569.
- animals in Italy, (52) U.S.D.A. 577.
- bacteriology, experiments, Mich., (51) 177; (54) 673.
- bacteriology, history, (52) 177.
- bacteriology, papers on, (51) 778; (60) 662.
- bacteriology, review, (51) 678.
- bacteriology, textbook, (55) 676.
- bacteriology, treatise, (60) 864.
- barn floor materials, tests, (56) Iowa 881.
- barns—
 - and equipment, Iowa, (53) 390; (59) 81.
 - construction, (51) 290; (52) Wis. 587; (53) 390.
 - for Nebraska, (53) 86.
 - plans and construction, (54) Mont. 684.
 - ventilation, (53) 580; (56) 884; (59) 481.
 - ventilation, importance, (57) 667.
- buildings and equipment, (59) W.Va. 85.
- buildings for Kansas, (54) Kans. 781.
- buildings for New South Wales, (52) 489.
- by-products, feeding value, (58) Calif. 465.
- calf club members, manual for, (58) Ill. 789.
- calf clubs, manual, (51) 599.
- cattle—*see also* Cattle, Cows, *etc.*
 - associations, work, (52) U.S.D.A. 574.
- chemistry, manual, (56) 187, 310.
- club, 4-H, manual, (51) 599.
- cold storage, electric, (59) N.H. 481.
- Congress, World's, proceedings, (52) U.S.D.A. 573; (60) 660.
- Congress, World's, report of delegates from Argentina, (52) 479.
- council, quality control work, (52) U.S.D.A. 574.
- council work, (52) U.S.D.A. 562.
- councils, work of, (55) 471.
- dry air sterilizers, electrically heated, (58) 781.
- education, extension methods in, (52) U.S.D.A. 597.
- education, motion pictures in, (52) U.S.D.A. 597.
- education, papers on, (60) 661.
- electric sterilizer for, (53) 590.
- engineering, treatise, (53) 791.
- equipment—*see also* Creamery churn, Churns, *etc.*
 - materials and standardization, (52) U.S.D.A. 576.

Dairy—Continued.

- equipment—continued.
 - protective preparations for, (57) Calif. 276.
 - sterilization with electricity, (60) 482.
 - sterilizing, superheated steam for, (59) Calif. 781.
 - testing offices for at Kiel, (56) 474.
 - without ice, (57) P.R. 466.
- factories of Canada, statistics, (51) 381.
- farmers, cooperation among, (55) 286.
- farming—
 - economic studies, N.Y.Cornell, (53) 391; (54) 584, 585.
 - educational and advisory work in, (52) U.S.D.A. 574.
 - factors affecting returns from, (58) Va. 383.
 - in Japan, (52) U.S.D.A. 577.
 - in New York, N.Y.Cornell, (52) 589; (56) 287; (59) 587.
 - in Victoria, (51) 78.
 - on arable land, (53) 675.
 - on mass production lines, (54) 585.
 - principles, treatise, (56) 870.
 - profits, factors affecting, (54) Ill. 385.
 - studies, Vt., (54) 882; (56) 483; (58) 783; (60) 483.
- farms—
 - business survey, (59) N.J. 381.
 - organization, (52) Wash.Col. 292; (57) Minn. 285.
 - organization and management, (58) Iowa 488.
 - rotation experiment, (59) N.H. 222.
 - rotations, tests of fertilizers in, (59) Conn.Storrs 431.
- feed, mixed, formula, (54) Mich. 571.
- herd—
 - improvement, (57) U.S.D.A. 571; (59) U.S.D.A. 167, Ohio 267; (60) Del. 768.
 - improvement, effect of environment and breeding, (59) Iowa, 872.
 - improvement, testing milk and cream for, (59) 167.
 - records, lessons from, (60) Wyo. 174.
 - selecting foundation cows, (53) Ohio 781.
 - tuberculosis - f r e e, establishing, (52) 779.
- herds—
 - average production, calculating, (54) 68.
 - building up from scrubs, (54) 265.
 - Holstein, improvement, (52) Nebr. 376.
 - State-Federal accredited, (55) 70.

Dairy—Continued.

- house, farm, construction, (55) 584.
- husbandry, courses in, (59) 187.
- improvement associations, results, (52) 174.
- Industry Act of Canada, amended, (51) 179.
- laboratory, operation, (58) Calif. 365.
- laboratory outline, (55) 773.
- manufacturing equipment, electric, power requirements, (58) Calif. 284.
- marketing plans, cooperative, (52) Wis. 93.
- neutralizing agents, Ark., (56) 376; (58) 365.
- organizations, international, (52) U.S.D.A. 574.
- pedigrees, interpretation, (52) Me. 679.
- periodicals, domestic, list, (55) U.S.D.A. 672.
- practices on general farms, (53) Mich. 798.
- produce, grading, treatise, (55) 69.
- produce, international trade, rôle of cooperative organizations in, (58) 686.
- produce trade in England, (54) 888.
- production, engineering applications to, (60) 882.
- products—
 - advertising, cooperative, (52) U.S.D.A. 593.
 - Brucella abortus* in, (59) 672.
 - carbonation of, (56) 74.
 - cold storage holdings, (55) U.S.D.A. 686.
 - colloidal problems of, (52) 10.
 - effect on hemoglobin production, (56) 495.
 - examination methods, treatise, (57) 805.
 - examination, Mojonnier tester, (53) 505.
 - experiments with, (56) Pa. 171.
 - fat determination in, (53) 315, Conn.Storrs 808.
 - feeding value for swine, (54) 467. in New South Wales, standardizing, (51) 280.
 - international trade in, (52) U.S.D.A. 594.
 - manufacture, (53) Okla. 177.
 - manufacturing and marketing, (55) Iowa 585.
 - marketing, (52) N.Dak. 592; (57) Ind. 680.
 - marketing, cooperative, (52) U.S.D.A. 593.
 - of British Empire, (51) 896.
 - of United Kingdom, (57) 287.
 - production and handling in Connecticut, (51) 279.
 - production and marketing, (52) U.S.D.A. 574.
 - production in Canada, (53) 178; (55) 288.

Dairy—Continued.

- products—continued.
 - production in Indiana, (54) Ind. 377.
 - quality, factors affecting, (56) Vt. 570.
 - quality in, guidebook, (57) 667.
 - relation to tariff, (54) 186.
 - sale and advertising, (51) 179.
 - standardization and grading, (60) 682.
 - technical control, treatise, (55) 268.
 - testing, (56) 772; (60) 206.
 - publications, conference on, (52) U.S.D.A. 574.
 - rations, digestibility and metabolism, effect of proteins in, (51) Ohio 875.
 - rations, effect of proteins in, (52) Mo. 478.
 - research and education, (51) 177.
 - science, fundamentals, treatise, (59) 165.
 - science, manual, (56) 671.
 - short courses, (59) U.S.D.A. 686.
 - sires, *see* Bulls and Sires.
 - statistics, handbook, (59) U.S.D.A. 577.
 - statistics of New York State, (54) 475.
 - sterilizers, new type of electric heater for, (57) Calif. 276.
 - sterilizers, thermal characteristics (57) 678.
 - tests, treatise, (56) 274.
 - utensils—
 - bacterial content, effect of method of cleaning, (55) 572.
 - cleaning, methods, (51) 581.
 - electric sterilizer for, (60) Ala. 182.
 - elimination of germs from, (52) Ill. 278.
 - sterilization, Ill., (56) 376; (60) 770.
 - sterilization by electricity, (55) 883; (59) Ala. 677.
 - sterilizers, effect of dirt, (60) Ill. 263.
 - wastes, aromatic bacillus from, (52) 81.
 - wastes, disposal, (55) 683.
 - wastes, purification, (53) 86.
- Dairying—*see also* Creamery, Butter, Cheese, Milk, *etc.*
- business side of, (60) S.C. 184.
 - common difficulties in, (56) 673.
 - common practices in, (55) 571.
 - economic aspects, (58) Calif. 383.
 - economic conference on, (55) 585.
 - economic study, (52) N.Y.Cornell 292.
 - evening school classes in, (56) 790.
 - experiments, Ill., (52) 479; (56) 376; (58) 364.
 - extension work in Western States, (54) U.S.D.A. 689.
 - history, (56) 769.

- Dairying—Continued.
- in Brazil, (52) U.S.D.A. 577.
 - in Czechoslovakia, improvement, (52) U.S.D.A. 575.
 - in Denmark, (59) 875.
 - in educational institutions, instruction, (52) U.S.D.A. 596.
 - in Finland, (59) 875.
 - in Idaho, (58) Idaho 81.
 - in India, (52) U.S.D.A. 574.
 - in India, development, (54) 571.
 - in Irish Free State, reorganization, (57) 384.
 - in Kansas, (52) 877.
 - in New York State, statistics, (56) 891.
 - in New Zealand, (57) 666.
 - in New Zealand and Wisconsin, (53) 693.
 - in Norway, (52) U.S.D.A. 574.
 - in Queensland, history, (51) 677.
 - in Russia, (52) U.S.D.A. 575.
 - in South Africa, (51) 677.
 - in Spain, (55) 676.
 - in Texas, economic study, (57) Tex. 783.
 - instruction in Cornwall, (52) 597.
 - laboratory guide, (59) 788.
 - lessons on, for club members, (52) 196.
 - manual, (55) 468.
 - National Institute for Research in, report, (58) 69.
 - papers on, (52) 676; (57) 485; (60) 663.
 - physics of, treatise, (59) 574.
 - principles, treatise, (52) 174.
 - relation to child welfare, (52) U.S.D.A. 574.
 - relation to tuberculosis eradication, (57) 180.
 - research and education in, (52) U.S.D.A. 596.
 - research, disseminating results, (52) U.S.D.A. 574.
 - research in, (53) 174.
 - science of, textbook, (60) 188.
 - trade associations in, status, (52) U.S.D.A. 592.
 - treatise, (51) 380.
 - use of microscope in, (55) 268.
- Dairyman's Association of—
- Ontario, reports, (51) 179.
 - Quebec, report, (60) 663.
- Dallis grass, behavior, (52) Fla. 224.
- Dalrymple, W. H., biographical notes, (53) 196.
- Dam and reservoir sites, geology, (60) 877.
- Damar and copal, notes, (52) 146.
- Damping-off fungi, control, (59) 842.
- Dams, reinforced concrete, (54) 681.
- Danaid limnace and parasites, life history, (52) 155.
- Dandelion, *Tylenchus dipsaci* affecting, (52) 153.
- Danthonia seed germination, effect of sulfuric acid, (58) 32.
- Danzysz—
- bacillus for rodent control, (60) 555.
 - bacillus in rats, inheritance of resistance to, (60) 176, 726.
 - virus for control of voles, (53) 551.
- Darluka filum, notes, (51) 46; (57) 444.
- Darnel grass fungus, notes, (55) 346.
- Darso, nutritional value, (53) Okla. 66.
- Darso, phosphorus in, (60) 204.
- Darwinism, present position, (51) 428.
- Dasheens—
- characteristics, composition, and food value, (52) U.S.D.A. 336.
 - keeping qualities, (57) P.R. 425.
 - large tubers, value, (54) P.R. 634.
 - varieties, (60) P.R. 732.
- Dasya coccinea cells, form of protoplast in, (59) 620.
- Dasychira pudibunda, bacterial disease of, (59) 654.
- Dasymutilla permista, notes, (53) 57.
- Dasyneura gibsoni, notes, (58) Ohio 434.
- Dasyneura leguminicola, *see* Clover seed midge.
- Dasyscopypha calycina in America, (58) 449.
- Datana integerrima, *see* Walnut caterpillar.
- Date—
- Grower's Institute, report, (51) 646.
 - industry, papers on, (51) 646.
 - leaf smut, notes, (55) 346.
 - palm flowers, effect of prompt pollination after opening, (59) 43.
 - palm, hermaphroditism and parthenocarp in, (55) 734.
 - palm in antiquity, (52) 238.
 - palm scale, control, (53) Ariz. 757.
- palms—
- direct effect of pollen on fruit, (59) 43; (60) 542.
 - distribution, (54) 540.
 - growth, inhibitive effect of sunlight, (54) 446.
 - in Egypt, (52) 344.
 - minimum temperature for growth, (54) 445.
 - partial thermostasy of growth center, (54) 445.
 - propagation, (56) Ariz. 239.
 - propagation from offshoots, (57) Ariz. 241.
 - spraying, (53) Ariz. 745.
 - vegetative and fruiting branches in, (57) 738.
 - pollen, viability, (53) 344.
- Dates—
- composition, differences in, (60) 542.
 - culture in Arizona, (55) U.S.D.A. 438.
 - culture in Egypt and the Sudan, (57) U.S.D.A. 636.
 - decaying, cause, (55) 249.
 - miscellaneous tests, (57) Tex. 136.
 - storage experiments, (60) 542.
 - varieties, Ariz., (53) 740; (56) 738.

- Datura**—
 chromosomal types, pollen abortion in, (56) 127.
 chromosome studies, (53) 226, 227, 328.
 effect of radium treatment, (56) 727.
 genetics of, (58) 526.
 interchromosomal mutation in, (54) 26.
 mutants, behavior of chromosomes in, (53) 328.
 mutations in, (55) 224.
 pollen tube growth abnormalities, (57) 121.
 reduction division in, (53) 227.
 sterility of pollen in, (57) 823.
 stramonium, chromosomal chimeras in, (52) 727.
 stramonium tetraploid, inheritance in, (53) 227.
- Daubentonia** seeds poisonous to chickens, (58) 97; (59) Fla. 581.
- Davainea proglottina**—
 enzootics in poultry, (60) Ky. 265.
 in poultry, (55) Mich. 877; (58) 879.
 life history, distribution, and control, (60) West.Wash. 756.
 notes, (60) 181; (60) West.Wash. 775.
- Davenport, Eugene**, papers on, (57) 660.
- Day length**, effect on various plants, (57) 418; (58) 535; (60) P.R. 739.
- Day lilies**, new varieties, (54) 839.
- Day lilies**, yellow, qualities and culture, (60) U.S.D.A. 543.
- Day lily**, orange, capsules, seeds, and seedlings, (56) 443.
- Deaf-mutism**, inheritance of, (54) 430.
- Deaminase** in water-logged soils and rôle, (59) 813.
- Death camas**—
 as poisonous plant, (56) Wyo. 572.
 meadow, toxicity, (51) U.S.D.A. 679.
 Nuttall's, poisonous to cattle, (54) U.S.D.A. 772.
 poisonous to livestock, (60) Wyo. 776.
 poisonous to poultry, (60) 182.
- Death Valley**, original vegetation, (54) 25.
- Death-watch beetle**, notes, (57) 552.
- Debenture plan** for farm relief in United States, (58) 788.
- Deciduomata**—
 in rats low in vitamins A and E, (59) 862.
 production in virgin rats, (56) 331.
- Decolorizer**, functioning, effect of chemical nature, (60) 312.
- Deer**—
 food plants of, (59) Calif. 728.
 head and throat bot in, (60) 561.
 horn development in, effects of sexual hormones, (56) 663.
 mice, sex ratio in, (60) 634.
 parasites of, (55) 657.
 species in Manchuria, Chosen, etc., (56) 551.
Taenia krabbei in, (60) Oreg. 774.
 white-tailed, ticks affecting, (52) 778.
- Deficiency disease, *see* Diet deficiency.
- Degeeria albiceps**, notes, (59) 655.
- Deilephila lineata**, notes, (57) La. 555.
- Dekker, Thomas**, and economic and social conditions of his time, (54) 289.
- Delaware**—
 Station, notes, (51) 300, 600; (52) 300; (53) 498; (54) 699; (55) 600; (57) 495; (58) 697; (59) 499; (60) 796.
 Station, report, (52) 899; (54) 698; (56) 398; (58) 498; (60) 794.
 Station, report of director, (51) 196.
 University, notes, (51) 600; (57) 495; (59) 499.
- Delphacidae** of South America, (55) 660.
- Delphastus**—
 catalinae, notes, (54) Fla. 257.
 notes, (56) Fla. 152.
 sp., notes, (52) Fla. 251.
- Delphax** as rice pest, (53) 857.
- Delphinium**—
 bacterial leaf spot, control, (52) 54; (59) 548.
 root rot and bacterial blight, studies, (52) N.Y.State 50.
 root rots, studies, (52) N.Y.State 543.
 sclerotial disease of, (55) 850.
 species, chromosomes of, (58) 125.
 virescent inflorescence in, (56) 517.
- Delphiniums**, chemical examination, (54) Wyo. 574.
- Demand curves**, statistical determination, (54) 286.
- Dematium** sp., notes, (56) 249.
- Demodex**—
 cysts and abscess of sheep, (54) 73.
 folliculorum, effects of ultra-violet and infra-red irradiation, (58) 475.
 folliculorum, notes, (58) 177.
- Dendroctonus brevicornis**, *see* Pine beetle, western.
- Dendroctonus frontalis**, *see* Pine beetle, southern.
- Dendroctonus monticolae**, *see* Pine beetle, mountain.
- Dendroctonus piceaperda**, *see* Spruce beetle, eastern.
- Dendroctonus pseudotsugae**, *see* Douglas fir beetle.
- Dendroctonus valens**, *see* Turpentine beetle, red.
- Dendrographic measurements**, (53) 517.
- Dendrolimus**—
 pini, control, (58) 755.
 pini, parasites of, (60) 656.
 spp. on conifers in Japan, (55) 857.
- Dendrometer**, automatic, structure and operation, (59) 122.
- Dendrothrips bispinosus** n.sp., description, (52) 854.
- Dengue fever**—
 studies, (54) 754.
 transmission by *Aedes aegypti*, (59) 656.
 transmission experiments, (53) 654.

Denitrification—

- chemical factors in, (52) 621.
- effect of pH value, (55) 218.
- effect of reaction of medium, (53) 512.
- effect of temperature, (53) 817.
- in moor soils, (54) 121.
- review of literature, (58) 518.

Dental caries in children, arrest, (59) 893.

Dental diseases in children, (58) 86.

Department of Agriculture, *see* United States Department of Agriculture.

Dermacentor—

- albipictus, outbreak in Saskatchewan, (60) 657.
- reticulatus, disseminator of surra, (58) 678.
- reticulatus, notes, (54) 478.
- variabilis, control work, (59) 660.

venustus—

- eradication, (55) 252.
- filter-passing virus from, (56) 65.
- hereditary transmission of tularemia by, (56) 261.
- microscopic changes of tularemia in, (58) 576.
- Rickettsia-like microorganisms, from, (56) 173.
- transmission of Bartonella bacilliformis by, (56) 662.
- tularemia infection in, (51) 657.

Dermacentroxenus rickettsi, notes, (53) 552.

Dermanyssus—

- avium, control, (56) 879.
- gallinae, *see* Chicken mite.

Dermaptera—

- from Italy, list, (52) 753.
- of British Columbia, notes, (55) 659.
- of France, (58) 257.

Dermatea spp. on Douglas fir and other conifers, (60) 647.

Dermatitis—

- contagious pustular, of sheep, (60) 872.
- contagious pustulous, of swine in Japan, (56) 175.
- of experimental pellagra, etiology, (60) 596.
- of swine, (57) 378.
- of the udder in cows, specific types, (54) 477.

Dermatomycoses of horses and immunity, (58) 879.

Dermestes coarctatus, resistance to high temperatures, (58) 159.

Dermestidae, keys, (58) 164.

Derris—

- insecticidal properties, (53) 52; (54) 454; (55) Calif. 352; (56) 458.
- investigations, (54) 552.
- spp., spraying and dusting experiments, (52) Calif. 59.
- spp. with insecticidal properties, (51) U.S.D.A. 158.
- test for ox warbles, (52) 359.

Derrisine as aphicide, (52) Calif. 59.

Derrisol, new aphid spray, (55) 760.

Desert—

- Egyptian, bioclimatic study, (52) 316; (53) 317.
- plants, absorption of water by, (56) 724.
- plants, cell sap density determinations, (58) 23.
- plants, distribution, structure, and transpiration, (56) 812.
- plants, water relations, seasonal changes, (51) 822; (53) 823.
- region, southwestern, vegetation, (52) 328.
- vegetation, relation to soil conditions, (59) 124.
- watering places and travel routes in Arizona, (51) 185; (53) 890.
- watering places and travel routes in California, (51) 185.

Deserts—

- of California, ecological aspects, (59) 27.
- of northeastern Lower California, (55) 629.
- of Turkestan, (59) 812.

Desiantha nociva, studies, (52) 662.

Design and clothing, courses in, (51) 494.

Desmodium triflorum as green manure and cover crop, (52) 732.

Detonation suppression, rôle of metallic colloids in, (56) 883; (60) 780.

Deutzia, chemical treatments for bud growth, (60) 425.

Dew—

- areometer, description, (54) 13.
- areometer, modification, (56) 414.
- on cotton plants, alkalinity, (54) 221.

Dewberries—

- culture, (52) U.S.D.A. 237; (53) Mo. 241.
- destructive diseases of, (60) 553.
- of New York, (55) N.Y.State 39.
- physiological studies, (59) N.C. 739.
- spraying, (53) Mich. 354.
- thornless, origin, (59) 128.
- varieties, (60) Tenn. 141.
- variety tests, (56) Ga.Coastal Plain 531; (58) Ga.Coastal Plain 738, Miss. 37.

Dewberry—

- anthracnose, control, (53) Mich. 354; (55) N.C. 249.
- anthracnose, notes, N.C., (53) 747, 847.
- diseases, control, (56) U.S.D.A. 54.
- diseases, studies, (59) N.C. 749.
- Lucretia, root disease, (58) 248.

Dexia ventralis—

- notes, (56) U.S.D.A. 860.
- parasite of Japanese beetle, (60) 563.

Dextrin—

- commercial varieties, (56) 393.
- manufacture, (56) 506.
- reserve in monocotyledons, (53) 519.

Dextrose—

- decomposition in soils, (51) 415.
- manufacture and uses, (53) 111.

- Diabase, formation of soil from, (53) 616.
- Diabetes—
 action and use of insulin in, (53) 462.
 diet charts for, (51) 367.
 dietary control with insulin treatment, (51) 466, 560.
 dietary management, simplified method, (53) 569.
 dietary treatment, (51) 466; (53) 368.
 dihydroxyacetone treatment for, (54) 595.
 effect of light treatment, (54) 695.
 exercise and respiratory quotient in, (55) 595.
 high carbohydrate diets for, (55) 91.
 in children, growth studies, (56) 693; (59) 893.
 in children, treatment, (53) 663.
 insulin treatment, (51) 271; (52) 865; (60) 899.
 intarvin for, (52) 264; (53) 569; (54) 894.
 inulin and artichokes for, (54) 894.
 juvenile, standard diet formulas for, (56) 92, 93.
 ketosis and respiratory exchange in, (51) 465.
 meal unit diet in, (53) 368.
 muscular exercise in, (53) 368.
 nature of, relation to use of insulin, (52) 464.
 new method in, treatise, (53) 266.
 standard diets for, (52) 265.
 status, (53) 368.
 studies, (51) 366, 465; (55) 92.
 thrice-cooked vegetables for, (53) Mo. 462, 768.
 treatise, (51) 770; (54) 791; (57) 194, 296.
 treatment, (60) 786.
- Diabetic—
 children, protein requirements, (57) 689.
 coma, dihydroxyacetone treatment for, (54) 595.
 dietetics, application, (57) 493.
 diets, (53) 65, 266; (58) 693.
 diets, adaptation to racial food habits, (56) 594.
 diets, calculation, rotary nomogram for, (53) 364.
 diets, deriving formula for, (56) 797.
 diets, prescribing, (51) 770.
 diets, treatise, (57) 194, 296.
 diets, use of glycerin in, (52) 464.
 patients, ambulatory, education, (60) 290.
 patients, metabolism of cod-liver oil by, (51) 668.
 patients, muscular efficiency, (52) 865.
- Diabrotica—
 beetles, control, (55) N.Mex. 456.
 trilineata, injury to truck crops, (53) 159.
 vittata, *see* Cucumber beetle, striped.
- Diageotropism of plants, studies, (51) 223.
- Dialeurodes—
 chittendeni n.sp., description, (60) 650.
 citri, *see* White fly, citrus.
 elongata n.subg. and n.sp., description, (60) 61.
- Dialeurolonga elongata n.subg. and n.sp., description, (60) 61.
- Dialyzer, rotating, description, (58) 412.
- Diammophos, fertilizing value, (60) N.C. 719.
- Diamond-back moth—
 notes, (51) V.I. 856; (52) 252; (59) 253.
 on cauliflower, control, (54) N.Y.State 552.
 studies, (60) Oreg. 753.
- Dianthidium sayi nesting habits, (60) 357.
- Diaphania nitidalis, *see* Pickle worm.
- Diaphnidia pellucida, descriptive notes, (54) 455.
- Diaphorina citri in India, bionomics and control, (58) 859.
- Diaporthe—
 and Melanconis, differentiation, (60) 643.
 citri, isolation and pathological anatomy of host, (60) 353.
 citri, new name, (57) 156.
 citri, proposed name, (56) 152.
 pernicioso, cause of die-back in stone fruits, (52) 150.
 pernicioso, notes, (56) 747; (57) 53, 649.
 pernicioso on lilac, (60) 354.
 phaseolorum, notes, (52) Pa. 243; (56) 148; (58) S.C. 646.
 sojao, notes, (55) 752; (56) 648.
 spp., life histories, (60) 642.
- Diaprepes—
 abbreviatus, notes, (52) 636.
 abbreviatus, West Indian, notes, (51) V.I. 856.
 capsiculis n.sp., description, (51) 59.
 spengleri, control, (54) 53.
 spengleri on sugar cane, control, (53) 860.
- Diarrhea, bacillary white—
 agglutination—
 and intradermal tests, (58) Ky. 71, 178.
 and pathological studies, (60) N.C. 777.
 and pullorin tests for, (59) 374.
 test, (51) Mich. 180, 481; (53) 82; (56) Ill. 276; (59) N.J. 373, Mich. 470, 879; (60) 671, Ark. 874.
 test as affected by fat in serum, (51) 384.
 test, effect of fowl typhoid vaccination, (58) 179.
 test, efficiency, (54) Ill. 380.
 test, improved antigen for, (58) 178.
 test, methods, (60) West.Wash. 775.

- Diarrhea, bacillary white—Continued.
 agglutination—continued.
 test, obscured reactions in, (55) 275.
 test, rapid, (59) Calif. 775.
 test, value, (60) Mont. 773.
 and coccidiosis in chicks, (56) 679.
 and fowl typhoid, identity, (59) 477.
 breeding for resistance to, (56) Ill. 276.
 carriers, collecting blood samples from, (51) 586.
 control, (53) Mass. 889; (54) 279, Del. 674; (55) N.J. 74, R.I. 275, Mass. 578; (56) 176; (57) 377, N.J. 773, Mass. 878; (58) 178, 472, N.J. 777, 778; (60) 580, Mass. 670, 671.
 control problems, (56) 575.
 control, system of management for, (54) Md. 777.
 diagnosis, (57) 774.
 diagnosis, double sugar medium for, (58) 579.
 diagnosis in United States, (60) 374.
 dissemination studies, (60) 581.
 duration of carrier stage, (59) N.C. 780.
 effect of chemicals, (56) 574.
 effect on egg production, (60) 580.
 effects, (53) Mich. 787.
 epizootic in chickens, (51) 84.
 eradication, (55) N.J. 878.
 in baby turkeys, (60) 275.
 in Belgium, (58) 75.
 in Chosen, (60) 72.
 in Japan, (55) 578.
 in Maine, summary, (56) 778.
 in New South Wales, (55) 777.
 in Ontario, (55) 578.
 in poultry, (51) N.J. 185, 786; (52) Colo. 285, Kans. 484, Mass. 484, Del. 886; (53) 279, Minn. 477, 889.
 in poultry, review of literature, (55) U.S.D.A. 877.
 in Union of South Africa, (57) 184.
 infection in eggs, (57) 380.
 infection in eggs laid by reacting hens, (60) 670.
 infection of sparrows in chicken runs, (59) 476.
 inheritance of resistance to, (56) 478.
 intradermal and agglutination tests for, (60) Conn.Storrs 580.
 intradermal test, (53) Ill. 371.
 lung lesions of, (59) Ind. 776.
 mortality in chicks from, (59) 374.
 notes, (57) 674.
 paper on, (51) West.Wash. 96; (55) Ohio 97, 677; (58) 273; (59) 170, 370, 371, 372.
 pathology, (60) Ind. 76.
 prevalence, (51) Mich. 84.
 prevention and control, (59) Ill. 80.
 pullorin test for, (60) Ill. 274.
 resistance of chicks to, (54) 380; (57) 660; (58) Ill. 372; (60) Ill. 274.
- Diarrhea, bacillary white—Continued.
 review of literature, (56) Kans. 380.
 serologic and pullorin tests for, (60) 670.
 studies, (53) 681; (55) Mich. 877; (56) Pa. 176, Ill. 381, Wis. 774, Kans. 875; (57) 80, Ohio 183, N.C. 280, N.H. 379, N.C. 577, 774; (58) Pa. 370, Ark. 371, 578; (59) Wis. 76, summary, (51) Ky. 482; (54) 74; (55) 74, 578; (57) 675.
 testing a breeding flock, (57) 877.
 testing, new method, (60) 670.
 testing pullets for, (59) N.H. 278.
 tests for, (53) 280; (59) Colo. 272.
 tests in Kansas, results, (60) 874.
 transmission in incubators, (55) 177, 374; (57) 180.
 transmission studies, (58) 880.
- Diarrhea in chickens, (59) 370.
 Diarrhea in chicks in Japan, (56) 679; (57) 377.
 Diarthronomyia hypogaea, *see* Chrysanthemum gall midge.
 Diaspis echinocacti cacti, notes, (55) Miss. 658.
 Diastase, effect of pH, (53) 714.
 Diastase in doughs, effects, (54) 790.
 Diastatic activity of flour, control, (55) 611; (56) 204; (59) 608.
 Diastrophus rubi, notes, (56) 659.
 Diatraea—
 American species, parasites, (59) 654.
 and allied species, (58) 160.
 lineolata, notes, (56) 155.
 saccharalis, *see* Sugar cane borer.
 saccharalis saccharalis, notes, (56) 557.
 spp. on sugar cane in British Guiana, (58) 860.
 zeacolella, *see* Cornstalk borer.
- Dialomella javensis n.sp., description, (52) 361.
 Dibolia borealis, notes, (59) 159.
 Dibotryon morbosum, notes, (54) Can. 149.
 Dibrachys—
 affinis, biology, (53) 760.
 boucheanus, biology, (54) 261.
 boucheanus, notes, (53) 652; (56) Del. 357; (57) U.S.D.A. 457.
 Dicaelotus erythrostoma, biology, (53) 656.
 Dicaeoma sorghi, aecial hosts in Quebec, (59) 539.
 Dichapetalum cymosum, poisoning by, (60) 573.
 Dichomera camarosporioides n.sp., description, (60) 216.
 Dichomeris marginella, eradication, (59) 355.
 Dichrostachys nutans, problem of, (57) 734.
 Dicoccumin, definition, (54) 802.
 Dicranotropis maidis—
 dimorphism in, (52) 155.
 notes, (54) 658.
 Dictophyme renalis, notes, (51) 285.

- Dictyocaulus**—
 arnfieldi, morphology, (57) 357.
 hadweni from lungs of buffalo, (53) 553.
 spp. parasitizing equines, (52) 85.
- Dictyoploca japonica**, egg masses, parasite of, (59) 160.
- Dictyospermum** scale, species of, (57) Calif. 257.
- Dicyandiamide**—
 action on plant growth, (52) 122.
 decomposition in soil, (51) 817.
 determination, (53) 805.
 fertilizing value, (52) 422.
 nitrogen, persistence in calcium cyanamide, (54) 19.
 toxicity studies, (53) 521.
- Didymella**—
 applanata, notes, (60) 553.
 mali n.sp., description, (57) 649.
- Diolocerus formosus**, aestivation of larvae, (58) 562.
- Diervilla lonicera** leaves, reddening, (55) 23.
- Diet**—*see also* Food, Meals, Menus, and Nutrition.
 and disease, (55) 895.
 and flour, treatise, (59) 889.
 and public health, (52) 461.
 calcium deficient, effect on fertility, pregnancy, and lactation, (57) 65, 91.
 calcium deficient, value of egg yolk in, (56) 293.
 calorie value, rotary nomogram for calculating, (53) 364.
 Chinese, adequacy, (56) 793.
 coefficient of digestibility and dynamic action in two types of individuals, (56) 896.
 composition, relation to fertility, (56) Mo. 559.
 deficiency—
 canine disease, (59) 394, 395.
 canine disease, correction, (59) 895.
 disease on therapeutic diets, (59) 395.
 disease, pathogenesis, (51) 269; (52) 68.
 diseases—*see also* Beriberi, Rickets, Scurvy, etc.
 malabsorption in, (57) 295.
 prevention, (52) 480.
 studies, (52) 367.
 symposium, (56) 92.
 ophthalmia as symptom, (53) 63.
 relation to gastric lesions in rats, (53) 165.
 relation to threshold of fertility, (51) 33.
 sensitization of organism to, (51) 767; (52) 365.
 with highly purified diets, (59) 489.
 deficient, effect on growth in rats, (57) 595.
 deficient, experiment with rats to demonstrate, (56) 390.
- Diet**—Continued.
 deficient in vitamin A, (51) 565.
 deficient material, effect on young, (58) 391; (60) 853.
 deficient, phosphorus and calcium metabolism in, (58) 689.
 determinations, graphic method, (57) 291.
 diabetic, *see* Diabetic diet.
 effect on—
 growth and reproduction in laboratory animals, (57) N.C. 265.
 reproduction, (58) 691.
 reproduction and growth in rats, (54) 159.
 teeth, (52) 763; (59) 290; (60) 593.
 teeth and bones, (51) 265.
 urinary excretion, (51) 164.
 vitamin B in liver, (51) 268.
 errors of, in urban population, (52) 461.
 factors in hemoglobin production, (52) 260.
 for vitamin E experiments, (57) 791.
 in health and disease, treatise, (55) 590; (56) 895.
 in rural sections, relation to health, (57) Va. 387.
 low in tyrosine, feeding experiments with, (60) 894.
 maternal, and lactation, (56) 90.
 maternal, during pregnancy, (55) 895; (59) 290.
 maternal, during pregnancy, effect on rickets of offspring, (58) 796.
 new purified, inadequacy, (58) 791.
 normal, treatise, (54) 889; (58) 388.
 of cow, effect on vitamin C in milk, (52) 877.
 of Korean people, (52) 461.
 of nursing mothers, effect on development of rickets in young, (56) 90.
 of purified food for rickets studies, (51) 371.
 parents', effect on young, (53) 262, 563.
 protein control in, (60) 686.
 rachitic, constitution, (60) 197.
 relation to—
 bodily activity and resistance, (57) Mo. 457.
 convulsions induced by insulin, (54) 791.
 growth rate, (56) 191.
 reproduction, (51) 860.
 reproduction and rearing of young, (56) 65.
 restricted, effect, (57) 762.
 standard for pernicious anemia, (58) 693.
- Dietaries**—
 in insane asylums, (54) 88.
 in public institutions of Denmark, (54) 192.
- Dietary**—
 habits of rural people, (59) Ga. 288.

- Dietary—Continued.
 study, individual and inventory meth-
 studies in New Orleans, (56) 692.
 requirements for fertility and lacta-
 tion, (60) 293, Ark. 899.
 ods, (59) 390.
- Dietetics—
 and dietotherapy, lectures to nurses,
 (58) 292.
 compendium on, (57) 590.
 for nurses, treatise, (53) 456.
- Diethylphenyl urea, reagent for nitric
 acid test, (51) 611.
- Diethylphthalate, detection, (54) 206.
- Diets—
 balanced, diagrammatic representation,
 (56) 290.
 comparison, (60) 190.
 good and bad, experimental contrast,
 (57) 893; (58) 293.
 good proportions in, (51) 263.
 in north China, (54) 591.
 Kosher, (56) 895.
 of different types, formulas, (57) 690.
 of rural and urban workers, (54) 688.
 protein rich, effects, (53) 863.
 protein rich, physiological effects, (57)
 89.
 rich in fat, for constipation, (56) 895.
 rich in fat, growth experiments, (57)
 193.
 special, classified, and calculated, (55)
 590.
 synthetic—
 adequacy for chicks, (54) 270.
 for scurvy and polyneuritis
 studies, (51) 270.
 growth and reproduction on, (56)
 693; (58) 392.
 preparation, improved technique,
 (55) 411.
 rearing rats on, (53) Mo. 464.
 tests by long-time feeding experiments,
 (59) 789.
 vegetarian, growth of rats on, (60)
 591.
- Digester tankage, feeding value, (59) 861.
- Digestion—
 effect of manner of eating, (60) 786.
 experiments, *see specific foods and*
animals.
 peptic, effect of halogen salts, (57)
 788.
 salivary, in human stomach, (55) 190.
- Digestive tract—
 diseases of, (60) 71.
 peristaltic activity, (51) 581.
- Digitalis—
 breeding experiments, (54) Pa. 337.
 hybrids, notes, (58) Pa. 334.
 hybrids, sterility in, causes, (60) 323.
 ovule and pollen fertility in, (56) Pa.
 139.
 reciprocal crosses, progeny of, (52) Pa.
 232.
- Digonochaeta setipennis—
 notes, (60) 64, Oreg. 754.
 puparia, shipment from England, (55)
 Oreg. 658.
- Dihydrositosterol—
 in plant fats, distribution, (57)
 N.Y.State 610.
 preparation, (52) 709.
- Dihydroxyacetone—
 effect on insulin hypoglycemia, (56)
 109.
 use in diabetes treatment, (54) 595.
 utilization by body and determination,
 (56) 87.
- α -Dihydroxy- β -thiodipropionic acid as
 substitute for cystine, (60) 687.
- Dihydroxyphenylalanine, 3, 4, synthesis,
 (60) 413.
- Dilophospora alopecuri—
 affecting cereals, (57) 247.
 on cereals, control, (55) 246.
- Dimastigella trypaniformis n.g. and n.sp.,
 description, (58) 616.
- Dimmockia—
 incongruus, notes, (57) U.S.D.A. 457.
 pallipes n.sp., description, (57) 365.
- Dindymus ribiginosus on rubber trees, (57)
 652.
- Dingo pest, notes, (59) 876.
- Dinitroresol, toxicity to insect eggs, (56)
 359; (57) 656.
- Dinocampus coccinellae, bionomics, (59)
 160.
- Dinopsyllus lypusus, rôle in spread of
 plague, (57) 760.
- Diocalandra taitensis on coconut palm,
 (56) 58.
- Diocetes obliteratus, notes, (54) Mich. 354.
- Diomus sp., notes, (60) 455.
- Dionne, C. E., naturalist, paper on, (55)
 253.
- Dioryctria reniculella, notes, (52) Mich.
 355.
- Dioscorea, oriental vernacular names of,
 (51) 534.
- Diparopsis castanea, notes, (57) 61.
- Dipeptides replacing cystine in diet of
 rats, (57) 487.
- Diphenylamino arsenious oxide, insecti-
 cidal value, (55) 658.
- Diphenylcarbazine as test for chromium,
 (60) 14.
- Diphtheria—
 avian—
 and contagious epithelioma, (51)
 184.
 immunization, (51) 184; (58)
 179, 282; (60) 671.
 in turkeys, (59) R.I. 677.
 notes, (53) 279; (55) 777; (60)
 475.
 studies, (53) 81; (57) 377; (59)
 370, 371.
 treatment, (57) 472.
 vaccines and bacterins for, (56)
 Mass. 381.

- Diphtheria—Continued.
 bacillus, hereditary resistance of fowls to, (55) 166.
 false, description, (52) 285.
 immunity to, (53) 677, 785.
 in fowls, cause, prevention, and cure, (52) 886.
 in fowls, vaccination against, (56) 679; (57) 878; (59) 277.
 prevention, (52) 480.
 toxin, resistance of avitaminic rats to, (53) 381.
- Diphthero-variola—
 of pigeons, vaccination for, (57) 281.
 virus and vaccinia, comparative susceptibility of animals to, (58) 281.
 virus of poultry, plurality, (60) 275.
- Diphyllbothrium latum of man in America, (59) 171.
- Diplarrhena moraea, feeding, value, (55) 677.
- Diplocarpon—
 earliana n.sp., notes, (51) N.C. 846.
 earliana, notes, (55) 850.
 earliana on strawberries, (55) N.C. 453.
 rosae, notes, (51) 46.
- Diplocladium macrosporium, notes, (60) 29.
- Diplococcus pneumonia capsulatus, notes, (53) N.C. 889.
- Diplodia—
 boll rot, notes, (51) 248.
 cacaoicola, notes, (55) 249.
 cacaoicola, studies, (54) 550.
 ear rot disease of corn, (57) 348.
 gossypina, life history and relations, (58) 543.
 gossypina, notes, (56) 351; (60) 241.
 in storage rots, insect carriers, (51) 543.
 infection phenomena, (58) 543.
 laelia-cattleyae n.sp., notes, (60) 838.
 macrospora, notes, (55) 245.
 natalensis, nitrogen metabolism of, (53) 122.
 natalensis, notes, (52) 352; (58) 555.
 natalensis, relation to Sphaeropsis malorum, (58) 53.
 penetration phenomena and facultative parasitism in, (57) 344.
 sp., notes, (56) 748; (59) 637; (60) 344.
 sp. on rubber seedlings, (56) 853.
 tubericola, studies, (53) 753.
 zeae, control, (56) 150.
 zeae infection, effect of environment, (53) 850.
 zeae, notes, (52) Ill. 245, 649, Del. 844; (53) 544, 850, La. 850, 851, Ill. 851; (56) 48, Del. 348; 846; (57) 843; (58) Ill. 338; (59) Mo. 539.
 zeae on seed corn, (51) 850; (52) Kans. 445.
 zeae on seed corn, treatment, (58) 549.
- Diplodias found in southern India, (55) 245.
- Diplodina—
 lycopersici, notes, (59) 535.
 oudemansii, notes, (59) 537.
- Diplosis sp., notes, (60) 455.
- Diplosporium album, notes, (60) 29.
- Dipping tanks, arsenical, oxidation in, (52) 82.
- Dips—
 arsenic determination in, (52) 82, 203.
 effect on wool, (54) 897.
 for livestock, sale in South Africa, (53) 278.
- Diptera—
 blood-sucking nematoceros, synopsis, (60) 249.
 Indian, progress in knowledge of, (52) 155.
 leaf-mining, of North America, (53) N.Y. Cornell 55.
 male, terminal abdominal structures, (57) 657.
 nematoceros, phylogeny, (57) 553.
 of medical and veterinary importance, (54) 259.
 parasites, biology, (53) 55.
 parasites of, (59) 660.
 taxonomic and synonymic tendencies, (52) 355.
- Dipylidium from cats and dogs, (54) 874; (55) 777.
- Dipyridyls, toxicity, (56) 155.
- Disease—
 prevention, address, (52) 480.
 resistance and immunity, (59) 853.
 resistance, discussion, (60) 176.
 resistance, inheritance of, (57) 761, 762.
 resistance, relation to vitamins, (51) Iowa 466.
 transmission, insects related to, (54) 258.
- Diseases—
 communicable, transmitted through milk, (57) 666, 667.
 deficiency, *see* Diet deficiency diseases.
 human, and animal parasites, treatise, (54) 855.
 human, and iron deficiency, (53) 161.
 in Tunis, rôle of flies in transmission, (59) 254.
 insect transmission studies, (60) Oreg. 753.
 insect-borne, treatise, (57) 359.
 milk-borne, outbreaks, papers on, (57) 372.
 nutritional, in children and adults, (57) 590.
 of animals, *see* Animal diseases and specific diseases.
 of Animals Acts, handbook, (56) 774.
 of Animals Acts, proceedings under, (53) 380.
 of man and animals, (58) 256.
 of man, relation to wild animals, (55) 473.

- Diseases—Continued.
of plants, *see* Plant diseases and specific host plants.
parasitic, of man and animals, (59) 169.
relation to nutrition, (52) 480.
tropical, handbook, (54) 53.
- Disholcaspis eldoradensis, secreting honey dew, (54) 757.
- Disinfectants—
for foulbrood, tests, (53) 655, 860.
for fruit trees, (59) Oreg. 744.
for incubators, (60) Mich. 470.
for seed, new, (55) 845.
for soil treatment, (56) 118; (57) 252.
for use by poultrymen, (54) N.J. 176.
protectives in seeds and fruits against, (60) 524.
testing germicidal efficiency, (58) 574.
- Disinfection—
for foot-and-mouth disease, (60) 869.
practice of, treatise, (58) 673.
primary and secondary, (60) 547.
- Disk harrow, dynamics of, (56) 80.
- Disk plow, development, (56) 179.
- Dispensatory of United States, (56) 275.
- Dispersy and base exchange in clay soils, (55) 213.
- Dispharynx—
sp., notes, (54) 74.
spiralis in birds, (59) U.S.D.A. 54.
spiralis, notes, (56) 56.
- Distemper—
canine, and complications, (54) 475.
canine, bacteriological study, (57) 378.
canine, nervous form, (55) 574.
canine, prophylaxis, (57) 183.
canine, studies, (54) 71; (56) 477; (59) 676.
canine, treatment, (55) 275.
clinical survey, (52) 280.
- Distichlis spicata, notes, (52) 351.
- Distillation—
columns, fractionating, (57) 309.
treatise, (54) 612.
tube, all-glass, without constriction, (59) 14.
- Distol, value against liver fluke, (58) 577.
- Distomatosis—
of cattle and sheep, course of infestation by parasite, (59) 475.
of sheep, control, (58) 577, 676.
- Distomiasis in sheep, treatment, (57) 875.
- Disulfide acids as supplementing agents in cystine deficient diets, (60) 687.
- Disulfides, color reaction for, (55) 714.
- Ditch cleaning and cutting machinery, (57) N.J. 779; (59) 859.
- Ditches—*see also* Drainage and Irrigation.
blasting with dynamite, (52) Mont. 485; (59) 479.
- Divining rod tests, value, (59) 83.
- Dochmoides stenoccephala, skin penetration by, (54) 72.
- Dock sawfly larvae on apples, (51) 555.
- Dodder—
alfalfa, hosts of, (54) 834.
control in lespedeza, (59) Tenn. 228.
in Iowa, (52) 639.
notes, (53) U.S.D.A. 334; (56) 843.
on chrysanthemums grown under glass, (59) Wash.Col. 47.
parasitism of, (56) 542.
removal from clover seed, (51) 238.
seed, effect of heat, (56) 433.
seeds, impermeability, (57) 134.
teratology of, (59) 725.
- Dog—
distemper, *see* Distemper.
fleas, control, (60) 266.
tick, control work, (59) 660.
tick, notes, (60) Guam 844.
- Dogfish liver oil, vitamin A in, (53) 864; (58) 294.
- Dogs—
affected with mange, hematology, (54) 478.
blood cells in, (57) 79.
blood pressure of, (53) 482.
breeds, history and descriptions, (55) U.S.D.A. 265.
cestodes from, (54) 874.
chow, management, feeding, and showing, (56) 867.
chromosome number, (58) 823.
convalescing from distemper, effect of cod-liver oil, (54) 174.
convulsions in, (58) 273.
cranial measurements, (55) 26.
cuterebrid larvae in, (53) U.S.D.A. 482.
Dachshund, inheritance of hair color in, (56) 129.
depancreatized and treated daily with insulin, behavior, (51) 769.
diseases and treatment, (55) 73.
diseases of, (55) 574.
effect of parathyroid hormone, (53) 564.
history and development, treatise, (58) 569.
intestinal parasites, (51) 581.
intussusception in, (55) 371.
leucocytes of blood of, (54) 174.
Malamute, eye color in, (51) 227.
nitrogen and sulfur metabolism in, (55) 491.
obstruction in oesophagus, (55) 371.
oestrous cycle in, (57) 723.
on different diets, pH of intestinal contents, (60) 491.
on vitamin B-deficient diets, gastric motility, (57) 595.
oxygen poisoning, (57) 181.
parasites and parasitic diseases, (53) U.S.D.A. 482.
parasites, in New South Wales, (59) 170.
parasites of, (51) 184.
pellagra-like disease in, (59) 394.
pellagra-like disease in, correction, (59) 895.

Dogs—Continued.

- pH value of intestinal contents, (57) 788.
 police, treatise, (52) 674.
 preventive antirabic vaccination, (53) 79.
 relation to human skin disease, (56) U.S.D.A. 776.
 running fits in, (59) 470.
 salmon poisoning in, (55) 176.
 Samojede, albino factor in, (58) 220.
 sex ratios, relation to season, (54) 632.
 Shepherd, origin, (52) 272.
 short tail and tailless variations in, (54) 632.
 spermatogenesis in, (59) 623.
 thyroparathyroprivic, effect of calcium salts, (54) 891.
 training, treatise, (56) 279.
 treatise, (51) 884; (52) 886.
 venereal tumor in, (58) 474.
 vitamin B requirement, (54) 194.
 worms in, water treatment, (55) 679.
- Dogwood, utilization, (56) U.S.D.A. 46.
- Dolerite meal—
 effect on plant growth, (54) 422.
 fertilizing value, (55) 815.
- Dolomite—
 effect on calcium and magnesium in soil, (51) 320.
 separates, disintegration, effect of zone of incorporation, (55) 122.
- Domestic art or science, *see* Home economics.
- Dominion—
 Grain Research Laboratory, notes, (57) 800.
 Illustration Stations in British Columbia, notes, (59) 900.
- Donkeys in Samoa, tumors on, (58) 281.
- Doob smut, mode of infection and perennation, (55) 46.
- Dopa action on pigment cells of rabbits, (55) 27.
- Dorylaimus regius, food habits, notes, (52) 551.
- Dothichiza populea—
 mode of infection, (60) 58.
 notes, (56) 648.
 on Norway poplar, (54) 51.
- Dothidella ulei, notes, (52) U.S.D.A. 550.
- Dothiorella—
 gummosis, notes, (54) Calif. 351.
 sp., notes, (59) Calif. 747.
- Dough—
 colloid behavior in, (54) 503.
 extensibility, determining, (52) 12.
 fermentation, organic acids produced during, (55) 408.
 modification for only panary fermentation, (55) 189, 692.
 yeast cells in, counting, (53) 109.
- Douglas fir—
 adaptability to German environment, (51) 648.
 beetle, control, (54) 153.
 boards, shrinkage, (60) 278.

Douglas fir—Continued.

- canker in Great Britain, (56) 55.
 chermes, paper on, (57) 554.
 climatic strains, (60) 237.
 containers for boxed apples, injury from, (60) 154.
 decay due to *Poria incrassata*, (56) 250.
 defoliation, (60) 247.
 disease, notes, (60) 647.
 growth rates, (59) 235.
 in Bohemia, (55) 648.
 in Italy, data, (54) 244.
 in North Carolina, fungus affecting, (58) 54.
 in Northwest, natural regeneration, (51) U.S.D.A. 244.
 in Poland, (56) 347.
 in Switzerland, (60) 342.
 in the Netherlands, (54) 44.
 leaf-cast, cause, (59) 647.
 oleoresins, composition, (53) 811.
 pitch moth, notes, (60) 651.
 reproduction, effect of cutting methods, (52) 541.
 sawdust, rate of decay, effect of salts, (56) 655.
 seed dissemination, (57) Calif. 242.
 seed germination, effect of heat, (54) 341.
 seeding experiments, (59) 838.
 seedlings, effect of pruning, (59) U.S. D.A. 236.
 seedlings, heat-resisting capacity, (52) U.S.D.A. 47.
 stands, young, thinning, (60) 742.
 timber, air seasoning, (56) 647.
 trees, measurements, accuracy of calipers and diameter tape in, (59) 45.
 value for shelter belts, (56) 833.
 wood, growth studies, (58) 41.
- Dourine, treatment with atoxyl, (58) 176.
- Doves—
 north China turtle, notes, (59) 454.
 ring, blood fat and phosphorus during reproductive cycle, (59) 364.
- Downy mildew, spraying experiments, (56) 850.
- Draba, chromosome numbers in, (57) 120.
- Dragonflies—
 Lahore, external genitalia, (52) 155.
 of Connecticut, guide, (58) 663.
 of Egypt, synopsis, (60) 846.
 rôle in fluke disease of fowls, (57) 774.
- Drainage—
 agricultural, effect on flood run-off, (58) 778.
 and flood control engineering, treatise, (55) 376.
 and improvement of white land, (57) Oreg. 880.
 and irrigation system, (52) Mont. 485.
 and Waters Department of Minnesota, report, (51) 185.
 by pumping from wells in Salt River Valley, (56) U.S.D.A. 679.

Drainage—Continued.

- canals in Finland, factors affecting condition, (53) 282.
 - construction on Newlands Project, (52) 485.
 - control in muck land, (53) Mich. 387.
 - design, subsoil as factor in, (58) 680.
 - ditch, Tempe, variations in composition of water, (53) Ariz. 789.
 - ditches, capacity, effect of vegetation in, (58) 582.
 - ditches, water flow in, (58) 778.
 - effect on crop yields, (59) Md. 478.
 - effect on properties of soil, (58) 282.
 - experiments, (51) Wis. 421; (53) N.C. 890; (60) Ill. 276.
 - in Sacramento Valley rice fields, (60) Calif. 877.
 - investigations at Belle Fourche field station, (57) U.S.D.A. 581.
 - loss of nitrogen in, (53) 723.
 - mole, by direct haulage, in England, (54) 75.
 - of farm lands, (54) 75.
 - of lower Rio Grande Valley, (52) Tex. 493.
 - of Missouri soils, (57) Mo. 473.
 - of salt marshes, effects, (57) N.J. 776.
 - of water-logged soils, (54) 876.
 - on farms, (52) Wis. 287; (55) Calif. 75.
 - papers on, (60) 513.
 - problems, application of hydrodynamics to, (57) Calif. 580.
 - problems in Gallatin Valley, (56) Mont. 778.
 - studies, (56) Utah 576; (59) 83.
 - studies at Aberdeen, (53) 213.
 - systems, depth on irrigated projects, (55) 178.
 - systems, farm, cost for tile trenching, (55) 178.
 - systems, run-off data for, (52) 887.
 - systems, structures used in, (55) U.S.D.A. 376.
 - tile, cost of installation on farm, (58) Minn. 482.
 - tile, shape of water table in, (59) Calif. 177.
 - tile, value, (51) 387.
 - water, removal of plant nutrients in, (55) 811.
 - waters at Cawnpore, amount and composition, (56) 117.
 - wells, capacity, (54) Mont. 876.
- Drain tile—
- concrete, curing conditions, (52) 87.
 - concrete, effect of alkaline waters, (54) 681.
 - studies, (55) Minn. 277.
- Drawbar dynamometer, description, (57) 678.
- Drepanothrips reuteri, notes, (60) 649.
- Dresses—
- fitting, (57) U.S.D.A. 298.
 - for little girls, (60) U.S.D.A. 98.

Dried blood—

- decomposition, (56) 420.
 - decomposition in soils, (51) 415.
 - nitrogen availability in, (59) N.J. 318.
 - nitrogen availability under varying conditions, (53) 619.
- Drill calibration studies, (57) Idaho 726.
- Drinking habit in a family, inheritance of, (53) 29.
- Drinks, fermented, bacteria used in, (54) Ill. 375.
- Drosophila—*see also* Pomace fly.
- effect of X-rays on, (60) 33.
 - obscure, new sex-ratio abnormality in, (60) 634.
 - sex-linked balanced lethal factors in, (56) 521.
 - X-ray treated, proportion of exceptions in, (56) 728.
- Drought—
- conditions in South Africa, (55) 414.
 - effect on pale western cutworm, (52) Mont. 453.
 - effect on plants, (53) 423.
 - in Volga district, (55) 807.
 - physiological processes of plants during, (59) 617.
 - prevention and cure, (55) 681.
 - resistance and soil moisture, (59) 429.
 - resistance and wilting of plants, (55) 124.
 - resistance, heightening, (59) 517.
 - resistance in plants, studies, (53) 518.
- Droughts in South Africa, (54) 808.
- Drug—
- plants, characters, (53) 225.
 - plants of France, (60) 124.
 - products, analyses, (51) Conn.State 859.
- Drugs—
- analyses, Conn.State, (55) 385; (57) 591; (59) 891.
 - bio-assay, (51) 700.
 - botanical, treatise, (53) 9.
 - chemistry of, treatise, (55) 110.
 - crude, moisture in, (51) 700.
 - determining foreign matter in, (51) 207.
 - inspection, Me., (52) 258; (54) 790; (56) 86; (57) 591; (60) 289.
 - inspection, index to reports, (57) Conn.State 89.
 - manufacture and sale, laws, (51) 501.
 - microchemistry, treatise, (51) 280.
 - properties, effect of polarized light, (58) 807.
 - teniacidal value for chickens, (57) 282.
 - textbook, (51) 280.
 - useful, treatise, (51) 281.
- Dry farming—
- at Belle Fourche, (53) U.S.D.A. 335.
 - at Northern Great Plains field station, (56) U.S.D.A. 41.
 - crop varieties for, (55) Oreg. 637.

- Dry farming—Continued.
 in eastern New Mexico, (58) U.S.D.A. 489.
 in southeastern Wyoming, (54) U.S.D.A. 30.
 in Spain, (58) 283.
 in Sulphur Spring Valley, (53) Ariz. 433.
 in western Kansas, (53) U.S.D.A. 88.
 methods in the Deccan, (59) 433.
 methods in wheat growing, (58) U.S.D.A. 331.
 rotation experiments, (52) Oreg. 435.
 statistics, (55) Mont. 181.
- Dry season, unusual, in southern Arizona, (55) 629.
- Dry-cleaning methods, improvements, (60) 599.
- Drying—
 agent for steel and organic combustion analysis, (51) 410.
 by air and steam, treatise, (52) 785.
 notes, (55) 114.
 of crops in the stack, (56) 180, 482.
 of egg yolks, methods, (57) 868.
 of fruits and vegetables, (54) U.S.D.A. 12.
 of peaches, (59) Ga. 290.
 oven, diagram, (53) Wis. 408.
- Drymaria—
 feeding tests, N.Mex., (57) 79, 278.
 glauca poisonous to cattle, (53) N.Mex. 179.
- Dryopeia hirsuta, life history and control, (53) 359.
- Duck—
 eggs, composition, (52) 113.
 eggs, incubation in Philippines, (55) 468.
 eggs, preservation, (57) 464.
 eggs, vitamin A in, (52) 65.
 industry in Philippines, (54) 273.
 trematode parasite, frog as intermediate host, (52) 584.
- Ducklings, White Pekin, growth and feed consumption, (60) 567.
- Ducks—
 as egg producers, (59) 363.
 breeds, popular treatise, (54) 866.
 castration, effect on feather characteristics, (58) 427.
 chemistry of, (57) 687.
 color in, inheritance of, (59) 361.
 diseases of, (57) 674.
 egg-laying, economic importance in Great Britain, (55) 198.
 feeding experiments, Can., (52) 571; (56) 470.
 Indian Runner and native Philippine, egg production, (54) 864.
 Indian Runner, chromosome numbers in embryos, (55) 819.
 Indian Runner, chromosomes in, (57) 820.
 natural history, (56) 551.
 poisoning by black nightshade, (54) 479.
- Ducks—Continued.
 raising, (51) 675.
 raising in California, (51) 577.
 raising, treatise, (59) 465.
 trapping for banding, (54) U.S.D.A. 655.
 treatise, (57) 370.
 White Pekin, raising, (58) 570.
- Dunes and sandhills, succession in, (54) 25.
- Dunesand land, studies, (54) Ill. 313.
- Duodenum, human, H-ion concentration in, (52) 664.
- Durumin, definition, (54) 802.
- Dust—
 control in grain elevators, (54) U.S.D.A. 879.
 explosions, control, (51) 88.
 explosions in grinding equipment, inert gas as preventive, (59) U.S.D.A. 679.
 explosions in industrial plants, (55) 179.
 explosions, treatise, (55) 480.
 for citrus groves, use and abuse, (53) 856.
 fungicides, continuous treatment of grains with, (59) 538.
 fungicides for wheat smut control, (51) Wash.Col. 149; (57) 840, 841.
 fungicides in Hungary, value, (56) 649.
 industrial, problem, (53) 590.
 rains and salt rains, (59) 417.
 respirators, construction and filtering efficiency, (56) 782.
 road, physical characteristics, (53) 483.
 sprays for apple pests and diseases, (55) 53.
- Dustfall of February 13, 1923, (52) 716.
- Dusting—*see also* Spraying and specific plants.
 airplane, in peach orchards, (55) 554.
 cloud-drift method, (56) 159.
 disinfectants and methods, (58) 745.
 effect on fruit pollination, (59) 856.
 experiments, (51) N.J. 658.
 experiments for cereal rusts, (58) 144.
 experiments in Missouri, (59) 57.
 for orchard disease control, (57) 153.
 machine for wheat smut, (53) 486.
 machine, self-mixing, efficiency, (57) 839.
 materials, physical properties, (57) N.Y.State 655.
 methods, advances in, (56) 243.
 mixtures, stickers in, (57) N.J. 757.
 v. spraying, (51) 548; (53) Conn.State 450.
 v. spraying for apples, (52) Ind. 141.
 v. spraying for curculio control, (58) Ill. 351.
- Dusts—
 for protection of stored seeds, (51) 358.
 volatile, estimation of dosage, (51) 358.

- Duty of water, *see* Irrigation water, duty of.
- D-vitasterin, studies, (60) 96.
- Dwarf growth disproportionate in animals, (54) 126.
- Dychrostachys nutans as weed in Cuba, (54) 239.
- Dyed materials, tests, (54) 596.
- Dyeing—
 chemistry of, treatise, (56) 496.
 fur, development of industry, (56) 397.
 hosiery of mixed fibers, (58) 96.
 laboratory methods and equipment, (58) 394.
 of cotton and artificial silk, (56) 898.
 of glove and clothing leather, (60) 598.
 of worn garments and new materials, (55) 796.
 of yarns and fabrics, (55) 598.
 piece, cause of faults in, (55) 796.
 textile fibers, (57) 298.
 uneven, causes, (60) 598.
- Dyes—
 adsorption by soils, (53) 617.
 affinity of cotton for, (60) 598.
 analysis and detection, (51) 12.
 and dyeing, treatise, (59) 498.
 and inorganic salts, antagonism between, (56) 125.
 and other synthetic organic chemicals, census, (56) 596.
 antiseptic, excretion through mammary gland, (57) 771.
 Chinese vegetable, preparation and use, (58) 96.
 coal-tar food, chemistry and analysis, (55) U.S.D.A. 112.
 effect of north and south light exposure, (56) 396.
 fading, effect of humidity, (58) 597.
 fading on wool, effect of humidity, (59) 297.
 fastness, light sources for testing, (58) 598.
 fastness properties on fabrics, (58) 393, 394, 596.
 fastness properties, testing, (59) 795.
 fastness, standardization, (58) 94.
 for coloring glymol, (52) Mich. 314.
 for destroying abortion organisms in the udder, (60) Wash.Col. 866.
 for food, certification, (54) U.S.D.A. 710.
 from lichens, use, (60) 598.
 identification on cellulose acetate rayon, (58) 696.
 in cotton fabrics, action of light on, (51) 716.
 isolation of bacteria by, (59) Idaho 722.
 not fast to ironing, (56) 298.
 on cotton, identification, (57) 694.
 on silk, fastness, (54) 597.
 on wool, fastness, tests, (54) 597.
 organic, chemistry of, (56) 507.
 penetration into living cells, (59) 619.
- Dyes—Continued.
 penetration through oiled cotton, (60) 297.
 phthalein and fluorescein, combination of proteins with, (59) 415.
 physiological action, (51) 382.
 standardization, use of spectrophotometer in, (58) 796.
 therapeutic application, (59) 297.
- Dynamite—
 use for ditch blasting, (59) 479.
 use in deep tillage experiments, (58) U.S.D.A. 374.
- Dynamiting, subsoil, experiments, (53) Ill. 17.
- Dynamometer—
 measurements, technique, (54) 179.
 new, for horse and power drawn implements, (60) 508.
 portable recording, power studies with, (51) 187.
 tests, (51) 485.
 to test man's power capacity, (60) 481.
 use in soil cultivation studies, (56) 480.
 value, (60) 508.
- Dynastidae injurious to palms, (59) 860.
- Dynastinae, life cycles, (54) Kans. 461.
- Dyscinetus—
 spp., notes, (54) Kans. 461.
 trachypygus, notes, (52) U.S.D.A. 256.
- Dysdercus—
 cingulatus, anatomy and bionomics, (51) 762.
 cingulatus, notes, (59) 652; (60) 151.
 obscuratus new to United States, (54) 754.
 sidae in Queensland, (60) 250.
 sidae n.sp., notes, (59) 561.
 supersticiosus, distinct forms and bionomics, (60) 846.
 supersticiosus, notes, (53) 254; (56) 750.
- Dysentery—
 among sheep, (54) Colo. 73.
 bacillary, Aberdeen epidemic of, (51) 272.
 chronic bacterial, *see* Johne's disease.
 in lambs, (54) 71; (57) 379; (60) Mont. 773.
 in lambs, prophylaxis, (58) 775.
 swine, paper on, (59) 169.
- Dyslobus granicollis, control, (57) Oreg. 263.
- Ear canker in rabbits, treatment, (53) 82, 587.
- Ear tick, spinose, in Chile, (54) 59.
- Ear tick, spinose, summary, (53) 657.
- Earias—
 insulana, color variations in, (52) 154.
 spp. in French West Africa, (53) 361.
 spp., notes, (57) 61.
 spp., parasites of, (52) 154.
- Earth—
 fills, vertical pressure, measurement, (53) U.S.D.A. 83.

- Earth—Continued.
 mite, red legged, in Western Australia, (54) 758.
 pressure against abutment walls, measurement, (53) U.S.D.A. 684.
 pressures on culvert pipes, (56) U.S. D.A. 680.
 rammed, experiments with, (59) N. Dak. 881.
 rammed, for walls, durability, (56) 479.
 rammed, use for building construction, (55) U.S.D.A. 880.
 use for wall construction, (54) 282.
 wall construction, progress in, (59) 882.
- Earth's crust—
 chemistry of, (51) 511.
 composition, (52) 208.
- Earthwork cost, effect of haul, (52) U.S. D.A. 185.
- Earthworms—
 and the cluster fly, (51) 458.
 destroying, method, (51) 54.
 effect on properties of soil, (54) 718; (58) 814.
 summary, (60) U.S.D.A. 355.
- Earwig—
 breeding habits, (58) 451.
- European—
 biological control, (57) 160; (60) Oreg. 754.
 control, Oreg., (52) 243; (55) 659.
 dipterous parasites of, (60) 64.
 in British Columbia, (53) 254.
 in California, (58) 558.
 in Oregon, (51) 55.
 notes, (52) Wash.Col. 852, 659.
 summary, (60) 649.
 habits, (53) 254.
 parasite, notes, (55) Oreg. 663.
 parasites from England, (55) Oreg. 659.
 parasites, methods for collecting, (60) 656.
- East African Agricultural Research Institute, (59) 800.
- East coast fever, *see* African coast fever.
- Eating utensils in U.S.Army, disinfection, (54) 191.
- Eberthella—
 gallinara, pathogenic and antigenic properties, (58) Del. 777.
 pyogenes, notes, (59) 79.
 sanguinaria, agglutinative and antigenic properties, (57) 381.
 sanguinaria, morphology, (51) 883.
 sanguinaria, notes, N.C., (53) 786, 889.
 sanguinaria, studies, (54) N.C. 176.
 typhosa, notes, (55) R.I. 276.
 viscosa, etiological factor in joint ill, (54) 478.
- Eccoptogaster spp., parasite of, (58) 863.
- Echinophaga gallinacea, *see* Sticktight flea.
- Echinochloa—
 colona as weed in Cuba, (54) 239.
- Echinochloa—Continued.
 colona, transmission of mosaic disease to, (53) 156.
 species in California, (52) Calif. 33.
- Echinopogon ovatus, cause of staggers, (55) 677.
- Echinosperrum lappula in grain seed, (53) 36.
- Echinostomidae, life history, (53) 357.
- Echinostomum conoideum, frog as intermediate host of, (52) 584.
- Echinuria—
 parva n.sp. in ducks and geese, (59) U.S.D.A. 54.
 uncinata in ducks and geese, (59) U.S.D.A. 54.
 uncinata, notes, (56) 56.
- Echocerus cornutus, life history and biology, (52) 458.
- Ecological—
 adaptation, genetical interpretation, (56) 630.
 factors, relation to pH of soil, (53) 125.
- Ecology—
 agricultural, (54) 819.
 and crop production on Great Plains, (58) 116.
 animal, course in, (56) 250.
 crop, studies, (55) 123.
 of fields, parks, and gardens, (51) 819.
 phytometer method in, (55) 325.
 plant, treatise, (54) 222.
 studies, (54) 24.
 studies of Carnegie Institution, (57) 818; (59) 124.
 system of classification, (51) 820.
- Economic—
 and commercial resources of Italy (51) 94; (53) 596.
 and social conditions in South Carolina, Fairfield Co., (53) 797.
 and social study of Tennessee, (53) 494.
 condition of Soviet Russia, (52) 896.
 conditions in China, (51) 193.
 Conference, International, resolutions on agriculture, (58) 78.
 development in modern Europe, treatise, (55) 786.
 equilibrium, world's, agriculture and dairying in, (52) U.S.D.A. 596.
 history, American, treatise, (53) 393.
 history, general, treatise, (59) 382.
 history of Tudor period in England, treatise, (53) 93.
 information available to farmers, (60) 883.
 life, American, and means of improvement, textbook, (55) 486.
 life, needs of, treatise, (52) 794.
 organization of Brazil, (51) 690.
 periodicals of foreign countries in English, list, (54) U.S.D.A. 782.
 progress in United States, history, (56) 187.

Economic—Continued.

- research, notes, (54) 198.
- resources of Canada, (54) 587.
- resources of the Pacific Northwest, treatise, (51) 688.
- status of China, changing factors in, (53) 596.
- survey of Texas, (60) 586.
- transformation of rural India, (51) 193.

Economics—

- and sociology of Tennessee, course in, (57) 290.
- and sociology, workers in, meeting, (60) 305.
- home, *see* Home economics.
- principles and problems, textbook, (55) 289.
- principles, treatise, (52) 795.
- rural, *see* Rural economics.
- textbook, (54) 86.
- treatise, (51) 598.

Ecthyma contagiosum of sheep and goats, (60) 573.

Edema—

- in South African cattle, (53) 385.
- malignant, immunization, (53) 78.
- malignant, of horses, use of antistreptococcal virus in, (58) 678.
- of the wattles, (53) 279; (54) 478.
- studies, (60) 197.

Edestin—

- analysis, Dakin's method, (52) 803.
- bases of, (60) 414.
- effect on milk secretion, (56) Ill. 376.
- tyrosine in, (56) 13.

Edinburgh and East of Scotland College of Agriculture—

- Experimental Farm, opening, (53) 200.
- notes, (60) 800.

Education—

- adult, in Scandinavia and America, treatise, (53) 94.
- agricultural, *see* Agricultural education.
- vocational, *see* Agricultural education, vocational, *and* Vocational education.

Educational associations and foundations in United States, (56) 389.

Eels, dried, vitamins in, (59) 594.

Egg—

- albumin, *see* Albumin, egg.
- fragments, development, (51) 826.
- industry, need of standardization in, (60) 682.
- law, New York, (60) 682.
- market, winter, factors affecting, (60) 588.
- production—*see also* Hens, laying.
 - and body weight, (53) N.J. 877.
 - and broodiness, (51) Mich. 576.
 - and hatchability, effect of rations, (53) Ohio 873; (56) Kans. 867.
 - and sexual maturity, correlation, (54) Mo. 371.
 - and trade, papers on, (55) 167.
 - annual, determining, (54) 569.

Egg—Continued.

- production—continued.
 - annual, relation to body characters, (51) 673.
 - annual, relation to date of sexual maturity, (53) Mo. 471; (60) Wash.Col. 859.
 - annual, variation in, (60) 861.
 - commercial v. home mixed feeds for, (51) Can. 275.
 - confinement v. range for, Can., (54) 470, 763.
 - correlation tables, seasonal and annual, (52) N.J. 372.
 - correlation with physical measurements, (57) Iowa 569.
 - correlations of characters in, (59) Mass. 72.
 - cost records, (59) Ohio 284.
 - culling for, (60) 861.
 - cycles in domestic fowls, (58) 631.
- production, effect of—
 - artificial light, (52) Pa. 272; (53) Iowa 778, N.C. 779; (54) Pa. 369; (55) N.J. 866; (56) 181, S.Dak. 567; (57) N.J. 765; (58) S.Dak. 766, 781; (59) Oreg. 665; (60) Minn. 172, Wyo. 768.
 - bacillary white diarrhea, (60) 580.
 - breeding, (59) Tex. 770.
 - calcium feeds on, (52) Ky. 75.
 - cod-liver oil and ultra-violet light, (57) Ohio 173.
 - different calcium compounds, (59) 264.
 - inadequate rations, (52) Kans. 475.
 - inbreeding, (54) 324.
 - latitude, (53) N.C. 779.
 - light and temperature, (55) Nebr. 669.
 - meat meal and milk, (59) N.C. 770.
 - molt, (53) Iowa 778.
 - ovarian injury, (55) 868; (60) 633.
 - protein feed, (53) Mo. 71; (60) Wyo. 768.
 - ultra-violet light, (53) 274; (54) 670; (55) 867.
 - vitamins, (51) 673.
 - winter sunshine, (56) Wis. 767.
- production—
 - factors affecting, (55) 265; (60) Ark. 859.
 - feed-purchasing power, (60) Mo. 187.
 - feeding for, (51) Can. 672, Mo. 776; (53) N.J. 472, Ohio 577; (54) Can. 65, Can. 470, Nebr. 766, 866; (55) Can. 364, Mich. 366; (57) 664; (58) 68, Mo. 466, Mo. 467; (59) Wyo. 264.
 - feeding for, all-mash method, (56) Ohio 168.

Egg—Continued.
 production—continued.
 first year, of Rhode Island Reds, (60) 566.
 fish meal v. meat meal for, (59) N.C. 770.
 genetic factors in, (53) 332.
 green feeds for, value, (55) Minn. 365.
 in Europe, (55) U.S.D.A. 284.
 in Ireland, (55) 869.
 in Leghorns, inheritance, (57) N.J. 28.
 inheritance, (51) 527; (56) Kans. 818; (59) N.C. 770.
 mean monthly, of birds which die during first laying year, (57) 665.
 meat meal v. meat scraps for, (56) Ohio 299.
 mineral requirements, (53) 273; (57) N.C. 271.
 monthly costs and receipts, N.J., (52) 573; (56) 768; (58) 869.
 of barred Plymouth Rocks, first year, (60) 860.
 of cross breeds in poultry, (55) 869.
 of Leghorn pullets, effect of confinement, (60) 659.
 of pedigreed pullets, Miss., (55) 669; (58) 67.
 of poultry breeds, (51) Conn. Storrs 874.
 of pullets, effect of artificial light, (58) Del. 168.
 of pullets, effect of winter confinement, (58) 168.
 of pullets v. hens, (53) Can. 875.
 papers on, (59) 361.
 principles, treatise, (55) 869.
 proteins for, (52) Can. 571; (54) Pa. 369, Ky. 370; (55) Miss. 568.
 proteins for, sources, (53) Can. 875; (55) N.C. 265; (56) Pa. 373.
 record of performance and registration, (59) 569.
 records, analysis, (51) N.J. 674.
 production, relation to—
 body form, (52) 675.
 body measurements, (57) 463.
 body weight, (57) N.J. 72; (59) 164.
 date of hatching, (53) Mo. 472; (54) Can. 65, Mo. 762.
 date of sexual maturity, (56) Mo. 167.
 molting, (51) Iowa 471.
 physical characters, (55) N.C. 265.
 rate of maturity, (57) Calif. 369.
 time laying starts, Mo., (53) 472; (54) 762; (57) 462.
 production—
 score card for judging, (60) 567.
 seasonal, (57) N.J. 72.

Egg—Continued.
 production—continued.
 second year, relation to first year, (60) 566.
 spring, stimulants for, (56) Can. 469.
 studies, (52) Calif. 75.
 summer-fall, securing, (59) N.J. 569.
 summer-fall, value, (57) N.J. 569.
 winter, (53) Mich. 376.
 winter and annual, Mass., (55) 672; (56) 270.
 winter, as guide to yearly production, (58) Minn. 869.
 winter, effect of age of birds, (54) Can. 273.
 winter, effect of artificial light, (53) Ind. 173.
 winter, effects of inbreeding, (51) 130.
 winter, feeding for, (52) West. Wash. 77, Can. 570; (53) Can. 875; (54) Ohio 371, Can. 668; (56) Can. 469.
 winter, inducing greater food consumption for, (58) Ohio 362.
 winter, requirements for, (53) Minn. 174.
 proteins, biological value, (52) 762.
 proteins, distribution of nitrogen in, (55) 714.
 recipes, (59) Okla. 290.
 solids, estimation in noodles, (52) 713.
 weight, relation to production, (52) 675.
 weight, relation to time laying starts, (55) 65.
 yolk—
 antirachitic value, (52) 263.
 as source of vitamin C, (55) 594.
 availability of iron in, (56) 494.
 Chinese preserved, composition, (52) 113.
 color affected by feed, (51) Wis. 472.
 color, effect of sweet peppers in feed, (57) Ga. 270.
 color, variations in, (55) 771; (59) 264.
 coloring by feeding pimiento peppers, (58) Ga. 63.
 dehydrating methods, (57) 868.
 irradiated, effect, (53) 568.
 olive-colored, cause, (53) 274.
 pellagra-preventive action, (60) 793.
 reserve, absorption rate in baby chicks, (60) 566.
 value for calcium deficient diet, (52) 260; (56) 293.
 vitamin A in, (57) Ohio 174, 463.
 vitamins in, effect of management of hens, (57) 791.

Egg-laying—

- contest, (52) N.J. 476, West.Wash. 573.
- contest, Canadian national, reports, (55) 772.
- contest, Maryland State, Md., (53) 877; (55) 366.
- contest, Utah Intermountain, rules and regulations, Utah, (52) 174; (53) 877; (55) 167; (57) 569; (59) 870.
- contests, (54) N.J. 766; (56) N.J. 568; (57) Okla. 567; (58) N.J. 468.
- contests, advantages and objects, (59) N.J. 569.
- contests, papers on, (59) 361.
- contests, poultry management for, (57) N.J. 766.
- contests, standardization, (56) 671.
- inhibition by hypophyseal substance, (55) 824.

Eggplant—

- blight, control, (51) 152.
- breeding experiments, (60) Can. 639.
- disease caused by *Pythium aphanidermatum*, (58) 549.
- fruit rot, control, (51) 156.
- fruit rot, notes, (54) 745.
- leaf miner and potato tuber worm, differentiation, (59) Va.Truck 251.
- leaf spot, control, (51) 156.
- pests, control, (54) Ill. 353.
- Phytophthora* disease, (60) 54.
- Phytophthora* rot, notes, (52) 548.
- powdery mildew, notes, (55) 346.
- root rot, notes, (53) 43.
- seed, effect of fruit maturity, (55) 835.
- seed-borne diseases, fungicides for, (56) Fla. 840.
- Verticillium* wilt, control, (59) N.J. 338.
- wilt in Philippines, (51) 246.
- wilt, notes, (53) 248; (57) 744.

Eggplants—

- breeding experiments, (51) P.R. 838.
- culture, (57) Va.Truck 832.
- culture and marketing, (57) V.I. 335.
- culture experiments and trial shipments, (59) V.I. 439.
- fertilizer experiments, (58) Ill. 333.
- insects on, control, (56) Ill. 357.
- prices and shipments from Florida, (59) 886.
- spraying and dusting, (52) Va.Truck 43.
- varieties, (51) R.I. 746.
- varieties, chromosome number in, (54) 127.

Egg-producing organs of poultry, diseases of, (51) West.Wash. 682.

Eggs—

- added to adequate diet, effect, (60) 191.
- antineuritic vitamin in, (52) 161.
- antineuritic vitamin in, relation to ultra-violet light, (55) 266; (56) 768.

Eggs—Continued.

- antiscorbutic properties, (53) 768.
- as supplements to white bread, nutritional value, (60) 191.
- bacterial flora, effect of dehydration, (54) 372.
- black spot in, (59) 265.
- candling, (55) 772.
- carbon dioxide given off by, during incubation, (52) W.Va. 77.
- chemical preservation, effect on stability of vitamins, (55) 594.
- cold storage holdings, (55) U.S.D.A. 686.
- color of, inheritance, (52) 128.
- composition and decomposition, (52) 113.
- consumption in Pennsylvania, (59) Pa. 681.
- cooperative assembling units, (58) Minn. 82.
- cost of production, (56) Calif. 690; (59) N.C. 364; (60) Ohio 83.
- data for consumers, (53) 376.
- development in vitro, (55) 526.
- dipping in chemicals, effect on hatchability, (53) 670.
- dirty, effect of washing on keeping quality, (53) 669.
- disinfection, experiments, (59) 583.
- distribution and prices in Great Britain, (52) 693.
- double-yolked, structural characteristics, (55) 634.
- dried, bacterial content, (54) 372.
- duration and change of fertility, (56) Can. 468.
- exchanges for marketing, (54) 81.
- fertility and hatchability, (51) Can. 275.
- fertility and hatchability, effect of bacillary white diarrhea, (56) Kans. 380.
- fertility and hatchability, effect of feeds, (58) Ark. 360.
- fertility and hatchability, effect of proteins, (54) Pa. 369.
- fertility and hatchability, effect of ultra-violet light, (55) 867.
- fertility and hatchability, relation to date of hatching, (54) Can. 66.
- fertilization, time required for, (53) 671.
- fresh, vitamin A in, (52) 664.
- from infected and immunized hens, examination, (51) R.I. 883.
- from 300-egg hens, hatchability and livability, (59) Wash.Col. 72.
- frozen, relation to egg industry, (59) 363.
- grading and marketing, (54) 471.
- hatchability, (56) Conn.Storrs 817; (59) 362.
- and fertility, effects of ultra-violet light and cod-liver oil, (58) Pa. 361.

Eggs—Continued.

- hatchability—continued.
 effect of age of hens, (56) Minn. 566.
 effect of anthelmintic treatment of hens, (60) 876.
 effect of chilling, (53) 273.
 effect of cod-liver oil feeding, (55) 770.
 effect of disinfectants, (59) Mich. 570.
 effect of exposure to low temperatures, (57) Calif. 270.
 effect of inadequate rations, (52) Kans. 475.
 effect of low temperature, (53) 670.
 effect of rations, (58) W.Va. 467.
 effect of shell texture, (51) 576.
 effect of wheat-germ oil, (60) Ill. 260.
 effects of sunlight, (59) 665.
 factors affecting, (56) S.Dak. 567.
 increasing, (52) Ohio 476.
 inheritance, Pa., (58) 361; (60) 364.
 nutritional factors affecting, (59) Ohio 263.
 relation to calcium supply of hens, (53) 577.
 relation to male, (56) 523.
 variation in, Tex., (55) 366; (57) 174; (59) 770.
 hatching factors involved in, Conn. Storrs, (59) 430; (60) 529.
 hatching, production, (59) 361; (60) Ohio 468.
 hatching quality, relation to poultry management, (56) 671.
 hatching results, (55) Minn. 365.
 hatching results, confinement v. range for, (54) Can. 470.
 hen and pullet, hatching results, Can., (54) 65, 763, 764.
 household preservation, (56) 691.
 in storage, factors affecting keeping quality, (59) 362.
 incubation, *see* Incubation.
 Kentucky, receipts on New York market, (58) Ky. 79.
 lime content, changes in, (54) 865.
 lipoids in, determination, (51) 205.
 loss of weight, variation in, (51) 674.
 low hatchability, causes, (55) Conn. Storrs 26.
 market in El Paso area, (57) N.Mex. 284.
 market, quality in, (53) N.J. 877.
 marketing, (51) U.S.D.A. 93; (54) Ky. 387; (56) Ky. 182; (57) Del. 586; (60) Ky. 286.
 and grading, (54) 471.
 by farmers, (58) Pa. 490.
 in England and Wales, (57) 190.
 in North Dakota, (59) N.Dak. 384.

Eggs—Continued.

- marketing—continued.
 papers on, (59) 362.
 studies, (59) Ind. 783.
 of different breeds, osmotic activity, (59) 569.
 of pullets v. hens for hatching, Can., (53) 874, 875.
 packing methods, (55) U.S.D.A. 885.
 pH value of white and yolk, (52) Ky. 475.
 phosphoric acid in, (51) 713.
 phosphorus in, (53) 807.
 physical characters, relation to hatchability, (57) 463.
 preservation by freezing, (53) 260.
 preserved, stability of vitamins in, (53) 459.
 preserving and storing, Can., (52) 572; (54) 668.
 prices, (58) Ill. 380; (59) Ohio. 482.
 prices and trade, in Ireland, (55) 383, 869.
 prices in Ohio and New York, (58) Ohio 381.
 prices, index numbers, (59) N.Dak. 885.
 prices, relation to feed costs, (60) Ohio 483.
 quality, (59) 264, Calif. 771.
 quality, factors affecting, (54) 166; (60) Ark. 859.
 quality, relation to poultry industry, (59) 362.
 quality, studies, (55) 771.
 shape and weight, relation to hatching quality, (54) 569.
 shape and weight, relation to sex of chicks, (52) 629.
 shell formation, sources of lime for, (51) Ohio 472.
 storage, (55) 267, 869.
 storage experiments, Can., (54) 470; (56) 470.
 storage quality, effect of rations, (58) Tex. 869.
 storing for winter, (53) Can. 875.
 time of hatch, effect, Okla., (58) 468, 766.
 transmission of avian tuberculosis through, (53) 384.
 two, one embryo from, (51) 525.
 unsaponifiable matter in, determination, (55) 310.
 vitamin A in, (57) Ohio 174.
 vitamin A in, effect of prolonged storage, (52) 664.
 vitamin B in, (53) 570; (54) 90.
 vitamin content, effect of storage, (59) Wis. 96.
 watery whites in, (59) Wash.Col. 11.
 watery whites, nature of, (60) Wash. Col. 801.
 weight and composition, effect of calcium in diet, (54) 165.
 weight and number, variation in, (60) 469.

Eggs—Continued.

- weight, factors affecting, (55) W.Va. 568.
- weight, relation to age at first laying, (54) 670.
- weight, relation to production, (51) 674; (55) 772.
- weight, relation to time laid, (57) 369.
- weight, relation to weight and growth rate in chicks, (59) 870.
- weight, relation to weight of chicks according to sex, (54) 372.
- White Leghorn, variation in weight, (53) W.Va. 671.
- white, tint in, (52) Calif. 75.

Eggshells—

- sources of lime for, (53) Ohio 874.
- strength, effect of carbonate grit, (59) N.J. 363.
- thickness, factors affecting, (60) 470.
- weight and texture, effects of feeding cod-liver oil, (56) Can. 469.

Egret, buff-backed, factor in Egyptian agriculture, (54) 52.

Egyptian fever, experimental transmission, (58) 774.

Eidamia—

- acremionoides and Monopodium uredopsis, identity, (56) 124.
- catenulata, cause of golden color in oak wood, (52) 152.
- morphology and physiology, (52) 215.
- tuberculata, notes, (56) 124.

Eimeria—

avium—

- in chicks, control, (54) Tex. 579.
- in chicks, effect of feeding milk products, (54) Calif. 278.
- in fowls, (59) N.J. 373.
- life cycle, (59) N.H. 781.
- notes, (57) N.J. 80; (58) 879.
- canna n.sp., notes, (52) 182.
- intricata from sheep, description, (53) 888.
- meleagridis n.sp., proposed name, (57) 381.
- nieschulzi n.sp., morphology and biology, (53) 280.
- spp. in rabbit feces, preservation for transmission, (59) 272.
- spp. in rabbits, (53) 280.
- spp., notes, (57) 381; (58) 277.
- stiedae, effect of acridine, (53) 889.
- stiedae, effect of gastric juice on, (55) 272.
- synonymy, (60) 66.
- zürnii in Japan, (58) 473.

Einkorn, results of experiments, (51) U.S.D.A. 435.

Elachertus pini, description, (57) 365.

Elachiptera cornuta, life history and habits, (59) 657.

Elaeis palm, floral organs, studies, (51) 242.

Eland, Eimeria canna in feces of, (52) 182.

Elasmus—

- brevicornis n.sp., description, (52) 361.
- nephantidis, life history and habits, (58) 758.

Elasticity, applied, treatise, (53) 386.

Elaterid larvae, parasites of, (55) 854.

Elderberry, Adams, new variety, (59) N.Y. State 233.

Electrargol, use in pneumoenterites of swine, (58) 775.

Electric—

- charge of colloidal clay, (52) Calif. 20.
- charges, effect on development of fungi, (58) 216.
- construction, rural, costs, (59) 586.
- contact, apparatus for making, (51) 410.
- cooking apparatus, (58) 395.
- cooking, load factor, (59) 695.
- current, effect on growth rate, (51) 424.
- current, effect on plants, (58) 422.
- currents, atmospheric, relation to plant growth, (52) 808.
- dairy cold storage, (59) N.H. 481.
- dairy cold storage, building, (60) 183.
- development as aid to agriculture, (56) 580.
- equipment, safety rules for installation and maintenance, (55) 495.
- farm exhibition at Harrisburg, (54) 481.
- hay hoists, (59) Wash.Col. 379.
- heater, new, for dairy sterilizers, (57) Calif. 276.
- heaters, explosive gases in, (54) 898.
- heating, treatise, (60) 280.
- lamps, gas filled, radiation from, (58) 598.
- light, effect on plants, (55) 726; (57) 117.
- light plant, selection, (56) Mich. 385.
- light plant, wind-driven, Ind., (53) 184; (55) 75; (56) 80.
- light plants on farms, (55) Ark. 75.
- light use in greenhouses, (51) 188.
- line poles, damage by termites, (59) 281.
- milk cooler outfit, development, (55) 584.
- motor for elevator and grinder, (60) Mich. 79.
- motors and control, principles, (52) 586.
- plowing, (53) 389.
- plowing in Italy, (59) 479.
- power for orchard spraying, (53) 486.
- power in Washington, (52) 182.
- power systems, effect of cooking on load condition, (54) 95.
- power transmission, treatise, (57) 777.
- refrigerating machines, household, comparison, (58) 198.
- refrigeration, cost, (59) 585.
- refrigeration on farms, (58) 781.
- service, calculating rural extensions, (53) 686.

Electric—Continued.

- sterilizer for average-sized dairy, (53) 590.
 stimulation of plant growth, (54) 626.
 transmission lines, construction, operation, and maintenance, (53) 686.
 washing machines, (53) 486.
 water heaters for poultry, (57) Oreg. 477.
 water heating, recommendations for, (60) 380.
 water systems, types, (54) Ill. 382.
- Electrical—
 dictionary, standard, (53) 686.
 house pumping systems, (51) 889.
 installations, defective, in farm buildings, (53) 891.
 protection and safety apparatus on farms, (55) 480.
- Electricity—
 aid to farmers, (59) Mich. 598.
 consumption on the farm, (59) 479.
 effect on bacteria, (54) 572.
 effect on plant cells, (53) 323.
 effect on plant growth, (53) 222.
 farm, definite program for, (59) 281.
 for chick brooders, (56) 481.
 for farm and household uses, Ind., (56) 281; (60) 79.
 for farmers of Pennsylvania by cooperative effort, (54) 583.
 for heating hotbeds, (57) 336.
 for irrigation pumping, (54) 583.
 for milking machines, (51) 88.
 for poultry houses, equipment, (56) 684.
 for rural districts, (51) 188; (58) 681.
 for rural districts from Hydro-Electric Power Commission of Ontario, (52) 183.
 for sterilization of dairy equipment, (55) 883; (60) 482.
 from farm plants, cost, Mo., (51) 787 (53) 482.
 generation by wind power, (52) 785; (53) Ind. 184, 891; (55) Ind. 75, 881; (56) Ind. 80, U.S.D.A. 315; (59) Nebr. 881.
 generation by wind power, airplane type of wheel for, (56) Iowa 881.
 heating of truck garden soils by, (59) 179.
 in agriculture, (53) 85; (55) N.H. 881; (56) Ill. 280, Ind. 281, Mich. 398, 579, 681, Wis. 781, 889; (58) Mo. 481; (59) Wis. 84, Ind. 782; (60) Ill. 276.
 in agriculture in California, (54) 282.
 in agriculture in England, (57) 777.
 in agriculture in Europe, (52) 388; (53) 389.
 in agriculture in Great Britain, (58) 681.
 in agriculture in Ontario, survey, (55) 881.
 in agriculture in Pennsylvania, (53) 486.

Electricity—Continued.

- in agriculture, research features, (52) 688.
 in agriculture, treatise, (58) 681; (60) 280.
 in New Zealand dairy factories, (51) 790.
 in rural districts of France, (53) 486.
 in smaller rural industries, (53) 389.
 industrial, treatise, (52) 688.
 on a farm in South Dakota, test line, (55) 480, 782.
 on farms, (54) Ind. 384, 878; (55) N.H. 881; (56) Ind. 281, Mich. 398, Wis. 781; (57) Idaho 775; (59) Wash.Col. 678; (60) Oreg. 781.
 on farms, analysis of consumption, (58) 377.
 on farms, editorial, (51) 301.
 on farms in Alabama, (55) 880.
 on farms in California, (54) 481.
 on farms in England, (54) 77, 682.
 on farms in Idaho, (57) Idaho 775.
 on farms in Indiana, (54) Ind. 384.
 on farms in Kansas, (54) 582; (59) 585.
 on farms in Missouri, (58) Mo. 780.
 on farms in New England, (57) N.H. 283.
 on farms in New Jersey, (58) 681.
 on farms in Oregon, (53) 891; (56) 579.
 on farms in Sweden, (51) 388, 789; (58) 183.
 on farms, kinds of equipment, (60) 780.
 on isolated farms, (54) 878.
 on New England farms, (57) N.H. 283.
 on South African farms, (55) 584.
 on sugar plantations in Hawaii, (54) 682.
 production by public-utility power plants, (59) 179.
 relation to agriculture, (55) Ind. 75; (60) Oreg. 781.
 relation to agriculture, work of Kansas committee, (54) 878.
 rural, costs, (56) 480.
 rural, determining selling price, charts for, (54) 282.
 rural distribution by galvanized-iron and copper lines, (54) 77.
 rural distribution, cost, (53) 485.
 rural, in California, (54) 481.
 rural rate, (58) 377.
 rural transmission schemes, statistics, (54) 76.
 specific operations by, cost data, (55) 782.
 static, in stationary threshers, (54) Wash.Col. 879.
 use in horticulture, (58) 535.
 use in Italy, (52) 183.
- Electroanalysis, platinized alundum cathodes in, (52) 310.

- Electroculture—
 experiment with the "electrokultivator," (54) 633.
 experiments, (51) 231, 232; (54) 434, U.S.D.A. 731.
 experiments with sugar beets, (54) 534. studies, (56) 34.
- Electrode, polarized platinum, in neutralization reactions, (59) 14.
- Electrodes for moisture determinations, standardization values, (53) 116.
- Electrodialysis, use in soil studies, (60) 509.
- Electrogenetic laboratory at Belgirate, work in, (53) 329.
- Electrogenetics, (52) 29.
- Electrolytes—
 action on soil, (52) 121.
 and silica, interaction, (54) 417.
 and soils, reactions, rôle of electronegative ions in, (54) 316.
 distribution in animal body, (56) 501.
 effect on absorption of H-ions, (56) 416.
 effect on swelling of agar, (57) 817.
 effect on types of clay suspensions, (56) 416.
 permeability of cells to, (51) 26.
 water-soluble, determination in soils, (60) 509.
- Eleocharis capitata, control, (53) 133.
- Eleodes—
 extricata convexicollis, notes, (60) 654.
 hispilabris affecting wheat, (56) Idaho 63.
- Elephant grass as fodder crop in India, (56) 37.
- Eleusine coracana—
 fungus affecting, (51) 46.
 seeds, smut on, (52) 545.
 smut, notes, (55) 445.
- Elevating grader—
 costs, (53) U.S.D.A. 483.
 wagon combination, operation, (53) U.S.D.A. 284.
- Elevators—
 cost of operating, (56) Kans. 885.
 farmers', management problems, (54) Minn. 785.
 farmers', organization and operation, (57) N.Dak. 86.
 financial operations, (60) Ill. 282.
 management, (55) N.Dak. 587.
 Ohio farmers', economic aspects, (58) Ohio 786.
- Elfingia megaloma, notes, (54) 150.
- Elionurus wombaliensis as weed in Belgian Kongo, (53) 839.
- Ellopia—
 athasaria attacking hemlock, (57) 857.
 fiscellaria, control, (51) 857; (58) 664; (59) Wis. 56.
 fiscellaria, notes, Mich., (55) 54; (57) 654; (59) 455.
 fiscellaria, outbreak, (56) Wis. 755.
 fiscellaria, parasite of, (60) 847.
- Elm—
 bacterial diseases, fatal, (60) 354.
 Chinese, culture in Arizona, (55) U.S.D.A. 438.
 Chinese, tests, (57) Tex. 136.
 Chinese, Tubercularia canker of, (58) 154.
 disease, Dutch, notes, (59) 647.
 disease in Bonn, (58) 853.
 disease in Holland, (55) 656.
 diseases in Europe, (60) 246.
 leaf beetle, account, (52) Mich. 61.
 leaf beetle in California, (53) 159; (58) 164.
 leaf beetle, notes, (52) Me. 661; (55) Mich. 853.
 leaf spot, notes, (60) Mich. 58.
 scale, European, in the West, (51) U.S.D.A. 856.
 twig canker in Ontario, notes, (58) 41.
- Elm-currant aphid, life history and control, (53) 858.
- Elms, disease and prohibition of importation, (60) 157.
- Elytranthe—
 globosa, notes, (53) 153.
 spp., notes, (53) 148.
- Embryo, one, from two eggs, (51) 525.
- Embryology—
 experimental treatise, (59) 462.
 insect, (57) 554.
- Embryonic—
 development, chemistry of, (52) 128.
 differentiation, early, (51) 332.
- Embryos—
 mouse, weight of, (57) 724.
 of chicks, grafted fragments, development, (55) 330.
- Emigration, Spanish, effect of the war, (51) 687.
- Emmer—
 history, distribution, and production, (55) 133.
 history, distribution, and use, (52) U.S.D.A. 34.
 plat tests, (51) Hawaii 740.
 results of experiments, (51) U.S.D.A. 435.
 seeding experiments, (55) Nebr. 229.
 stripe rust, notes, (52) 648.
 suitability for Ohio, (55) Ohio 97.
 variety tests, (53) U.S.D.A. 134; (57) Can. 33; (58) U.S.D.A. 532; (60) Ariz. 133.
 yields, (54) Pa. 328.
- Emphysema in calves, acute alveolar, (53) 279.
- Emphytus canadensis, notes, (54) Mich. 655.
- Empire Cotton Growing Corporation—
 activities, (53) 532; (56) 135.
 report, (57) 828; (59) 628.
- Employment hours and earnings in United States, (51) 891.

- Empoa—
 malini in Ohio, (55) 556.
 pomaria, prediction of injury from, (60) 250.
 rosae, *see* Rose leafhopper.
- Empoasca—
 fabae, *see* Potato leafhopper.
 facialis, notes, (59) 651.
 flavescens, studies, (58) 160.
 mali, *see* Apple leafhopper.
 maligna, notes, (52) 855.
- Empusa—
 aphidis, notes, (52) Mich. 354.
 aulicae, relation to ravages by Panolis flammea, (59) 557.
 erupta n.sp., description, (52) 852.
 fresenii, studies, (60) Fla. 147.
 grylli, cause of epidemic among locusts, (54) 154.
 grylli, effects on host, (56) 459.
 lecanii, notes, (60) 162.
- Emulsions, theory and technical treatment, treatise, (58) 801.
- Enarmonia caryana, *see* Laspeyresia caryana.
- Enarmonia diniana, notes, (56) 659.
- Encapsulatus genitalium—
 isolation and identification in mares, (54) Ky. 378.
 studies, (57) 280.
- Encarsia—
 flavoscutellum, parasite of woolly sugar cane aphid, (58) 265.
 formosa n.sp. description, (53) 561.
 formosa, studies, (60) 248, 650.
 merceti, parasitic on Aleurocanthus, (58) 666.
 n.sp., notes, (56) 552.
 variegata, notes, (57) 559.
- Encelia farinosa transpiration, seasonal changes in, (56) 25.
- Encephalitis—
 enzootic, of horses, (51) 384.
 in foxes, (58) 679.
- Encephalitozoon—
 cuculi as kidney parasite in rabbits, (53) 889.
 rabiei, description, (52) 380.
- Encephalomyelitis—
 enzootic, experimental study, (58) 772.
 enzootic, neuritis caused by virus of, (59) 672.
 of sheep and cattle and Borna diseases, (60) 476.
- Encyrtidae—
 bred from psyllids, (56) 362.
 new genera and new species, (56) 65.
- Encyrtinae—
 new, from Japan, (60) 559.
 new genera and species, (53) 160.
- Encyrtus variicornis, notes, (54) 259.
- Endamoeba—
 dysenteriae infection of rabbits, (55) 375.
 spp., notes, (53) 553.
- Endive—
 diseases, control, (59) Fla. 541.
 effect of pH of soil, (60) 338.
 fertilizer experiments, (58) Ill. 333.
 rots, studies, (58) 147.
 rust and chicory rust, comparison, (57) 446.
- Endocrine—
 diseases, diagnosis and treatment, treatise, (53) 266.
 gland injections, effect on milk secretion, (55) N.J. 66.
 glands and chick development, (52) 368.
 glands, relation to metabolism, (53) 462.
 glands, seasonal changes in weight, (52) 669.
 organs, grafting on animals, (53) 167.
 secretions, rôle in reproduction and sex determination, (58) 825.
- Endocrines, chromosomes, and heredity, (53) 627.
- Endodermis—
 in leaves of Abietineae, structure and function, (51) 519.
 structure, relation to function, (51) 328.
 study in causal anatomy, (54) 125.
- Endolimnax nana, notes, (53) 553.
- Endosperm in cereals, removal and restoration, (58) 819.
- Endothia—
 gyrosa, parasitism, (58) 53.
 parasitica cankers, occurrence and growth, (54) 654.
 parasitica in Europe, (56) 55.
 parasitica in Ontario, (56) 355.
 parasitica, notes, (51) 52, 843; (52) 550; (55) U.S.D.A. 150, 756.
 parasitica reported in Belgium, (56) 456.
 parasitica, studies, (57) 157.
- Endoxerosis, proposed name, (55) Calif. 344.
- Energy—
 consumption of staircase climbing, (60) 593.
 expenditure during "daily dozen," (51) 72.
 expenditure of women during walking, (54) 890.
 expenditure of Yale oarsmen, (53) 863.
 maintenance requirement of, (57) 762.
 metabolism during work, character, (60) 193.
 transformations in human body, (58) 392.
 values, determination, (54) 204.
 yield in biological reactions, (53) 827.
- Engine—
 cooling systems, (51) 290.
 fuels, dilution results, (51) 87.
 oil, used, foreign material in, (53) 485.

Engineering—

- aerial photography in, (52) 345.
- agricultural—
 - extension work in, U.S.D.A., (51) 96; (53) 599.
 - graduate training facilities in, (59) 584.
 - in Burma, (51) 386, 885.
 - in Great Britain. (59) 81.
 - in India, (55) 178.
 - national research, (55) 579.
 - papers on, (53) 399.
 - programs at experiment stations, (59) 584.
 - research at experiment stations, (52) U.S.D.A. 485; (54) 479.
 - research in, (52) 386; (56) 177.
 - studies, (51) Iowa 482, Wis. 482; (52) Calif. 86, Mont. 485; (53) Mo. 482; (54) Mo. 778; (55) Colo. 276, Minn. 277; (56) Ill. 280, Ark. 381, Ill. 382.
- and the International Soil Congress, (57) U.S.D.A. 677.
- application to dairy production, (60) 882.
- chemical, treatise, (58) 201.
- colleges, cooperation with State and municipal departments, (53) 598.
- construction materials, treatise, (51) 388.
- dairy, treatise, (53) 791.
- education survey, editorial note, (58) 5.
- farm, treatise, (51) 385.
- forest, and extraction, (58) 880.
- handbook, (51) 385.
- heat-power, treatise, (56) 780.
- highway, soil science in, (60) 513.
- highway, treatise, (53) 589.
- highway, yearbook, (51) 888.
- in agriculture, (58) 880.
- instruction, papers on, (56) 587.
- materials, resistance of, (53) 684.
- mechanical, handbook, (51) 482.
- methods applicable to agriculture, (60) 778.
- place in Canadian agriculture, (56) 679.
- practices of United States, survey, (58) 778.
- problems manual, (60) 673.
- problems of irrigation practice, (54) 479.
- research, (60) 480.
- research, papers on, (55) 384.
- Section, Association of Land-Grant Colleges, 1913-1926, index, (56) 587.
- specifications and quantities, treatise, (57) 80.
- structural, fundamental properties of materials, (53) 284.
- structural, handbook, (53) 388.
- studies, (59) Iowa 81.
- time-saving suggestions, treatise, (54) 75.
- water-power, treatise, (55) 878.

Engines—

- automotive, mechanism for antiknock action, (52) 888.
- farm gas, operation and care, (51) Wash.Col. 790.
- farm gas, operation and valve timing, (52) 288.
- high-compression, ignition requirements, (60) 780.
- internal-combustion—
 - acceleration tests, (58) 375.
 - air cleaners for, (55) Calif. 375; (59) 84.
 - air cleaning devices, tests, (52) 185, 186; (53) 485.
 - air consumption relation to brake horse power, (53) 286.
 - antiknock materials, (56) 79.
 - audibility antiknock tests and knock-intensity evaluation, (56) 79.
 - carbon deposition, factors affecting, (56) 78.
 - carbon deposition tests, (54) 877.
 - carbon formation in, (55) 279.
 - carburetion requirements, (52) 185.
 - chemical equilibrium of exhaust gas, (55) 77.
 - combustion time in cylinder, effect on performance, (58) 484.
 - corrosion, causes, and avoidance, (54) 682.
 - crankcase-oil dilution, (52) 187; (56) 578.
 - cycles, analysis, (57) 882.
 - detonation control, (51) 86.
 - detonation, factors affecting, (55) 179.
 - detonation in, effect of nitrogen compounds, (52) 887.
 - detonation tests, effect of carbon deposits, (58) 375.
 - dilution effects of crank-case oil, (54) 877.
 - economic fuels for, (60) 79.
 - effects of knock inducers and superchargers, (55) 179.
 - exhaust, supplying heat from, (52) 89.
 - filtering air in, benefits, (52) 185.
 - fuel-air mixtures, dew point determination, (55) 378.
 - fuel deposition temperature and equilibrium boiling point, (56) 78.
 - fuel saving devices, (51) Nebr. 888.
 - gaseous explosions, (58) 484.
 - heat loss in, (53) 85.
 - intake-manifold distribution, (51) 289.
 - internal friction relation to lubricant, (51) 87.
 - lubricating oil tests, (57) 678.
 - lubrication and cylinder, (53) 685.
 - lubrication studies, (60) Ill. 276.

Engines—Continued.

- internal-combustion—continued.
 missing pressure in, (53) 84.
 on farms, troubles and remedy,
 (56) 681.
 operation, effect on lubricating
 oil, (55) 378.
 power and economy of, (60) 378.
 radiation characteristics, (51) 86.
 rate of gas burning, (58) 483.
 saving gasoline in, (52) 487.
 starting, (53) 685.
 starting tests, (55) 378.
 starting troubles and remedy,
 (56) 79.
 substitute fuels for, (60) 279.
 tetralin for fuel, (52) 784.
 water in oil pan, (52) 186.
 tests, thermodynamic analysis, (54)
 480.
 tractor, *see* Tractor engine.
Engleromyces goetzei, notes, (53) 246.
 English scientists, recent visits by, (52)
 105.
Enigleae apiata, notes, (57) N.J. 59.
Entedon pharnus, notes, (51) 761; (53)
 259.
 Enteritis—*see also* Johne's disease.
 epidemic in Aberdeen, (51) 272.
 in poultry, (51) Del. 185; (59) 370.
 in swine, (57) 179.
 infectious, in swine, studies, (58) 176;
 (59) 475.
 necrotic, studies, (51) N.Dak. 881.
 Enterohepatitis, *see* Blackhead.
 Entero-proventriculitis, infectious purulent,
 of fowls, (60) N.C. 375.
 Enterprise Farmers' Club of Sandy Spring,
 (56) Md. 786.
 Entomological—
 collections of world, location, (57) 256.
 Commission of Kansas, report, (58)
 557.
 Conference, Second Imperial, report,
 (54) 257.
 Congress, Third International, pro-
 ceedings, (57) 552.
 investigations in Georgia, (52) 252.
 literature, index, (60) 158.
 meeting at Pusa, proceedings, (52) 154.
 problems of California, analysis, (55)
 354.
 record, (54) 153; (60) 844.
 research, scheme for, (60) 59.
 Society of British Columbia, proceed-
 ings, (55) 659.
 Society of Ontario, history, (52) 355.
 Society of Ontario, report, (56) 458;
 (58) 158.
 work in Canada, (56) 553.
 Entomologist of Colorado, report, (55) 455.
 Entomologists—
 biographies, bibliography, (60) 839.
 importance of patent literature to,
 (58) 255.
 of Hawaii, exploration trips by, (60)
 60.

Entomology—*see also* Insects and specific
kinds.

- agricultural, and parasitology, treatise,
 (52) 552.
 agricultural, problems, (59) 833.
 American economic, literature, Index
 III, (54) 151.
 American, needs in study, symposium,
 (59) 153.
 applied, in Canada, (53) 358.
 applied, of Palestine, (52) 356.
 applied, treatise, (54) 752.
 biological control in, principles, (57)
 160.
 committee on, report, (60) 842.
 common names used in, (53) 553.
 courses in American colleges, (58) 789.
 economic, in India, papers on, (52)
 154.
 economic, in Russia, (52) 554.
 elementary, textbook, (56) 553.
 Eriksson prizes in, (60) 699.
 forest, in British Columbia, (54) 153.
 forest, problems and methods, (52)
 753.
 forest, recent work in, (52) 154.
 forest, treatise, (57) 854.
 Hawaiian, early references, (53) 554.
 in India, rise and progress, (57) 359.
 in Palestine, (59) 853.
 in rural schools of Quebec, (54) 153.
 in Southern States, (59) 55.
 Indian, cooperation in, (52) 155.
 Indian, list of publications, (51) 762;
 (54) 553; (57) 258.
 International Congress, editorial, (59)
 601.
 International Congress, notes, (58)
 200.
 introduction to, treatise, (53) 252.
 medical and veterinary, treatise, (51)
 356.
 medical, needs of, (57) 258.
 medical, researches in, (57) 854.
 needs of world for, (56) 856.
 of Haiti, (60) 648.
 papers on, (55) 252; (57) 553, 554,
 (58) 158.
 research problems for graduate stu-
 dents, (54) 158.
 research program, (56) 57.
 statistical methods, (51) 356.
 textbook, (53) 651; (60) 388.
 theory and practice, manual, (59) 550
 value of life history studies in, (56)
 250.
 world literature in, index, (59) 853.
 Entomophthora—
 punctata n.sp., description, (59) 563.
 sp., notes, (53) 755.
 sphaerosperma, artificial culture and
 dissemination, (57) 452.
 sphaerosperma, life history notes, (54)
 152; (58) Del. 455.
 sphaerosperma, notes, (51) 761; (53)
 756; (56) Del. 357; (59) 563.

- Entomosporium—
 maculatum, notes, (56) 748.
 mespili, notes, (54) 453.
- Entonyssus rileyi n.sp., description, (51) 657.
- Entyloma fuscum, notes, (54) 449.
- Environment—
 and heredity, (53) 430.
 organic adaptation to, treatise, (53) 27.
- Enzyme—
 action, mechanism, (60) 310.
 action, temperature coefficients, (54) 504.
 action, treatise, (52) 409; (54) 504.
 chlorophyll decomposing, of oranges, (59) Ala. 617.
 milk-coagulating, of Solanum elaeagnifolium, (53) 324.
 solutions, purification and concentration, (51) 112.
- Enzymes—
 action on digestion in poultry, (56) 768.
 chemical investigations, (51) 804; (53) 408; (55) 110; (56) 501.
 discussion, (54) 6.
 feeding value, (56) Iowa 266.
 hydrolyzing, (53) 8.
 in bacterial spores, (53) 25.
 in buttermilk, (54) 868.
 in citrus peel, oxidizing, (57) 489.
 in peach plant, activity, (51) Del. 123.
 monograph, (56) 110; (57) 203.
 of blood in experimental scurvy, (53) 165.
 of digestive system of bees, (59) 562.
 of intestinal contents, effect of food intake, (53) 457.
 of locust bark proteins, (54) 203.
 of Stereum purpureum, (56) 515.
 of velvet beans, (58) Ala. 411.
 pectic, preparation, (60) 239.
 plant, specific action, (54) 627.
 produced by Bacterium pruni, (58) 204.
 produced by Pythiacystis citrophthora, (58) 443.
 proteolytic, effect of heat, (53) 882.
 proteolytic, of flour, effect, (53) 311.
 proteolytic, of yeast, (54) 109.
 use in beet sugar factory control, (53) 811.
- Eosin—
 effect on germination and growth of plants, (57) 416.
 effect on root growth, (60) 807.
 effect on ultra-violet light therapy of rickets, (51) 71.
- Ephemere simulans, artificial fertilization, (55) 657.
- Ephialtes, oviposition, (53) 652.
- Ephialtes aequalis, notes, (56) Va. 556.
- Epilema—
 carolinana, paper on, (60) 844.
 otisana, notes, (59) Iowa 55.
 spp., notes, (53) 559.
- Epicallima coloradella on apple tree, (59) 552.
- Epicauta—see also Blister beetles.
 lemniscata, control, (58) U.S.D.A. 760.
 Epicoccum hyalopes, notes, (57) 639.
 Épictète, use of term, (57) 319.
- Epidapus scabiei, notes, (60) 166.
- Epidemics due to ice cream, (56) 86.
- Epilachna—
 borealis, see Squash beetle.
 corrupta, see Bean beetle, Mexican.
 dregei in South Africa, (56) 759.
 28-punctata in Java, control, (60) 166.
- Epilobium, use in genetic research, (56) 127.
- Epimys alexandrinus on coconut palm, (56) 58.
- Epinephrin action, effect of various factors, (51) 269.
- Epiphytes—
 on cultivated trees, (58) 144.
 succession in Quercus incana forest, (54) 424.
 tissue fluids, electrical conductivity, (57) 25.
- Epirhysalus atriceps, notes, (56) Pa. 156.
- Epischnia parkerella, notes, (53) Mont. 51.
- Epithelial cells, peritoneal, transition into germ cells, (51) 525.
- Epitheliogenesis imperfecta neonatorum bovis, inheritance, (60) Wis. 727.
- Epithelioma, contagious—
 and avian diphtheria, (51) 184.
 avian, cell inclusions, (59) 677.
 cutaneous immunity, (60) Mass. 78.
 immunity in, (51) 184.
 relation to faulty nutrition in pigeons, (52) 68.
 vaccine therapy, (55) 475.
 virus and vaccine virus, relation, (58) 281.
- Epithelioma virus, relation to virus of variola and vaccinia, (57) 878.
- Epitrix cucumeris, see Potato flea beetle.
- Epitrix parvula, see Tobacco flea beetle.
- Epiurus—
 indagator, notes, (52) U.S.D.A. 456; (53) 652; (60) Md. 841.
 pterophori, notes, (58) 60, 863.
- Epsom salts for laying hens, (51) Can. 276.
- Equidae, nematode parasites of, (52) 385.
- Equines, blood of, (52) 82.
- Erannis tiliaria, see Lime tree looper.
- Erethothecium cymbalariae, studies, (58) 851.
- Erethothecium sp., notes, (55) 245.
- Eretmocerus californicus, notes, (56) 552.
- Ergosterol—
 absorption spectrum, relation to vitamin D formation, (58) 794, 795.
 activated, for rickets, treatment, (60) 792.
 and esters, highly purified, studies, (60) 896.
 as precursor of vitamin D, (57) 487, 492; (60) 596.

- Ergosterol—Continued.
 balance, method of determining, (57) 794.
 detection, test, (59) 596.
 in Japanese edible mushroom, (59) 595.
 in vegetable oils, detection by spectro-scope, (58) 895.
 induced fluorescence, notes, (58) 897.
 irradiated—
 antirachitic action, (60) 296.
 antirachitic value, (57) 693, 792, 794; (59) 395, 595.
 as dressing for wounds, (59) 395.
 clinical experience with, (60) 394.
 effect of X-rays on vitamin D in, (60) 792.
 effects in large doses, (60) 692, 693.
 for pernicious anemia, (58) 596.
 reaction, (60) 692.
 richest source of vitamin D, (60) 896.
 spectra of, (60) 691.
 v. cod-liver oil in rickets treatment, (59) 596.
 photochemical activation, (60) 896.
 production of vitamin D from, (58) 794.
- Ergot—*see also specific host plants.*
 and the milling industry, (59) 541.
 antirachitic effect, (60) 296.
 control, N.Dak., (51) 847, 848.
 oil, composition, (59) 203.
 poisoning from rye bread, (59) 292.
 summary, (60) 29.
- Eri silk, origin, characteristics, and preparation, (59) 897.
- Eridontomerus isosomatis, life history, (57) 365.
- Eriksson prizes in phytopathology and entomology, (60) 699.
- Eriocampoides limacina, *see* Pear slug.
- Eriochloa punctata, striped grass looper affecting, (52) 61.
- Erionota thrax, notes, (52) 361.
- Eriophyes—
 gracilis, description, (53) 561.
 oleivorus, *see* Citrus rust mite.
 pini, notes, (53) 861; (60) 168.
 pini, studies, (54) 663.
 pyri, *see* Pear leaf blister mite.
 ribis, control, (57) 366.
 ribis, life history, (60) 852.
 ribis, notes, (59) 563.
 tristriatus, biology, (59) 563.
- Eriophyidae, biology, (59) 563.
- Eriosoma—
 lanigerum, *see* Apple aphid, woolly.
 lanuginosa, control, (56) Calif. 255.
 lanuginosa, life history, (55) 458.
 ulmi, life history and control, (53) 858.
- Ermines, raising, (54) 274.
- Ernestia rudis, notes, (53) 53.
- Erodium spp., notes, (59) Calif. 726.
- Erwinia espinosa n.sp., description, (59) 556.
- Erysipelas—
 immunization, duration of immunity, (51) 582.
 porcine, (51) 383.
 streptococcus from, allergic reactions, (58) 278.
- Erysiphaceae—
 genetics, biology, and physiology, (59) 48.
 infection tests with, (56) 843.
 near Moscow, (57) 421.
 notes, (52) 645.
 of Croatia, monograph, (56) 654.
 overwintering, (52) 746.
 use of soda against, (52) 646.
- Erysiphe—
 cichoracearum, notes, (59) 148, Calif. 747.
 cichoracearum powdery mildew, control, (57) Calif. 244.
 graminis in France, (57) 541.
 graminis, notes, (56) 448.
 graminis on barley, (51) 47.
 graminis secalis, notes, (57) 747.
 polygoni, control, (51) 156.
 polygoni, notes, (54) 144; (58) N.Mex. 243, 442.
 polygoni, studies, (56) 843.
 spp., notes, (55) 346.
- Erythrina—
 lithosperma as green manure and cover crop, (52) 732.
 twig borer, notes, (53) 654.
- Erythrocytes—
 and action of hemolysins, treatise, (53) 278.
 number in fowls, (60) 479.
 of domestic animals, resistance, (55) 473.
- Erythrodestrin in waxy corn, (52) 329.
- Erythronera—
 aclys, notes, (51) 253.
 comes, *see* Grape leafhopper.
 hartii, notes, (59) Va. 458.
 hartii, studies, (58) Del. 454.
 maculata, life history, (55) 53.
 parvula, notes, (60) 248.
 sp., notes, (56) 756.
 spp., control, (54) Ky. 355.
 spp. on grapes, (52) Ky. 753.
 spp., rate of oviposition, (57) 558.
 synopsis of genus, (56) 660.
 zizac, life history, (60) 163.
- Erythrosin, effect on germination and growth of plants, (57) 416.
- Esca—
 paper on, (52) 746.
 studies, (57) 850; (58) 249.
 treatments for, (58) 250.
- Escalante, Utah, social survey, (54) 288.
- Escarole diseases, control, (59) Fla. 541.
- Escherichia—
 coll, differential medium for, (60) 669.
 neapolitana, cause of ropy milk, (57) 76.

- Escherichia*—Continued.
neapolitana, notes, (56) 74.
 spp., notes, (59) 79.
Eskimos, effect of meat diet, (57) 291.
Esonja in Brazil, (51) 786.
 Essential oils, *see* Oils, essential.
Estate accountancy, (52) 491.
Etharsanol, therapeutic value in experimental trypanosomiasis, (60) 178.
Ether, effect on permeability of plant cells, (57) 515.
Etherization, effect on renewal of growth, (52) 45.
Ethology, paper on, (57) 553.
Ethyl acetate-carbon tetrachloride mixture as fumigant, (52) 662; (53) 453.
Ethyl alcohol—
 effect on barley growth, (56) 125.
 effect on carbon dioxide production by radishes, (52) 626.
 from bacterial fermentations, (59) Wis. 12.
 reaction of protoplasm to, (52) 215.
Ethylene—
 bleaching, effect on vitamin B in celery, (60) 294.
 dichloride, anthelmintic value, (52) 776.
 dichloride-carbon tetrachloride mixture as new fumigant, (58) 255.
 dichloride-carbon tetrachloride mixture, fumigation tests with, (59) 650; (60) 840.
 effect on blanching and respiration of celery, (60) Pa. 338.
 effect on permeability of cells, (60) 310.
 effect on respiration of lemons, (52) 626.
 gas, effect on formation of intumescences on apple, (60) 28.
 gas, production of intumescences on apple twigs by, (58) 821.
 glycol, properties and uses, (52) 11.
 oxide as fumigant, (60) 840.
 stimulation of growth of bulbs and seeds with, (58) 645.
 use in celery blanching, (52) 640; (57) 336.
Etiella zinckenella, characteristic injury by, (56) 258.
Etiolation, cause, (58) 626.
Etiolation, studies, (51) 330; (56) 325.
Eucanthus interruptus, notes, (56) 58.
Euaphycus—
 flavus, notes, (57) 856.
 portoricensis n.sp., description, (56) 858.
Eublemma amabilis, notes, (52) 155.
Eucalymnatus tessellatus, notes, (56) 552.
Eucalypts, growth in the Transvaal, (60) 642.
Eucalyptus—
 culture, (60) 444.
 culture experiments, (55) V.I. 339.
 fatal disease of, (57) 450.
 grown in California, key, (60) 237.
- Eucalyptus*—Continued.
 growth in California plantations, (52) Calif. 742.
 in northern India, (54) 44.
 of Western Australia, key, (52) 742.
 robusta as windbreak, (54) Hawaii 137.
 snout beetle, studies, (53) 56; (55) 555.
 species tests, (54) 646.
 trees in South Africa, borer pests, (60) 654.
Eucraphis deducta, notes, (51) Conn.State 852.
Euclea capito, notes, (59) 257.
Eudamus proteus, *see* Bean leaf roller.
Eudemis—
 botrana, control in Switzerland, (54) 55.
 enemies of grapevine, (59) 553.
 moth, parasite of, (53) 656, 760; (54) 453.
 natural enemies, (51) 762.
 vacciniana, *see* Fireworm, blackhead.
Euetheola rugiceps, *see* Sugar cane beetle.
Euetheola spp., notes, (54) Kans. 461.
Engenia jambolana, transpiration studies, (57) 320.
Eugenia species in Madagascar, (56) 838.
Eugenics—
 and genetics, treatise, (52) 822
 and heredity, treatise, (51) 227.
 studies, (51) 525.
Euglena, relation to combined nitrogen, (59) N.J. 381.
Eulecanium nigrofasciatum, *see* Terrapin scale.
Eulechriops gossypii—
 n.sp., description, (55) 663.
 parasite of, (55) 663.
Eulia—
 life history studies, (56) 858.
 quadrifasciana, life history notes, (57) 857.
 quadrifasciana, notes, (56) Pa. 154.
 spp., studies, (59) Pa. 858.
 velutinana, biology and control, (59) Va. 60.
 velutinana, notes, Pa., (54) 352, 458; (56) 154.
 velutinana, summary, (53) 558.
Eulimneria—
 bakeri n.sp., description, (54) 462.
 crassifemur, parasite of European corn borer, (60) 560.
Eumerus—
 spp., bionomics, (60) 653.
 strigatus in Oregon, (56) 259.
 strigatus, life history, habits, and control, (60) 850.
 strigatus, life history notes, (53) 361.
Eumycetus ? *saccharidis* n.sp., description, (58) 460.
Euonymus scale, control, (60) Md. 841.
Euparagia scutellaris, notes, (68) 562.
Eupelminus saltator, life history, (57) 365.

- Eupelmus*—
 allynii, notes, (52) Iowa; (59) 62.
 amicus, notes, (59) Ark. 252.
 coccidivorus n.sp., description, (53) 561.
 inyoensis, notes, (53) 260.
 pini n.sp., description, (58) 666.
 soudanensis, notes, (54) 259.
- Euphalerus citri*, parasite of, (52) 154.
- Euphorbia*—
 feeding tests, N.Mex., (57) 79, 278.
 hypericifolia as weed in Cuba, (54) 239.
 notes, (52) 582.
 spp., culture experiments, (57) 729.
- Euphoria fulgida*, notes, (54) Kans. 461.
- Euphorus*—
 helopeltidis, notes, (58) 158.
 sahlbergellae, parasites of, (60) 656.
- Eupithecia* spp., notes, (55) 759.
- Euplectrus*—
 bicolor, parasite in North America, (51) 662.
 platyhyphenae, notes, (53) 653.
 platyhyphenae, parasite of noctuid larvae, (58) 266.
 sp., notes, (52) 361; (59) 655.
- Euproctis*—
 chrysoorrhoea, see Brown-tail moth.
 irrorata, notes, (53) 558.
- Eupteromalus cognatus* n.sp., description, (53) 561.
- Eupteryx*—
 auratus, feeding methods, (58) 455.
 auratus, transmission of mosaic disease by, (57) 359.
 auratus, transmission of virus diseases by, (60) 243.
 flavoscuta nigra on leather-leaf fern, (57) 360.
- Eurukuttarus* spp., notes, (60) Tex. 164.
- Eurygaster integriceps* injury in Syria and Persia, (58) 558.
- Euryphlepsia cocos* on coconut palms, (52) 854.
- Eurytoma*—
 appendigaster, notes, (57) U.S.D.A. 457.
 appendigaster, oviposition and feeding, (53) 560.
 chrysothrix on bamboo, (52) 859.
 curculionum, notes, (51) 761; (53) 259.
 masii, new parasite of scolytids, (58) 863.
 orchidearum, see Orchid fly.
 parva, biology, (57) 562.
 pissodis, notes, (55) N.Y.Cornell 561.
 tylodermatis, notes, (58) 60.
- Euscillus striatulus*, notes, (59) 250.
- Eusemion californicum* n.sp., notes, (53) 260.
- Eusimulium pecuarum*, notes, (57) 760.
- Eustillus apicalis*, notes, (59) Mich. 455.
- Eustrongylus gigas*, notes, (51) 285.
- Eutettix*—
 strobi, biology notes, (56) 555.
 tenella, see Beet leafhopper.
- Eutheola rugiceps*, notes, (60) Ark. 841.
- Eutreta xanthochaeta*—
 n.sp., description, (53) 654.
 notes, (52) 356.
- Eutrixopsis javana*, notes, (56) U.S.D.A. 860.
- Euxesta notata*, notes, (58) 57.
- Euxoa*—
 auxiliaris in Utah, parasites of, (54) 458.
 ochrogaster, control in Canada, (55) 855.
 perpolita, notes, (60) 166.
 radians, notes, (59) 561.
- Euzenilliopsis diatraea*, notes, (53) 155; (56) 557.
- Euzophera semifuneralis*, control, (57) N.J. 757.
- Evaporation*—
 cup, description, (56) 854.
 from soil, (51) 509.
 in currents of air, (54) 680.
 in vegetation at different heights, (58) 124.
 in wind, (56) 126.
 laboratory studies, (53) Colo. 185.
 of water from soil, (55) 809.
 on United States reclamation projects, (58) 881.
 power of soil, (55) 316.
 precipitation, and run-off, relations, (60) U.S.D.A. 79.
 studies, (57) 719; (59) Colo. 279.
 studies on reclamation projects, (54) 875.
- Evaporimeter*, Bates', use, (57) 118.
- Evergreen trees*—
 hardness tests, (55) Iowa 535.
 of Ohio, frost resistance of leaves, (53) 843.
 treatise, (59) 532.
- Exetria buolinana*—
 notes, (51) Conn.State 852.
 parasites of, (56) 361.
 thurificana outbreak, (58) 755.
- Evolution*—
 and genetics, treatise, (55) 730.
 and geographical distribution, statistics, (53) 225.
 and mutation, relation to Mendelism, (51) 128.
 genetics, and eugenics, treatise, (55) 223.
 heredity, and variation, treatise, (54) 628.
 of substances in plant world, (57) 718.
 processes causing, treatise, (53) 328.
 treatise, (53) 225.
- Evotus naso* on apple trees, (60) 563.
- Ewe lambs*, breeding, (51) N.Dak. 870.
- Ewes*—see also Sheep.
 age, and growth rate of lambs, (56) 729.

Ewes—Continued.

- breeding, (55) Ohio 184.
 breeding efficiency, (60) Oreg. 762.
 breeding, feeding experiments, (54) Ky. 362; (56) Wis. 763; (58) Ky. 65.
 breeding, grain allowance, (54) Ohio 565.
 breeding, swedes v. corn silage for, (59) Wis. 67.
 breeding, wintering, (51) Iowa 469; (52) Mont. 72; (60) Miss. 856.
 disease affecting, (51) Wash.Col. 180.
 fattening, effect on breeding efficiency, (55) Oreg. 665.
 feeding and finishing, (59) Nev. 865.
 maintenance and production requirements, (59) 864.
 Merino, cross-breeding, (52) Pa. 270.
 mineral requirements during gestation, (54) 466.
 mineral supplements for, value, (59) Ohio 260.
 pregnancy disease, (57) 763.
 pregnant, mineral balances of, (53) Ohio 574.
 pregnant, wintering, Mo., (54) 759; (57) 460; (58) 463.
 range, feeding and finishing, (53) Nev. 467.
 range, feeding experiments, (57) 69.
 range, size, relation to production, (58) 568.
 range, wintering, hay substitutes for, (60) Mont. 761.
 salt consumption, (53) Iowa 773.
 winter rations, (56) S.C. 561; (60) Oreg. 762.
 wintering, (55) Oreg. 665.
- Exaereta ulmi**, notes, (59) 856.
- Exallonyx ligatus**, notes, (58) 459.
- Excreta**, energy value, determination, (54) 205.
- Exeristes roborator**—
 life history, (58) 561.
 parasite of European corn borer, (51) 160; (59) Guam 555.
- Exoascus**—
 cerasi, notes, (59) 247.
 deformans, biological and cultural studies, (56) 249.
 deformans, control, (59) 53, 245.
 deformans endovolus gummiferous, proposed name, (57) 448.
 deformans, notes, (55) 346; (56) Utah 540.
 mirabilis, biological and cultural studies, (57) 848.
 pruni, notes, (54) 144, Can. 149.
 sp., notes, (52) 352.
 sp. on Prunus amygdalus amara, (56) 354.
 spp., studies, (55) 844.
- Exobasidium parvifolii** n.sp., description, (59) 852.
- Exocarpus** spp., root parasitism of, (57) 49.
- Exochomus marginipennis childreni**, life history, (60) 654.
- Exorista pyste**, notes, (53) U.S.D.A. 54.
- Exosmosis**, relation to injury and permeability, (51) 732.
- Exosporium palmivorum**, notes, (54) 247.
- Experiment station**—
 for wheat growing, establishment in Sicily, (59) 800.
 leadership, (53) 598.
 new, in Peru, (52) 900.
 projects, classified list, U.S.D.A., (53) 798; (57) 697; (59) 796.
 projects, classified list, editorial, (59) 704.
 system, editorial, (53) 301.
- Experiment Station Record**—
 abbreviations of periodicals, (53) U.S.D.A. 599.
 changes in, (54) 3.
 changes in, editorial, (59) 701.
- Experiment stations**—*see also* Alabama, Arizona, *etc.*
 bulletins, 1875–1920, list, (51) U.S.D.A. 495.
 bulletins, 1921–1922, list, (52) U.S.D.A. 97.
 bulletins, 1923–1924, list, (55) U.S.D.A. 898.
 bulletins, 1925–1926, list, (58) U.S.D.A. 395.
 home economics research at, (58) U.S.D.A. 189.
 in Czechoslovakia, organized union of, (54) 500.
 in Denmark, activities, (57) 727.
 in Denmark, organization and work, (54) 530.
 in 1925, editorial, (55) 401.
 in Queensland, (59) 800.
 in West Indies and Florida, storm damage, (59) 699.
 new, in Brazil, (51) 99.
 organization list, U.S.D.A., (52) 95; (53) 298; (55) 288; (56) 790; (59) 90.
 reply to criticism, editorial, (54) 701.
 report, U.S.D.A., (55) 898; (58) 198.
 work and expenditures, U.S.D.A., (52) 496; (53) 696; (54) 796.
 work and expenditure, editorial, (54) 301.
- Experimental**—
 Farm at Edinburgh and East of Scotland College of Agriculture, (51) 499.
 work in Sind, India, (51) 698.
- Explosives**—
 agricultural, use, (53) 84, 891; (54) 281; (56) 681; (57) 776.
 cultivation of soil with, (51) 387.
 farmers' handbook, (54) 681.
 for cut-over land reclamation, (51) 387.
 methods of using, handbook, (55) 780.

- Explosives—Continued.**
 use in land clearing, (55) Ala. 879;
 (60) 513.
 velocity of detonation, (52) 89.
- Export trade, financing, (52) 493.**
- Exports—**
 and imports in foreign countries, Government control, (55) U.S.D.A. 82.
 from French colonies, (55) 288.
 of foods to Mexico from United States, (55) 185.
- Extensimeter, description, (52) 12.**
- Extension—**
 agricultural and home economics, in United States, (60) U.S.D.A. 188.
 exhibits, preparation and display, (55) U.S.D.A. 486.
 service handbook, (58) U.S.D.A. 386.
 teaching, principles, (57) 762.
 work—*see also* Agricultural extension.
 cooperative, report, (58) U.S.D.A. 83.
 development in Germany, (54) 403.
 effectiveness, (54) U.S.D.A. 888.
 in foods and nutrition, (53) U.S.D.A. 899.
 in rural sociology, (58) 189.
 negro, 1914–1924, (56) U.S.D.A. 85.
- Extensometer, recording, description, (55) 392.**
- Extraction—**
 apparatus, continuous, (57) 111.
 of solid substances, automatic devices for, (57) 111.
- Eye—**
 abnormality in rats, (54) 226, 821.
 color in man, inheritance of, (59) 522.
 defects in rabbits, inheritance of, (56) Kans. 818.
 defects in rats, effect of alcohol fumes, (58) 629.
 infection due to *Bacterium tularensis*, (54) 262.
 nematode in chickens, (54) 778.
 worm of Australian poultry, transmission, (56) 879.
 worm of poultry, (58) 880.
 worm of poultry, control, (57) 381.
 worm of poultry, development, (59) 278.
 worm of poultry, intermediary host, (58) 481.
 worm of poultry, life history studies, (59) 81.
 worms of birds, (60) 480.
- Eyes of vertebrates, as affected by development of embryo, (51) 130.**
- Fabraea maculata, notes, (51) N.J. 654; (56) 748; (58) S.C. 646.**
- Fabrics—*see also* Textiles.**
 action of acids and alkalis on, (60) 496.
 analysis, contraction of warp and weft, (55) 296.
- Fabrics—Continued.**
 and yarns, testing, treatise, (56) 406.
 blood stains removal from, (54) 494.
 colored, effect of light on, (60) 697.
 colored, laundering, (54) 494.
 coordinating research committee, report, (55) 195.
 damage from field crickets, (58) 257.
 damage, nonresponsibility of dry cleaner, (59) 796.
 dyed, action of light on, (57) 598.
 dyed, action of light on, critical note, (59) 297.
 dyed, fastness to laundering, (60) 198.
 dyed, temperatures and washing formulas used in power laundry, (58) 797.
 dyestuffs in, fastness to light, (58) 596.
 effect of atmospheric factors, (58) 694.
 effect of washing, (55) 196.
 fading tests, cabinet for, (58) 598.
 fungi causing decay in, (58) 157.
 guaranteed color fast, studies, (57) 795.
 how to know them, treatise, (54) 697; (57) 97.
 inflammability test, (54) 298.
 knitted, strength test, (59) 296.
 knitted, thread take-up in seaming, (56) 496.
 luster of, measurement, (54) 492.
 machine for measuring wear, (57) 695.
 microscopic study, treatise, (54) 697.
 mold-proofed, copper determination in, (57) 611.
 mothproofing, (59) 253.
 narrow, ballistic testing machine for, (59) 795.
 properties, effect of humidity, (55) 492.
 properties, effect of twist in yarns, (60) 297.
 properties, effect of yarn and weaving structure, (59) 295.
 protective value, (56) Kans. 898; (57) 199; (58) 298.
 rotting and discoloration, cause, (55) 196.
 stain removal from, (55) U.S.D.A. 898.
 testing with Mullen tester, (54) 296.
 ultra-violet transmission of, (58) 94; (59) 693; (60) 398.
 waterproofing, (54) 596; (58) 394; (59) 497.
 woolen and worsted, handbook, (55) 94.
- Factory exhalations, injury to plants and animals, (54) 221.**
- Fairfield County, S.C., economic and social conditions, (53) 797.**
- Fairs, exhibiting and scoring, (54) 189.**
- Fairway Farms project, (55) 784.**
- Fallopian tubes—**
 contraction, effect of ovarian extracts, (53) 526.
 in breeding cows, gas insufflation, (54) 172.

Fallow—

- effect on crops, (51) 816.
- for small grains, (56) Wyo. 825.
- methods of handling, (52) U.S.D.A. 828.
- value for wheat culture, (55) Idaho 825.

Fallowing experiments, (52) Kans. 434, U.S.D.A. 527.

Familism, sociology of, (54) 288.

Family—*see also* Farm families.

- budget as tool for sociological analysis, (59) 684.
- budget, inquiries, methods, (56) 890.
- budgets, making, (56) 489.
- budgets of farm workers in England, (53) 692.
- economic holdings in Europe and India, (59) 587.
- expenditures, planning and recording, (58) U.S.D.A. 598.
- income, disbursement, (54) 95.
- life on moderate income, treatise, (57) 97.
- life, relation to social work, (56) 891.
- living from the farm, (53) U.S.D.A. 897.
- living in farm homes, (60) U.S.D.A. 487.
- living on successful farms, (58) Minn. 788.
- pedigrees, universal card system for, (51) 231.
- relationships, teaching in public schools, (51) 494.
- system economy in agriculture, treatise, (53) 297.

Fans, value in furnace heating, (53) 590.

Farm—

- account book entries, 1769-1782, (52) 789.
- accounting, (51) 687; (52) 788, 895; (54) Mo. 782; (56) Ill. 284; (58) 284, Mo. 487.
- associations, (55) Calif. 286.
- cooperative, (56) Ill. 385.
- double entry, (53) Iowa 89.
- in Denmark, (53) 392.
- international statistics based on, (54) 289.
- manual, (53) 190.
- on Iwerne Minister Home Farm, (53) 688.
- summary of records, (56) Ohio 285.
- teaching, manual, (55) 888.
- textbook, (53) 95; (56) 489.
- textbook, blank books for, (53) 194.
- treatise, (59) 883.
- value, (51) Ill. 793.
- and farmer, treatise, (56) 891.
- animals, *see* Animals, Livestock, Cattle, *etc.*
- boys, home and social experiences, (51) 897.
- building materials, (60) P.R. 779.

Farm—Continued.

buildings—

- cost analysis, (58) 781.
 - design, (60) Ark. 876.
 - for Nebraska, (54) 283.
 - plans, (55) Ark. 75; (56) 683.
 - protection from fire, (55) Ala. 280.
 - protection from lightning, (56) 482.
 - studies, (55) Mont. 280.
 - styles, effect of prices, (52) 491.
 - treatise, (59) 883.
 - unit system for, (60) 82.
 - utilizing poles and timber in, (52) 887.
- bureau movement, sociological implications, (52) 790.
- bureau-farm management service project in Illinois, (55) 689.
- business—
- analysis and survey methods, notes, (54) 199.
 - human problems in, (54) 187.
 - of the Lewes community, (51) 293.
 - summaries, 1925-27, (60) Ohio 782.
 - survey in New Castle County, Delaware, (58) 889.
 - survey in Seaford community, (54) 585.
 - surveys, (59) N.J. 381.
- calculations and accounts, textbook, (55) 691.
- census for Ohio, 1925, (55) Ohio 85.
- colonies in Italy for war orphans, (54) 589.
- cost studies, (56) Wis. 783.
- drainage, methods of survey and design, (52) Minn. 584.
- drainage systems, construction, (52) Minn. 585.
- earnings, analysis, (54) Ill. 385.
- earnings, studies, Ill., (56) 284, 385; (60) 281.
- economics, management and distribution, textbook, (52) 197; (60) 686.
- economics, textbook, (55) 289.
- economy, soil type as factor, (55) Conn.Storrs 684.
- equipment costs, (58) Mo. 487.
- equipment, manufacture and sale, (57) 678.
- equipment, research in, (54) 283; (56) U.S.D.A. 179.
- equipment, research in, editorial, (56) 101.
- estimates in England, (60) 589.
- expenses, index numbers, (56) Ohio 182.
- families—*see also* Family.
- colored, cost of living, (52) U.S.D.A. 791.
 - cost of living, (51) Mo. 691, Mo. 794, Mo. 795; (55) Ohio 482.

Farm—Continued.

- families—continued.
 income, sources and uses, (60) U.S.D.A. 487.
 incomes and expenditures, (58) Minn. 287.
 standard of living, (54) U.S.D.A. 885; (56) U.S.D.A. 185, Iowa 186.
 wealth and welfare studies, methods, (60) 88.
 fires, cause and prevention, (56) 81.
 fires, method of study, (56) 283.
 forestry, extension program, (53) U.S.D.A. 695.
 garden from planting to storage, (58) Ill. 738.
 holdings, peasant, in Denmark, cropping systems, (53) 596.
 home makers, activities, educational factors in, (60) Okla. 488.
 home planning, (60) Ark. 883.
 homes—*see also* Rural homes.
 and families, survey, (52) Iowa 694.
 electrical equipment for, (59) Ind. 782.
 fire prevention, (51) 889.
 in Florida, water and sewage disposal systems, (56) 483.
 in United States, (56) 889.
 periodical reading in, (59) Okla. 487.
 water supplies and sewerage systems for, (55) 394.
 water supply for, (54) U.S.D.A. 283.
 water systems for, (56) 779; (57) W.Va. 187.
 house, remodeling, (51) Mich. 590.
 household management, apprenticeship training in, (54) 187.
 household management instruction, (55) 385.
 household management instruction in Netherlands, (57) 486.
 household management traveling schools, (54) 187.
 implements, draft, (58) Mo. 481.
 in Brie, France, (54) 181.
 incomes, (57) Va. 383; (58) Ky. 79, Ill. 379.
 incomes and farm life, treatise, (57) 886.
 incomes and standard of living, (53) 897; (56) Ark. 386; (58) Ark. 378.
 incomes and taxes, (55) Ohio 80.
 incomes, factors affecting, (55) U.S.D.A. 284; (60) Mich. 83, Mich. 484.
 incomes for 1926, (57) Ohio 684.
 incomes, principles of expenditure, (60) 88.
 incomes, sources, (58) Miss. 79.
 installation, hydroelectric, (60) 882.
 institutes, work, (55) 691.
 insurance, (54) U.S.D.A. 80.

Farm—Continued.

- investment in Nebraska, (53) Nebr. 189.
 kitchens, studies, (59) Nebr. 898.
 labor, *see* Agricultural labor.
 land—*see also* Land.
 and farm population, recent changes in, (59) 684.
 economics, research in, (59) 481.
 income relation to value, (53) 189.
 mortgages on, in Punjab, (59) 285.
 prices and ownership, (59) S.C. 183.
 requirements for agricultural export products, (60) 382.
 lands—
 Missouri, agricultural and market value, Mo., (54) 782; (58) 487.
 taxation, (53) 490.
 terracing, (51) U.S.D.A. 684; (53) 387.
 terracing in Texas, (56) 780.
 value, (51) 687, Mo. 795.
 value, changes in, (57) U.S.D.A. 83.
 lease systems, (57) Mich. 684.
 leases, (57) Wis. 84; (60) 886.
 leases in Belgium, (55) 184.
 leases, type, (55) Ind. 80.
 life improvement, (54) Wash.Col. 886.
 lighting systems, (56) Mo. 580.
 Loan Act, Federal, *see* Federal Farm Loan Act.
 machinery, *see* Agricultural machinery.
 management—
 and agricultural extension programs, (60) 381.
 and cost statistics, (55) U.S.D.A. 787.
 cooperative, (56) Ill. 385.
 costs in, (51) 396.
 data, testing, (51) U.S.D.A. 190.
 extension teaching in, (51) U.S.D.A. 196.
 extension work, history, (59) U.S.D.A. 487.
 in corn borer area, (58) Mich. 487.
 in Pee Dee area, (58) S.C. 684.
 on dairy farms in New York, (53) 892.
 on irrigated farms, (55) U.S.D.A. 284.
 relation to cattle feeding, (53) Ill. 88.
 studies, (51) N.Dak. 889; (52) Mont. 491; (54) S.C. 684; (55) Ind. 79.
 studies, principle of comparative advantage, (56) 784.
 study of special areas, (56) S.C. 581.
 survey, (59) N.J. 385.
 treatise, (51) 488; (54) 879.

Farm—Continued.

- market, advertising survey, (54) 686.
 measurements, textbook, (55) 691.
 mechanics, (52) Mich. 386.
 mechanics handbook for farmers, (53) 84.
 mechanics, short-unit course in teaching, (59) 187.
 mechanics, teaching, treatise, (58) 289.
 mechanics, treatise, (60) 686.
 mortgage debt in Iowa, Iowa, (56) 885; (58) 381.
 mortgage financing, (54) Tex. 182.
 mortgage interest rates, (53) 689.
 mortgage investments, (53) 794.
 mortgages, (51) 689.
 organization—
 and cost of production, (52) U.S.D.A. 190, Kans. 489; (58) Ark. 378.
 and costs on cotton farms, (52) S.C. 588.
 and management, (52) Ill. 490, W.Va. 589, Ky. 893; (53) Iowa 687; (58) Ill. 379, Mo. 487; (60) Ill. 281.
 and management, correlation analysis, (55) Iowa 78.
 and management in Indiana, (52) U.S.D.A. 290.
 and management, survey, (51) Iowa 486.
 and management, textbook, (59) 187.
 and profits, (54) Iowa 881.
 cost studies in, (51) 189.
 in Brown County, (56) S.Dak. 685.
 in Corn Belt, effect of corn borer, (59) 482.
 in Kansas, (52) U.S.D.A. 588.
 in Lexington-Batesburg section, (56) S.C. 582.
 in lower Coastal Plain, (57) N.C. 783.
 in Minnesota, (52) U.S.D.A. 490.
 in western Canada, changes in, (60) 384.
 in winter wheat belt, (59) 482.
 research, state program, (60) 381.
 studies, (56) Kans. 885.
 organizations, (59) Wis. 86.
 organizations of North Carolina, (57) 191.
 ownership—
 absentee, in United States, (57) 480.
 and tenancy, (51) U.S.D.A. 792.
 and tenancy in China, (60) 587.
 economic aspects, (53) U.S.D.A. 488.
 in low tenancy region, pre-ownership steps in, (60) 886.
 in United States, (53) 793.
 steps toward, (55) Nebr. 184; (60) Wis. 382.
 pests in Colorado, control, (51) 251.

Farm—Continued.

- plumbing, (52) U.S.D.A. 389.
 pond, dam and spillway for, (53) 83.
 power and farm organization, (59) Ind. 783.
 power costs, Ill., (54) 385; (56) 386; (58) 379.
 power survey, national, summary, (52) 487.
 practice, elements, textbook, (60) 388.
 prices and value of gold, (60) 886.
 prices, future trend, forecasting, (51) 189.
 prices, index numbers, (59) N.Dak. 884.
 prices, state indexes of, (60) 587.
 prices, types of index numbers, (53) 92.
 products, *see* Agricultural products.
 profits, (53) Okla. 89.
 profits and losses, (53) 688.
 profits in Williston area, factors affecting, (54) Fla. 386.
 projects and problems, textbook, (57) 290.
 property in Germany, changes in value, (54) 182.
 purchasing power, aggregative index, (59) 384.
 real estate—
 assessment practices, (59) Mich. 183.
 maintenance cost, (57) Ohio 285.
 situation, (58) U.S.D.A. 285.
 taxes, trend in Kansas, (54) Kans. 483.
 receipts and expenses, (59) Ohio 783.
 relief, data for and against McNary-Haugen plan, (59) 384.
 rentals, new, in Hungary, (54) 181.
 returns, increasing, (58) Ala.Tuskegee 288.
 review, Montana, (60) 588.
 shop work for teachers, course in, (59) 686.
 shop work, teaching, treatise, (58) 289.
 shop work, treatise, (53) 186.
 structures, basic requirements, de-termination, (59) 586.
 structures, notes, (58) Mo. 481.
 structures, papers on, (53) 399.
 survey of black land cotton belt, (53) Tex. 893.
 surveys, lighting systems, (54) Mo. 778.
 taxation, (54) U.S.D.A. 80; (56) Wis. 783; (58) Ark. 378, Ark. 785; (59) Ohio 284; (60) Del. 781.
 taxation in Missouri, (56) Mo. 585.
 taxation in North Dakota, (56) N.Dak. 586.
 taxation, research in, (59) 481.
 taxes and assessments in Massachusetts, (57) Mass. 384.

Farm—Continued.

- taxes, index number, relation to other factors, (56) N.Y.Cornell 686.
 taxes, index numbers, Ohio, (54) 386; (58) 684.
 tenancy—*see also* Land tenancy and Land tenure.
 and forms of leases and contracts, (58) Pa. 381.
 and ownership, (57) Okla. 583, Ind. 680.
 disputes adjustment in Japan, (53) 794.
 in United States, (53) 591, 793. in Virginia, (55) Va. 380.
 methods of leasing, (51) Calif. 595.
 relation to land ownership, (54) Ill. 386.
 studies, (60) Ky. 233.
 tenants and owners on a corporate estate, (51) U.S.D.A. 890.
 tenants, Scotch, income in eighteenth century, (51) 192.
 trade area, Columbia, economic study, (58) S.C. 889.
 village, Mormon, social survey, (53) 797.
 water supply and sewage disposal, (56) W.Va. 81.
 water systems, electric, (58) 498.
 women, American, treatise, (53) 297.
 women, use of time by, (56) Idaho 597.
 woods, use, (60) U.S.D.A. 342.
 work, energy requirements, (55) 479.
 youth, attitudes and problems, (57) U.S.D.A. 886.
 youth, papers on, (59) 388.
 zone, treatise, (53) 797.

Farmer—

- and agriculture, (52) 896.
 and farm, treatise, (56) 891.
 leaders in United States, (60) 486.
 reclamation, financial troubles, (52) 182.
 relation to taxation and national indebtedness, (52) 393.

Farmers—

- American, economic condition, (60) 585.
 American, economic position, (53) 189. and industrial prosperity, treatise, (58) 78.
 attitude toward farming, (57) S.Dak. 539.
 bankruptcy among, causes, (52) 393.
 bookkeeping society in Wiltshire, (59) 382.
 business organizations, publications, (59) U.S.D.A. 185.
 cash income, Brookmire estimates, (60) 678.
 church, treatise, (53) 797.
 cooperative associations in United States, (53) 297.

Farmers—Continued.

- cooperative business organizations, development, (52) U.S.D.A. 592.
 cooperative business study, (55) U.S.D.A. 689.
 cooperative organizations in New York, (59) N.Y.Cornell 785.
 difficulties and complaints, (52) 182.
 difficulties of, (51) 687.
 double entry accounts for, (53) Iowa 89.
 economic position in New Zealand, (59) 680.
 effect of education, (57) U.S.D.A. 387.
 financial policy for, (53) 90.
 income and gasoline engine, (60) 883.
 institute work, developments in, (56) 588.
 laws for, treatise, (51) 297.
 movements in Canada, history, (53) 895.
 mutual benefit fund in South Africa, (55) 288.
 negro, tenancy and ownership in Virginia, (55) U.S.D.A. 286.
 of North Carolina, economic and social conditions, (51) 392.
 of Ohio, sources of income, (54) Ohio 182.
 raw materials, treatise, (51) 510.
 relation to U. S. Warehouse Act, (54) U.S.D.A. 586.
 shop book, treatise, (53) 186; (56) 283.
 white, living conditions in Wake Co., (60) N.C. 386.
 wives, insanity among, (53) Ohio 797.
- Farming—*see also* Agriculture.
 adjustments, research in, notes, (54) 199.
 areas, characteristics, (58) N.Dak. 382.
 areas, types, in Massachusetts, (60) Mass. 83.
 as business, treatise, (52) 197.
 by cooperative societies, (58) 81.
 changes in, 1922-1925, (56) N.Dak. 582.
 Corn Belt, place of hog production, (58) Ill. 684.
 dairy, *see* Dairy farming.
 diversified, in Florida, (55) 838.
 dry-land, *see* Dry farming.
 economic study, (52) N.Dak. 291.
 fifty years in borders of Scotland, (59) 486.
 first steps in, treatise, (51) 291.
 grain v. livestock system, (58) S.Dak. 734.
 improved, treatise, (59) 187.
 in Big Bend area, (56) Wash.Col. 386.
 in Connecticut, history, (55) Conn. State 186.
 in England, treatise, (54) 687; (57) 885.
 in Iowa, types, (60) Iowa 884.
 in Overton Co., economic analysis, (59) Tenn. 180.

Farming—Continued.

- in South Dakota wheat belt, (51) 293.
- irrigation, in Gallatin Valley, (53) Mont. 793.
- irrigation, in Idaho, studies, (56) U.S.D.A. 285.
- more intensive, value, (58) 887.
- on grass and arable farms in England, (54) 80.
- on logged-off uplands in Washington, (51) U.S.D.A. 890.
- on logged-off uplands, returns, (51) Wash.Col. 191.
- on 160-acre farms, (54) U.S.D.A. 79.
- partnerships in Tuscany, (52) 690.
- peasant, in dairy region, (58) 685.
- profitable, in South Carolina, (56) S.C. 286.
- society of Cîteaux, France, (54) 181.
- systems for hill sections, (60) Miss. 885.
- systems for spring wheat area, (60) S.Dak. 284.
- systems in Kingsbury County, (58) S.Dak. 186.
- systems, livestock, for mountain region, (60) N.C. 678.
- treatise, (53) 898.
- type of, (59) Iowa 86.
- under corn borer conditions, (59) U.S.D.A. 87.
- with bluegrass, (54) Ky. 284.

Farms—

- and markets law of New York State, (54) 81.
- business analysis, (51) Wis. 591; (52) Ky. 489; (56) Ky. 182.
- cash and share renting, (51) N.Dak. 595.
- construction and repair jobs on, treatise, (56) 283.
- Corn Belt, organization, cattle feeding enterprise in, (53) 88.
- developing, on South Dakota ranges, (52) 390.
- eighty-acre, in Indiana, income from, (52) U.S.D.A. 91.
- electricity on, *see* Electricity.
- electrified, exhibition, (54) 481.
- English, evolution, (57) 387.
- hill land, organization, (54) 585.
- in Kentucky, economic study, (55) Ky. 181.
- in Ohio, number and size, (57) Ohio 883.
- in Quebec, cultural systems and rotations for, (54) 434.
- in United States, share renting, (51) 293.
- internal readjustments, public agencies in, (53) 896.
- irrigated, organization on, (51) Wash. Col. 191.
- irrigated, profits on, (57) Colo. 189.
- large, operation, (60) Ohio 782.
- near Wuhu, China, economic and social survey, (53) 597; (55) 79.

Farms—Continued.

- numbers by States and counties, 1900–1925, (55) 187.
 - of Brie, France, (53) 894.
 - of Georgia, field and crop labor, (53) U.S.D.A. 190.
 - of Iowa, costs and incomes, (53) 687.
 - of West Virginia, organization and management, (53) W.Va. 488.
 - Ohio, people on, (57) Ohio 494.
 - 160-acre, successful farming on, (54) U.S.D.A. 79.
 - orchard, organization and costs of production, (56) U.S.D.A. 785.
 - peasant, establishment and maintenance, (60) 88.
 - planning, for profits, (59) Wis. 180.
 - potato, in New Jersey, business records, (57) N.J. 783.
 - poultry, in British Columbia, (59) 87.
 - poultry, in New Jersey, business records, (57) N.J. 783.
 - profitable and unprofitable, comparison, (56) Miss. 581.
 - profitable, factors affecting, (60) Ky. 283.
 - rental terms, (51) Mont. 293.
 - rented, in Virginia, (55) Va. 380.
 - rented, ownership, (56) U.S.D.A. 83.
 - rented, taxation, (53) U.S.D.A. 90.
 - Scottish, standards of production and net output, (53) 688.
 - vegetable, sprinkling irrigation on, (58) N.J. 679.
- Fasciation—
- and prolepsis due to crown gall, (51) 549.
 - in corn, (56) 29.
 - in dahlia, (57) 753.
 - in phlox, (58) 143.
 - of stems in phlox, cause, (60) Pa. 323.
- Fasciola hepatica—
- course of invasion, (59) 475.
 - development, (58) 667.
 - extracts, anaphylactic experiments, (60) 868.
 - in cattle, (57) P.R. 468.
 - intermediate host, (56) 175.
 - ova, parasite of, (60) 556.
 - treatment for, (58) 577.
- Fasciola magna, notes, (59) 881.
- Fascioliasis in a cow, (59) 577.
- Fasting—
- and rice disease in pigeons, (56) 795.
 - and undernutrition, treatise, (52) 564.
 - effect on composition of blood, (51) 70.
 - prolonged, effect on basal metabolism, (51) 67; (56) 90.
- Fat—*see also* Oil.
- and soap industry, (54) 708.
 - chemistry, (51) 201.
 - colostrum, chemical and physical constants, (53) 203.
 - consumption of children, (56) Ohio 493.

Fat—Continued.

- content of body, effect of minerals in diet, (55) 91.
- determination, formulas to correct differences in, (51) 806.
- diets, high, for constipation, (56) 895.
- excretion, (52) 665.
- excretion, source and purpose, (55) 693.
- extracting from cacao products, (52) 713.
- formation in pigs on low-fat ration, (55) 363.
- globules, agglutination, (52) 278.
- globules in milk and cream, effect of separation and pasteurization, (59) 168.
- globules in milk, measurement, (56) Ill. 376.
- in alimentary products, determination, (51) 13.
- in apple shoots, movement, (60) 142.
- in blood, determination, (55) 410.
- in buttermilk, determination, (51) Ill. 317.
- in buttermilk, error in determination, (60) 313.
- in cacao products, determination, (54) 613.
- in cotton, determination, (51) 716.
- in dried milk, determination, (51) 316.
- in feed, determination, effect of fineness of grinding, (51) 317.
- in flour, effect of drying, (59) 711.
- in goats' butter, composition, (53) 502.
- in ice cream, frozen cream as source, (58) Pa. 364.
- in ice cream, Garrett-Overman test, (60) 313.
- in malted milk, determination, (51) 208.
- in plant substances, determination, (59) 503.
- in yeast, vitamin A in, (53) 502.
- industry in Germany, statistics, (51) 201.
- metabolism and vitamin A, (51) 67.
- metabolism, effect of insulin, (55) 90.
- metabolism in avitaminosis, (51) 369.
- metabolism of pigs, (54) 269.
- metabolism of plants, (51) 427.
- metabolism, studies, (58) 790.
- odd-carbon, feeding to diabetic patients, (51) 367.
- production in animals, technique for study, (52) 109.
- production in cattle, inheritance, (57) Mo. 423.
- production in cows, inheritance, (58) Mo. 425.
- separation in emulsions, theory, (59) 710.
- solvents, (55) 610.
- utilization in animal body, (53) 763.

Fatigue, effect on infection, (55) 173.

Fats—

- analysis, (55) 207.

Fats—Continued.

- and oils, analysis, (51) 12.
- and oils, studies, (59) 108.
- and oils, technology, treatise, (57) 309.
- and waxes, industrial chemistry, treatise, (58) 201.
- animal and vegetable, statistics, (53) 203; (54) 307; (55) 710.
- as source of energy, efficiency, (51) 263.
- autoxidation, (52) 10.
- biochemistry, (55) 201.
- bromine-iodine numbers, (58) 509.
- calories furnished by, and respiratory quotient, (51) 263.
- chemistry of, new aspects, (56) 801.
- coconut and palm kernel, methods of estimating, (53) 806.
- dark, determination of acid and saponification numbers, (59) 415.
- digestion, absorption, and assimilation, (55) 371.
- edible, deterioration, (51) 201.
- effect on vitamin E adequate diet, (57) 197.
- excess in diet, growth experiments, (57) 193.
- extraction from cereal products, (53) 807.
- foreign, in cream, turbidity test for, (51) 208.
- import requirements in Germany, (52) U.S.D.A. 297.
- in corn crosses, inheritance, (56) Iowa 519.
- in corn, inheritance, (56) 29.
- in dairy products, determination methods, (53) Conn.Storrs 808.
- in dry milk, susceptibility to oxidation, (56) 611.
- in malted milk, determination, (56) 412.
- in microorganisms, formation and decomposition, (58) 502.
- in plants, (59) 608.
- in the diet, beneficial effect, (59) 489.
- iodine number, determination, (53) 315; (57) 204.
- irradiated, effect on rats, (54) 489.
- irradiated, growth-promoting property, (56) 592.
- Kreis test, quantitative aspects, (51) 806.
- melting points, determination, (54) 111.
- natural and synthetic, treatise, (54) 7.
- nutritive value, (58) 296.
- oils, and waxes, studies, (57) 203.
- origin and significance, (52) 109.
- production and utilization, (57) U.S.D.A. 8.
- rancidity determinations, (59) 204.
- rancidity in, detection, (54) 111.
- rôle in vital phenomena, (54) 391.
- separation of unsaponifiable matter from, (52) 712; (54) 614.
- solidification point, (56) 613.

Fats—Continued.

- statistics, (60) U.S.D.A. 785.
 - susceptibility to oxidation, measurement, (54) 111.
 - transformation into carbohydrates, loss of energy in plants, (58) 523.
 - treatise, (56) 310.
 - vegetable, deposition in rats, (56) 761.
 - vegetable, treatise, (54) 7.
 - vitamin A in, inactivating action of other fats on, (53) 62.
- Fatty acid series, insecticidal properties, (52) 655.

Fatty acids—

- and derivatives, insecticidal action, (58) 452.
- as contact insecticides, (53) 452.
- as sources of energy for *Azotobacter*, (60) 20.
- effect on analysis of alkaloids, (57) 312.
- halogenated, esters of, insecticidal action, (60) 840.
- halogenated, insecticidal action, (59) 649.
- in linseed varnishes and oils, (53) 810.
- iodine number determination, (53) 315.
- metabolism, (55) 592.
- odd v. even carbon, catabolism, (52) 666.

volatile, production in intestinal tract of calves, (53) N.Y.Cornell 378.

Fatty oils, use in citrus flavors, (56) 310.

Fauna of British India, birds, (56) 551.

Fauna of France, (52) 154.

Fearon pyrogallol test for vitamin A, (56) 112, 410, 411.

Feathers—

- pigmentation in hybrid fowls, (60) 429.
- poultry, marketing and value, (51) 176.

Feces—

- calcium in, determination, (55) 311.
- energy value, determination, (55) 311.
- human, organisms in, (54) 383.
- lipid excretion, source and purpose, (55) 693.
- lipoids in, source, (52) 665.
- parasitic ova in, detecting with aid of cedar oil, (58) 574.
- pH determination, (55) 311.

Fecundity—

- high, inheritance, (51) Mich. 129.
- simple measure of, (58) 129.

Federal—

- aid for research and education in agriculture, (56) Kans. 84.
- aid in highway construction, legislation for, (54) 876.
- aid, treatise, (59) 482.
- Board for Vocational Education, policies, (55) 289.
- Board for Vocational Education, report, (54) 589; (56) 487.
- Board for Vocational Education, year-book, (51) 796.

Federal—Continued.

- Farm Loan Act and amendments, (53) 90.
 - Farm Loan Board, report, (57) 884; (60) 85.
 - Highway Act, rules and regulations, (54) 876; (57) 776.
 - Highway Act, standards for carrying out, (55) U.S.D.A. 278.
 - irrigation projects, (57) 184.
 - Power Commission, history, activities, and organization, (53) 587.
 - Trade Commission report on grain trade, (53) 191; (57) 785.
- Feeding—
- device, new, for experimental rats, (52) 261.
 - experiments, *see* Cows, Pigs, *etc.*
 - in public schools in England, (53) 563.
 - of farm animals, treatise, (55) 56.
- Feeding stuffs—*see also specific kinds.*
- American, digestion coefficients, (54) Tex. 60.
 - analyses—*see also* Feeding stuffs, inspection and analyses.
 - (53) Ky. 269, R.I. 465, Ariz. 769;
 - (55) Ariz. 57, Can. 260; (56) Can. 69, Ky. 261; (57) Tex. 66;
 - (59) Vt. 762; (60) Ky. 253.
 - analyses and law of Oregon, (53) 572.
 - analyses in Minnesota, (54) 664.
 - analyses in New York State, (51) 74; (54) 858.
 - analyses in Pennsylvania, (55) 57.
 - analyses in Texas, (55) 57.
 - and feeding, (60) 852.
 - and foods, Germany's needs and production, (58) 788.
 - calcium content, (51) 274.
 - calculating values, (53) 66.
 - commercial, value, (53) 666.
 - composition, (52) Calif. 70.
 - composition and cost, N.Y.State, (58) 63; (60) 463.
 - concentrated, regulations, (59) Conn.-State 99.
 - consumption, relation to protein and energy retention, (53) Mo. 464.
 - data on sales and guaranty, (57) Ky. 863.
 - determination of moisture in, (51) 700.
 - digestibility, (53) Mass. 572.
 - digestibility by working horses, (60) 467.
 - digestibility, determination, (54) 559.
 - digestibility, effect of proportion of nutrients, N.Mex., (55) 465; (56) 159.
 - digestibility trials, value of balanced rations in, (59) Va. 467.
 - effect of fineness of grinding on analyses, (51) 374.
 - energy value, determination, (54) 205.
 - energy value for chickens, (56) Ill. 372.
 - enzymatizing, value, (60) Ohio 169.
 - fermented, value, (59) Wis. 70.

Feeding stuffs—Continued.

- green, effect on cows, (57) N.J. 767.
 green pressed, feeding value, (54) 168.
 grinder, principles involved in design, (58) 682.
 grinding experiments (57) 582, Ind. 666, Ind. 675.
 grinding, value, (59) Ind. 772, Ind. 782; (60) 482.
 grinding with electricity, (60) 280.
 grinding with electricity, cost, (58) Mo. 481.
 grinding with motors, (56) 81.
 home-grown, comparison, (51) Minn. 174.
 home-grown, feeding value, (60) 565.
 home-grown, for fattening hogs, (52) 370.
 home-mixed v. commercial, (51) Can. 375.
 in New York State, analyses, (52) 766.
 Indian, digestibility, (54) 263; (58) 761; (60) 852.
 Indian, requirements for milk production, (56) 672.
 Indian, tests, (57) 169.
 inspection, (51) Ind. 571.
 inspection and analyses—*see also* Feeding stuffs, analyses.
 (51) N.H. 73, Ky. 170, Tex. 170, R.I. 467, Conn.State 868; (52) N.J. 167, Vt. 167, Me. 268, N.H. 567, Vt. 671, Mass. 866; (53) Conn.State 666, N.J. 666, Tex. 667, Vt. 667; (54) N.H. 264, N.Y.State 463, Vt. 560, Mass. 663, Me. 758; (55) Conn.State 358, N.J. 664, 861; (56) Me. 69, R.I. 69, N.H. 363, Vt. 466, Ind. 559, Mass. 559; (57) R.I. 458, N.J. 661; (58) Conn.State 63, Me. 267, Ind. 762, Mass. 762, N.H. 762, Vt. 762, Tex. 865; (60) Ind. 68, N.J. 68, R.I. 253, Me. 758.
 in Louisiana, (53) 666.
 in Maryland, (51) 170.
 in Minnesota, (51) 374, 571.
 in New York, (54) 264.
 in North Carolina, (52) 670; (56) 69.
 in Ohio, (53) 667.
 in Pennsylvania, (51) 274; (52) 866.
 inspection and sales, (54) Ind. 357.
 inspection in Porto Rico, (54) 264.
 law of Kentucky, (54) Ky. 858.
 law of Maine, (56) 271.
 manufacture, (54) Vt. 264.
 milk products in, (59) 504.
 mineral content, relation to soil, (58) S.C. 618.
 mineral content, relation to soil, (58) S.C. 618.
 mineral nutrients in, (57) 292.
 mixed, calculating composition, (51) 571.

Feeding stuffs—Continued.

- mixed, determination of milk solids in, (60) 15.
 natural, rapid growth of chicks on, (60) 261.
 net energy values, calculating, (54) 463.
 net energy values, revised, (54) 758.
 new, for dairy cows, (52) U.S.D.A. 78.
 nutritive value, calculating, (55) 57; (57) 659, 761.
 nutritive value, effect of processing, (59) N.J. 364.
 of South Carolina, minerals in, (60) S.C. 708.
 official samples, composition, (52) N.Y.State 71.
 Philippine, value, (59) 262.
 phosphorus in, (51) 274.
 phosphorus in, nutritive value, (53) 867.
 prices and index, (56) Ohio 285.
 productive value, effect of size of ration, (56) 863.
 sale and manufacture in Canada, (51) 170.
 silica in, (54) 857.
 statistics, (53) U.S.D.A. 293.
 succulent, feeding value, (52) Can. 870.
 succulent, for dairy cattle, (59) Ohio 166.
 succulent, of the Karroo, (51) 771.
 succulent, preservation by electricity, (53) 168.
 succulent, tests, (60) Oreg. 769.
 treatise, (60) 852.
 valuation, (52) 166.
 wet v. dry, for pigs, (52) 769.
 yeast fermented, value, (55) Ohio 162.
 Feeds, *see* Feeding stuffs.
 Fehling's solution—
 modification, (54) 506.
 preparation, (55) 715.
 Feijoas, pollination, (56) 646.
 Feldspars, liberation of potassium from, (51) 218.
 Feltia—
 ducens, notes, (60) Tenn. 161.
 venerabilis arida, notes, (60) Mont. 752.
 Females, immature, offspring from, (56) Ill. 224.
 Fence posts—
 cottonwood, preservative treatment, (55) Iowa 584.
 durability tests, (51) 187; (53) 891; (55) Ark. 75; (58) Ark. 373; (60) Ark. 876.
 preservation, (52) Mont. 485; (53) 287, Mo. 482; Iowa 789; (54) Mo. 778; (56) Ark. 382; (57) Mo. 473; (58) Mo. 481.
 Fencing, vermin-proof, (54) 683.
 Fenugreek as cover crop, (59) Calif. 727.
 Fenusa pumila, notes, (55) 554.
 Fenusa pumila on birch, (52) 454.

Fermentation—

- alcoholic, equation of, (59) 803.
- bacteriology, handbook, (57) 819.
- biochemical aspects, (52) 624.
- industries for 1923, report, (51) 809.
- industries, treatise, (52) 315.

Fermentations, industrial, treatise, (55) 113.

Fern—

- Boston, anthracnose, studies, (54) 254.
- creeping, eradication by bamboo, (57) 440.
- leather-leaf, brown leaf spot of, (57) 159.
- leather-leaf, leafhopper affecting, (57) 360.
- mite, studies, (56) 65.
- rusts and aecia, (55) 551.
- variegation in, genetics, (53) 330.

Ferns—

- apospory in, experimentally induced, (60) 529.
- dictionary of, (57) 22.
- etiolation in, cause, (58) 626.
- greenhouse, *Leucothrips nigripennis* on, (55) Mich. 853.
- Mendelian inheritance in, (57) 120.
- variegation in, inheritance, (58) 525.

Ferrase, use of term, (59) 217.

Ferrets—

- and ferreting, treatise, (58) 556.
- immunization against dog distemper, (59) 676.

Ferric—*see also* Ferrous and Iron.

- chloride, effect on phosphorus recovery from soils, (52) 817.
- ferrocyanide as source of iron for plants, (55) 518.
- glycerophosphate v. soluble ferric phosphate for soy beans, (52) N.J. 725.
- oxide, value in arsenical sprays, (59) N.J. 350.

Ferromanganese, native, fertilizing value, (53) 517.

Ferrous sulfate—

- anthelmintic value, (52) 776.
- effect on calcium and magnesium in soil, (51) 321.
- injection into plants, effect, (58) 24.
- methylene blue effect on, (51) 13.
- relation to ophthalmia in rats, (58) 295.

Fertility—

- and lactation, dietary requirements, (60) 293, Ark. 899.
- and sterility in Norway rat, (57) 323.
- in *Drosophila*, effects of X-rays and temperature, (53) 428.
- in humans, effect of nutrition, (57) 224.
- in rats, (55) 822.
- in rats, relation to vitamins B and E, (57) 65.
- in sheep, (56) 668.

Fertilization—

- hill, secondary effects, (54) Iowa 18.
- of crops, broadcast and row, (52) 817.
- selective, in corn, (59) 624.

Fertilizer—

control work, summary history, (60) N.Y.State 719.

distributors, testing set-up experiments, (59) 84.

experiments—*see also special crops.*

- (51) Del. 621, Mo. 719, Ark. 725;
- (52) Calif. 24, Del. 119, 322, N.Y.Cornell 526; (53) Minn. 119; (54) Fla. 334, S.C. 624; (55) Minn. 219, R.I. 220; (56) 719, 720, Fla. 811, Iowa 811; (57) Tex. 115, N.C. 213, Va. 426; (58) Ky. 20, Ark. 315, Mo. 419; (59) Wis. 19, Ind. 718, N.C. 718, Tex. 718, Tex. 719; (60) Tenn. 119, S.C. 717, Ore. 718.

analysis of results, (54) 815.

at Pusa, (52) 120.

at Wellcome Tropical Research Laboratories, (52) 120.

financial returns from, error in interpreting, (53) 119.

in Germany, (51) 623.

in Moscow Province, (59) 213.

in Russia, (59) 19, 20, 21.

in South Island of New Zealand, (60) 25.

in Sweden, (52) 621.

in Tula Province, (59) 319.

in Tver Province, (59) 213.

limitation of Student's method, (54) 720.

on rotated and nonrotated crops, (60) Tex. 717.

with different types of tillage, (54) 814.

with fine waste mixed fertilizers, (52) 121.

handbook, American, (52) 123; (53) 819; (56) 625.

industry, evolution, (58) 211.

industry in Canada, (53) 220.

industry of United States, relation to soil science, (51) 399.

industry, survey, (57) 316.

ingredients, pulverizing, (51) 217.

instruction, treatise, (52) 816.

law, (56) Mo. 322.

law of Georgia, (53) 121.

law of Maryland, (51) 626.

law of Missouri, (55) Mo. 223.

law of Pennsylvania, (55) 423.

materials from municipal waste, (54) 815.

materials from potassic rock, (52) 514.

mixtures, computation, (52) U.S.D.A. 324.

mixtures, ternary, geometrical calculation, (56) 119.

practices, (54) Mo. 717.

Fertilizer—Continued.

- primer, (51) 216.
 ratios for Prince George Co., (59) Md. 424.
 registrations for 1924, (51) N.J. 222.
 registrations in Maryland, (51) 626, 819.
 requirements, mineral nutrients in plant solutions as index, (57) 812.
 salts, synthetic, behavior with limestone and dolomite, (60) 213.
 sampling tube, description, (51) 9.
 situation in various foreign countries, (53) 122.
 spreaders, tests, (56) 80.
 suggestions, (54) Mich. 624.
 Testing Station in China, (51) 499.
- Fertilizers—*see also specific material.*
 absorption by Ceylon soils, (56) 419.
 acid, effect on soil reaction, (55) 419.
 amounts and prices, calculating, (51) 623.
 analyses—*see also Fertilizers, inspection and analyses.*
 (56) Me. 625; (57) N.J. 214, Mo. 513, S.C. 814; (58) Ind. 211, Mo. 420, N.J. 421; (60) Ind. 26, S.C. 26, Mo. 122, Me. 720.
 in Maryland, (53) 122.
 valuation, and cost, (57) Oreg. 115.
 analysis, standard methods, (55) 506.
 and bone products, treatise, (53) 724.
 and Feeding Stuffs Act, report, (52) 767.
 and fertility tests, (55) Miss. 624.
 and fertilizer industry, (57) 22.
 and manures, treatise, (53) 819.
 and soil improvers, (58) 121.
 and soil, treatise, (55) 16.
 and soils, (51) 719; (60) 25.
 and use, (52) 211.
 anticryptogamic action, (58) 340.
 application and effects on crops, (54) Wis. 423.
 application of law of diminishing returns, (51) 725.
 application on seed and seedling, (56) 212.
 available in Italy, (51) 326.
 bibliography, (59) 121.
 biological control of effect, (53) 625.
 catalytic, tests, (53) 517.
 chemical, nature and use in Italy, (51) 216.
 chemistry, manufacture, and application, treatise, (57) 317.
 commercial, data, (60) N.Y.State 719.
 composition and cost, changes in, (52) N.Y.State 819.
 composition and prices, N.Y.State, (56) 722; (59) 23.
 composition and prices in 1923, (52) N.Y.State 24.
 concentrated, need and means of production, (57) 813.

Fertilizers—Continued.

- concentrated, preparation and use, (57) 21.
 concentrated, use, (53) 818; (54) Mass. 123.
 consumption and crop yields in France, (57) 813.
 definition of terms, report, (54) 98.
 distributing machinery, (59) 480.
 effect of methods of applying, (55) 582.
 effect on colloidal properties of crops, (55) Mich. 425.
 effect on composition of plant juices, (60) 209.
 effect on fruiting of cotton, (57) 129.
 effect on hygroscopicity of soil, (60) 21.
 effect on mineral content of pastures, (55) 462.
 effect on nitrification, (51) 419.
 effect on number and size of potato tubers, (53) 635.
 effect on nutritive value of wheat, (53) Ohio 566.
 effect on pH in soil, (56) 419.
 effect on plant cell sap, (56) Mich. 318.
 effect on potash content of soil, (56) 622.
 effect on quality of canned tomatoes, (59) 439.
 effect on quality of winter wheat, (56) 639.
 effect on seed germination, (58) 136.
 effect on stand or germination of cotton, (57) 229.
 effect on vitamin B in wheat, Ohio, (57) 168; (59) 258.
 effect on wheat stem rust, (51) 448.
 effects of method of application on corn, (57) Iowa 526.
 efficiency of, (59) R.I. 615.
 for Barry County soils, (54) Mich. 516.
 for crops in Pennsylvania, (52) 621.
 for cut-over lands, (53) Idaho 514.
 for greenhouse soils, (53) Ohio 514.
 for marsh soils, (57) Wis. 20.
 for pastures, (56) N.Y.Cornell 334.
 for west Tennessee, (58) Tenn. 817.
 from cocoa by-products, (55) 615.
 from salt marsh hay, (57) N.J. 716.
 from straw and cornstalks, preparation, (57) Ohio 115.
 from sugar cane by-products, (57) 813.
 from superphosphate treated with ammonia, (52) 514.
 handbook, (59) 317.
 hold-over effects in orange grove, (57) 141.
 home mixing, (52) 215.
 hygroscopicity and cakiness, (54) 217.
 industry and commerce in, (57) 317.
 inspection and analyses—*see also Fertilizers, analyses.*
 (51) Mass. 23, N.H. 23, Tex. 23, N.J. 222, Ind. 729; (52) S.C. 24, Oreg. 515, Tex. 515, Conn.State 623, Me. 623, N.H. 724; (53)

Fertilizers—Continued.

inspection and analyses—continued.
 Mass. 22, N.J. 22, Mo. 220, N.J. 220, Ky. 420, R.I. 420, Ind. 724; (54) Conn.State 319, S.C. 319, Tex. 423, Vt. 518, Mass. 722, Me. 722, N.H. 817; (55) R.I. 22, Ky. 123, N.J. 123, Mo. 223, N.J. 223, S.C. 518; (56) Ky. 216, Tex. 216, Mo. 322, N.H. 323, Conn.State 423, Vt. 423, Ind. 514, Mass. 514, N.J. 514; (57) R.I. 115; (58) R.I. 421, Conn.State 622, Ky. 724, Mass. 724, Me. 724, Tex. 724, Vt. 818; (59) N.J. 23, N.H. 321; (60) R.I. 518, Tex. 518, Conn.State 624, Mo. 624, N.J. 624, Ore. 719.
 in California, (54) 423; (55) 725.
 in Georgia, (53) 121.
 in Kansas, (52) 819.
 in Maryland, (51) 625, 626; (52) 123; (53) 220; (54) 423; (55) 223; (56) 216.
 in Michigan, (51) 123.
 in New York, (51) 222; (56) 216.
 in North Carolina, (51) 222, 626; (52) 215, 724; (53) 220, 622.
 in Pennsylvania, (51) 222; (52) 724; (55) 423.
 in Porto Rico, (51) 519; (54) 264.
 in Vermont, (52) Vt. 624.
 international trade in, (56) 626.
 iodine determination in, (53) 201.
 leaching from soils, (52) 816.
 manufacture, selection, and use, (55) 516.
 methods of applying, (55) 180, Iowa 509.
 methods of applying to potatoes, (51) N.J. 622.
 mineral nitrogen in, determination, (53) 715; (57) 8.
 mixing on the farm, (57) 317.
 nature, functions, and application, (58) 720.
 new, and uses, (60) N.C. 719.
 new factors in production and trade, (55) 422.
 new, use and value, (58) Tenn. 721.
 1924 yearbook, (51) 819.
 1926 yearbook, (56) 423.
 1927 yearbook, (58) 211.
 nitrification of, (60) 718.
 nitrogen determination in, (51) 805; (53) 804.
 nonhomogeneous, analysis, (54) 613.
 organic nitrogen in, (51) 204; (60) Ark. 803.
 package, sale, (55) Mo. 223.
 phosphates in, method of determination, (59) 804.
 phosphatic, availability on acid and nonacid soils, (56) 121.

Fertilizers—Continued.

phosphoric acid determination in, (53) 109.
 potassium in, determination, (51) 204.
 purchase, selection, and use, (51) Mich. 815.
 rates of application, (60) Ark. 805.
 registration in Maryland, (55) 518.
 registrations, N.J., (53) 220; (55) 223; (57) 214; (59) 23.
 response of fruit trees to, (51) Ohio 441.
 response to, permeability reactions as test, (51) Del. 123.
 sales, (57) Ohio 215.
 sampling, trier for, (57) 8.
 selection and purchase, (52) 724.
 selection and use, (55) 721.
 selection and use, handbook, (52) 118.
 selection and use in South Australia, (51) 422.
 simplified practice in, (57) 32.
 sources of material used for, (60) Ark. 804.
 statistics for Texas, (57) Tex. 215.
 studies, (53) N.C. 818; (57) Ga. 212, Minn. 213.
 treatise, (56) 720; (59) 22.
 urea-containing, manufacture and analysis, (54) 613.
 use, (52) West.Wash. 515.
 use in eastern France, (58) 211.
 use in horticulture and market gardening, (58) 20.
 use in protecting corn against freezing, (54) 436.
 use in the hill for corn plants, (52) 797.
 use of hair and leather in, (51) 728.
 use of refuse for, (55) 625.
 use on Iowa soils, (53) Iowa 420.
 use, treatise, (51) 120; (57) 317.
 v. manure, (51) Ohio 422.
 varying ratios in, (60) Ark. 805.
 work by commission in Russia, (59) 719.
 world's production and consumption, (53) 22.
 Fescue—
 meadow, germination, physiology of, (57) 517.
 meadow, seed production, (52) 334.
 yield as pasturage and as hay, (55) 827.
 Fescues, broad leaved, notes, (57) 727.
 Festuca—
 classification and phylogenetics, (58) 823.
 ovina, studies, (56) 736.
 rubra, occurrence and distribution in Great Britain, (52) 137.
 systematic cytology, (58) 525.
 Fetal retrogression in mice, (51) 633.
 Feterita—
 and kafir crosses, seed color inheritance, (51) 29.
 effect of cultivation, (54) Tex. 329.

- Feterita—Continued.
 loose kernel smut, notes, (59) 847.
 seed coats, relation to water absorption and germination, (55) 828.
 smut resistance in, (56) 246.
- Fetus—
 development, nutrients required for, (54) 562.
 human, growth measurements, (54) 161.
 resorption, nature of, (54) 826.
- Fetuses, distribution in mouse uteri, (57) 724.
- Fiber—
 and yarn spun from Angora rabbit fur, (60) 97.
 crops, culture experiments, (58) 429.
 crops, experiments, (59) Can. 524.
 crops, experiments in Philippines, (55) 434; (60) 327.
 crops, studies, (53) Can. 134.
 cross sections, depicting, (56) 193.
 plants, characteristics, (54) 733.
 plants in Argentina, (54) 133.
 plants, Indian, studies, (52) 523.
 production in bast fiber plants, effect of nutrition, (53) 235.
 strands of flax and hemp, breakdown, (53) 337.
 strands, sorting machine for, (54) 94.
- Fibers—
 bast and leaf, culture, (57) 726.
 cordage, characteristics, (58) 832.
 culture in India, (57) 629.
 extensibility, (54) 697.
 microscopic identification, (60) 496.
 minor, international trade, (53) 296.
 minute structure, (55) 93.
 Philippine, regulations concerning, (57) 130.
 plant, lattice structure of swollen cell wall, (58) 796.
 plant, molecular structure, (56) 297.
 properties, instrument for studying, (55) 392.
 strength, effect of ultra-violet rays, (57) 694.
 technical research in, (56) 193; (57) 95.
 technical studies, treatise, (57) 795.
 tendered, microscopic structure, (52) 337.
 testing instruments for, (60) 398.
 textile, bacterial decomposition, (56) 297.
 textile, treatise, (51) 337.
 vegetable, descriptions, uses, production, and preparation, (54) 828.
 vegetable, manufacturing stains, removal, (59) 897.
- Fibroin, converting into state of colloidal solution, (57) 407.
- Ficus vogelii, movement of latex in, (58) 854.
- Fidia viticida, *see* Grape root worm.
- Field crops—
 breeding work, (56) 630.
 breeding work at experiment stations, (54) U.S.D.A. 726.
 improvement, technic in, (53) 230.
 in the Ukraine, varietal diversity, (56) 432.
 solar energy used by, (53) 508.
 southern, treatise, (52) 794.
 systematic laboratory studies, (60) 327.
 treatise, (60) 635.
 under irrigation, (55) U.S.D.A. 132.
 variety tests, methods, (54) 733.
- Field crops work—
 at Pusa, (55) 229.
 at Rothamsted, (54) 433.
 at University of Hawaii, (51) 636.
 in Aberdeen, Scotland, (58) 130.
 in Abkhasia and upper Svanetia, (59) 626.
 in Assam, (53) 31.
 in Bengal, (53) 632; (57) 33.
 in Bihar and Orissa, (52) 132.
 in British Guiana, (56) 36.
 in Burma, (53) 31.
 in England, (52) 529; (54) 231.
 in England, Northumberland Co., (56) 334; (58) 130; (59) 826.
 in Guadeloupe, (51) 636; (55) 229.
 in India, (51) 232; (52) 227; (53) 632; (54) 828; (55) 826; (57) 628; (59) 524.
 in Ireland, (51) 529.
 in Italy, (51) 232; (53) 231.
 in Kenya, (53) 632; (56) 823.
 in Madras, (51) 637.
 in Montserrat, (54) 231.
 in Morocco, (59) 826.
 in Moscow, (58) 734.
 in Mysore, (52) 529.
 in Nigeria, (53) 335; (55) 637.
 in Philippines, (53) 133; (55) 434; (57) 425; (58) 429.
 in Porto Rico, (53) 133; (58) P.R. 531.
 in Prussia, (57) 227; (58) 130.
 in Punjab, (51) 137; (52) 132; (53) 632.
 in Pusa, (51) 36; (53) 531.
 in Scotland, (52) 227; (54) 434.
 in South Australia, (54) 434.
 in Tanganyika, (53) 32.
 in Tunis, (53) 134.
 in Uganda, (52) 34; (56) 823.
 in West Indies, (52) 132, 227.
 on Dry-Land Station, Ardmore, S. Dak., (58) U.S.D.A. 324.
- Field experiment plats—
 checker-board arrangement, (59) 523.
 permanence of differences in, (59) 30.
- Field experiments—
 analysis of plat yields, formulas in, (55) 528.
 applications of biometry to, (57) 626.
 arrangement, (56) 332.
 artificial plats for, (56) 227.

Field experiments—Continued.

- cooperative, in Ontario, (55) 434.
 correlated variation in, moving average
 for measuring, (55) 433.
 duplication, effect of climatic complex,
 (52) Calif. 24.
 effect of border rows, (57) 725
 effect of plat size and replication on
 experimental error, (52) W.Va. 734.
 eliminating error in, (53) Pa. 733.
 intensive method for handling, (60)
 212.
 interpretation of results, (57) 524.
 methods, (53) 527.
 new methods with check plats, (56)
 131.
 notes, (60) Ky. 212.
 organization and conclusion, (54) 433.
 planning and carrying out, (55) 826.
 plat technique, (53) 835.
 plat types in, (60) 326.
 probable error in, (53) 632.
 probable error methods in, (58) 827.
 soil heterogeneity in plats, (55) 617.
 standardization of descriptive terms,
 (51) 33.
 Student's method, limitations in, (52)
 827.
 Student's method, value, (57) 124.
 symposium on, (59) 430.
 technique, (54) 130; (55) 227; (60)
 222.
 with cotton, technique, (56) 635.
 yields in rod-row trials, correcting,
 (59) 624.

Field—

- heterogeneity coefficient, calculation,
 (58) 631.
 observations, technique, (56) 113.
 plat experiments, statistical method,
 value, (57) 725.
 plat variability, determinations, (56)
 432.
 plat variety tests, new system for,
 (60) 34.
 plats, variation in yields, (57) 224.

Fig—

- canker, notes, (54) 745.
 endosepsis or internal rot, etiology and
 transmission, (57) Calif. 254.
 internal rot, control, (59) Calif. 746.
 latex, anthelmintic value, (55) 271.
 leaf blight, control, (51) 156.
 leaf bronzing, notes, (59) 534.
 rust, control, (51) 156; (57) Tex. 155.
 Tex. 651; (59) Tex. 740.
 rust, notes, (55) 346.
 smut, notes, (53) Calif. 354.
 smut, studies, (52) 451.
 soft rot, notes, (53) Calif. 448; (54)
 453; (55) Calif. 344; (57) Calif.
 243.
 trees, new psyllid injurious to, (52)
 357.
 trees, *Phomopsis cinerescens* on, (57)
 651.

Fig—Continued.

- trees, sod v. clean-culture plats, (53)
 Miss. 239.
 trees, spraying, (54) Fla. 342.
 wax scale in Palestine, (60) 650.
Figites anthomyiarum, notes, (59) 660.
 Figs—see also *Caprifig*.
 breeding, (60) 45.
 Calimyrna, rot affecting, (58) 152.
 caprifig, internal rot, control, (59)
 852.
 chimeras in, (59) 43.
 culture experiments, (59) Hawaii 632.
 culture in Arizona, (55) U.S.D.A. 438.
 diseases, cause, (52) Calif. 48.
 edible, from caprifig seed, (53) 844.
 fertilizer experiments, (57) Tex. 136;
 (58) 141; (59) Tex. 740.
 floral character, (57) Calif. 234.
 flowering and fruiting habit, (58) 236.
 fruit fall of, (56) 851.
 Kadota, preservation, (58) Calif. 290.
 Kadota, production in California, (58)
 Calif. 237.
 preservation by freezing, (52) Calif. 15.
 production and rôle of *Blastophaga* in-
 sects, (54) 644.
 quality, improvement, (58) Calif. 554.
 Roxburgh's giant, in Teneriffe, (58)
 741.
 Smyrna, culture, (52) 642; (53) 643.
 so-called smut of, (51) 52.
 use in ice cream and ices, Calif., (57)
 276; (58) 239.
 varieties, (59) Calif. 737, Tex. 740.
 variety tests, (56) Miss. 739; (57)
 Tex. 136.
 yield, (59) Miss. 332.
- Filaria—
 bancrofti, Japanese mosquitoes as in-
 termediate hosts of, (60) 249.
 blinding, of Guatemala, (52) 760.
 irritans, notes, (60) Fla. 175.
 mansonii, notes, (54) 773.
 recondita, morphology and life cycle,
 (53) 363.
- Filariasis in Australia, (52) 285.
- Filbert—
 roots, activity during winter, (58) 642.
 trees, root development, (57) 42.
- Filberts—
 culture, (51) West.Wash. 346; (58)
 West.Wash. 336, 840.
 effect of humidity on, (51) Oreg. 538.
 pollination studies, (55) Oreg. 643;
 (57) 438.
 production and pollination, (52) Oreg.
 238.
 propagation studies, (55) Oreg. 643.
 sterility in, (57) 738.
 storage, relation to humidity, (55)
 Oreg. 643.
- Filino, value against liver fluke, (58) 577.
- Fillies, purebred draft, feeding, (53) Ill. 71
- Filter—
 bed, sprinkling, bacteriological popu-
 lation, (52) 786.

- Filter—Continued.
 bed, sprinkling, film accumulation in, (57) N.J. 781.
 bed, sprinkling, studies, (51) N.J. 685.
 beds, coagulated matter in, studies, (51) 483.
 materials, adsorption effects on sugar solutions, (53) 110.
 press cake as cane fertilizer, (53) 121.
 press cake, fertilizing value, (51) 819.
 press residues at sugar plant, utilization, (59) 13.
 sprinkling, chemical changes in, (52) 290.
- Filtering agents for cane juice, comparison, (53) 612.
- Filters—
 membranous, use in microbiology, (53) 25.
 monochromatic, in the visible spectrum, formulas, (58) 796.
 sand for, size and depth, (52) 686.
 slow-filtering sand, in Tropics, (51) 790.
 trickling, ventilation in, (57) 187.
- Finances, State and local, tendencies in, (59) 682.
- Fishes poisoned by strychnine, amount, (54) 151.
- Fingerprints, statistical analysis, (53) 522.
- Fingers, inherited abnormalities of, (54) 28.
- Fir—
 noble, growth, (54) 742.
 red, yield, stand, and volume tables, (60) Calif. 742.
 seed germination, effect of heat, (54) 341.
 silver, in Great Britain, relation to chermes, (56) 360.
 silver, new disease in Scotland, (55) 250.
 silver, time for sowing in nursery, (54) 341.
 trees, trunk circumference, effect of meteorological factors, (55) 23.
 white, new disease of, (58) 154.
 white, yield, stand, and volume tables, (56) Calif. 240.
- Fire ant, studies, (55) Tex. 354.
- Fire blight—
 cankers, studies, (56) Ill. 349.
 development and control, (59) Wis. 47.
 history and control, (57) 846.
 notes, (54) 448.
 organism, infection studies, (60) Pa. 344.
 organism, leaf tissues as portal of infection, (59) Pa. 851.
 organism, new host for, (52) 449.
 organism, overwintering, (58) Ark. 337.
 organisms, flagella on, (59) 245, 851.
 overwintering on different hosts, (60) Ark. 829.
 resistance, studies, (57) Tenn. 639.
- Fire blight—Continued.
 studies, (52) Tenn. 549; (56) Wis. 746; (60) Ill. 238.
 studies, host range, (60) 449.
- Fire insurance—
 companies, cooperative, (52) N.Y. Cornell 691.
 farmers' mutual, in United States, (53) 595.
- Fire weather in the Adirondacks, (55) 211.
- Firefly, luminous larva, attack of snails by, (58) 56.
- Fires—
 effect on California pine forests, (52) U.S.D.A. 542.
 extinguishing with carbon dioxide gas, (56) Colo. 881.
 farm, cause and prevention, (56) 81.
 farm, method of study, (56) 283.
 forest, *see* Forest fires.
 grain, prevention, (51) 889.
 prevention in farm homes, (51) 889.
 protection of farm buildings against, (55) Ala. 280.
 relation to weather conditions, (59) 808.
- Fireworm, black-head, control, Wash. Col., (51) 158; (52) 853; (60) 845.
- Fish—
 chilling and freezing in atomized brine, (58) 683.
 cold-storage holdings, (55) U.S.D.A. 686.
 crushed, decomposition, (56) 420.
 culture in inland public waters, (51) 759.
 dried, vitamin A in, (52) 65.
 for destruction of mosquito larvae, (53) 859.
 guano, decomposition, (56) 420.
 infection with broad tapeworm, (59) 171.
 liver, effect on hemoglobin production, (56) 495.
 liver oils, vitamin D in, (57) 295.
 liver, vitamin content, (53) Wis. 459.
 manure, fertilizing value, (55) 516.
 meal—
 analyses, (52) U.S.D.A. 78.
 and soy bean meal, feeding value, (59) N.C. 767.
 antirachitic value, (59) N.H. 771.
 as source of protein, (57) N.J. 69.
 effect on calcium assimilation, (57) 761.
 effect on pigs, (55) 62.
 feeding value, (52) 768; (54) Fla. 367, 666; (55) N.C. 265; (56) S.C. 268, 766; (58) 270; (59) N.C. 767.
 feeding value for poultry, (57) N.C. 271.
 menhaden, calcification studies, (57) 458, 762.
 studies, (56) 22.
 Swedish, composition and feeding value, (56) 666.

Fish—Continued.

- meat—continued.
- v. beef scrap, Can., (54) 763, 764.
 - v. meat meal, feeding value, (55) Fla. 863.
 - v. meat meal for egg production, N.C., (55) 265; (59) 770.
 - v. meat meal for poultry, (53) N.C. 779.
 - v. soy bean meal for pigs, (55) N.C. 263.
 - v. tankage for pigs, (57) N.J. 764.
 - vitamin in, (53) 571.
 - New Zealand, food values, (60) 93.
 - nutrition of, factor H in, (59) 192.
 - nutritive value, (55) 889.
 - of Alabama, (54) 52.
 - of British Empire, (51) 896.
 - oil as adhesive in insect control, (59) 61.
 - oil as adhesive in sprays, (53) 452; (56) U.S.D.A. 658.
 - oils, behavior with uranium nitrate and pyrogallic acid, (58) 715.
 - oils, characteristics, (55) 10.
 - Pacific coast, composition, (54) 190.
 - Philippine food, composition and nutritive value, (60) 189, 789.
 - poisons as insecticides, (54) 258.
 - refrigeration, (58) 590.
 - refrigeration and preservation, (56) 413.
 - sex ratio in, (60) 634.
 - sex reversal in, (60) 325.
- Fisher, A. K., list of writings, (55) 454.
- Fishing industry, use of waste products for poultry feed, (59) 362.
- Fishponds in moors, fertilization, (51) 625.
- Fistula of withers in horses, (55) 70; (56) Kans. 876.
- Fistulina hepatica in oaks, (56) 753.
- Flacherie of silkworms, causes, (57) 453.
- Flagella of bacteria, modification in shape and staining, (58) 474.
- Flagellate infections, studies, (52) 582.
- Flagellates in plants, (58) 55.
- Flagellates, insect, and disease, (58) 666.
- Flannel moth, white, life history and hair structure, (55) Ark. 50.
- Flatheaded borer—
- Pacific, studies, (60) U.S.D.A. 850.
 - repellent against, (52) Mich. 355.
- Flatirons, heat loss from, (60) 498.
- Flaveria trinervia as weed in Cuba, (54) 239.
- Flavobacterium ophthalmiae, proposed name, (58) 879.
- Flavobacterium suaveolens n.sp., description, (52) 81.
- Flavones, reddening, action of acids and metallic sodium, (58) 524.
- Flax—
- and cereal mixtures, tests, (55) Ohio 132; (56) Wis. 733; (57) Minn. 226; (59) Ohio 823.

Flax—Continued.

- and cereal mixtures, yields, (55) Ohio 528.
- and grain mixtures, tests, (51) 199; (54) Mich. 634.
- and hemp fibers, distinction between, (58) 95.
- and oats mixtures, tests, (55) Minn. 332, Mich. 825; (56) Minn. 524; (57) 528; (58) Minn. 828.
- and products, (53) 530.
- and wheat mixtures, tests, (51) Minn. 436, N.Dak. 438; (53) N.Dak. 334, N.Dak. 529; (55) Minn. 332; N.Dak. 527; (56) Mont. 133, Minn. 524; (57) 528; (58) Minn. 828; (59) N.Dak. 825.
- and wheat mixtures under irrigation, (57) Mont. 429.
- and wheat mixtures, value, (60) Mont. 729.
- and wheat mixtures, yields, (54) S.Dak. 34.
- anthracnose, cause, (54) 847.
- as fiber and oil plant, (59) 328.
- bast fibers, structure and formation, (55) 493.
- breakdown of fiber strands, (53) 337.
- breeding experiments, (51) Mich. 133, N.Dak. 832; (55) N.Dak. 527; (59) N.Dak. 825.
- breeding in Finland, (59) 133.
- browning disease, notes, (53) 246; (58) 147.
- cost of production studies, (59) Can. 524.
- culture, (54) S.Dak. 34; (57) Kans. 429.
- culture experiments, (53) U.S.D.A. 132; (54) U.S.D.A. 132; (59) Can. 524; (60) Oreg. 731.
- culture experiments under dry farming, (54) U.S.D.A. 30.
- culture in India, (51) 532.
- cytoplasmic inheritance in, (58) 219.
- degeneration of, (54) 229.
- disease new in United States, (53) 851.
- disease resistant strains, (59) 239.
- diseases, notes, (55) 747.
- fall seeding experiments, (52) 633.
- fertilizer experiments, (53) 625; (54) 830; (59) 20, 21, 213, Can. 524; (60) 37.
- fiber, effect of increased osmotic pressure, (59) 418.
- fiber, effect of stem size and seeding rate, (57) 230.
- fiber strands, sorting machine for, (54) 94.
- fiber, structural characters, (53) 531.
- fibers, microscopic structure, (52) 337.
- fibers, structure and development, (57) 394.
- flea beetle, notes, (59) 855.
- for seed, variety tests, (57) Minn. 226.
- genetic studies, (55) 224.

Flax—Continued.

- growth in artificial light, (51) 25.
 hemp, and jute yearbook, (56) 297.
 hybrids, studies, (51) 30.
 improvement and yield, (54) 735.
 improvement by selection, (54) 125.
 in Montana, (55) Mont. 231.
 in Oregon, (53) Oreg. 235.
 in the Northwest, (54) 185.
 industry, profitableness, (53) Wis. 432.
 inheritance of wilt resistance in, (59) 29.
 inheritance studies, (59) 223.
 international trade, (53) 296.
 irrigation experiments, (54) Mont. 328.
 natural crossing in, (60) 434.
 on peat soils, physiological disorder, (55) 348.
 pasmo disease, (54) 847; (56) 49.
 plant, botanical study, (53) 522; (56) 631.
 plant characters, effect of fertilizers, (56) 827.
 plant, distribution of nitrogen in, (56) 697.
 planting tests, (59) N.Dak. 825.
 plants, roots of, (59) 525.
 prices, index numbers, (59) N.Dak. 885.
 production, (54) N.Dak. 332; (56) Wis. 733; (58) 299.
 production in British Empire, (53) 530.
 production in Ireland, (57) 36.
 production in Michigan, (52) Mich. 796.
 production in Saskatchewan, (57) 528.
 quantitative characters in, correlations, (60) 534.
 ratio between tops and roots, effect of varying nitrogen supply, (55) 829.
 research work in, (57) 493.
 resistance to *Melampsora lini*, (52) 645.
 retting studies, Mich., (55) 896; (57) 631; (60) 397.
 rotation and tillage experiments, (53) U.S.D.A. 528.
 Russian and American, anatomy of stem, (59) 628.
 rust, control, (56) Minn. 245; (57) 248.
 rust development, factors affecting, (58) 651.
 rust, notes, (56) 847.
 rust resistance, studies, (55) N.Dak. 542.
 screenings, feeding value, (55) Minn. 361.
 secondary crops with, (51) Wis. 435.
 seed—*see also* Flaxseed.
 as a farm crop, (53) U.S.D.A. 34.
 variety tests, (55) Oreg. 637.

Flax—Continued.

- seedling experiments, (51) Minn. 133; (53) Minn. 130, Can. 530; (54) U.S.D.A. 31, 436; (55) Minn. 332, Minn. 527; (58) S.Dak. 325.
 shives, digestibility as affected by sodium hydroxide, (51) 372.
 soil fatigue, biological cause, (55) 446.
 solar energy used by, (53) 508.
 spacing experiment, (57) 230.
 strains, variation in, (58) S.Dak. 734.
 straw, pulping, (57) 796; (59) 195; (60) 697.
 straw, pulping, chemistry, (56) 698.
 straw, uses, (54) N.Dak. 332.
 studies, (53) Can. 134.
 tillage and cropping tests, (60) Mont. 730.
 tillage and seeding tests, (53) N.Dak. 334.
 transmission of acquired character in, (58) 219.
 treatise, (55) 231.
 ultimate fiber, weight per centimeter, (57) 394.
 under dry land culture, (55) U.S.D.A. 132.
 varieties, (60) Mont. 729.
 varieties for Minnesota, (55) Minn. 132.
 varieties, improved, (54) Minn. 30.
 variety for peat land, (55) Minn. 527.
 variety tests, (51) Minn. 133, N.Dak. 833; (53) Minn. 130, N.Dak. 334, N.Dak. 529, Can. 530; (55) Minn. 332, N.Dak. 527, Mich. 697, Minn. 735; (56) Minn. 524, Wash.Col. 525; (57) Can. 33, 227, U.S.D.A. 524, Idaho 726; (58) Minn. 828, U.S.D.A. 532; (59) N.Dak. 825, Wash.Col. 31; (60) N.Dak. 34, Oreg. 731.
 wet spinning, (53) 531.
 wilt, biochemistry, (57) 348.
 wilt, effect of soil temperature, (52) 348.
 wilt, effect of temperature, (51) Wis. 446.
 wilt, notes, (52) Can. 846; (60) 344
 wilt resistance in, (52) Minn. 245; (55) N.Dak. 542; (56) N.Dak. 847; (59) N.Dak. 841.
 wilt resistant, transmission of character, (58) 341.
 wilt, studies, (51) N.Dak. 846; (53) 851.
 yarn, action of caustic soda on, (54) 196.
 yarns behavior under repeated impacts, (56) 94.
 yarns, elasticity, (57) 694.
 yarns, elasticity, effect of sizing ingredients, (55) 596.
 yarns, experimental sizing plant, (58) 392.
 yarns, extensibility, (58) 94.

Flax—Continued.

- yarns, resistance to wear, measurement, (59) 97.
- yields and agronomic data, (52) Can. 733.

Flaxseed—

- Bavarian, (51) 138.
- bibliography of, (57) U.S.D.A. 130.
- culture in Argentina, (55) 829.
- culture in Wisconsin, (55) 829.
- daily growth and oil content, (60) 328.
- feeding, effect on milk, (58) 68.
- harvesting, (57) 130.
- impurities and determination of origin, (60) 539.
- infestation by mites, (56) 662.
- moisture in under varying humidity, (54) 636.
- of Turkestan, weed seed in, (55) 137.
- oil characteristics, (58) S.Dak. 226.
- oil content, (57) U.S.D.A. 505.
- oil in, determination, (53) U.S.D.A. 611
- production, (51) N.Dak. 437; (52) U.S.D.A. 437.
- production and consumption, (51) N.Dak. 37.
- quality, effect of time of harvest, (54) 638.

Flea beetle—

- affecting black pepper, (58) 760.
- banded, notes, (60) Tenn. 161.
- control, (53) N.C. 755.
- injury in Washington, (59) 552.

Flea beetles—

- control, (54) Ill. 353; (60) 851.
- life history and control, (60) Va. 459.
- north of Mexico, synopsis, (60) 654.
- notes, (51) 157; (57) Tenn. 654; (60) 161.
- on beets, (53) Utah 254.
- on cauliflower, control, (54) N.Y.State 552.
- on tobacco, (55) Conn.State 253.

Flea bites, reaction to, (56) 660.

Fleahopper, garden, control, (52) 753.

Fleas—*see also special hosts.*

- and rats, survey of San Juan, Porto Rico, (58) 660.
- control with calcium cyanide, (51) 357.
- plague transmission by, (56) 63; (59) 657.
- relation to plague, (53) 758; (57) 760.
- summary, (55) Mich. 456.
- taxonomy and natural relationships, (54) 659.

Fleece weight, effect of rainfall, (58) 14.

Flies—

- and fly sprays, relation to milk production, (59) 760.
- and foot-and-mouth disease dissemination, (53) 886; (59) 471.
- as affected by methylene blue, (51) 57.

Flies—Continued.

- attacking cattle, control, (55) Ind. 51, 559; (57) Ohio 175, Okla. 569, Ind. 654.
 - attacking cattle in Dutch East Indies, (56) 461.
 - attraction by paraffin derivatives, (54) 855.
 - black, *see* Black flies and Simuliidae.
 - breeding in manure, control, (56) 557.
 - control, (58) 158.
 - control with fly-larval-trap manure enclosure, (54) 756.
 - effect on milk production, (54) 659; (57) Calif. 273.
 - hibernation, (57) 657.
 - house, *see* House flies.
 - infesting mushrooms, biology, (60) Pa. 356.
 - larval stages, comparative study, (59) 357.
 - muscoïd, tentative arrangement, (54) 460.
 - of genus *Belvosia*, revision, (59) 859.
 - on cultivated mushrooms, control, (56) Pa. 154.
 - rearing for experimental purposes, (52) 558.
 - repellents and larvicides for, (54) 661.
 - repellents for cattle, (56) Kans. 871.
 - rôle in disease transmission, (57) 456.
 - rôle in transmission of undulant fever, (59) 254.
 - sand, *see* Sand flies.
 - sarcophagid, puparia and larvae, (54) 57.
 - spray for, (59) 560.
 - Swedish, control, (59) 855.
 - two-winged, new genus and species, (51) 763.
 - two-winged, North American, new species, (57) 262.
 - two-winged, North American species, (55) 763.
 - white, *see* White fly.
- Flint, E. R., biographical sketch, (54) 406.
- Flood—
- and gravel control, (56) Utah 576.
 - control engineering and drainage, treatise, (55) 376.
 - flow characteristics, (53) 82.
 - lands, Chizhinsk, studies, (60) 711.
 - New England, in November, 1927, (60) 114.
- Floods—
- and forest, (58) U.S.D.A. 744.
 - control by forestation, (51) 347.
 - in New England and eastern New York, (58) U.S.D.A. 808.
 - in Rocky Mountain region, (55) 277.
 - of Mississippi River from a meteorological standpoint, (58) 717.
 - of 1927 in Mississippi Basin, U.S.D.A., (58) 412, 413.
- Flora—*see also* Vegetation, Plants, *etc.*
- of northern Saghalien, (55) 25.
 - of South Africa, treatise, (56) 837.
 - of Utah and Nevada, (54) 523.

- Floriculture, manual, (55) 441.
- Florida red scale—
control, (52) 61; (56) Fla. 855.
fumigation against, (58) 859.
parasite of, (59) Calif. 757.
- Florida—
State Geological Survey, report, (57) 808.
Station, notes, (53) 196; (54) 300, 495; (55) 98, 600, 797; (56) 96, 900; (57) 698; (58) 97, 499; (59) 197.
Station, report, (52) 299; (54) 299, 395; (55) 898; (56) 195, 899; (60) 199.
Station, Tobacco Substation, report, (60) Fla. 152.
University, notes, (52) 300; (54) 300, 495; (55) 600, 797; (58) 97, 499; (59) 397.
- Florida wax scale, notes, (59) Guam 555.
- Flour—*see also special kinds.*
absorption capacity, factors affecting, (60) 289.
analyses, (53) Conn.State 657.
analysis, fluorescence in, (58) 114.
and diet, treatise, (59) 889.
and wheat, studies, (53) 311, 802.
ash determination, (55) 505; (56) 14.
ashing, use of glycerol in, (53) 314.
baking properties, relation to pH of dough, (59) 310.
baking qualities, differences in, (51) 409.
baking qualities of Arizona soft wheat, (59) 890.
baking quality, determination, (53) 504.
baking quality, effect of sodium nitrate applied to wheat, (55) 832.
baking strength of Arizona Early Baart, (60) Ariz. 591.
baking test, development, (60) 789.
baking tests, (51) Ind. 804.
baking tests, effect of size and shape of pan, (59) 311.
baking tests, interpretation, (59) 590, 713.
baking tests, standardization, (57) 687, 888; (59) 591.
beetle, confused, toxicity of insecticides to, (58) Minn. 756.
beetle, confused, vitamin requirements, (59) 593.
beetles, effects on flour, (54) 557.
bleached, chlorine determination in, (58) 806.
bleaching, oxidizing effects, (60) 612.
cake-making qualities, (52) 259.
Canadian, discrimination in freight rates, (54) 285.
characteristics, baking test for determining, (59) 112.
chemistry of, treatise, (56) 108.
Chicago trade in, (51) 298.
color, numerical expression for, (58) 805.
- Flour—Continued.
colorimetry, methods, (60) 612.
composition and nutritive deficiencies, (55) 692.
composition, effect of storage, (53) Utah 861.
consumption in United States, decline, (55) 786.
diastatic activity, control, (56) 204; (59) 608.
diastatic activity, factors affecting, (59) N.Dak. 825.
diastatic, production, (55) 611.
doughs, carbon dioxide diffusion ratio in, (53) 410.
doughs, retention of gas in, relation to gluten content, (54) 190.
drying, (53) 806.
effect of fine grinding, (55) 504.
effect of sweating of grain, (54) 237.
experimental baking test, standardizing, (56) 86.
experimental milling test, value, (59) 311.
export shipments, routing, (53) 295.
extracted with ether, bread-making properties, (60) 288.
fat in, (56) 312.
fat in, effect of drying, (59) 711.
fineness, effect on composition and baking quality, (56) U.S.D.A. 390.
for pretzels, (58) U.S.D.A. 590.
foreign import duties on, (53) 595.
from frozen wheat, baking tests, (56) Mont. 133.
from hard spring wheat, ash of, (57) 112.
from Missouri soft wheat, tests, (56) Mo. 391.
from single wheat variety, (60) Ill. 288.
from Wyoming, baking qualities, (56) Wyo. 589.
gasoline color value, (56) 205.
gasoline color value, determination, (55) 611.
gluten determination in, factors affecting, (52) 112.
gluten proteins of, identity, (53) 409.
gluten quality and isoelectric point, (54) 501.
gluten quality in, (57) 111.
glutenin determinations, (59) 111.
gold medal, history, (55) 137.
grades, studies, (53) 410.
Graham, ashing methods, (56) 13.
hydration capacity, viscosity as measure, (51) Minn. 803.
international trade in, (55) 185.
international trade, rôle of cooperative organizations in, (58) 686.
lipoids in, determination, (51) 205.
manufacture, (51) 318; (55) 209.
mill streams, gluten quality, (53) 409.
milling—
and baking, chemistry, (51) 804.
and baking tests, (54) Mich. 634.

Flour—Continued.

- milling—continued.
 - and baking tests of New Zealand wheat, (59) 736.
 - and bread making, bibliography, (53) U.S.D.A. 9.
 - chemistry of, (54) 11.
 - industry research problems, (53) 614.
 - processes and methods, treatise, (59) 713.
 - textbook, (54) 11.
- mills, fumigation with Cyanogas calcium cyanide, (59) 352.
- Missouri, for bread making, (53) Mo. 58.
- Missouri soft wheat, for bread making, (55) Mo. 291.
- modification, mechanical method, (60) 789.
- moisture determination, (52) 205; (53) 715, 806, 807; (54) 506; (55) 805.
- moth, Mediterranean—
 - control, (57) 358.
 - parasite of, (59) 861.
 - parasitic diseases of larva, (60) 652.
 - physiological study, (55) 155.
 - protozoan and bacterial disease, (58) 162.
 - temperature experiments with eggs, (58) 559.
 - web construction, (55) 257.
- of New Zealand wheat, bread making qualities, (54) 889.
- Oklahoma, quality, (55) Okla. 488.
- output of mills in United States since 1879, (59) 484.
- patent, digestibility in baked goods, (51) 61.
- patent wheat, irradiated, effect, (53) 568.
- protein and ash in, converting to uniform moisture base, (52) U.S.D.A. 312.
- proteins, effect of yeast fermentation, (56) 502.
- proteins in, preparation and analysis, (59) 112.
- proteins in relation to baking quality, (55) 831.
- proteoclastic activity, (59) 310.
- quality, factors affecting, (52) 202, Kans. 410.
- quality, tests, (52) 12.
- rate of drying, (59) 110.
- sampling, triers for, (54) 613.
- stiffness of dough, penetrometer for measuring, (59) 311.
- strength, chemistry of, (53) 8.
- strength, effect of heat, (56) 710.
- strength, factors affecting, (51) Minn. 803.
- strength, index, (53) 410.
- strong and weak, properties, (51) 803; (52) 12.

Flour—Continued.

- supply, future, (55) 692.
 - suspensions, use of Ostwald viscometers for, (59) 111.
 - test, automatic proof box, (59) 311.
 - test baking, problems, (56) 85.
 - trade, ex-European, (60) 386.
 - unsaponifiable matter in, determination, (55) 310.
 - valuation by colorimetric drop tests, (54) 613.
 - viscosity and baking quality, (54) 502.
 - viscosity measurements, effect of hydrogen peroxide, (54) 502.
 - viscosity studies, (54) 609.
 - washing of gluten from, (58) 805.
 - weight, variations in, (51) 413.
 - wheat, detection of rye in, (51) 613.
 - white, biological values of nitrogen, (56) 188.
 - whole-wheat v. patent, food value, (60) 393.
 - yield, relation to test weight of wheat, (53) 238.
- Flour-in-water suspensions—
- effect of monocalcium phosphate, (55) 612.
 - hydrion concentration measurement, (56) 204.
 - plasticity, (56) 502.
- Flower—
- color, alteration through external factors, (53) 424.
 - color and sterility factors, linkage between, (55) 732.
 - color in *Oenothera*, inheritance, (56) 521.
 - garden, handbook, (57) 142.
 - gardens, planning and planting, treatise, (56) 646.
 - gardens, treatise, (51) N.J. 647.
 - pots, Growell, tests, (59) 137.
 - spotting, inheritance of, (53) 628.
 - stalk growth, effect of young inflorescence, (57) 516.
 - thrips, affecting peach, (51) Ind. 853.
 - thrips, control, (60) Fla. 160.
 - thrips, Florida, control, Fla., (52) 250; (56) 855.
 - thrips on peanuts, (52) Fla. 251.
 - webworm, control, (59) 552.
 - webworm, notes, (59) Iowa 55.
- Flowering plants, *see* Plants, ornamental.
- Flowers—
- and insects, (57) 57.
 - annual, culture, (55) 442.
 - annual, culture, treatise, (51) 539.
 - anthocyanin in, origin, (53) 726.
 - bisexual, in *Cannabis sativa*, (55) 730.
 - blooming, biological study, (56) 326.
 - cultivated, animal enemies, (59) 553.
 - culture, (52) S.Dak. 143; (55) 236.
 - culture experiments, (58) Can. 836, Can. 837, Can. 838; (60) Can. 539, Can. 540, Alaska 736.
 - culture, manual, (55) 441.

Flowers—Continued.

- culture, treatise, (51) 242, 346, 647; (58) 142.
 cut, lasting qualities, factors affecting, (60) 641.
 cut, use, (59) Mich. 532.
 ecology and insects, (53) 728.
 for herbaceous border, treatise, (59) 838.
 garden, culture, (55) Mich. 142.
 garden, treatise, (60) 441.
 long-tubed, honey from, (55) 56.
 morphology and anatomy as affected by alpine climate, (53) 728.
 mountain, treatise, (52) 344.
 of field and garden, treatise, (57) 142.
 of South Africa, treatise, (55) 442.
 opening and closing, (53) 825; (54) 25.
 pollination by thrips, (55) 660.
 production in greenhouse, value of fresh soil, (56) Ill. 343.
 production under glass, (60) 822.
 seed germination, optimum temperatures, (51) 124.
 varieties for Porto Rico, (58) P.R. 536.
 variety tests, (54) Can. 443; (55) Minn. 339; (60) Can. 539.
 winter, in outdoor garden, (57) 142.
- Fluids, mechanical properties, (51) 885.
- Fluke disease—
 in poultry, (55) Mich. 877.
 of fowls, newly recognized, (55) 778.
 of fowls, rôle of dragon flies in transfer, (57) 774.
- Flukes—
 cause of salmon poisoning in dogs, (55) 176.
 in cattle, treatment, (60) 478.
 in ewes, treatment, (53) 586.
 parasitizing a duck, (58) P.R. 574.
- Flume, Venturi, improved, studies, (60) Colo. 480.
- Fluorescein—
 derivatives, staining properties, (60) 317.
 dyes as bacterial stains, (58) 813.
- Fluorides—
 composition, (60) 454.
 toxic values, (56) 854.
 v. fluosilicates as insecticides, (55) 658; (56) 157.
- Fluorine—
 compounds, insecticidal value, (52) Tenn. 555.
 compounds, toxicity, (59) Tenn. 456.
 determination, volatilization method, (59) 503.
 effect on bone formation, (56) Ark. 363.
 effect on growth and reproduction of rats, (54) 193.
 in diet of rat, effect on teeth, (53) 660.
 in rock phosphate, (59) 502.
 salts, effect on rats, (56) Iowa. 863.

Fluosilicates—

- composition, (60) 454.
 insecticidal value, (55) Tenn. 152; (56) Tenn. 154; (58) 350.
 properties and reactions, (59) Tenn. 456.
 tests, (53) 253.
 v. fluorides as insecticides, (55) 658; (56) 157.
- Fly—
 repellents, effect on milk production, (59) N.C. 773.
 salt, tests, (58) 262.
 spray, paper on, (60) 843.
- Flying fox pest, notes, (59) 876.
- Foals, pyemia in, (52) 885.
- Fodder crops, *see* Forage crops.
- Follicles, polyovular, in opossum, (55) 634.
- Follicular—
 atresia in opossum, relation to vitamins and exercise, (51) 635.
 atresia in the mouse, (57) 825.
 extract, effect on generative organs of hysterectomized guinea pigs, (57) 723.
 hormone of hen ovary, action, (52) 731.
 hormone, relation to development of secondary sex characters, (55) 822.
 hormone, standardization of preparations, (56) 226.
 hormone variation in pig, cow, and human ovaries, (55) 822; (56) 226.
 secretions, effect on sexual cycle in mammals and humans, (59) 624.
- Fomes—
 annosus, host plants, (60) 345.
 annosus, studies, (55) 250.
 igniarius, notes, (52) 353.
 lamaensis, notes, (54) 144, 254.
 lignosus, notes, (51) 45; (53) 153; (57) 639.
 lucidus, notes, (51) 46.
 pinicola, notes, (59) 152.
 pinicola, physiological specialization, (52) 550; (56) 655.
 pseudoferreus, notes, (58) 156; (59) 637.
 spp., notes, (53) 148; (54) 150, 151; (56) 655; (58) Minn. 752; (60) 48.
 spp. resistance to sodium fluoride and zinc chloride, (56) 853.
 yucatanensis, notes, (53) 246.
- Fomina rubi idaei n.g. and n.sp., description, (59) 537.
- Fomitiporella betulina, notes, (54) 150.
- Fomitiporia tsugina, notes, (54) 150.
- Food—
 allergy, diagnosis and treatment, (60) 597.
 and the body, (55) 589.
 and the family, treatise, (55) 188.
 animals, ratio of births and slaughter, (53) 167.
 bacteriology, textbook, (56) 490.
 buying and markets, textbook, (53) 899.

Food—Continued.

- chemistry, (55) 188.
 chemistry and related topics, lectures on, (55) 801.
 chemistry, textbook, (56) 201.
 color industry development in United States, (56) 590.
 colors, coal-tar, certification, (54) U.S.D.A. 710.
 colors, coal-tar, chemistry and analysis, (55) U.S.D.A. 112.
 colors, studies, (57) 203.
 composition and preparation, textbook, (54) 389.
 Conservation Conference, Pan-Pacific, editorial, (51) 401.
 consumption in Japan, (58) 592.
 consumption of pseudopregnant females, (56) 665.
 consumption of rural school children, relation to health, (59) Mass. 790.
 consumption on farms, costs and standards, (57) Nebr. 685.
 consumption, production, and distribution, (52) W.Va. 493.
 control, British, during World War, (60) 888.
 control in Chicago, (54) 191.
 costs and city consumers, (56) 789.
 costs in city distribution, (56) U.S.D.A. 387.
 customs, Jewish, origin and significance, (60) 687.
 demand and supply in Fitchburg, Massachusetts, (56) 789.
 economy, treatise, (52) 258.
 effect on longevity, (60) 787.
 effect on metabolism of goat, (53) 664.
 energy, utilization and composition of gains, (56) 161.
 factors, sex differences in requirement, (53) 659.
 fallacies, common, (58) 590.
 habits in a Hungarian mining town, (55) 188.
 habits in Poland, (60) 788.
 habits of people in contrasting areas, (59) Miss. 189.
 handling, treatise, (52) 459.
 health, vitamins, treatise, (60) 891.
 human, contributions of science toward, (60) 591.
 in house refrigerator, (53) 363.
 in Providence, carload receipts, sources, (60) R.I. 86.
 industries and chemistry, symposium, (60) 891.
 industries, textbook, (59) 889.
 industry of the Nation, graphic analysis, treatise, (57) 87.
 infections and intoxications, treatise, (58) 771.
 intake of rats, age and sex differences in, (53) 573.
 intake of rats during pregnancy and lactation, (53) 573.

Food—Continued.

- intake, relation to energy factor, (59) 793.
 Investigation Board of Great Britain, report, (51) 459; (53) 260; (55) 290.
 manipulation, relation to health, (54) 590.
 materials, analysis, phenomena of fluorescence in, (58) 114.
 materials, intestinal reduction, (52) 862.
 oral administration, effect on intermediary metabolism, (52) 64.
 passage through hen, rate, (57) 567.
 plants—
 of British Guiana, (55) 290.
 of China, culture and use, (56) 390.
 of green apple aphids, (51) Me. 360.
 of Philippines, (54) 123.
 of Porto Rico, (55) 123.
 specificity, for insects, (51) 252.
 treatise, (60) 124.
 poisoning—
 at Derby, (51) 272.
 due to *Bacillus moribificans bovis*, (59) 579.
 in Aberdeen, (51) 272.
 in England, (55) 92.
 in New York City, (51) 272.
 outbreaks, (55) 577; (59) 171.
 relation to paratyphoid bacilli, (51) 169; (58) 674.
 studies, (59) 292.
 preservation, (53) 694.
 preservation by sterilization, (51) 508.
 preservation methods, manual, (56) 893.
 preservation, public health aspects, (57) 290.
 preservation, treatise, (53) 208; (54) 87.
 preservatives and coloring matter in, (53) 160.
 prices, causes, (54) 486.
 prices, report of Royal Commission, (54) 485.
 prices, retail and wholesale, (60) Ohio 183.
 problems, tropical, (51) 164.
 production within the State, (55) N.H. 688.
 production, world's, papers on, (51) 490.
 products—
 analyses, (51) Conn.State 859.
 chemistry of, textbook, (59) 108.
 conservation in cold storage warehouses, (59) 362.
 disinfection methods, (54) 753.
 Japanese, vitamins in, (59) 594.
 processing, (55) Ind. 86.
 receipts by rail and water, (58) R.I. 490.

Food—Continued.

- products—continued.
 source, chemistry, and use, treatise, (60) 89.
 textbook, (52) 794.
 treatise, (52) 258.
- receipts in Providence, (59) R.I. 679.
- recipes of Porto Rico, (55) 291; (57) 192.
- requirements for growth in rats, (58) 192, 592.
- requirements of infants, (60) 492.
- Research Institute, report, (51) 764.
- selection and expenditure in college communities, (56) 289, 290.
- selection, Red Cross course in, (52) 794.
- situation, German, and import requirements, (52) U.S.D.A. 297.
- specific dynamic action, (53) 60.
- specific dynamic action, and metabolism in children, (56) 792.
- specific dynamic action in infants, (58) 593.
- study club work, (53) 694.
- study for high schools, treatise, (55) 888.
- study outlines, (51) 494.
- supply and increasing agricultural returns, (54) 788.
- supply, economics of, treatise, (51) 291.
- supply in France during the war, (57) 785.
- supply of New England, (53) 394.
- supply, present and future, (56) 588.
- supply, world, bibliography, (53) U.S.D.A. 896.
- supply, world's, (58) 890.
- survey of Lima, (56) Ohio 183.
- tests, biological, (51) 666; (52) 762.
- values, teaching to children, (51) 164.
- Foods—
 accidental contamination, (54) 590.
- acid- and base-forming elements in, (54) 891.
- acid- and base-forming elements in, correction (57) 487.
- activation by ultra-violet irradiation, (55) 794.
- analyses, Conn.State, (53) 657; (55) 385; (57) 591; (59) 891.
- analysis methods, (51) 12.
- analysis, treatise, (52) 113; (55) 111.
- and condiments, chemical technology, treatise, (57) 787.
- and condiments, chemistry of, supplement, (51) 859.
- and condiments, composition, treatise, (55) 692.
- and condiments, examination, (57) 504.
- and cookery, handbook, (56) 491.
- and cookery, textbook, (56) 690.
- and feeding stuffs, Germany's needs and production, (58) 788.
- and health, (60) Miss. 786.
- and health, treatise, (56) 791.

Foods—Continued.

- and home making, manual, (57) 290.
- and nutrition, chemistry of, treatise, (55) 691.
- and nutrition, extension work in, (53) U.S.D.A. 899.
- and nutrition, Government publications on, list, U.S.D.A., (51) 196; (53) 260; (55) 188; (58) 590.
- and nutrition, manual, (55) 589; (56) 791.
- and nutrition, papers on, (60) 786.
- and nutrition, textbook, (58) 589; (59) 487.
- and other materials, toxicological examination, (59) 12.
- and principles of dietetics, treatise, (53) 456.
- and their treatment, effect on growth and reproduction, (53) 62.
- animal, biological value of nitrogen in, (56) 188.
- antiberiberi vitamin in, (51) 370.
- antirachitic properties, imparting, Wis., (53) 463; (56) 797.
- antiscorbutic value, determination from teeth, (57) 295.
- as sources of vitamins, relative value, (55) 293.
- benzoic acid determination in, (59) 15.
- blacktongue-preventive action, (60) 793.
- boric acid determination in, (51) 112.
- calcium and phosphorus contents, table, (52) 260.
- calcium in, variation, (55) 87.
- canned, *see* Canned foods.
- carbohydrates in, determination, (56) 111.
- Chinese, composition, (55) 592.
- Chinese, nutritive value, (60) 894.
- chlorine determination in, (56) 614.
- contamination with zinc, (51) 163.
- copper in, (56) 505; (57) 891.
- digestibility, method of study, (56) 192.
- employed in nutrition experiments, preparation, (57) 690.
- encyclopedia of, (51) 60.
- energy value, determination, (54) 205; (55) 311.
- from grains, treatise, (56) 490.
- from patent flour, digestibility, (51) 61.
- in Japan, nutritive value of proteins in, (58) 688.
- inspection, Me., (52) 258; (54) 790; (56) 86; (57) 591; (60) 289.
- inspection, index to reports, (57) Conn.State 89.
- iodine in, determination, (53) 201; (56) 312.
- iron content, (59) 687.
- irradiated, antirachitic activation, (53) 568; (54) 92, 489.

Foods—Continued.

- irradiated, effect on bone lesions of rachitic children, (55) 387.
 irradiated, effect on rickets, (55) 387, 594.
 Japanese, proteins in, relative nutritive value, (60) 291.
 Japanese, vitamins in, (60) 291.
 keeping quality, effect of temperature, (53) 363.
 manganese in, (58) 290, 411.
 manufacture and sale, laws, (51) 501.
 marketing and preparing for market in United Kingdom, (57) 286.
 marketing, college course in, (59) 889.
 metals in, (59) 391.
 mineral nutrients in, (57) 292.
 national, use for diabetic patients of foreign birth, (56) 594.
 nutrition, and health, treatise, (55) 487.
 of East Indies, proteins and vitamin A in, (52) 64.
 of India, analyses, (56) 490.
 of various races of India, (53) 59.
 oriental, nutritive value, (56) 390.
 Philippine, calcium oxide content, (57) 688.
 Philippine, preservation, (57) 193.
 Philippine, viability of intestinal bacteria in, (51) 364.
 phytin in, (55) 889.
 Polynesian, nutritive value, (58) 83.
 Porto Rican, vitamins in, (57) 690.
 potassium determination in, (56) 614.
 preparation and meal planning, manual, (57) Ill. 591.
 processed, heat penetration determinations, (59) 91, 488.
 protein value calculation, (52) 363.
 protein value in nutrition, (57) 891.
 review of literature, (57) 192.
 rich in calcium and iron, lists, (52) 64.
 sodium determination in, (56) 614.
 supplementary values, (60) 191.
 United States, Mexican market for, (55) 185.
 vitamin C determination in, Höjer's method, (60) 691.
 vitamins in, (59) Iowa 92.
 with specific action, (51) 562, 563.
- Foot maggots in cattle, (51) 383.
- Foot-and-mouth disease—
 and vaccine virus, relation, (58) 477.
 and vesicular stomatitis, differentiation, (57) 181, 182, 671.
 antiserum, preparation, (57) 770.
 appraisal of diseased animals, (51) 382.
 causative organism, morphology and cultivation, (53) 181.
 cause, (51) 680; (52) 179, 682; (53) 79.
 chemotherapy for, (56) 378, 379.
 Commission, report, (59) U.S.D.A. 672.
 control, (52) 881.
 control, newer methods, (53) 181.
 differential diagnosis, (59) 470.
 dissemination and flies, (53) 886.

Foot-and-mouth disease—Continued.

- epizootic in Denmark, (60) 74.
 experiments with small animals, (60) 269.
 from South America, prevention, (59) 778.
 immunization, (52) 778; (53) 79; (56) 378; (58) 773; (59) 471.
 immunization, dangers in, (52) 379.
 in deer, outbreak, (57) 875.
 in England, Wales, and Holland, (58) 876.
 in Europe, control, (52) U.S.D.A. 583.
 in goats, (57) 772.
 in Great Britain, (51) 283, 681.
 in Netherlands, (51) 681.
 in rats, (51) 83.
 inclusion bodies in, (56) 378.
 iodine injections for, (59) 471.
 methods of combating, (52) 778.
 notes, (54) 171; (57) 278.
 outbreak in California, (51) 181, 582; (52) 682; (55) 874, 875.
 outbreak in Great Britain, (53) 582.
 outbreaks, (52) U.S.D.A. 282; (53) 179.
 outbreaks, California and Texas, (54) 172.
 outbreaks in 1924–25, (56) 378.
 papers on, (53) 78; (57) 180, 470, 471; (60) 867.
 precautionary measures against infection, (51) 382.
 prevalence in various countries, (53) 583.
 prevention, (52) 480.
 progress report, (54) 476.
 propagation, (59) 878.
 rats as carriers, (52) 778.
 report, (53) 178.
 research, (55) 71; (59) 876.
 Research Committee, report (54) 275; (57) 77; (60) 268.
 scientific control, (51) 680.
 studies, (51) 82; (52) 682; (57) 377, 873; (58) 72, 674.
 summary, (51) 480, Utah 480.
 symposium, (51) 83; (58) 876.
 transmission by birds, (52) 282.
 transmission by flies, (59) 471.
 transmission in rodents by contact, (60) 869.
 virus, lecture and demonstration, (52) 179.
 virus, plurality, (57) 278; (60) 575.
 virus, studies, (55) 71.
 virus, tenacity, (57) 278.
 virus, viability in diseased flesh, (56) 277.
 virus virulent for rabbits, (54) 575.
- Footwear, bibliography, (57) U.S.D.A. 298.
- Forage—
 combinations, (60) Wyo. 733.
 conservation in silos, (51) 570.
 contamination with anthrax, (56) Ia. 173.
 crop diseases, (56) 541.

Forage—Continued.

- crop seed, determination of origin, (55) 534.
- Forage crops—
- after oats, comparison, (51) Miss. 134.
- analyses, (55) Ariz. 57.
- and hay, economic conference on, (55) 585.
- and summer feeding, (52) 676.
- breeding experiments, (57) 425.
- comparison, (51) Kans. 75; (53) Mo. 431.
- composition, (56) Wyo. 134.
- cultural and planting tests, (56) Kans. 822.
- culture experiments, (52) U.S.D.A. 527; (54) Can. 828; (58) 429.
- culture in India, (57) 629.
- culture in northwest, (57) U.S.D.A. 125.
- culture, papers on, (57) 627.
- dry matter determination in, (57) 426.
- ensiling, treatise, (58) 761.
- experiments, (56) Fla. 131; (59) Can. 432.
- experiments at Lodi, Italy, (54) 635.
- experiments in Philippines, (55) 434.
- for fattening hogs, Ala., (59) 663; (60) 170.
- for lambs, (52) S.Dak. 170.
- for Oregon coast counties, (51) Oreg. 529.
- for pigs, (51) 774; (54) Mo. 760; (55) Ark. 62; (56) Pa. 165, Ark. 369, Del. 370; (57) Mo. 461; (58) Ark. 357, Del. 464, Mo. 465, S.C. 669; (59) Mich. 463, Nebr. 866.
- for pigs, comparison, (52) Idaho 872; (56) S.C. 565.
- for winter feeding of cows, (60) 569.
- improvement, (57) 425; (58) 130.
- in Philippines, (54) 232.
- mineral content, (56) Fla. 821.
- of New South Wales, (52) 830.
- relation to agriculture of semiarid regions, (51) U.S.D.A. 738.
- relation to soil improvement, (51) 34.
- seeds mixture experiments in Wales, (54) 828.
- studies, (53) Nebr. 433; (54) Fla. 325; (60) Mont. 729.
- tests, (54) Wash.Col. 329; (56) Utah 525.
- tests in Philippines, (60) 327.
- variety tests, (51) Tenn. 337; (52) Wash.Col. 829; (53) U.S.D.A. 528, N.Dak. 529; (55) N.J. 31; (56) Ariz. 731; (58) U.S.D.A. 325.

Forage—

- grasses—*see also* Grasses, forage.
- culture experiments, (58) P.R. 531.
- damage from prairie dogs, (52) U.S.D.A. 250.
- fertilizer experiments, (55) Guam 131.

Forage—Continued.

- grasses—continued.
- for distribution in Philippines, list, (55) 229.
- for intercrop pastures, (60) 533.
- of western cattle ranges, (59) 661.
- tests, (59) Hawaii 626.
- variety tests, (53) 133; (56) 525; (58) 32.
- green, electrical and Italian methods of preservation, (52) Calif. 70.
- green, preservation, monograph, (60) 358.
- legumes, variety tests, (59) N.Dak. 825.
- mixtures, tests, Ill., (58) 327; (60) 223.
- phosphorus and calcium deficiencies in, (60) Mont. 720.
- plant, useful wild Brazilian, (57) 131.
- plants, (59) N.J. 325.
- breeding methods, (54) 433.
- composition, Wyo., (52) 368; (58) 530.
- culture, treatise, (52) 334.
- green, proteins of, (56) 708.
- in Argentina, (51) 771.
- in Chile, studies, (57) 525.
- in Don Region, (59) 130.
- native American, treatise, (52) 334.
- notes, (52) Fla. 224.
- nutritive value, (59) Wyo. 259.
- of Russia, (57) 525.
- perennial, culture for seed, (60) 815.
- production experiments, (54) 530.
- resources, (51) U.S.D.A. 792.
- samples, drying house for, (60) 379.
- sunflower and corn, comparison, (55) W.Va. 530.
- supply and new forage plants, (51) 34.
- types, nutritive value, (59) Calif. 728.
- weed from western Asia, tests, (57) 830.
- winter, studies, (57) 33.
- Forda spp., notes, (54) Ohio 155.
- Forest—
- administration, *see* Forestry.
- ant, red, importance to forestry, (58) 158.
- areas, burned, natural reproduction on, (59) 44.
- cover, effect on soil temperature, (56) 837.
- cover reconstruction based on soil maps, (59) Mich. 17.
- crops, cubical contents, measurements, (55) 746.
- decay, relation to length of rotation, (58) 157.
- ecology, rôle of fungi in, (57) 318.
- engineering and extraction, manual, (58) 880.

Forest—Continued.

- entomology in British Columbia, (54) 153; (59) 651.
- entomology, problems and methods, (52) 753.
- entomology, treatise, (54) 552.
- Experiment Station—
 - Appalachian, report and program, U.S.D.A., (58) 41; (59) 532.
 - Dunbar, (55) Mich. 647.
 - Lake States, report, U.S.D.A., (55) 647; (58) 41; (60) 46.
 - new, in Pacific Northwest, (51) 199.
 - Northeastern, notes, (52) 797; (56) 97.
 - of University of California, (56) 198.
 - Rocky Mountain, (55) U.S.D.A. 443.
- Experiment Stations, notes, (57) 800.
- finance, treatise, (55) 343.
- fire danger, measuring, (60) U.S.D.A. 544.
- fire protection, liability ratings in, (53) 540.
- fire season in Idaho, (53) U.S.D.A. 211.
- fire weather in central Massachusetts, (59) U.S.D.A. 715.
- fires—
 - and forest succession in Bitter Root Mountains, (60) 443.
 - and humidity, (53) 113.
 - and lightning storms in State of Washington, (57) U.S.D.A. 507.
 - and precipitation in Minnesota, (55) 539.
 - and weather, (55) 539; (57) 14, U.S.D.A. 506.
 - and weather conditions in California, (54) U.S.D.A. 342.
 - causes and protective measures, (54) Ohio 141.
 - control, (54) U.S.D.A. 743.
 - effect on annual rings of trees, (58) 240.
 - effect on land clearing and crop production, (54) Minn. 177.
 - effect on plant succession, (53) Ohio 745.
 - effect on vegetation in north Finland, (57) 46.
 - factors affecting, (56) 239.
 - in California, (54) U.S.D.A. 43, 541.
 - in intermountain region, (51) U.S.D.A. 541.
 - in Minnesota, (59) 143.
 - losses from, (53) Ohio 798.
 - natural reproduction after, (54) 43.
 - papers on, (60) 511.
 - prevention, meteorological studies in, (57) 14.

Forest—Continued.

- fires—continued.
 - prevention, school handbook, U.S.D.A., (57) 290, 590, 687; (59) 488.
 - relation to humidity, (55) 717; (60) 206.
 - rôle of weather forecasts in predicting, U.S.D.A., (53) 211, 718. studies, (54) 43.
- floor, burning, effect on jack pine land, (60) 511.
- flora in Harvard Forest, (58) 645.
- fungi, life history studies, (60) 838.
- genetics and disease resistance, (57) 821.
- growth, effect of biological factors, (55) 839.
- growth, effect of carbon dioxide, (54) 817.
- handbook for teachers, (57) U.S.D.A. 486.
- insects—
 - damage, estimating, (53) 358.
 - importance to biologist and practitioner, (58) 159.
 - manual, (58) 57.
 - of Australia, (58) 159.
 - of British Columbia, (59) 651.
 - of central Europe, textbook, (51) 253.
 - of Sweden, (55) 759.
 - of western Europe, (57) 854.
 - repression by Palearctic birds, (52) 554; (53) 652.
 - treatise, (54) 552.
- insurance, application in Michigan, (60) Mich. 237.
- lands, drainage, (56) Wis. 778.
- lands, taxation, (55) Ohio 143.
- litter, fauna of, (55) 854.
- management in northern India, (53) 42.
- manual, (52) 345.
- mensuration, treatise, (53) 244.
- nursery, college, operation, (54) Mich. 541.
- nursery practice, developments, (51) 842.
- officers' handbook, (51) 649.
- officers of British Empire, list, (53) 846.
- pathology in Great Britain and Denmark, (59) 247.
- pathology, notes, (52) Can. 846.
- pests, effect of arsenicals, (59) 853.
- plantation experiments, (60) 641.
- plantations—
 - accuracy in measurement, (59) 44.
 - cost of establishing and carrying, (59) Mich. 534.
 - cultivation, (52) Mich. 742.
 - mixed v. pure, (56) Ohio 538.
 - rainbow, report, (52) Conn.State 643.
 - wind and exposure as factors, (53) 441.

Forest—Continued.

- planting in intermountain regions, (52) U.S.D.A. 643.
- planting in northern Rocky Mountains, stock for, (60) 47.
- policy for Oregon, (52) 241.
- policy for South Africa, (53) 744.
- policy of United States, (51) 347.
- policy on private estates, (51) 750.
- production, continuous, solution of forest problems, (60) 342.
- productivity, relation to calcium, (60) 236.
- products, manufacture and use, (58) 143.
- products, 1922, (51) 245.
- products, utilization, national conference on, (53) U.S.D.A. 347.
- range plant study, instructions for, (54) U.S.D.A. 541.
- research in Finland, (58) 143, 336, 841.
- research in India, (57) 243.
- research, national program, (58) 841.
- research, statistical methods in, (51) 443.
- reserve tax laws, discussion, (60) Mich. 442.
- resources of Canada, (56) 239.
- resources of Czechoslovakia, (51) 750.
- resources of Finland, (53) 347.
- resources of Surinam, survey, (53) 540.
- resources of world, (58) U.S.D.A. 843.
- roads and trails, administration, U.S.D.A., (54) 876; (57) 776.
- seedling plats, fertilizer experiments, (55) Mich. 343.
- seeds, production and distribution, (57) Calif. 242.
- soils—
 - acidity, (55) 621; (58) 17.
 - air capacity and acidity, (54) 121.
 - ammonifying and nitrifying power, (59) Idaho 718.
 - chernozem, degradation into podsol soils, (54) 119.
 - dead covering, humification, (55) 812; (56) 621.
 - effect of tree products, (58) 516.
 - formation of Bleichsand and Orterde in, (53) 115.
 - nitrates in, (54) 120.
 - nitrogen fixation in, (52) 512.
 - notes, (60) Conn.State 716.
 - of Czechoslovakia, composition, (52) 511.
 - papers on, (60) 513.
 - physical properties, (53) 113.
 - profile studies, (53) 213.
 - transformation of organic matter in, (59) 814.
- species, broadleaf, in Finland, (54) 840.
- species, exotic, of Bulgaria, acclimatization, (54) 143.

Forest—Continued.

- species injury from parasitic fungi, (52) 646.
- species, measurement of physical factors in, (60) 236.
- sprout hardwood, growth, (59) N.Y. Cornell 235.
- stands, even-aged, normal stocking, (60) 48.
- survey of Illinois, (55) 539.
- Taxation Inquiry, progress report, (60) U.S.D.A. 828.
- trees, *see* Trees.
- types in central Rocky Mountains, (52) U.S.D.A. 239.
- types in farm woodlots, (59) Minn. 443.
- types of Lake States, classification, (54) 141.
- types on Cloquet Forest, Minnesota, (60) 443.
- types, theory, (57) 46.
- zoology, Danish, treatise, (53) 651.
- Forestation—
 - for flood control, (51) 347.
 - in Ireland, land acquisition problems, (58) 79.
 - on peat types, (54) 839.
 - studies, (60) P.R. 742.
- Forestry—
 - aerial photography in, (52) 345.
 - almanac, (52) 241; (55) 539.
 - and national forests, (51) U.S.D.A. 540.
 - application of soil classification to, (52) 17.
 - as a profession, (57) U.S.D.A. 739.
 - at Northern Great Plains Station, (53) U.S.D.A. 540.
 - Conference of British Empire, report, (51) 147.
 - Congress, World's, notes, (52) 799; (54) 799.
 - cooperative, in Rumania, (59) 336.
 - ecological studies, value in, (55) 839.
 - education in United States, (51) 298.
 - facts, (57) U.S.D.A. 342.
 - farm, (59) Idaho 745.
 - for agricultural students, (59) 336.
 - handbook, (57) 45.
 - in Ajmer-Merwara, (51) 44; (53) 244.
 - in Alabama, (54) 541.
 - in Baluchistan, (54) 447.
 - in Bengal, (53) 244.
 - in Bihar and Orissa, (53) 145.
 - in Bombay, (51) 44; (53) 645.
 - in British Columbia, (52) 241; (53) 644; (55) 745.
 - in British Empire, (56) 839.
 - in British Guiana, (55) 443.
 - in British Honduras, (55) 344, 539.
 - in British India, (52) 444; (54) 645.
 - in Brunei and Labuan, (52) 444.
 - in Burma, (51) 45; (53) 146.
 - in California and fire losses, (54) 541.
 - in Canada, (53) 145; (60) 235.

Forestry—Continued.

- in central hardwood region, (58) U.S.D.A. 40.
- in Central Provinces, (51) 146; (52) 644; (53) 441.
- in China, (51) 844.
- in Connecticut, (51) Conn.State 145.
- in Coorg, (53) 146; (54) 447.
- in Denmark, handbook, (56) 838.
- in Douglas fir region, (58) U.S.D.A. 40.
- in Dutch East Indies, (52) 444.
- in Europe, (51) 243.
- in Federated Malay States, (52) 241.
- in Finland, (59) 840.
- in Finland, papers on, (58) 440.
- in Great Britain, (51) 750; (52) 743; (53) 645.
- in Haiti, (58) 700.
- in Iceland, (51) 44.
- in Idaho, (52) Idaho 842.
- in India, (51) 649; (53) 441; (55) 443.
- in Indiana, (51) 648.
- in Jammu and Kashmir, (54) 840.
- in Louisiana, (51) 540.
- in Madras, (51) 751; (54) 244.
- in Maine, (51) 540.
- in Malay Peninsula, (52) 144.
- in Massachusetts, (51) 649.
- in New Brunswick, (51) 243.
- in New Hampshire, (53) 145.
- in New South Wales, (54) 841; (55) 241.
- in New York State, (51) 347.
- in New Zealand, (52) 743; (54) 841.
- in Nigeria, (51) 347; (53) 43.
- in Northwest Frontier Province, (51) 347, 649, 844; (53) 244.
- in Ohio, Ohio, (51) 444; (55) 143; (57) 144.
- in Ontario, (53) 645; (59) 534.
- in Oregon, (52) 241; (53) 145.
- in Pacific Northwest, (51) 640.
- in Philippines, (52) 843; (54) 244.
- in Porto Rico, (54) P. R. 645.
- in Province of Assam, (52) 843.
- in Punjab, (51) 146; (54) 447.
- in Queensland, (51) 44; (52) 843; (54) 244.
- in Rumania, (51) 94.
- in Shansi, (54) 840.
- in Siberia, (54) 447.
- in South Australia, (53) 441; (56) 646.
- in South Carolina, (54) S.C. 645.
- in Tasmania, (51) 649.
- in Uganda, (52) 241, 843; (53) 846.
- in Union of South Africa, (53) 645.
- in United Provinces, (52) 345.
- in Virginia, Lee Co., (54) 447.
- in war-devastated regions of France, (54) 447.
- in Washington, (53) 42.
- in Wisconsin, (60) 236.
- industrial, development, (55) 539.
- insects and mammals of interest to, (57) 160.

Forestry—Continued.

- investigations, statistical methods in, (54) 541.
 - laws, State, 1922-1923, (55) U.S.D.A. 344.
 - manual, (51) 842; (55) 40; (56) 538.
 - marginal ditch and swamp drainage for, (58) 240.
 - nursery practice, (55) Mich. 343.
 - of Assam, (55) 41.
 - of Nigeria, (55) 41.
 - organizations and activities, (56) 646.
 - practical, treatise, (52) 345.
 - practices for landowners and lumbermen, (55) U.S.D.A. 144.
 - present-day situation, (60) 441.
 - primer, (54) 645.
 - problem in Great Britain, (60) 742.
 - program for women's organizations, (56) U.S.D.A. 892.
 - research aided by McSweeney-McNary Act, (59) 407.
 - research at Michigan Station, (59) Mich. 444.
 - research in Belgium, (53) 42.
 - Schlich's manual, (53) 42.
 - silvicultural systems, (60) 236.
 - situation in United States, (51) U.S.D.A. 347.
 - studies, (55) Miss. 647; (56) Pa. 142; (57) Mich. 637; (59) Calif. 745, Ohio 234; (60) Meut. 742.
 - survey of Illinois, (52) 843.
 - textbook, (52) 196.
 - treatises, (54) 839.
 - use of line plat system in, (56) 646.
 - world, papers on, (56) 239.
 - yearbook, New York, (55) 344.
 - yearbook statistics, (51) U.S.D.A. 795.
- Forests—
- and floods, (58) U.S.D.A. 744.
 - and forest products, (58) U.S.D.A. 440.
 - and ground cover of northeastern Arizona, (56) 744.
 - animal ecology of, (57) 754.
 - California coniferous, succession in, as affected by fire, (52) 144.
 - control, governmental, development in United States, (60) 544.
 - destruction and slope denudation in China, (55) 647.
 - effect on climate, rainfall, etc., (58) U.S.D.A. 440.
 - effect on rainfall and run-off, (59) 507.
 - effect on stream flow, (59) U.S.D.A. 477.
 - fire hazards in, determining, (51) 649.
 - German, ground plants in, (55) 540.
 - hardwood, methods of cutting in, (60) U.S.D.A. 47.
 - hardwood, reproduction in southern Connecticut, (60) 826.
 - in northern Michigan, species composition, (54) 446.
 - Knysna, phenological data, (57) 440.
 - mapping, use of airplane in, (52) 345.

Forests—Continued.

- national—*see also* National forest.
- accessions and changes in, (52) 842.
- control of bark beetles in, (55) 857.
- grazing periods and forage production, (56) U.S.D.A. 227.
- harvesting timber crops in, (56) U.S.D.A. 239.
- in Oregon, recreational features, (51) U.S.D.A. 649.
- management, (59) U.S.D.A. 142.
- management, predicting second cut in, (56) 240.
- of Arizona, (52) U.S.D.A. 444.
- of California, (57) U.S.D.A. 342.
- of Colorado, (59) U.S.D.A. 635.
- of Idaho, (55) U.S.D.A. 443.
- of Utah, (56) U.S.D.A. 538.
- of Wyoming, (57) U.S.D.A. 537.
- rôle in development of intermountain region, (54) U.S.D.A. 645.
- telephone system in, (55) U.S.D.A. 683.
- trespass on, (55) U.S.D.A. 443.
- value to Montana, (55) U.S.D.A. 143.
- new growth percentage formula, (56) 646.
- of Belgium, history, (57) 836.
- of Bombay, popular account, (53) 645.
- of British Guiana, (53) 145.
- of Burma, (55) 540.
- of Burma, airplane survey and mapping, (54) 840.
- of Cyprus, (54) 840.
- of French Guiana, (54) 143.
- of Illinois, Vermilion Co., (53) 744.
- of India, (55) 648.
- of Indo-China, (57) 441.
- of Japan, survey, (56) 838.
- of Lee County, Virginia, (54) 447.
- of Mississippi watershed, part in flood prevention, (60) U.S.D.A. 145.
- of Moscow Province, studies, (60) 48.
- of Nigeria, composition and distribution, factors affecting, (55) 648.
- of North Carolina, (51) 649.
- of Papua and New Guinea, (54) 840.
- of Siberia, (54) 447.
- of Suomi, Finland, (60) 145.
- of the Gold Coast, (58) 143.
- of the world, statistics, (52) 841.
- of tropical America, treatise, (52) 345.
- of valley coal fields of Virginia, (53) 145.
- of West Java, reproduction and cutting in, (55) 746.
- protection against animals, (60) 647.
- protection by natural methods, (60) 157.
- protection, lessons in, (51) 897.
- protective association, work, (52) 241.
- regeneration by seed sowing, (53) 540.
- regeneration in north India, (55) 840.

Forests—Continued.

- reproduction, factors affecting, (52) 540.
- rôle of insects in, (59) 856.
- State, new, (55) Ohio 97.
- upland, of southern New England, successions in, (60) 236.
- Forficula auricularia, *see* Earwig, European.
- Formaldehyde—
 - action on wool, (57) 95; (59) 97.
 - and serum proteins, reaction between, (52) 801.
 - dusts for seed treatment, (58) Ohio 650.
 - effect on plants, (53) 326.
 - effect on vitamin content of milk, (51) 580.
 - effect on wheat, (51) 28.
 - for lettuce seed bed treatment, (56) Pa. 50.
 - for potato seed treatment, (52) Mont. 447.
 - for smut control, (54) 47.
 - fungicidal value, (55) 544, Oreg. 650.
 - hot, for potato seed treatment, (52) Kans. 445.
 - in marine products, (55) 306.
 - in wood smoke and smoked foods, (57) 505.
 - injury of onion seedlings, (54) 545.
 - oral administration, value, tests, (54) 71.
 - photochemical production, (53) 26, 125.
 - seed treatment, water and lime-water baths following, (55) 845.
 - tank for onion drill, (53) 852; (54) 49.
 - treatise, (59) 108.
 - treatment for oat smut, (51) 542; (55) 845; (60) Ohio 746.
 - treatment of soil for lettuce diseases, (55) 848.
 - v. copper carbonate for smut control, (51) Wash.Col. 149.
 - v. sulfuric acid for damping-off in seed beds, (51) 540.
- Formalin, *see* Formaldehyde.
- Formates, alkyl and alkylene, for insect fumigation, (59) 856.
- Formic acid separation in food products, (56) 505.
- Formic aldehyde, effect on bean plant, (53) 521, 726.
- Formica ulkei, life history and habits, (59) 159.
- Formol, action on aerobic and anaerobic organisms, (60) 665.
- Foulbrood—
 - American—
 - and European, notes, (57) N.J. 758.
 - causal agent, (59) Can. 358.
 - chlorine disinfectant for, (58) 62.
 - control, (51) 663; (53) 259, Conn. State 450; (55) Conn.State 251, Calif. 258; (59) 659.

Foulbrood—Continued.

- American—Continued.
 development, (51) 858.
 diagnosis, Kelty's method, (60) 655.
 disinfecting combs infected with, (60) 563.
 distribution, (55) 252.
 immunity of bees to, (54) 462, 558.
 notes, (55) Calif. 352.
 papers on, (54) 59; (58) 344.
 spread, (53) 259.
 studies, (56) Can. 362, Wyo. 553.
 transmission by bee moth caterpillars, (52) 758; (60) 655.
 treatment, (52) 859.
 area clean up of, (59) 461.
 control, (51) Conn.State 852, Wis. 453.
 disinfectants for, (53) 655, 860.
 disinfecting solutions, surface tension, (59) Wyo. 561.
 European, etiology, (58) 561.
 infected combs, sterilization, (55) 56, U.S.D.A. 159; (60) 655.
 inspection, (59) Tex. 759.
 law and revised regulations, (53) Tex. 57.
 papers on, (54) 158; (56) 461.
 recognition and treatment, (51) 764.
 treatment, (54) 663.
 treatment with alcohol-formalin, (54) 757.
 work, (57) Tex. 162.

Foundation—

- pile, head bond and anchorage tests, (60) U.S.D.A. 481.
 planting, treatise, (57) 439.
 test loads, effect of scale, (54) 580.

Foundations, abutments, and footings, treatise, (52) 887.

4-H clubs, *see* Boys' clubs and Girls' clubs.

Fowl—

cholera—

- account, (52) Ill. 86.
 and fowl typhoid, differential diagnosis, (53) 786.
 bacteriophage of, (56) 575.
 diagnosis, double sugar medium for, (58) 579.
 immune serum for, (51) Nebr. 879.
 immunization, studies, (51) 184; (55) 374; (57) 378.
 in rabbits, immunization, (51) 85.
 notes, (53) 279; (54) Nebr. 379.
 papers on, (55) 177; (59) 370.
 studies, (52) Calif. 82, Kans. 485; (54) N.C. 176; (55) 579; (59) N.J. 373.
 summary, (52) N.J. 181.
 vaccines and serums for, preparation, (59) 671.
 diphtheria, cause, prevention, and cure, (52) 886.
 disease in Palestine, leucocyte inclusions in, (53) 386.

Fowl—Continued.

- muscle, distribution of protein in, (57) 762.
 paralysis, *see* Paralysis.
 pest—
 European, in United States, (52) 782; (53) 786.
 European, summary, (55) 74.
 in geese, (56) 176.
 studies, (53) 786; (55) Ind. 69; (56) 279.
 virus, studies, (58) 473, 480.
 virus, susceptibility of pigeons to, (59) 371.
 pests, papers on, (55) 177.
 plague—
 immunity, production, (60) 180.
 new chicken disease in America, (53) 183.
 new, in Japan, (53) 82; (60) 72.
 notes, (56) 575; (57) N.J. 79.
 paper on, (55) 574.
 summary, (53) N.J. 482.
 virus, experiments with, (59) 581.
 pox—
 and vaccinia, paper on, (59) 173.
 and vaccinia viruses, cytological studies, (59) 175.
 immunization, (53) 785; (55) 579; (56) 679; (59) 476; (60) Ohio 479, 671.
 in England, summary, (60) 671.
 inclusion bodies, infectivity, (60) 875.
 prevention by immunization, (58) 179, 282.
 studies, (56) 279; (58) 776.
 vaccines and bacterins for, (56) Mass. 381.
 virus, cultivation, (59) 582.
 virus strains, studies, (58) 880.
 tapeworm, anatomy and life history, (57) 77, 879.
 tick, longevity, (52) 258.
 tick, origin and spread, (56) 159.
 typhoid—
 account, (52) Ill. 86.
 among turkeys, (53) Calif. 477.
 and bacillary white diarrhea, identity, (59) 477.
 and fowl cholera, differential diagnosis, (53) 786.
 bacteria, feeding to chickens, mortality following, (60) 181.
 bacteriological study, (52) 782.
 bacteriophage with, (57) N.C. 280.
 breeding for resistance, (59) Iowa 80.
 control, bacteriophage in, (56) Del. 377.
 diagnosis and control, (54) 579.
 diagnosis, double sugar medium for, (58) 579.
 dissemination and control, (51) 883.
 epidemic in Yorkshire, (58) 282.
 history, (58) 282.

Fowl—Continued.

- typhoid—continued.
 in Algeria, (51) 682.
 in baby chicks, (57) N.J. 79.
 in Chosen, studies, (58) 580.
 in Rumania, (57) 473; (58) 282.
 inheritance of resistance to, (59) 278; (60) 181, 726.
 intradermal reaction in, (57) 473.
 notes, (53) N.C. 786; (57) 674; (59) N.J. 373.
 papers on, (59) 370.
 strains, comparison, (54) 279.
 studies, (54) N.C. 176; (57) Calif. 281, N.J. 577; (58) 473, Del. 480, Del. 777.
 transmission through eggs, possibility, (54) 579.
 vaccination against, (55) 275.
 vaccination, effect on agglutination test for diarrhea, (58) 179.
 vaccine for, (53) N.C. 889.

Fowler's solution—

- anthelmintic value, (55) 272.
 effect on animals, (56) Ill. 277.
 effect on reproduction in rabbits, (56) Ill. 363.
 for fitting livestock, effect, (53) 571.
 injury to reproductive cells, (54) Ill. 357.

Fowls—see also Chickens, Hens, Poultry, etc.

- abscess in feet of, (56) 280.
 anatomy, (57) 280.
 Australian Black Orpington, origin, (55) 65.
 autosomal linkage in, (60) 31.
 biometrical measurements, (56) 669.
 blood pressure in, (54) 175.
 breed characteristics in crosses, (56) 430.
 caponizing, directions, (55) N.J. 367.
 case of lateral asymmetry in, (60) 632.
 castration, effect of feather characteristics, (58) 427.
 cecal abligation in, (56) 176.
 chromosome number, (58) 823.
 disease of wattles, (59) 371.
 effect of doses of thyroid gland, (54) 470.
 effect of insulin, (55) 770.
 effect of thyroid and thymus feeding, (60) 532.
 female, anomalous appearance of male sex characters, (56) 820.
 female, inheritance of spurs in, (55) 820.
 gaseous metabolism during polyneuritis, (56) 696.
 gonads of, histological studies, (53) 329.
 hybrid, pigmentation of feathers in, (60) 429.
 ileocolic valve and caecal diverticula in posterior intestine, (55) 166.
 inheritance of rumplessness in, (54) 27.

Fowls—Continued.

- inheritance of sex-linked barred pattern, (54) 228.
 inheritance of shank colors in, (55) 820.
 linkage relations in sex chromosome, (54) 325.
 metabolism in, (53) 172.
 modification by sexual hormones, (53) 130.
 normal histology, (53) 279.
 of the world, breeds and varieties, treatise, (51) 675.
 oogenesis in, (55) 367.
 origin and early development, (57) 175.
 paralysis of, (54) R.I. 679.
 parasites of, (58) P.R. 574.
 plumage characteristics, relation to gonadic structure, (55) 431; (57) 221.
 reproduction in, (59) 361.
 reptilian, (55) 327.
 Rhode Island Red, inheritance of plumage color in, (55) 820.
 rumplessness in, (54) 322, 526.
 secondary sex characters in, determination, (53) 130, 632.
 selective fertilization in, (58) 128.
 sex determination at hatching, (60) 728.
 sex in, Mendelian nature of, (55) 431.
 sex reversal in, (58) 827.
 sex sterility in, (60) 129.
 somatic segregation in, (55) 431.
 Sussex, popular account, (56) 669.
 variolous, diphtheric affection of, (56) 279.

Fox—

- arctic, seasonal changes in coat color, (60) 220.
 black, industry in Ontario, (59) 577.
 blue, farming in Alaska, (54) U.S.D.A. 256.
 farming, importance of diseases in, (56) Wis. 774.
 farming, theory and practice, treatise, (56) 769.

Foxes—

- intestinal parasites, use of vermifuges for, (59) 577.
 iodine vermicide pills for, (57) 879.
 lungworms in, (53) 787; (60) 876.
 new anthelmintic for, (57) 871.
 raising, (54) 274.
 roundworm in, (53) Wis. 479.
 salmon poisoning in, (55) 176.
 silver, disease epidemic among, (58) 679.
 silver-black, lungworms in, (55) Oreg. 677.
 temperature, pulse, and respiration, (51) 385.
 tetrachlorethylene treatment, (57) 80.
 Foxglove aphid, seasonal history and food plants, (60) Me. 757.

Foxtail—

- bacterial disease, notes, (52) Ark. 148.
- grass downy mildew, studies, (59) 342.
- grass leaf spot, notes, (58) 647.
- meadow, protein in, effect of frequency of cutting, (59) 129, 328.
- millet, inheritance in, (53) 831.
- seed, green, effect of heat, (56) 433.
- spraying, (59) Calif. 781.

Fractionating columns, (71) 309.

Fragaria, cytological and genetic studies, (60) 125.

Francilia, new genus, erection, (51) 661.

Frankliniella—

- bispinosa, studies, (54) Fla. 351.
- occidentalis affecting apples, (58) 558.
- occidentalis, notes, (55) 659.
- spp., notes, (54) Fla. 257.
- tritici, *see* Flower thrips.
- tritici bispinosa, control, (52) Fla. 250.
- tritici bispinosa, notes, (56) Fla. 855.

Freemartins—

- development of genitalia, (52) 130.
- studies, (60) 32.

Freezing and death by cold in plants, (51) 733.

Freight rates—

- index numbers, (54) N.Y.Cornell 883.
- measurement, (53) 294.
- on dairy products, (56) Ohio 285.
- on farm products, index numbers, (56) Ohio 182.
- relation to agriculture, (59) U.S.D.A. 183.

Fresno and wheel scraper work, value of foreman on, (55) U.S.D.A. 278.

Fresnoes, cost of grading with, (52) U.S.D.A. 184.

Frit fly, *see* *Oscinella frit* and *Oscinis frit*.Frog as host of *Echinostomum conoideum*, (52) 584.

Froghopper—

- blight of sugar cane in Trinidad, (58) 455.
- Investigation Committee of Trinidad proceedings, (60) 650.

Frogs—

- as insect collectors, (53) 357.
- sex differentiation in, (53) 524.

Frost—

- blister of vegetables, (57) 50.
- injury to apples, (55) Ohio 451.
- injury to fruit trees, (55) N.Mex. 439.
- on cranberry bogs of New Jersey, (51) U.S.D.A. 617.
- protection by overhead irrigation, (54) 540.
- protection devices, development and present status, (54) U.S.D.A. 115.
- protection of orchards from, (54) 13.
- protectors for early planting, (53) Mich. 341.
- protectors for plants, (55) Mich. 837.
- protectors, types, effect on plant growth, (59) Mich. 439.
- rings in forest trees, (56) 427.

Frosts—

- insulating value of burlap against, (56) 239.
- predicting, (56) 15.

Fructose—

- absorption from intestine, (51) 559.
- effect on plants, (51) 224.
- utilization by fungi, (53) 123.

Fruit—

- acids, effect on jelly flavors, (56) 589.
- acids, notes, (60) 786.
- and vegetable family budget, (55) 592.
- and vegetable industry, relation to other types of farming, (55) U.S.D.A. 784.
- breeding, (55) Minn. 742; (56) Minn. 441; (58) Can. 836, Can. 837; (60) Ill. 229.
- breeding, chromosome studies, value, (54) 629.
- breeding farm, report, (60) 541.
- breeding methods, (57) N.Y.State 237.
- breeding, progress, (55) 836; (58) 138; (60) 41.
- breeding, record system for, (56) 441.
- breeding, value of homozygous species, (60) 528.
- brown rot, studies, (53) 151.
- bud differentiation in deciduous fruits, (53) Calif. 439.
- bud formation—
 - and growth, (56) 642.
 - and spur composition, (56) 835.
 - experiment station investigations on, (52) U.S.D.A. 442.
 - relation to composition of fruit spurs, (55) N.H. 833.
 - relation to rootstock growth, (60) 43.
 - studies, (51) N.H. 141; (54) 740; (55) Oreg. 643; (58) Ark. 331.
- bud sports, (60) Mich. 440.
- by-products, digestibility, (58) 761.
- cast in woody plants, (57) 321.
- crop pests, use of poultry against, (58) 756.
- crops, winter injury, (52) Wash.Col. 845.
- cuttings, rooting capacity in greenhouse, (52) Calif. 40.
- diseases and pests, (55) U.S.D.A. 741; (58) 756.
- diseases in Illinois, (53) 547.
- districts of Argentina free from fruit fly, (58) 350.
- farms, child labor on, (52) 591.
- flies—
 - breeding in capacity, (58) 665.
 - Ethiopian, keys, (52) 855.
 - in cherry orchards, control, (57) 853.
 - notes, (55) 253.
 - of wild olives, (59) 456.
 - South African, biological notes, (59) 456.

Fruit—Continued.

- fly—
 control, (54) 757.
 control by cold storage, (51) 661.
 hibernation and parasitism, (54) 57.
 in Queensland, studies, (55) 763; (56) 361; (58) 857.
- fly, Mediterranean—
 baiting and trapping experiments, (60) 562.
 description and control, (54) 260.
 in Almeria, Spain, and embargo on grapes, (53) 454.
 in Australia, (51) 553; (52) 757.
 in Hawaii, (55) 558.
 in Palestine, (53) 654.
 in Victoria, eradication, (53) 257.
 notes, (52) 853.
 parasite of, breeding methods, (60) 847.
 poisoning, (54) 260.
 summary, (53) 51; (58) 263.
 trapping experiments, (57) 167.
 winter trapping, (52) 757; (54) 556.
- fly, Mexican—
 notes, (59) Tex. 759.
 quarantine control work in Texas, (58) 350.
 situation in Rio Grande Valley, (59) 357.
 studies, (58) 163.
 summary, (59) 860.
- fly situation in Spain's grape area, (58) U.S.D.A. 759.
- fly, studies, (51) 763; (53) 362.
- fly, West Indian, in Argentina, (58) 163.
- fly, West Indian, notes, (58) 57.
- formation in vegetable crops, nutritional factors, (58) 738.
- grafts, variation in growth, (53) 843.
- Growers' Convention of California, entomologists' meeting, report, (59) 552.
- growers cooperative organization of California, (60) 681.
- industry, (55) U.S.D.A. 741.
- industry and prices in Canada, (52) 640.
- industry, crown gall problem in, (54) 452.
- industry in Canada, (54) 537.
- industry in Rhode Island, economic phases, (56) R.I. 689.
- industry of United States, effect of climate and weather, (53) 111.
- inhibitory effect on vegetation, (53) 142.
- investigations, Hudson Valley, (54) N.Y.State 538.
- jellies, *see* Jellies.
- juice concentrates, preparation, (54) Calif. 12.

Fruit—Continued.

- juices—
 and fruit juice beverages, preparation, (59) Calif. 488.
 carbonated beverages from, (52) Calif. 14.
 clarification and filtration, (59) 713.
 effect of storage on antiscorbutic value, (53) 567.
 heat penetration during processing, (59) 91, 488.
 jelling, (53) 209; (60) Del. 790.
 manufacture, (55) U.S.D.A. 787.
 pectinous, extraction and clarification, (53) Oreg. 810.
- maggot affecting cherries, (52) West. Wash. 56.
- nibbler, trapping, (53) 257.
- pickers, seasonal, housing in Scotland, (52) 191.
- pink rot, notes, (57) 154.
- plants, fertilizing, unusual results, (54) 740.
- products, artificially colored, determination of acidity, (56) 506.
- products, chemical investigations, (55) 202.
- ripe, brown rot in, control, (52) Calif. 49.
- rot fungi, action of salts on, (57) 649.
- rots, notes, (56) 748.
- rotting diseases, (56) 446.
- seeds, storage and germination, N.Y. State, (52) 46, 442.
- soil surveys, (57) 809.
- spur composition, relation to fruit bud formation, (56) 835.
- spur, composition, variation in, (56) 741.
- spurs, chemical examination, (55) Iowa 535.
- stocks and scion compatibility, (60) 141.
- stocks—
 classification, (60) 340.
 clonal selection in, (60) 528.
 discussion, (51) 240.
 effect on variety, (53) 143.
 propagation, (51) 344.
 propagation by stem cuttings, (57) 238.
 studies, (59) Nebr. 832.
 uncongentiality in, (56) 141.
- testing, studies, (53) Minn. 140.
- trade of United Kingdom, (57) 287.
- transportation, trucks as factor, (59) U.S.D.A. 882.
- transportational diseases, cause, (51) Mich. 149.
- tree—
 bark canker, notes, (57) 53, 649.
 brown rots, studies, (60) 245, 551.
 burrknots, (58) 244.
 canker, European, notes, (55) Oreg. 650.
 chlorosis, cause, (55) 550.

Fruit—Continued.

tree—continued.

- chlorosis studies, (53) N.Mex. 146; (57) 750.
 die-back, notes, (57) 53, 649; (58) 442.
 diseases, (54) 46; (57) 448; (58) 244.
 diseases and pests, control, (60) 350.
 fungus diseases in Ireland, (57) 649.
 fungus diseases in New Zealand, (57) 649.
 heart rot, notes, (55) Oreg. 650.
 insects, control, (60) 557.
 insects, control, general principles, (59) 553.
- tree leaf roller—
 control, (51) 553; (52) Mont. 453, Utah 752, Idaho 851; (54) Idaho 56; (55) 54, Utah 557; (56) Mont. 153; (57) 855; (58) 256.
 effect of low temperatures, (55) Idaho 853.
 eggs, toxicity of oils to, (59) Idaho 757.
 in British Columbia, (53) 155.
 in western New York, (60) N.Y. State 756.
 life history and habits, (58) N.Y. State 856.
 notes, (53) 859; (57) 854.
 paper on, (55) 455.
 studies, (52) N.Y.State 552; (57) Idaho 755.
 susceptibility to insecticides, (56) N.Y.State 251.
- tree shoots, winter hardiness, (60) Wash.Col. 820.
- tree sour sap, notes, (59) Calif. 746.
- tree stocks, production in Southern States, (60) 42.
- tree white root rot, studies, (59) 245.
- trees—
 Armillaria root rot, (55) Calif. 344.
 arsenical injury, (55) N.J. 655.
 bush form, (51) 839.
 culture, (53) 641.
 drupaceous, gumming of, (57) 54.
 dwarf, growth and fruitfulness in, (58) 839.
 dying in Hudson Valley, (52) N.Y.State 543.
 effect of grass, (53) 842.
 effect of oil sprays, (51) 442.
 fertilizer experiments, (52) 140; (54) 643.
 for Iowa, (52) Iowa 442.
 grafting, budding, and care, (54) Mo. 38.
 grafting, studies, (56) Wis. 740.
 in full bloom, spraying and dusting, (56) 462.

Fruit—Continued.

tree—continued.

- in Hudson Valley, dying, (54) N.Y.State 543.
 in Maltese Islands, (51) 40.
 in mild climate, rest period, (52) 45.
 in winter, root growth, (55) Oreg. 643.
 irrigation studies, (53) Calif. 436.
 judging, score cards for, (56) 790.
 manual, (54) 739.
 number of flowers per cluster, (60) 439.
 nutrition, physiology, (55) 323.
 physiology of, studies, (58) 37.
 planting and thinning distances, (56) Calif. 534.
 pollination studies, (57) 535.
 propagation, (55) Md. 340; (56) 740; (59) Wash.Col. 836.
 propagation and top-working, (51) N.J. 644.
 pruning, (53) Calif. 37; (56) Ariz. 739; (57) Ariz. 237.
 pruning, treatise, (53) 641.
 pruning v. disbudding, (54) 38.
 pythiaceus infection, studies, (58) 52.
 response to treatments, catalase activity as measure, (60) 43.
 rest period, effect of sprays, (53) 240.
 ringing, studies, (60) 42.
 ringing, technic and value, (57) 43.
 secondary dormant buds, origin, (54) 740.
 seed, diseases and control, (54) 252.
 self-pollination, (60) 439.
 spraying, (55) 550; (59) Nebr. 743.
 spraying for plant diseases, (59) 244.
 sterility in Russia, (58) 642.
 stone, fungi associated with die back in, (52) 149.
 top-working, (52) 640.
 transpiration, effect of oil sprays, (58) 232.
 transplanting, (57) Mo. 42.
 variation in yield, (52) Me. 428.
 vegetative reproduction, (57) 138.
 winter injury, (54) Wash.Col. 841; (56) Wash.Col. 540; (58) 41.
 winter injury and sour sap disease, (52) Calif. 49.
- wipers for removal of arsenical residues, (56) Wash.Col. 541.
 worm, oriental, notes, (55) 759.
- Fruits—
 American, treatise, (52) 342.
 and the fruit trade, treatise, (55) 645.
 and vegetables, distribution, alleged combine in, investigation, (54) 285.

Fruits—Continued.

- and vegetables, effect of paper wrap-
pers, (59) Mich. 41.
- arsenical residue on, studies, (59)
Wash.Col. 39.
- blooming data, (51) N.J. 643.
- British wild, identification, (57) 535.
- California standards for, (60) 682.
- canned, cut-out tests, (60) Oreg. 790.
- canned, popular bulletins on, (59)
389.
- canning—*see also* Canning.
manual, (54) 87.
methods, (54) 890.
- carload shipments of, U.S.D.A., (53)
91; (57) 88.
- car-lot shipments and unloads, (60)
U.S.D.A. 485.
- cause of spoilage en route to market,
(58) Ill. 334.
- Chinese, vitamin C in, (60) 595.
- citric acid determination in, (59) 505.
- citrus, *see* Citrus fruits.
- clearing house plans, (60) 682.
- cold storage plants, survey, (60) 676.
- cold storage studies, (52) 539; (58)
535, 536; (60) 541.
- conditions of export from South
Africa, (51) 45.
- conservation, industries for, treatise,
(55) 507.
- cool storage experiments, (54) 643.
- cooperative marketing in United
States, (52) 93.
- Cuban, digestibility, (51) 364.
- culture, (52) Can. 341, Alaska 536,
Can. 639; (53) Can. 340, Can. 840;
(54) V.I. 240; (55) Minn. 741, 743;
(57) 138.
- against walls and buildings, (55)
238.
- and bees, (57) 264.
- anomalies in, (54) 221.
- at Newlands, (53) U.S.D.A. 840.
- experiments, (53) Minn. 139; (55)
Alaska 438; (58) Minn. 835,
Can. 836, Can. 837, Can. 838;
(60) Ga.Coastal Plain 140,
Ohio 140, Can. 539, Can. 540.
- guide, (54) 836.
- in Arizona, (56) Ariz. 642.
- in Bombay, (59) 141.
- in North Dakota, (53) N.Dak.
342.
- instruction on project basis, (60)
232.
- on northern Great Plains, (56)
U.S.D.A. 740.
- relation to winter adversities,
(55) Mich. 139.
- treatise, (56) 834; (57) 833; (58)
142.
- cytological studies, (58) 525; (60)
527.
- dependable, (55) Ohio 139.
- disease resistant, (56) 549.

Fruits—Continued.

- dried—
- fumigated, hydrocyanic acid ab-
sorbed by, (52) U.S.D.A. 561.
- industry of Australia, (58) 889.
- insect pests, (54) U.S.D.A. 12;
(60) 60.
- packaging, (52) Calif. 14.
- sulfur dioxide in, determination,
(57) 409.
- dropping, effect of post-blossoming use
of lime-sulfur spray, (59) 639.
- dropping, studies, Del., (52) 822; (54)
641; (55) 451; (56) 353; (58) 448;
(60) 748, 749.
- drupaceous, breeding experiments, (57)
N.Y.State 636.
- drying, (52) Calif. 14; (54) U.S.D.A.
12.
- drying and canning industries, (55)
U.S.D.A. 787.
- drying in California, (56) 205.
- drying in Canada, (59) 379.
- drying, use of electricity in, (56) 579.
- effect of climate, (54) 210.
- effect of freezing weather during blos-
soming time, (59) N.Mex. 231.
- effect on hemoglobin regeneration, (57)
795.
- extension work with, (53) U.S.D.A.
695.
- first drop, relation to nutrition, (51)
Wis. 442.
- forcing, (58) 437.
- from all parts of world, (51) 441.
- frost injury in 1922, (51) N.J. 644.
- growing and marketing, treatise, (58)
437, 642.
- growing, survey, (57) 736.
- growing, treatise, (53) 641.
- hardy, of Great Britain, handbook,
(53) 843.
- home preservation, (57) 890.
- immature, dropping, (57) 337.
- in holds of ships, temperature condi-
tions, (58) 536.
- in storage, ammonia injury, (58) 542.
- Indian, vitamin A in, (59) 492.
- injury from exposure to ammonia, (60)
345.
- insects affecting, (56) 359; (57) 160;
(59) 553, 554.
- insects affecting in Argentina, (55)
759.
- insects affecting in Indiana, (55) 759.
- introduced, tests, (58) Can. 836.
- losses in transit, reducing, (60) Ill.
231.
- marketing, (55) U.S.D.A. 785; (59)
N.Y.Cornell 286.
- marketing associations, (54) 183.
- marketing in England and Wales, (57)
484.
- marketing in Minneapolis and St. Paul,
(58) 589.
- marketing on pooling basis, problems.
(58) Calif. 286.

Fruits—Continued.

- marketing, retail margins in, (58) Minn. 384.
 maturity, determination, (53) Mich. 743.
 maturity determination with pressure tester, (54) U.S.D.A. 39, Wash.Col. 338.
 moisture withdrawn from by leaves, (58) 738.
 mutations in, (60) 127.
 new, (51) 240.
 new and important, tests, Hawaii, (51) 744, 745.
 new and noteworthy, N.Y.State, (52) 46; (54) 643; (55) 139; (59) 233.
 new, from South Dakota, (54) S.Dak. 140.
 notes, (53) Miss. 239.
 nutritive value, (55) U.S.D.A. 788.
 of British Empire, (51) 896.
 of Delaware, pollination requirements, (60) 824.
 of Ecuador, (51) 441.
 of France, (54) 39.
 of Moravia, composition, (57) 138.
 of Queensland, marketing, (52) 394.
 of Temperate Zone of North America, treatise, (53) 37.
 oxidizing systems, (56) 802.
 paper on, (54) 732.
 parthenocarp and self-pollination in, (59) 440.
 passage of solutes into, (60) 724.
 pectin in, determination, (51) 205.
 penetration by bacteria and disinfection, (54) 590.
 phenological data, (52) N.J. 738.
 Philippine, preservation, (57) 193.
 Philippine, viability of intestinal bacteria in, (51) 364.
 Philippine, vitamin B in, (57) 94.
 pigments in, (55) 325.
 pollination, methods of study, (57) 833.
 pollination, rôle of bees in, (54) 153; (55) N.J. 663.
 pollination studies, (52) 342; (57) 42; (58) 37; (59) Wash.Col. 42.
 preservation—
 by freezing, (52) Calif. 15.
 by protective coatings, (57) 138.
 for home use, (57) 193.
 methods, manual, (56) 893.
 production under glass, (60) 822.
 propagation, (53) Calif. 843.
 propagation, cultivation, and marketing, treatise, (57) 437.
 propagation vegetatively, (58) 437.
 recommended for New York, (59) N.Y. State 742.
 Rhizopus affecting, (51) 354.
 ripening, effect of ethylene, (60) 822.
 Russian, culture experiments in Switzerland, (60) 341.
 self-protection against disinfectants, (60) 524.

Fruits—Continued.

- selling by auction, (54) U.S.D.A. 484.
 setting, factors affecting, (57) 43; (59) 139.
 setting, pollination and nutrition in, (55) 743.
 shipments and unloads, (53) U.S.D.A. 293.
 shippers, operations of, (56) N.Y. Cornell 584.
 small—
 blooming records, (59) N.J. 334.
 breeding, (57) Can. 236; (60) 41.
 culture, (53) 343; (54) 539; (59) 141.
 culture in British Columbia, (59) 87.
 culture in California, (60) 825.
 culture in England, (54) 240.
 diseases, (58) 244.
 fertilizer experiments, (51) West. Wash. 96; (59) R.I. 633.
 handling for greater profits, (51) West. Wash. 694.
 leaf analysis, (60) 640.
 monographs, (54) 497.
 of New York, (55) N.Y.State 39.
 pollination studies, (52) 342.
 production, (59) 441.
 production, economic study, (52) Wash.Col. 894.
 raising, economic study, (55) Wash.Col. 585.
 spray schedules for, (53) Mich. 37.
 tests, (56) Ill. 343.
 treatise, (53) 536.
 varieties, (54) Ill. 335.
 variety tests, (54) Fla. 334; (56) Minn. 531, Minn. 532.
 spray residue removal from, (57) 455.
 spray schedules for, (52) Mo. 236; (57) Ohio 144.
 spray service of Weather Bureau, (53) 112.
 sprayed, removal of lead arsenate from, (56) Colo. 442.
 spraying directions, (51) Ill. 40.
 standard containers for, (52) U.S.D.A. 296.
 sterility studies, practical application, (58) 642.
 stings on, (57) Mich. 654.
 stone, bacterial spot, (58) Del. 441.
 stone, Coryneum blight of, (54) 750.
 stone, diseases, (52) U.S.D.A. 653.
 stone, spraying for brown rot, (51) 548.
 stone, unreported diseases of, (52) 248.
 storage problem, (60) 341.
 storage studies, (51) 345; (56) 748; (53) Pa. 335.
 subtropical, culture experiments, (59) Hawaii 632.
 sun-drying, (53) Calif. 614.
 supply for fifteen cities, (60) 385.

Fruits—Continued.

- survey in Romanic Switzerland, (60) 825.
 temperature conditions in refrigerated holds, (60) 551.
 thinning experiments, (55) Calif. 338.
 thinning, value, (57) 833.
 tropical, jelly making from, (54) 112.
 use in candy, (52) Calif. 14.
 use in ice cream and ices, (58) Calif. 289.
 varieties, Ohio, (55) 39; (60) 144, 738.
 varieties, behavior, (51) Minn. 141.
 varieties in Ohio, (58) Ohio 138.
 varieties, self-sterility and self-fertility in, (51) N.Y.State 40.
 varieties tested at Mandan, N.Dak., (53) U.S.D.A. 140.
 varieties under test, (60) N.Y.State 438.
 variety tests, (51) Can. 238, Can. 239; (53) Okla. 141; (54) Can. 443; (55) Minn. 339, Hawaii 535, Minn. 742; (56) Minn. 531, Minn. 532; (57) Alaska 532; (60) Can. 539.
 vitamins in, (56) Kans. 894.
 water translocation in, (58) 318.
 wholesale market preferences for, (55) R.I. 81.
 winter injury, (51) Wash.Col. 150.
- Fuel—
 for rural homes, (59) Ind. 782.
 from pine stumps, (55) Minn. 583.
 savers for house-heating boilers, tests, (54) 395.
 treating materials for gas engines, (51) Nebr. 888.
- Fuels—
 and their combustion, treatise, (57) 882.
 antiknock, characteristics, (58) 780.
 combustion, maximum temperatures and pressures, (51) U.S.D.A. 589.
 economic, for internal-combustion engines, (60) 79.
 engine, dilution results, (51) 87.
 engine, tests, (58) 375.
 free burning, for open fire, (58) 599.
 from tubers in Australia, (60) 279.
 high compression and antiknock, (60) 780.
 hydrocarbon, oxidation, action of accelerators and inhibitors, (60) 674.
 knock characteristics, measuring methods, (58) 882.
 knock mechanism in internal-combustion engine, (58) 485.
 liquid, Government specifications, (52) 784.
 motor, antiknock quality, measuring, (60) 378.
 motor, starting properties, (58) 375.
 rating for knock, importance of mixture ratio, (60) 674.
 substitute, for gas engines, (60) 279.

- Fulgoridae of Mississippi, (60) Miss. 163.
 Fulgoroidea, South American, (55) 660.
 Fuligo ovata, cultural characters, (54) 255.
 Fumaria officinalis, control, (54) 240.
 Fumariaceae, evolution in, (52) 330.
 Fumigants, insecticidal, testing, (60) 162.
- Fumigation—
 of orchards in California, (51) 659.
 procedures, adapting to industrial needs, (57) 854.
 research, (59) 650.
 tests with aliphatic chlorides, (59) 57.
 v. spraying for citrus scale insects, (52) Calif. 60.
 vacuum, paper on, (58) 661.
- Fungi—
 and orchids, association between, (57) 219.
 and plant diseases, (51) 246.
 and plant diseases, treatise, (55) 444.
 apical growth of hyphae, (52) 216.
 beneficial and injurious, treatise, (57) 441.
 calcium requirements, (57) 117.
 causing decay of fabrics, (58) 157.
 causing fruit and bulb rot, (56) 446.
 causing mildew in cotton goods, identification, (59) 497.
 causing plant diseases, morphology and taxonomy, (54) 45.
 causing root rot of peas, (57) 843.
 cerophilous, studies, (57) 27.
 comparative effects of various salts, (57) 344.
 comparative morphology, (58) 25.
 culture solutions for recognition of species, (55) Mich. 842.
 cultures, maintained growth rates in, (55) 747.
 damping-off, control, (51) 351.
 damping-off, inoculation of coniferous stems, (53) 356.
 development in soil, effect of soil acidity, (54) 119.
 diagnosis of species, (59) Mich. 444.
 differentiation, (52) Mich. 346.
 edible and poisonous, (57) 437.
 edible and poisonous, of Canada, (58) 641.
 entomogenous, studies, (60) 162.
 entomogenous, use, (53) 556.
 entomophthorous, growing in cages prior to dissemination, (54) 153.
 entomophytic, studies, (59) 154.
 facultative parasitism, (58) 543.
 facultative parasitism and host ranges, (58) 241.
 from nodes of corn, (59) 342.
 growth, action of prussic acid on, (60) 807.
 growth, effect of glucose and fructose, (53) 123.
 growth on culture media, (52) 216.
 growth rate and utilization coefficients, (53) 519.
 growth rate, effect of time and temperature, (56) 243.

Fungi—Continued.

- growth reactions to staling products, (56) 843.
- hardwood heart-rotting, biology and pathology, (56) 654.
- identification, studies, (51) Mich. 148.
- in Colorado soils, (59) 512.
- in cotton mill structures, occurrence and identity, (54) 255.
- in cultures, staling, (56) 221.
- in frozen soil, (54) 119.
- in resin, (55) 522.
- in soil, effect of decomposition of organic matter, (51) 620.
- in wood, effect of methods of seasoning, (52) U.S.D.A. 249.
- infection phenomena, (58) 543.
- inhibitions exhibited by, (55) 543.
- injurious to cultivated plants in Turin, (52) 148.
- larger, seasonal occurrence, (59) 324.
- loss of virulence in, (54) 448.
- Manoillov reaction, application, (59) 722.
- mutation in, (58) 729.
- new species, description, (60) 29.
- new species, formation, (60) 31.
- of forest and garden soils, (60) 29.
- of Kansas, (58) Kans. 744.
- of soils, summary, (60) 124.
- parasitic—
- and wood-destroying, of Missouri, (57) 146.
 - biology, (52) 746; (56) 445.
 - causing plant diseases, treatise, (57) 637.
 - entrance into host plant, (60) 544.
 - in Wisconsin, (55) 243.
 - limiting food supply in China, (59) 536.
 - notes, (54) 449.
 - on plant roots, (59) 218.
 - on plants, list, (54) 247.
- pathogenic—
- achromatic variations in, (60) 642.
 - in Bohemia, (59) 537.
 - media used by, toxicity for plants, (58) 42.
 - to plants, destruction by protozoa, (57) 17.
- penetration of plant cuticle by, (58) 443.
- penetration phenomena and host ranges, (57) 344.
- physicochemical and biological reactions compared, (60) 805.
- physiology of, studies, (53) 122, 224.
- phytopathogenic, action at a distance, (52) 746.
- rôle in forest ecology, (57) 318.
- rôle in orchid culture, (57) 720.
- root, of conifers, (51) 227.
- sexual stage, effect of ultra-violet irradiation, (59) 519.

Fungi—Continued.

- single-spore isolation simplified, (59) 144.
- soil-inhabiting, parasitic on peas, (57) 749.
- special groups, (57) 819.
- succession on culture media, (55) 24.
- sugar transformation, new product of, (56) 325.
- toxicity of copper for, (53) 542.
- treatise, (54) 46.
- tree-destroying, in Vancouver forestry district, (54) 150.
- undescribed, on sourwood, (57) 753.
- wood-destroying—
- growth relation to pH of media, (53) 224.
 - laboratory cultural diagnosis, (55) 151.
 - notes, (59) 152.
 - of Java, (53) 153.
 - resistance to moist and dry heat, (52) 55.
 - resistance to sodium fluoride, (56) 853.
 - resistance to zinc chloride, (56) 853.
 - staining hyphae, (52) 353.
 - studies, (55) 851.

Fungicidal—

- materials, mechanical loss from leaves, (54) N.Y.State 653.
- powders for wheat smut, (52) 148.
- solutions, temperature of, (54) 448.

Fungicide and insecticide guarantee in Canada, (52) 253.

Fungicides—*see also* Sprays and specific kinds.

- action on seed wheat, (57) 748.
- analyses, (51) N.J. 39, Me. 344; (52) Conn.State 537; (53) N.J. 37, Me. 539; (54) Conn.State 642, Oreg. 739; (55) Me. 138; (56) Can. 534, Me. 534, N.J. 534; (58) Me. 738, N.J. 738; (60) N.J. 438, Can. 557.
- behavior, (56) 447.
- colloidal, action and effects, (59) 48.
- comparison, (57) 344, 345.
- composition, (58) Oreg. 838.
- coordination of investigations, (55) 245.
- copper in, indispensability, (52) 148.
- copper, toxicity studies, (51) N.H. 47.
- dry, testing in laboratory, (59) 638.
- dry, tests, (57) 146.
- dust, in Hungary, value, (56) 649.
- dust, toxicity, testing in vitro, (59) 842.
- dust, use of selfmixer in, (56) 243.
- effective fraction in, estimating, (59) 638.
- effectiveness, effect of temperature, (54) 247.
- efficiency, (57) 839.
- for apple scab, comparison, (53) Pa. 48.

Fungicides—Continued.

- for covered smuts of grains, tests, (58) 648.
- for potato blight, tests, (54) 652.
- for roses, cautionary word, (56) 752.
- for wheat smut control, tests, (59) 146.
- formulas, (57) 160.
- injury to seeds, (58) 144.
- insecticides, and weed killers, treatise, (54) 656.
- inspection and analyses, (55) N.J. 38.
- mercury, in repeated use, (58) 144.
- modifications in, (51) 548.
- notes, (51) 542; (60) 345.
- on apple trees, tests, (52) 848.
- physical properties, (58) 844.
- preparation, (56) Kans. 349.
- toxicity and effect, (58) 845.
- toxicity studies, (59) 638.

Fungolit, chemotherapeutic tests, (56) 543.

Fungus—

- cultures, central bureau for, (52) 645, 746.
- cultures, growth, relation to storage temperature, (59) 339.
- diseases, control, (60) 344.
- diseases in Great Britain, (51) 245.
- diseases of plants in Egypt, (52) 745.
- flora of alluvial soils, (55) La. 513.
- flora on apples, (56) Wash.Col. 540.
- gnats of New Zealand, synopsis, (57) 859.
- mycelium, behavior under electrical charges, (58) 216.
- parasites of man and animals, (51) 680.
- spores, germinating and staining, (52) 447.
- spores, germination, effect of carbon dioxide of plant tissue, (55) Colo. 242.
- tissue, nitrogenous compounds in, decomposition, (60) 619.

Funtumia elastica, rubber yields, (60) 743.

Fur—

- dictionary of, (55) 94.
 - dyeing industry in America, development, (56) 397.
 - farm, experimental, of Biological Survey, (58) U.S.D.A. 56.
 - farming in Canada, census, (54) 672.
 - farming principles, (57) 665.
 - farming, recommendations to beginners, (60) U.S.D.A. 768.
 - from rabbit skins, (56) U.S.D.A. 597.
 - garments, cleaning, (58) 696.
 - garments, mothproofing, (59) 253.
 - papers on, (57) 199.
 - rabbits, treatise, (56) 168; (58) 767.
- Fur-bearing animals—
- feeding, breeding and handling, treatise, (59) 165.
 - food predilections, (53) 251.
 - laws, U.S.D.A., (52) 55; (54) 52; (56) 56; (58) 252; (60) 355.

Fur-bearing animals—Continued.

- of Alaska, laws and regulations, U.S.D.A., (57) 552; (60) 355.
 - of Alaska, laws and regulations, amendments, (58) U.S.D.A. 855.
 - of Louisiana, (60) 838.
 - raising, treatise, (54) 273.
- Furfural—
- and adhesives from corncobs, (51) 114.
 - and derivatives, review of literature, (55) 802.
 - commercial manufacture, (56) 313.
 - critical constants, (55) 109.
 - determination, (51) 315; (52) 804.
 - for wheat smut control, (51) Wash. Col. 149.
 - formation and distillation, (51) 12.
 - from corncobs, (51) 114, 809.
 - fungicidal activity, (59) 638.
 - fungicidal value, (55) Oreg. 651.
 - in vinegar, (57) 408.

Furnace—

- electric combustion, (60) 13.
- for ashing food and excreta, (51) 711.
- heating, value of fans in, (53) 590.
- operation, essentials, (51) 188.
- systems, warm-air, variations in temperature at register faces, (53) 686.

Furnaces—

- gas-fired warm-air, testing efficiency, (58) 584.
- warm-air, and heating systems, (60) 882.
- warm-air, performance with anthracite and bituminous coal, (51) 486.
- warm-air, studies, (55) 296.
- warm-air, studies at research residence, (59) 98.

Furniture—

- beetle, notes, (57) 552.
- beetles, treatise, (59) 456.
- old, retouching and refinishing, (56) 598.

Fusanus spp., root parasitism of, (57) 48.

Fusariosis of cereals in European Russia, (58) 649.

Fusarium—

- aduncisporum n.sp., description, (54) 845.
- affecting seeds, studies, (57) 146.
- as cause of stem diseases, (56) 542.
- batatatis vanillae n.v., description, (59) 54.
- blight of cereal crops, (53) 43.
- boll rot, notes, (51) 248.
- bulbigenum, notes, (58) 442.
- cepae, notes, (55) 848.
- cepae on onions, (52) 348.
- coeruleum, physiology of, (56) 843.
- conglutinans callistephi, notes, (58) 449; (60) Wash.Col. 830.
- conglutinans, description, (55) Iowa 545.
- conglutinans, notes, (56) 448; (57) 246; (58) 547.
- cromyophthoron behavior in various decoctions, (57) 838.

Fusarium—Continued.

- cromyophthoron, extracellular pectinase, effect of pH, (56) 445.
- cromyophthoron n.sp., description, (56) 246.
- cubense, notes, (54) 48; (55) 244; (57) 156; (58) 53, 157; (59) 547; (60) 344, 345.
- culmorum in France, (57) 541.
- culmorum in Oregon, varieties and strains, (56) 47.
- culmorum v. leteius on cereals and grasses, (56) 47.
- discolor sulphureum, notes, (51) N.Dak. 846.
- discolor sulphureum, zonation in cultures, (58) 421.
- disease of dadap, (60) 646.
- dry root rot, notes, (54) Calif. 351.
- eumartii, notes, (51) Nebr. 752.
- fructigenum, notes, (60) 351.
- genus, studies, (56) 843; (58) 217.
- growth in nutritive solutions, relation to pH value, (55) 346.
- growth products, toxic action, (56) 843.
- infection of sweet potatoes, factors affecting, (57) 351.
- lateritium, notes, (56) 654.
- lini, alcoholic fermentation, (59) 144.
- lini and Colletotrichum lini, comparison, (57) 640.
- lini and potassium cyanide, relation, (55) 630.
- lini, biochemistry, (57) 348.
- lini, notes, (52) Minn. 245.
- lini, physiologic forms, (59) 145.
- loncheceras microsporion n.v., description, (56) 246.
- loncheceras n.sp., description, (56) 246.
- lycopersici—
- control, (52) Ark. 247; (53) Mo. 442.
- description, (55) Kans. 450.
- effect of pH value, (51) Mo. 51.
- in soil, longevity, (55) Ga. 145.
- mycelium, protein analogies, (56) Mo. 542.
- notes, (52) 351; (53) Calif. 446; (56) Kans. 842; (58) 647; (59) Kans. 753, Miss. 544.
- on tomato, effect of liming, (54) Mo. 744.
- on tomato, growth reaction, (56) 452.
- strains, (52) Kans. 446.
- strains, characteristics, (59) 752.
- strains, relation to toxic products to tomato wilt, (59) 753.
- studies, (57) 153, Mo. 442; (58) Mo. 442.
- tomatoes resistant to, (55) Miss. 541.
- malli, notes, (51) 542; (54) 144.
- martii phaseoli, notes, (54) 845.
- martii phaseoli, variations in, (55) 730.

Fusarium—Continued.

- martii pisi, notes, (56) 545; (57) 843.
- moniliforme—
- ascigerous stage, (53) 747.
- ascigerous stage and synonymy, (52) 448.
- fici n.v., notes, (57) Calif. 254.
- fici, notes, (59) 852.
- notes, (52) Ill. 245; (53) 850, La. 850, 851, Ill. 851; (54) 453; (56) 48, Del. 348, 460, 549, S.Dak. 649; (58) 152, Ill. 338; (59) Mo. 539, 846.
- on cereals, pathogenicity, (53) 847.
- on seed corn, (51) 850; (52) Kans. 445.
- on seed corn, treatment, (58) 549.
- studies, (52) Tenn. 544.
- nivale, notes, (58) 145.
- niveum, notes, (59) 46, 346.
- niveum, studies, (59) Iowa 754.
- on pine, (55) 250.
- orthoceras, notes, (59) Wis. 48.
- orthoceras pisi n.sp., description, (60) 348.
- oryzae α and β , description, (52) 747.
- oxysporum—
- gladioli n.v., description, (58) 659.
- infection of potatoes, critical temperature, (54) 746.
- medicaginis n.v., description, (60) 447.
- notes, (52) Pa. 243; (55) Mont. 147, Ore. 448; (56) 548.
- strains, pathogenicity, (51) U.S. D.A. 152.
- pigment development, rôle of pH, (53) 828.
- relation to other fruiting forms, (56) 542.
- resistant cabbage, studies, (53) 849.
- rhizochromatistes microsclerotium n.v., description, (56) 246.
- rhizochromatistes n.sp., description, (56) 246.
- rot in stored potatoes, studies, (59) U.S.D.A. 751.
- rot of peaches in California, (57) 849.
- rot on onions, (54) 847.
- saubinetii, notes, (53) La. 850.
- sclerostromaton n.sp., description, (56) 246.
- soil troubles in Indiana, (55) 242.
- solani on spinach, (55) Tex. 345.
- solani, production of toxic substances, (54) 745.
- sp. in citrus seed beds, (60) 353.
- sp., notes, (51) Del. 147; (53) 43; (54) 246, Wis. 248, P.R. 648; (55) N.J. 43, 249, Calif. 344, 346; (57) 48, 52, P.R. 442, 644, 843; (58) 41, N.Y.State 844; (59) 534, 535, 540, 845; (60) West.Wash. 746, 832.
- sp. on cotton, (56) 750; (60) 241.
- sp. on gram, (51) 752.

Fusarium—Continued.

- sp. on wheat, (52) 747.
 spinaciae n.sp., notes, (54) 49.
 spores, morphology, effect of temperature, (53) 847.
 spp., carbon and nitrogen sources, (54) 726.
 spp. causing onion bulb rot, (58) 549.
 spp. causing wilt and dry rot, relation, (51) 153.
 spp. causing wilt, studies, (52) Tenn. 544.
 spp., control, (51) 152, 156.
 spp., longevity of cultures, (56) 445.
 spp., notes, (51) 353, P.R. 847; (52) Minn. 648, N.J. 744; (53) 46; (54) 549; (55) 445, 546; (56) 351, 541; (57) 540, 639, 648, N.J. 742; (58) 143, 851; (59) 536; (60) 29, 149.
 spp. on cereal seedlings, (54) 543.
 spp. on cotton and in cotton soils, (59) 640.
 spp. on onions, (56) 246, 450.
 spp. on pine roots, (51) 356.
 spp. on sweet potatoes, (52) N.J. 744.
 spp., relation to banana disease, (58) 658.
 spp., studies, (60) 546.
 spp., tropical, studies, (60) 353.
 spp. variations, relation to culture media, (54) 145.
 staling by, (56) 221.
 taxonomic studies, (53) 747.
 toxins causing cotton wilt disease, (57) 543.
 tracheiphilum in culture, range of pH toleration, (56) 26.
 tracheiphilum, notes, (55) 752.
 udum in Uganda, (55) 543.
 udum, notes, (51) 46; (59) 453.
 vasinfectum, means of inducing wilting, (56) 545.
 vasinfectum, notes, (51) 248; (53) 44; (58) 48, 143, 148.
 vasinfectum, parasitism, (60) Ark. 829.
 vasinfectum, relation to soil temperature, (59) Ark. 640.
 vasinfectum, studies, (55) Ark. 41; (58) 548; (60) Miss. 151.
 vasinfectum tracheiphilum, notes, (57) 343; (59) 46.
 viticolum, notes, (53) 250; (59) 546.
 willkommii, notes, (59) 635.
 wilt, behavior of tomato varieties to, (56) 247.
 wilt, notes, (52) 549.
 wilt of cotton, relation to pH of soil, (60) Tex. 747.
 wilt of potatoes, control, (58) Pa. 339.
 wilt of spinach in Texas, (55) 849.
 wilt of spinach, new, (56) Tex. 246.
 wilt of sweet potatoes, notes, (59) 345.

Fuscoporia ferruginosa, notes, (54) 150.

Fusicladium—

- control in pear orchards, (55) 452.

Fusicladium—Continued.

- effusum, notes, (52) 152; (55) U.S.D.A. 551, Fla. 756; (58) 852; (59) 54; (60) 246.
 photinicola n.sp., notes, (57) 852.
 pirinum, notes, (57) 353.
 pisicola n.sp., description, (58) 652.
 saliciperдум, notes, (55) 251; (57) 158; (60) Conn.State 743.
 spp., notes, (60) 154.
- Fusicoccum—
 putrefaciens, notes, (51) Wash.Col. 155; (56) 249, U.S.D.A. 454.
 pyrорum n.sp., description, (54) 50.
 sp., notes, (53) 43.
- Futures contract, (53) 530.
- Gaits, inheritance of, (51) 100.
- Galactose—
 absorption from intestine, (51) 559.
 biochemical characterization, (51) 505.
 dextro-, isolation, (56) 409.
 propionic fermentation rate, (51) 409.
- Galacturonic acid in pectin, determination, (55) 710.
- Galalith toxicity to wheat sprouts, (53) 21.
- Galeopsis spp., control, (54) 240.
- Galerucella—
 cavicollis, *see* Cherry leaf beetle.
 luteola, *see* Elm leaf beetle.
 of New Jersey, (58) 459.
 systematic account and new species, (52) Me. 660.
- Gall midge, new, attacking Arabis albida, (58) 158.
- Gall midge, new, notes, (59) 854.
- Gall midges—
 aphid-eating, notes, (58) 261.
 British, material for monograph, (58) 158.
 key, (53) 860.
 new African, notes, (59) 456.
 notes, (58) 451.
 of India, new species, (57) 162.
 of truck crops, (56) 758.
- Gall mites found on Ribes, (59) 563.
- Galleria mellonella, *see* Bee moth and Wax moth.
- Gallinaceae, secondary sex characteristics and heredity, (55) 165.
- Gallowaya pinicola, organization of telial sorus in, (54) 549.
- Galls—
 formation, (60) 445.
 South African cecidomyid, notes, (59) 456.
 that secrete honeydew, (54) 757.
- Galton and Mendel—
 contribution to genetics, (51) 28.
 memorial to, (51) 28.
- Gambo hemp, studies, (52) 634.
- Gambusia—
 holbrookii, control of mosquitoes by, (54) 459; (58) 861.
 holbrookii, spermatogenesis, (52) 433.
 larviphage and antimalarial control with, (59) 357.

Gambusia—Continued.

spp., relation to malaria and mosquito control, (58) 262.

Game—

animals of Yellowstone National Park, (54) 52.

birds, propagation, (57) U.S.D.A. 56.

fowl, stocking hunting grounds with, (54) 471.

laws and regulations of Alaska, U.S.D.A., (57) 552; (60) 355.

laws and regulations of Alaska, amendments, (58) U.S.D.A. 855.

laws for 1924-25, (52) U.S.D.A. 55.

laws for 1925-26, (54) U.S. D.A. 52.

laws for 1926-27, (55) U.S.D.A. 657.

laws for 1927-28, (58) U.S.D.A. 56.

laws for 1928-29, (60) U.S.D.A. 158. of Alabama, (54) 52.

protection, directory of officials for, U.S.D.A., (52) 452; (54) 256; (56) 56; (58) 252; (60) 158.

Gametophyte factors, active, genetic results, (57) 120.

Ganoderma—

lucidum, notes, (55) 245.

lucidum on rubber areas, (58) 854. spp., notes, (54) 150.

Gapes in poultry, notes, (56) 659.

Gapeworms—

in pheasants, (55) Oreg. 677.

in wild geese, (59) U.S.D.A. 54.

spread by birds, (57) 473.

Garages, heating, (54) 395.

Garbage—

feeding value, Ariz., (53) 774; (56) 764.

sifted, fertilizing value, (52) 121.

tankage, availability of nitrogen in, (55) 516.

Garbanza pea, nutritive value (59) 792.

Garden—

architecture, treatise, (57) 342.

centipede, biology and control, (53) 58.

chronicles of, treatise, (53) 144.

clubs, boys' and girls', (53) 899.

crop diseases and pests, treatise, (51) 45.

flea hopper, control, (51) Md. 454.

guide, handbook, (60) 543.

insects—*see also* Vegetables, insects affecting, *and special crops*.

control, (56) 756.

in Ontario, (58) 57.

paper on, (51) 55.

paths, tests of weed-killers for, (59) 438.

planting and care, (51) 239.

soils, care in Porto Rico, (58) P.R. 536.

springtail as crop pest, (52) 852.

Gardening—

amateur, treatise, (59) 44.

bibliography, (58) 239.

city and suburban, treatise, (60) 543. handbook, (52) 640.

history of, (57) 142.

Gardening—Continued.

in California, treatise, (51) 145; (52) 344.

in Virgin Islands, (55) V.I. 236.

landscape, treatise, (51) 243; (57) 242.

ornamental, in Florida, treatise, (57) 739.

ornamental, manual, (57) 142.

treatise, (51) 539; (52) 138, 341, 540, 642, 741; (53) 40, 640; (55) 741, 839; (57) 136, 142, 242, 336; (58) 142.

tropical, treatise, (53) 844.

vegetable—

and soil disinfection, (59) 553.

in Alaska, (60) Alaska 541.

research in, (56) 344.

Gardens—

British and foreign, (57) 142.

English, treatise, (58) 439.

flower and vegetable, treatise, (54) 244.

of South Africa, treatise, (52) 344.

plan, (51) Ill. 39.

plan, and vegetable storage, (58) Ill. 738.

planning, treatise, (51) 243.

plans and sketches, treatise, (52) 540.

rock, handbook, (57) 342.

school and home, treatise, (56) 46.

school, introducing and developing in Argentina, (52) 795.

unconventional, treatise, (60) 544.

vegetable, subterranean enemies, control, (59) 553.

Garlic—

effect on flavor and odor of milk, (53) U.S.D.A. 75.

garden, control, (58) 137.

leaf spot, new, (54) 651.

wild, seed production in Indiana, (51) 641.

Gärtner's bacillus, infection of rats by, (55) 473; (57) 573.

Gas—

analysis apparatus, (52) 615.

analysis, continuous, apparatus for, (59) 808.

analysis, gasometer, simplified calculation, (58) 591.

appliances, testing for safety from producing carbon monoxide, (55) 95.

engines, *see* Engines, internal-combustion.

formation in cheese containing pimientos, (59) 670.

gangrene and blackleg in cattle, (52) 780.

house waste, fertilizing value, (52) 819.

production from sludge digestion, (59) 283.

Gaseous explosions—

in internal-combustion engines, (58) 484.

rate of rise of pressure, (57) 777.

- Gases—**
 absorbed on charcoal, insecticidal value, (52) Tenn. 555.
 dissolved, removal from water, (58) 804.
 distribution in animal body, (56) 501.
 explosive, generation in electric heaters and boilers, (54) 898.
 in tree trunks, composition, (57) 815; (59) 124.
 in tree trunks, distribution, (57) 815.
- Gasoline—**
 distillation curves, volatility data from, (59) 377.
 substitutes for use on farms, (60) 79.
 sulfur in, effect on wrist-pin corrosion in automobiles, (58) 882.
 taxes in 1924, data, (53) U.S.D.A. 284.
 taxes in 1927, (59) U.S.D.A. 478.
 taxes in 1927, first six months, (58) U.S.D.A. 482.
 tests, effect on carburetor adjustment, (52) 487.
- Gasolines, comparison, (57) 778.**
- Gas-tight stirrer, description, (51) 9.**
- Gastric—**
 contents of infants, pH value, (51) 166, 167.
 contents, pH value, (51) 504.
 digestion, studies, (58) 691.
 lesions in rats, (51) 369; (53) 165.
 secretion, effects of fasting, (51) 861.
 secretion in beriberi in dogs, (55) 388.
- Gastritis—**
 in cows, diagnosis and treatment, (60) 71.
 in lambs, treatment, (57) 472.
- Gastro-enteritis—**
 Aberdeen epidemic of, (51) 272.
 in cattle, epizootic, notes, (59) 471.
 outbreak, (58) 478.
 verminous, treatment, (58) 676.
- Gastrophilliasis of horses, summary, (54) 380.**
- Gastrophilus—see also Botfly.**
 nasalis, synonymy, (55) 258.
- Gastroxides ater, notes, (54) 556.**
- Geese—**
 chemistry of, (57) 687.
 disease caused by parasitic nematode, (55) 374, 375.
 raising, (51) 675.
 twins, normal development in one egg, (56) 470.
 use in controlling weeds in cotton fields, (53) N.Mex. 840.
 young, black fly affecting, (57) 658.
- Gel or sol formation in soils, (53) 418.**
- Gel tester for determining strength of jelly, (51) 210.**
- Gelatin—**
 action of proteolytic bacteria of milk on, (60) N.Y.State. 772.
 analyses, (51) 712.
- Gelatin—Continued.**
 and viscosity of ice cream mix, (57) 376.
 bacterial content, effect of pH, (60) 370.
 chemistry of, (53) 312.
 commercial, studies, (57) 112.
 determination in ice cream, (56) 806.
 edible, food value, (54) 189.
 effect on bacterial content of ice cream mix, (59) 169.
 effect on ice cream and ices, (53) N.Y.State 476, 677.
 for ice cream, amount and quality, (55) 270.
 for ice cream, bacterial content, (53) 883.
 for ice cream making, (56) Pa. 172; (58) Ill. 364.
 for pellagra prevention, (51) 270.
 grades, effect on ice cream, (60) Mich. 474.
 grades for ice cream making, (60) Ill. 264.
 ingested during starvation, effect, (55) 789.
 jellies, tensile strength determination, (58) 807.
 liquefaction by bacteria, Ostwald viscosimeter for, (57) 120.
 nutritive value, (55) 692.
 optical rotation, effect of salts, (58) 610.
 quality, (53) Okla. 177.
 rôle in ice cream, (57) 871.
 specific dynamic action, (52) 665.
 studies, (59) 410.
 testing, (60) N.Y.State 473.
 testing, quantity for ice cream and sherbets, (60) 665.
 viscosity and related problems, (56) 802.
 yeast extract as supplement, (56) 696.
- Gelechia—**
 monotaeniella n.sp., description, (56) 257.
 trialbamaculella, notes, (53) 555.
- Gelechiid moth in Uganda, parasites of, (60) 252.**
- Gelis spp., description, (57) 365.**
- Gels and theory of adsorption, (51) 116.**
- Gene, salmon-eyed, in guinea pigs, (54) 227.**
- Genes—**
 chemical conception, (56) 328.
 conception of, (54) 629.
 evidence of structure in, (53) 426.
 functional interrelation in mice, (57) 820.
 in two species, similar, identification of relation, (55) 632.
 interaction in development, (60) 125.
 theory of, treatise, (55) 522.
- Genetic—**
 characters, new, production, (56) 328.
 research, quantitative methods in, (58) 526.

Genetic—Continued.

- research, subdivision of individuals in, (51) 635.
- Genetics—
and eugenics, treatise, (52) 822.
and evolution, treatise, (55) 730.
and physiology of development, relation, (58) 627.
application to farmers' problems, (54) Me. 322.
at Anikowo Station, Moscow, (60) 30.
development, (53) 226.
development from time of Aristotle, (55) 427.
elementary course in, (51) 432.
experiments in, (54) 628.
International Congress of, announcement, (56) 100.
International Congress, papers, (58) 525.
laboratory course in, outline, (53) 298.
mammalian, opportunities for research in, (60) 30.
morphological restoration in, (57) 121.
outline, treatise, (51) 28.
popularizing, (55) 166.
principles, treatise, (54) 427.
problem of inheritance of acquired characters, (56) 521.
relation to agriculture, treatise, (58) 728.
relation to breeding practices, (53) 571.
relation to poultry industry, (59) 361.
studies at Carnegie Institution, (53) 829.
treatise, (53) 522; (59) 621.
- Genitalia of Lepidoptera, preparation and study, (56) 758.
- Gentian violet—
action in bacterial infections, (54) 675.
behavior of *Brucella melitensis* and *B. abortus* toward, (60) 666.
lactose broth for detection of *Bacillus coli* in milk, (57) 869.
- Geochemistry, data, (53) 212.
- Geococcus citrinus* n.sp., notes, (53) 158.
Geococcus oryzae, notes, (53) 158.
- Geocoris pallens* affecting beet leafhopper, (52) Calif. 58.
- Geography—
business, textbook, (55) 788.
commercial, handbook, (53) 95.
economic, of North America, source book, (56) 389.
economic, textbook, (53) 694.
economic, treatise, (51) 299; (52) 598.
human, quantitative phases, (58) 82.
in France, (51) 599.
industrial, textbook, (52) 899.
of North America, textbook, (59) 889.
plant, treatise, (57) 116.
political, New World problems in, textbook, (52) 196.
Geocia spp., notes, (54) Ohio 155.

Geology—

- agricultural, treatise, (60) 315.
engineering, treatise, (53) 587.
of Goose Creek basin, (53) Idaho 83.
- Geometrid moth eggs, toxicity of 3:5-dinitro-o-cresol, (56) 359.
- Geometridae, new, of India, (57) 162.
- Georgeson, C. C., editorial notes, (57) 701.
- Georgia—
Coastal Plain Station, report, (52) 299; (54) 197; (56) 598; (58) 797; (60) 199.
College, notes, (52) 697; (55) 396; (56) 96; (58) 697; (59) 797.
Station, notes, (51) 97, 398, 496; (54) 397; (55) 98, 396; (56) 399, 699; (57) 98, 395; (58) 397; (59) 797.
Station, report (51) 197; (53) 299; (55) 196; (57) 299; (59) 298.
- Geotropic—
excitation in roots, conduction, (52) 217.
reaction, analysis, (57) 516.
response, reversal of, (54) 519.
- Geotropism—
materials stimulating, (54) 724.
of plants, studies, (51) 223.
of seedlings, bilateral symmetry in, (58) 726.
theory, (51) 522.
- Geranium—
aphid, biology, (57) 452.
disease, relation to lettuce gray mold, (55) 145.
stem rot, description, (53) 855.
stem rot, notes, (52) 749.
- Gerbillus meridianus*, control, (60) 162.
- Germ—
cell history of male rat, (55) 823.
cells and somatic tissue, treatise, (56) 427.
cells, formation, (55) 734.
cells in potatoes, formation and degeneration, (52) 126.
plasm, architecture, treatise, (58) 423.
plasm, experimental modification, (57) 220.
- German scientists, American tour, (52) 500.
- Germanin and naganol, comparison, (60) 73.
- Germicide, new, S. T. 37, (58) 574.
- Germination—*see also* Seeds and various crops.
chemical aspects, (52) 624.
energy yield in, effect of temperature, (53) 827.
of woody plants, (56) 426.
physiological aspects, (52) 516.
physiology of, problems, (56) 627.
stimulation studies, (57) 415.
tests, duplicate, variations, (52) 737.
tests, laboratory and field, (52) 737.
- Germisan, seed treatment data, (56) 649.
- Gesneria* sp. bacterial leaf spot, notes, (59) 534.

- Gestation period—
 effect of compulsory work during, (53) 833.
 of rats, weight during, (57) 794.
- Gettinger, W. E., notes, (55) 252.
- Ghee, keeping qualities, (59) 576.
- Giannini Foundation of Agricultural Economics, editorial, (58) 602.
- Giardia spp., from rats, (58) 666.
- Gibberella—
 moniliformis n.comb., description, (52) 448.
 moricola, notes, (56) 654.
 saubinetii—
 control, (56) 150.
 infection of corn, effect of nutrient media, (57) 748.
 infection, relation to crop successions, (51) 752.
 notes, (51) Wis. 446; (52) Ill. 245, Minn. 648, Del. 844; (53) 44, 748, 850, 851, Ill. 851; (54) U.S.D.A. 452, Mo. 744; (56) Del. 348, 449; (57) Mo. 442, 443, 843; (58) Ill. 338; (59) Mo. 240.
 on rice, (53) 151.
 on seed corn, (51) 850; (52) Kans. 445.
 on seed corn, treatment, (58) 549.
 stage in life history, (57) 145.
 studies, (51) Minn. 550, N.Dak. 847.
 sp., notes, (60) 832.
 spp., notes, (58) 851.
- Gifblaar poisoning, (60) 573.
- Gigantism and genetic constitution, (56) 630.
- Gigantorhynchus moniliformis, intermediate host of, (58) 663.
- Gila region of Arizona, geologic and hydrologic data, (51) 185.
- Gillettea cooleyi, paper on, (57) 554.
- Gingelly cake, feeding value, (51) 676.
- Ginger—
 cultivation, preparation, and trade, (57) 141.
 culture and curing, (56) 236.
 helminthosporiose, notes, (58) 143.
 tests, (59) Hawaii 626.
- Ginseng moldy seed, notes, (54) 745.
- Gipsy moth—
 abundance and damage, estimating, (51) 356.
 biological studies, (59) 154.
 caterpillars, effect of thyroid feeding, (60) 247.
 control, (51) 552, 760, Conn.State 851; (55) Conn.State 251, 355.
 control by airplane dusting, (57) 856.
 control in New Jersey, (52) 557; (54) 156; (56) 360; (60) 556.
 control in Spain, (59) 858.
 development and weight, effect of vitamins, (59) 648.
 imported egg parasites of, (53) 561.
 in Algeria, (57) 554.
- Gipsy moth—Continued.
 in New Jersey, eradication work, (58) 559.
 in Quebec, (54) 153; (55) 253; (56) 458.
 parasite, new parasites of, (57) 365.
 parasite, studies, (54) U.S.D.A. 756.
 parasites and hyperparasites in Morocco, (59) 155.
 parasites of, (51) 162.
 pebrine of, (58) 755.
 problem in New York State, (51) 158.
 pupae, intersexuality in, (51) 635.
 quarantine, (59) Conn.State 99.
 quarantine, enforcing, (54) 154.
 spread and control, (60) Conn.State 751.
 spread and winds, (52) 355.
 summary, (51) 661; (53) 51.
 supermale, development of sex organs, (54) 128.
 work, Conn.State, (53) 450; (57) 160.
- Girls—
 basal metabolism, (53) 862; (55) 895; - (59) Ohio 288.
 Chinese, growth measurements, (54) 592.
 club manual for meal planning and preparation, (57) Ill. 591.
 club work, Hawaii, (54) 189.
 club work, 1922, (51) U.S.D.A. 796.
 clubs, garment making, (51) 494.
 clubs, organization, (54) 86.
 clubs, organization and programs, (52) 795.
 dresses, making, (60) U.S.D.A. 98.
 4-H club, food projects, (54) Ill. 86.
 4-H club national encampment, editorial, (59) 106.
 4-H club, work of, U.S.D.A. (54) 86; (56) 84, 691.
 4-H clubs in Missouri, (52) 795.
 4-H clubs, place in public school system, (59) U.S.D.A. 186.
 preparation for rural social life, (56) 889.
 private school, growth standards, (59) 289.
 training for rural life, (60) 388.
 underweight and overweight, percentages, (54) 693.
- Gizzard worms in poultry, (51) N.C. 884; (52) Kans. 481.
- Glacial relics, genealogy, (57) 120.
- Gladioli—
 breaking rest period, effect, (58) 645; (60) Ill. 231.
 chemical treatments for bud growth, (60) 425.
 culture, (52) Alaska 536; (56) Ill. 235.
 culture, treatise, (57) 242, 341; (58) 142.
 forcing, studies, (54) Ill. 336.
 history, development, and culture, (58) 645.

- Gladioli—Continued.
 propagation and culture experiments, (58) Alaska 435.
 propagation and varieties, (51) Ohio 841.
 varieties and culture, treatise, (53) 644.
 variety tests, (58) Can. 836.
- Gladiolus—
 bacterial blight, (51) 156.
 bacterial diseases, (56) 54.
 corm bacterial diseases, control, (59) Mich. 445.
 corm rot, notes, (58) 659, 853; (59) 246.
 corms, storage in Florida, (58) 841.
 corms, storage in Illinois, (58) 841.
 corms, treatment in greenhouse, (58) Ill. 334.
 diseases, (51) Ohio 899.
 dry rot disease, description, (59) 152.
 dry rot, notes, (57) 159; (59) 534.
 fertilizers, (58) 142.
 flowers, sterilities in, (60) 46.
 hard rot, notes, (58) 443.
 heart rot, control, (56) 551.
 leaf and corm disease, (52) 654.
 Penicillium rot, notes, (60) 354.
 rot, notes, (56) S.C. 539.
- Glanders—
 experimental studies, (53) 382.
 notes, (54) 171; (57) 278.
 relation to meliodosis, (53) 678.
- Glass—
 containers, paraffined, for culture experiments, (55) 817.
 electrodes, use in biochemistry, (55) 310.
 screens for light radiations curative of rickets, (56) 295, 593.
 substitute, effect upon growth of chicks, (56) 868.
 substitutes for hotbeds, value, (57) Okla. 533.
 substitutes for poultry houses, effect on chick growth, (59) 265.
 substitutes, value for radiating ultra violet rays, (59) Wis. 70, Iowa 71.
- Glauconite, potash from, (55) 422.
- Gleditsia triacanthos roots, bacteria in, (57) 26.
- Gliadin—
 definition, (54) 802.
 in flour, studies, (59) 112.
 isoelectric points, (53) 803.
 preparation, (56) 202.
 preparation, solubility, and specific rotation, (54) 610.
 solubility, (54) 502.
 specific dynamic action, (52) 665.
 tyrosine in, (56) 13.
 wheat, denaturation, (58) 111.
- Glinka, K. D., editorial note, (58) 405.
- Gliricidia—
 maculata as green manure and cover crop, (52) 732.
 sepium as shade plant for coffee, (60) P.R. 740.
- Gliricola porcelli, control, (52) Calif. 59.
- Globulin in flour, studies, (59) 112.
- Globulins—
 of potato plants, effect of mosaic, (59) N.Dak. 842.
 of rice, (58) 111.
- Gloeophyllum spp., notes, (54) 150.
- Gloeosporium—
 alborubrum, notes, (54) 549; (55) 151.
 capreae, notes, (58) 449.
 caulivorum, notes, (58) 340.
 caulivorum, studies, (58) 548.
 cyclaminis n.sp., description, (57) 852.
 eriobotryae, notes, (54) 453.
 eucalyptorum, notes, (57) 450.
 fructigenum hollandica n.var., studies, (60) 642.
 fructigenum strains, physiological behavior, (54) 252.
 hysteroideum, description, (57) 354.
 lagenarium, notes, (58) 647.
 limeticolum, notes, (55) 350, 656; (56) 455; (57) 851; (59) 152; (60) 345.
 limeticolum, susceptibility of citrus varieties to, (53) 549.
 lindemuthianum, notes, (51) 247; (55) 652.
 musarum, studies, (51) 250; (52) 653.
 of oak and sycamore, (55) 250.
 perennans n.sp., description, (54) Oreg. 350.
 perennans, notes, (56) Wash.Col. 540.
 piperatum, notes, (54) 545; (55) Ga. 145; (58) 653; (60) 644.
 piperatum, studies, (53) Ga. 246.
 ribis, notes, (56) 748.
 spp., notes, (54) 247; (56) 541.
 venetum, notes, (60) 553.
- Glomerella—
 cingulata, notes, (52) 549; (54) 254; (55) 454; (58) 54; (59) 646; (60) 156.
 cingulata, perithecia production, effect of ultra-violet irradiation, (59) 519.
 cingulata, studies, (57) Va. 448.
 cingulata vaccinii, notes, (56) 249.
 glycines, n.n., notes, (55) 752.
 gossypii, notes, (53) 148, 351; (56) 351, 750; (60) 241.
 nephrolepis, proposed name, (54) 255.
 piperata, notes, (54) 545; (60) 644.
 psidii, notes, (53) 246.
 rufomaculans, notes, (54) 144, 448.
 rufomaculans on grape in Japan, (53) 151.
 sp., notes, (52) 151.
- Glossina morsitans. See Tsetse flies.
- Glow worm, Indian, habits and life history, (52) 552.
- Glucokinin—
 effect on corn seedlings, (55) 817.
 from yeast, (52) 765.
 studies, (51) 66.
- Glucose—
 absorption from intestine, (51) 559.

- Glucose—Continued.
 concentration in blood, curves for, (54) 192.
 copper number for, (58) 115.
 determination in blood, (55) 192.
 determination, iodimetric, (59) 506.
 determination, method, (53) 504.
 dextro-, transformation in the intestines, (51) 165.
 effect on plants, (51) 224.
 equivalent of sugars, (52) 806.
 estimation in presence of phosphate buffers, (56) 14.
 fermentation, effect of insulin, (52) 110, 203, 611.
 in urine, estimating small amounts, (51) 318.
 in vitro, effect of insulin and muscle tissue, (53) 64.
 manufacture, (54) 506.
 oxidation by air, (54) 23; (55) 628.
 oxidation by iodine, (51) 66.
 oxidation in alkali solutions of iodine, (58) 11.
 propionic fermentation rate, (51) 109.
 respiratory exchange after ingestion, (51) 465.
 utilization by fungi, (53) 123.
- Glucoside, second, in *Monotropa hypopitys*, (53) 827.
- Glucosides and carbohydrates, treatise, (52) 108.
- Glucosides, hydrocyanic acid determination in, (51) 409.
- Glucosides in plants, rôle, (59) 217.
- Glue—
 animal, water-resistant, (56) 802.
 chemistry of, (53) 312.
- Glutamic acid—
 decomposition, (53) 310.
 in proteins, (60) 502.
 relation to nutrition, (58) 892.
- Glutathione—
 colorimetric estimation, (58) 12.
 determination in animal tissues, (57) 90.
 distribution in insects, (57) 57.
 effect on oxidation of fats and proteins, (55) 409.
 in insects as arsenical receptor, (58) 557.
 in tissues, determination, (54) 9.
 production in bacterial cultures, (52) 611.
 review of literature, (54) 310.
 synthesis of, (54) 9.
- Glutelins—
 of grains, comparative study, (59) 11.
 studies, (58) 110, 410; (60) 202.
- Gluten—
 composition, (53) 803.
 determination in wheat flour, factors affecting, (52) 112.
 feed, feeding value, (55) 163.
 feed, value for milk production, (56) 472.
- Gluten—Continued.
 flours and breads, sugar value, (53) 266.
 formation, effect of oils and fats in, (57) 389.
 hydration, effect of ammonium chloride, (53) 105.
 in flour, relation to gas retention of dough, (54) 190.
 in wheat and flour, quality, (57) 111.
 meal, feeding value, Mo., (51) 776; (54) 762; (58) 467.
 meal, value for egg production, (53) Mo. 471.
 of flour mill streams, quality, (53) 409.
 of wheat and rye, studies, (51) 806.
 physical state, effect on loaf volume, (51) 803.
 proteins, identity, (53) 409.
 quality, (53) 105.
 quality, relation to lipoids, (52) 202.
 quality, viscosity as measure, (53) 314.
 rate of drying, (59) 110.
 washing methods of flour testing, (58) 805.
 washing problem, (53) 105.
- Glutenin—
 concentration in wheat flour, (59) 111.
 imbibitional properties, determination, (52) 13.
 in flour, studies, (59) 112.
 individuality, (54) 501.
 isoelectric points, (53) 803.
 preparation and determination, (54) 309.
- Glutinium macrosporum n.sp., description, (57) 352.
- Glyceric aldehyde, preparation, (57) 817.
- Glycerids of lard, (51) 709.
- Glycerin—
 as factor in test for methyl alcohol, (51) 505.
 use in diabetic diets, (52) 464.
- Glycerol—
 and aqueous solutions, freezing points, (54) 201.
 hygroscopic properties, (55) 796.
 identification, (52) 614.
 manufacture from sugar, fermentation processes in, (52) 315.
 production, properties, and uses, (59) 803.
 respiratory exchange after ingestion, (51) 465.
 use in ashing flour, (53) 314.
- Glycero-phosphoric acid, physiological action in fowls, (55) 165.
- Glyceryl margarate, including in diabetic diet, (52) 766.
- Glycine—
 decomposition, (53) 310.
 effect on vitamin B-deficient pigeons, (58) 88.
- Glyciphagus cadaverum in flaxseed, (56) 662.

Glycozell as protein substitutes for milk goats, (53) 275.

Glycogen—

formation as evidence of inulin utilization, (58) 590.

formation, effect of insulin, (51) 560, 768.

relation to spore ejection, (58) 421.

Glycols, production and properties, (59) 803.

Glymol, coloring matter for, Mich., (52) 314, 796.

Glyphina eragrostidis, parasite of, (52) N.Y.Cornell 360.

Glyphipteryx fischeriella, structure, life history, and distribution, (58) 457.

Glyphodes indica in French West Africa, (54) 259.

Glyphodes pyloalis, notes, (53) 558.

Glypta—

mutica, notes, (54) Mich. 354.

rufiscutellaris, notes, (60) Conn.State 751, Md. 841.

spp., notes, (56) Pa. 156.

Glyptocelis squamulata, control, (59) Calif. 756.

Gnathostoma hispidum as human parasite, (51) 680.

Gnats, fungus, of New Zealand, synopsis, (57) 859.

Gnomonia—

bullata n.sp., description, (58) 449.

cingulata n.sp., description, (58) 55.

erythrostoma, notes, (56) 747.

leptostyla, notes, (56) 748.

rubi, notes, (53) 153.

rubi on rambler roses, (57) 450.

sp., notes, (53) Iowa 746.

ulmea, notes, (58) 41.

veneta, notes, (53) 43.

Goat—

diseases, notes, (59) 471.

lice, control and eradication, (58) U.S.D.A. 858.

louse, notes, (57) Tex. 160.

pox and pustular stomatitis, (59) 173.

Goats—

adaptability and characteristics and uses of milk, (59) Iowa 774.

Angora, for clearing land, (51) Can. 573.

Angora, industry in South Africa, (51) 772.

Angora, ridgeling character, inheritance, (59) Tex. 726.

Angora, weights of fleeces, (52) Tex. 569.

breeding for milk production, (55) N.Mex. 470.

breeding, notes, (55) 199.

breeds, breeding, and exploitation, (56) 764.

breeds in Rumania, (55) 768.

butter, composition of fat in, (53) 502.

care, management, and uses, (53) 575.

carriers of *Micrococcus melitensis*, observations and autopsy, (51) 583.

Goats—Continued.

castrated, growth studies, (53) 268.

diseases and pests in South Africa, (54) 477.

diseases, hematological studies, (60) 665.

diseases of, (60) 475.

energy exchange, factors affecting, (53) 663.

horn growth in, (59) Wis. 28.

horns in, inheritance, (55) 525, 732.

immunizing against *Micrococcus melitensis*, (58) 677.

inception of lactation in, (55) 368.

infestation with lice and ticks, (58) P.R. 574.

land clearing with, (60) Oreg. 762.

milk, breeding, (51) N.Mex. 476.

milk, care and management, (56) 772.

milk, effect of irradiation, (56) 771.

milk, improvement, (57) N.Mex. 74.

milk, chlorine content during lactation period, (54) 867.

milk, Jack cheese from, (52) Calif. 80.

milk, Roquefort cheese from, (54) Calif. 475.

milk, testing for butterfat, (55) Calif. 370.

milking, effect of sunlight, (53) Wis. 464.

milking, effect of ultra-violet light on, (54) 274.

normal and castrated, blood of, (55) 578; (58) 273.

parasites affecting, (60) P.R. 774.

parasites and parasitic diseases, (56) 678.

protein substitutes for, (53) 275.

range, food of, (58) 166.

reproduction and sterility, (59) 221.

stomach worms in, (54) Tex. 379; (58) 74; (59) Tex. 776; (60) Oreg. 774.

Toggenburg, inheritance of horns, wattles, and color, (56) 224.

Gciter—

among school children, (55) 389.

endemic, among school children, (58) 595.

endemic, in Colorado, (53) 663.

endemic, in New Zealand, (55) 389, 390.

endemic, in Oregon, (58) 595.

endemic, in swine, (57) 79.

endemic, in United States, distribution, (56) 697.

in children in New York City, (54) 295; (56) 396.

in farm animals, (60) Mont. 668.

in lambs, prevention, (54) Can. 61

in Massachusetts, (57) 296.

in Michigan and iodine deficiency, (51) 668.

in Michigan, survey and prevention, (52) 265.

in poultry, (53) 786; (55) Mich. 877.

- Goiter—Continued.
 in sheep and cattle, control, (60) Mont. 773.
 in Utah, relation to water supply, (53) 369, 463.
 iodization of water supplies for, (57) 693.
 methods of administering iodine for, (51) 72.
 new type, related to vitamin-deficient carbohydrate, (58) 298.
 notes, (53) Minn. 477.
 prevention, (56) 296; (58) 898.
 prevention and cure, (52) 366.
 prevention, efficiency and safety, (60) 495.
 prevention in young animals, (54) Mont. 379.
 prophylaxis, history, (60) 495.
 prophylaxis, limitations, (57) 693.
 prophylaxis, treatment of water for, (53) 463.
 prophylaxis, value of canned salmon, (55) 596.
 relation to iodine, (53) 63, 202; (57) 297.
 relation to iodine in drinking water, (58) 897; (59) 12.
 relation to iodine in food and drink, (52) 68; (55) 490.
 relation to iodine in soils and water in India, (58) 595.
 survey at Northwestern University, (59) 396.
- Gold spot, notes, (56) 659.
- Golden-glow borer, paper on, (60) 844.
- Goldenrod—
 leaf beetle, notes, (52) Me. 661.
 rayless, as poisonous plant, (55) U.S.D.A. 372; (56) 572.
- Goldenseal leaf blight, notes, (54) 745.
- Goldfish—
 inheritance of dove-tails and telescope-eyes, (51) 828.
 inheritance studies, (53) 832.
 transparency and mottling in, (60) 218.
- Golf—
 courses, injury from changa, (56) 359.
 courses, winter injury, (60) 347.
 greens as affected by Japanese beetle, (51) 58.
 greens, bluegrass leaf spot affecting, (57) 347.
 greens, brown patch control, (54) Ohio 351; (57) 343, 345, 346, 347, 444, 642; (58) 546, 747.
 greens, studies, (60) R.I. 35.
- Golonbatz fly, ravages in Rumania, (53) 257.
- Gomphrena globosa leaf spot, notes, (57) 56.
- Gonad grafts—
 germ cell differentiation in, (56) 522.
 in embryonic chicks, (53) 631.
 in fowls, (54) 826.
- Gonadectomy, effect on size of body and organs of mice, (56) 67.
- Gonads—
 and thyroids, reciprocal size changes in pigeons, (54) 730.
 embryonic chick, transplanted, behavior, (55) 330.
 in fish, dependence of male characteristics on, (56) 430.
 of fowls, histological studies, (53) 329; (55) 331.
 of mice, development and morphology, (57) 221; (60) 219.
 physiological properties, (56) 664.
 properties, (60) 633.
- Gonatopus contortulus affecting beet leafhopper, (52) Calif. 58.
- Gonderia mutans, notes, (59) 173.
- Gonderia mutans or Theileria mutans, (60) 573.
- Gonderia ovis in blood of splenectomized sheep, (57) 77.
- Gonderia ovis, notes, (51) 383; (53) 183, 482.
- Gongylonema—
 scutatum of cattle, transmission experiments, (55) 474.
 spp., notes, (53) 760.
- Gonocotes—
 abdominalis, control, (60) 266.
 gigas, control, (52) Calif. 59.
- Gonipterus scutellatus, studies, (53) 56.
- Gonococcus, effect of soap on, (54) 796.
- Goose septicaemia, outbreak, (52) 684.
- Gooseberries—
 breeding, (55) 836; (56) S.Dak. 532; (57) Can. 236; (58) Ill. 333; (60) Ill. 230.
 canned, effect of sulfur spray residues, (60) Oreg. 790.
 canned, hydrogen in, (55) Oreg. 643.
 cold storage studies, (58) 535; (60) 541.
 culture, (53) Mo. 241, 343.
 culture and relation to white pine blister rust, (52) U.S.D.A. 343.
 culture experiments, (58) Alaska 435.
 culture in Ontario, (55) 837.
 fertilizer experiments, (52) 141; (54) 643; (57) 834.
 notes, (52) Alaska 536.
 of New York, (55) N.Y.State 39.
 pruning, (51) Kans. 40.
 sprayed with lime sulfur, effect on cans, (60) Oreg. 745.
 spraying experiments, (54) Ill. 350.
 Sunset, origin and characteristics, (54) S.Dak. 140.
 taxonomic study, (53) N.Y.State 424.
 varieties, (52) 237.
 varieties, pollination studies, (57) 536.
 variety tests, (56) Ill. 343; (60) Minn. 140, Alaska 736.
 yield records, (58) Can. 836.
- Gooseberry—
 anthracnose, control, (54) Ill. 350.
 anthracnose, notes, (57) 343.

Gooseberry—Continued.

- aphid, green, notes, (57) Me. 163.
 aphid in Ohio, (51) 360.
 borer, black, studies, (60) Oreg. 753.
 bud midge, notes, (60) Oreg. 753.
 bushes, composition, effect of fertilizers, (60) 45.
 die-back, notes, (54) 745.
 diseases in East Sussex, (54) 253.
 diseases, studies, (54) 449.
 Fredonia, new variety, (59) N.Y.State 233.
 leaf spot, control, Ill., (54) 350; (56) 349.
 leaf spot, notes, (57) 343.
 mildew, American, control, (60) 450.
 mildew, American, control in Ireland, (60) 449.
 mildew, American, protection against, (57) 849.
 mildew, control, (57) 651; (59) 645.
 mildew, notes, (56) 541; (58) 442.
 root borer, studies, (54) 557.
 rust, notes (59) 645.
 sawflies, paper on, (60) 844.
 sawfly, notes, (56) 659.
 seeds, germination, (52) N.Y.Cornell 46.
 spiny-fruited, from Florida, (51) 825.
 witch-broom aphid, control, (55) 53.
 witch-broom aphid, development, (53) 359.
 witch-broom aphid, notes, (56) Iowa 855.
 Gopher, pocket, poisoning, (53) Minn. 551.
 Gophers, pocket, control, (55) Minn. 252.
 Gorse weevil, rôle in control of gorse, (59) 658.
 Gorytes costalis, notes, (53) 656.
 Gossard, H. A., paper on, (55) Ohio 97.
 Gossyparia spuria, *see* Elm scale, European.
 Gossypium, classification of genus, (58) 526.
 Gossypol—
 destruction in cottonseed products, (59) 12.
 in cottonseed, (59) N.Mex. 222.
 in cottonseed, changes in chemical composition, (57) 609.
 in cottonseed products, occurrence and destruction, (60) 575.
 in cottonseed, relation to toxicity, (51) 880.
 pharmacology of, (51) 880.
 rate of formation in cottonseed, (59) 434.
d., relation to toxicity of cottonseed meal, (60) 868.
 studies, (55) 109.
 Gothic roof in barn construction, description, (54) Mich. 584.
 Gouda cheese making, (52) 177.
 Gousiekte in sheep, (52) 84.
 Gout, effect on calcium in blood, (52) 465.
 Gout fly in Poland, (59) 860.

- “Gouwziekte” veld, vegetation and flora, (52) 82.
 Government in United States, cost, (59) 384.
 Gracilaria—
 azaleella—
 biology and control, (57) 760.
 habits and development, (57) 658.
 notes, (57) 655.
 outbreaks, early detection, (59) 558.
 studies, (52) 660.
 summary, (60) 456.
 spp., notes, (52) 361.
 syringella, notes, (52) Wash.Col. 852.
 syringella, paper on, (54) 152.
 Graft hybrids, studies, (57) 29, 222.
 Grafting—
 effect on plant perfumes, (53) 627.
 heredity acquired by, in Helianthus dangeardi, (59) 520.
 physiology of, (51) 345.
 reciprocal effects from, (57) 421.
 Grain—
 acre of, sampling, (56) 227.
 Act of Canada, text, (55) 82.
 airtight storage, (52) 155.
 and legume mixtures, culture experiments, (57) Alaska 522.
 aphid, spring—*see also* Green bug. notes, (53) Okla. 155.
 beetle, saw-toothed—
 biology, (55) 764.
 in raisins, control, (54) 662.
 metal barriers against, (56) 157.
 revival after fumigation, (57) 855.
 binders, tests, (56) 80.
 bins, estimating capacity, (53) U.S.D.A. 895.
 borer, lesser, notes, (56) 659.
 breeding experiments, (55) Minn. 228.
 breeding, symposium on, (57) 826.
 carbohydrate reserves in types, (59) 323.
 Chicago trade in, (51) 298.
 cleaners in heavy dockage areas, (54) 283.
 cleaners, types, (57) U.S.D.A. 82.
 cleaning on farms, (58) U.S.D.A. 35.
 cleaning tests, (59) N.Dak. 881.
 cleaning with Bates' aspirator, (55) U.S.D.A. 279.
 combined, moisture content and drying, (60) 881.
 combining, and drying tests, (57) 581.
 composition, effect of irrigation, (51) 530.
 cooperative marketing in United States, (52) 93.
 cost of handling, (59) N.H. 284.
 crops, effect of phosphatic fertilizers, (55) 421.
 crops, germination, effect of soil acidity, (55) 418.
 crops, studies, at Ontario Agricultural College, (59) 129.

Grain—Continued.

- culture, effect on organic matter in prairie soils, (54) 623.
 culture experiments, (53) U.S.D.A. 333.
 disease, new, (56) 844.
 diseases, control, (53) Wis. 443; (54) 248.
 diseases, studies, temperature and moisture control apparatus for, (55) Wis. 145.
 dressed, statistical analysis of yield, (52) 526.
 drill, clogging with excess chemicals and brush hairs, (59) Calif. 781.
 drying experiments, (59) Ind. 782.
 drying studies, (60) 881.
 drying, symposium on, (58) 780.
 effect of fallow, (56) Wyo. 825.
 effect of irrigation water, (53) 735.
 effect of preceding crop, (53) U.S.D.A. 335.
 elevators—
 dust control in, (54) U.S.D.A. 879.
 floating dust in, removal, (53) 484.
 management, (55) N.Dak. 587.
 management problems, (54) Minn. 785.
 endosperm, phytosterols in, (54) N.Y.State 502.
 exporters, methods and operations, (51) 92.
 fall seeded, culture, (51) Ga.Coastal Plain 530.
 fall seeded, spring fertilization, (52) Mich. 796.
 fall, soil treatments for, (60) Mich. 24.
 farms, dry-farming methods on, (58) U.S.D.A. 331.
 feeding in boxes, effect, (58) Ill. 360.
 feeding value for wintering cattle, (56) Oreg. 365.
 fertilizer experiments, (52) Del. 119; (55) 220; (58) Ga.Coastal Plain 732.
 fires, prevention, (51) 889.
 food from, treatise, (56) 490.
 for fattening swine, preparation, (57) 659.
 for laying hens, comparison, (52) Mont. 476.
 for winter cover and spring hay, (59) N.C. 728.
 futures, hedging by dealing in, (55) 185.
 futures, statistical information, (52) U.S.D.A. 393.
 germinability, effect of time of threshing, (56) 725.
 ground v. whole, for chickens, (53) Ohio 874.
 ground v. whole, for laying hens, (55) 771.
 growers' cooperation in western Canada, (60) 87.

Grain—Continued.

- growing in Great Britain, early estimates, (52) 194.
 handling, equipment for, (57) Calif. 282.
 harvested, sweating in, (54) 237.
 harvested with the combine, cleaning, (60) 881.
 heating caused by insects, (52) 555.
 heavy feeding to poultry, effects, (54) 669.
 high-fiber content, effect on poultry, S.Dak. (56) 567, 669.
 high-protein, feeding value, (59) Ohio 466.
 hulls, feeding value, improving, (55) Mass. 561.
 hybrids, comparison, (53) Minn. 130.
 Illinois, market destinations, (60) Ill. 285.
 in silage, utilization by cattle, (58) S.C. 671.
 in variety tests, harvesting, (57) 428.
 inheritance studies, (59) 223.
 Inquiry Commission, Royal, report, (55) 687.
 insects, estimating losses caused by, (55) 355.
 intervarietal competition, (58) 829.
 irrigation experiments, (51) N.Mex. 483; (59) U.S.D.A. 678.
 judging club, (53) 695.
 judging, use of ultra-violet light in, (60) 538.
 manuring experiments, (52) 722.
 marketing of western Canada, (59) U.S.D.A. 89.
 marketing organization, Minneapolis, problems, (58) 589.
 markets, terminal, (58) Ill. 380.
 mixtures for cows, tests, (52) Kans. 477.
 mixtures for laying hens, (52) Ky. 475.
 mixtures of specified protein content, preparation, (60) Ohio 758.
 mixtures, seeding experiments, (53) Minn. 130.
 mixtures, tests, (56) Wis. 733.
 moth affecting wheat, (51) 157.
 newly threshed, dormancy, (52) 737.
 nutritive and vitamin values, as affected by manure, (52) 212.
 plowing experiments, (53) U.S.D.A. 335.
 plowing of stubble and fallow for, (60) Mont. 730.
 production and trade, (54) 290.
 production in Sicily, climatic conditions, (53) 615.
 profits, (56) Ill. 386.
 rations for pigs on alfalfa pasture, (53) U.S.D.A. 373.
 rations for steers, (51) Wash.Col. 171.
 rations, full v. limited, for steers, (57) 67.

Grain—Continued.

- Research Laboratory of Canada, notes, (57) 800.
 rotation and tillage tests, (60) Mont. 730.
 rotation experiments, (51) Minn. 636.
 rust, control, (51) 45.
 rust losses, reduced, (51) 48.
 rusts, studies, (56) Wis. 746.
 scratch, in poultry rations, value, (58) Okla. 269.
 scratch, variability in consumption, (54) 765.
 seed, smut-infected, disinfection, (54) 845.
 seed, treatments, effect of high temperature, (56) 544.
 seeding experiments, Ga.Coastal Plain, (56) 523; (58) 732.
 seeding machines, single, development, (56) 80.
 shipments, (58) Ill. 380.
 small—
 continuous cropping, (51) Minn. 119.
 drill calibration, relation to stand and yield, (52) 828.
 experiments, (60) Ariz. 133.
 fertilizer experiments, (58) S.C. 325.
 hay production, (52) Mont. 435.
 Marasmius parasitic on, (57) 840.
 seeding in furrows, (51) Kans. 137.
 spring sown, for eastern Oregon, (51) Oreg. 739.
 smuts—*see also* Cereal smut, Smut, and specific grains.
 notes, (55) 346.
 of Colorado, control, (59) Colo. 538.
 spring, time of seeding and yields, (55) Nebr. 229.
 standing, moisture content, effect of weather, (60) 881.
 statistics in United States, (51) 597; (53) 796.
 storage, drying, and shrinkage problems, (56) 181.
 storage in bags, weevils affecting, (54) 757.
 stored, insect control in, (55) U.S.D.A. 253.
 stored, insects affecting, (59) 554.
 stored, moisture, absorption in arid Southwest, (60) Ariz. 40.
 stored, protection from insect attack, (53) Calif. 52; (59) 57.
 straw, reduction to manure, (60) Oreg. 717.
 stripe rust, studies, (57) Idaho 740.
 stubble, spring v. fall plowing, (52) U.S.D.A. 828.
 summer and winter, differences, (57) 420.
 supplements for skim milk in poultry rations, (54) Ky. 371.

Grain—Continued.

- testing in Montana, (52) Mont. 638.
 textbook, (59) 685.
 tillering, relation to yield, (54) 635.
 trade—
 and milling industry, (59) 228.
 Canadian, yearbook, (53) 396; (55) 82.
 cooperatives, and exports of Soviet Union, (57) 385.
 documents, (52) 899.
 during World War, (60) 589.
 export, (60) 589.
 of Canada, (51) 296; (54) 81, 788; (56) 387.
 of Canada, report, (59) 485.
 of Montreal, (55) 81.
 report, (53) 191.
 report of Federal Trade Commission, (57) 785.
 studies, (53) 691; (59) Iowa 85.
 world, before and after the war, (59) 88.
 treated with copper carbonate dust, rate of flow through drill, (55) Calif. 375.
 variety tests, (53) Ariz. 733; (60) Ga. 815.
 variety tests, effect of border rows, (57) 725.
 viscosity and winter hardiness in, (57) 126.
 weevil, fumigation of cotton for, (59) 651.
 weevils, fumigation against, (52) U.S.D.A. 661.
 whole v. chop for pigs, (54) Can. 61.
 winter, fertilizer experiments, (52) 723.
 yield, relation to seed size, (52) 731.
 yields, (51) Nebr. 831; (58) U.S.D.A. 325.
 yields and rainfall in Sicily, (52) 16.
 Grains, comparison, for pigs, (51) Mich. 174.
 Gram—
 Fusarium wilt, (51) 752.
 stain, reaction of micrococci to, (55) 427.
 staining methods, (58) N.Y.State 125.
 wilt, notes, (58) 143.
 wilt, pot culture experiments, (54) 246.
 Gramineae—
 bacterial diseases, (57) 540.
 streak disease in Mauritius, (56) 447.
 Granary insects, notes, (54) 257.
 Granary weevil—
 factors in ecology of, (57) Minn. 363.
 life history and habits, (55) U.S.D.A. 460.
 new chemicals for, (60) 844.
 notes, (53) 652; (59) 853.
 resistance to high and low temperatures, (52) 458.
 toxicity of hydrocyanic acid for, (60) 454.

Granite weathering, (52) 323.

Grape—

- anthracnose in Florida, (52) 549.
- anthracnose, notes, (57) Miss. 353.
- anthracnose, studies, (59) 545.
- anthracnose, winter treatment, (56) 850.
- berry moth, bionomics and control, (60) Del. 750.
- berry moth, control, (56) 458; (59) 61.
- berry moth, notes, (52) Mich. 354; (56) N.Y.State 252.
- berry moth, studies, (54) Mich. 354.
- bitter rot, notes, (52) 549.
- black measles, control, (54) Calif. 751.
- black rot, control, (51) 156.
- black rot in Florida, (52) 549.
- black rot, notes, (52) Del. 844; (54) S.C. 648; (57) 343, Miss. 353; (59) 545.
- blossom midge, notes, (52) Mich. 355.
- bud beetle, control, (59) Calif. 756.
- buds, microscopic studies, (52) Calif. 43.
- court-noué, notes, (59) 545.
- court-noué, studies, (53) 354; (58) 249; (59) 546.
- cuttings, rooting, (57) Calif. 240.
- diseases—
 - control, Del., (54) 647; (58) 852.
 - early sprayings for, (57) 851.
 - in Florida, (55) Fla. 150.
 - in Illinois, (53) 547.
 - in Japan, (53) 151.
 - in North Caucasus, (58) 647.
 - notes, (55) Mass. 249.
 - studies, (59) 546.
- downy mildew—
 - control, (51) 156; (57) 850; (60) N.Y.State 749.
 - In Australia, (57) 850.
 - in Egypt, (54) 453.
 - notes, (52) 746; (55) 346; (57) 55.
 - studies, (60) 353.
 - treatment in autumn, (51) 757.
 - treatments, (59) 546.
 - Villedieu formula against, (59) 546.
- erinoze disease, winter treatment, (56) 850.
- erinoze, notes, (59) 545.
- esca, studies, (57) 850; (58) 249, 250.
- fla beetle, biology, (57) 64.
- fla beetles, control, (51) Mo.Fruit 856.
- industry, economic status, (57) Calif. 884.
- juice, preparation, (57) 891.
- juice, removal of sulfurous acid from, (54) 112.
- juices, composition, factors affecting, (54) 40.
- juices, volatile flavor in, distribution, (55) 711.
- leaf scorch, description, (57) 850.

Grape—Continued.

- leaf spottings in American varieties in France, (59) 546.
 - leafhopper—
 - bionomics and control, Del., (58) 454; (60) 750.
 - control, (52) Calif. 56, 355, N.Y.State 553, 658; (53) 454; (54) Ky. 355; (57) 855.
 - control, machine for, (56) 179.
 - life history notes, (56) Del. 357.
 - rate of oviposition, (57) 558.
 - studies, (51) Ariz. 359; (52) Ky. 753; (54) Mich. 354.
 - leaves, chlorosis and premature fall, (53) 325.
 - mealybug, notes, Mich., (54) 354, 656.
 - mealybug, parasites of, (54) 558.
 - mildew control in France, (52) 749.
 - mildew, control with sulfur, (59) Calif. 747.
 - mildew, notes, (52) 544; (53) 43; (54) S.C. 648.
 - mildew outbreak of 1925, (58) 250.
 - mildew, treatment for, (55) 350.
 - Oidium, control, (57) 850, 851.
 - Oidium, notes, (53) 151.
 - phylloxera—*see also* Phylloxera.
 - and viticulture, (52) 756.
 - control, (56) Calif. 255.
 - in California, relation to soil types, (59) U.S.D.A. 154.
 - paper on, (51) 55.
 - pigments, chemistry, (52) 610, 803; (56) 311.
 - pigments, studies, N.Y.State, (54) 503; (58) 802; (60) 709.
 - pollen, longevity, (55) 325.
 - powdery mildew, control, N.Y.State, (52) 558; (60) 749.
 - red burn, cause, (54) 253.
 - red scald, description, (59) 547.
 - ripe rots, control, (55) 453.
 - root rot, life history, (51) 452.
 - root worm, control, N.Y.State, (52) 558; (53) 455.
 - root worm, studies, (54) N.Y.State 552.
 - rougeot or leaf scorch, notes, (57) 851.
 - rust in Florida, (56) 249.
 - rust, notes, (53) 43.
 - sclerosis, (58) 343.
 - seeds, germination, factors affecting, (57) 415.
 - sirup preparation in South Africa, (51) 716.
 - stocks, American, adaptability in South Africa, (53) 844; (57) 240.
 - thrips, notes, (60) 649.
 - white rot, in Ontario, (51) 542; (54) 144.
 - white rot, notes, (52) 549.
 - white rot, studies, (52) 849; (53) 250; (59) 547.
- Grapefruit—
- anthracnose, cause, (57) 851.
 - blue mold rot, control, (52) 451.

Grapefruit—Continued.

- breeding for scab resistance, (51) P.R. 847.
 canning, (52) Calif. 14.
 coloring, (55) U.S.D.A. 142.
 cultivation experiments, (59) Tex. 740.
 effect of potash, (60) Fla. 139.
 Florida, cold storage experiments, (54) U.S.D.A. 644.
 juice and outer peel, constituents, (59) 93.
 Kao Pan Siamese seedless, studies, (56) 645.
 melanose, control, (52) Fla. 241.
 Phomopsis from Isle of Pines, (52) 352.
 prices and shipments from Florida, (59) 886.
 production and trade, (60) Calif. 783.
 products, vitamins in, (51) 666.
 propagation studies, (59) Calif. 737.
 rate of water loss, (59) Calif. 722.
 refuse, feeding value, (56) Fla. 872.
 rind, vitamins and other constituents in, (56) 409.
 scab resistance in, (58) P.R. 542.
 scaly bark, studies, (60) Fla. 146.
 seedlings in Hoagland's nutrient solution, growth, (55) Calif. 339.
 spraying, (55) Fla. 841.
 stem-end rot, control, (51) P.R. 838.
 storage methods, (51) P.R. 838.
 thread blight, notes, (60) 344.
 toxic and insulin-like substances in, (51) 768.
 transportation from Porto Rico, (52) U.S.D.A. 539.
 trees, fertilizer experiments, Fla., (54) 334; (55) 832.
 withertip, notes, (54) Fla. 342.
- Grape-hyacinth bulbs, production, (53) U.S.D.A. 144.

Grapes—*see also* Vineyards.

- Almeria, production in Spain, (52) 343.
 American, grafting, (52) N.Y.State 538.
 artificial pollination, (53) 143.
 breeding experiments, (54) 838; (56) S.Dak. 641; (59) N.C. 739.
 breeding for hardiness, (56) S.Dak. 532.
 breeding in Maryland, (51) 346.
 breeding, value of homozygous species, (60) 528.
 California, marketing, (60) U.S.D.A. 87.
 cane length and pruning, (57) N.J. 39.
 changes during ripening, (52) 641.
 cold storage studies, (54) 644; (58) 535.
 Concord—
 fruiting shoots from primary and secondary buds, (58) 237.
 growth and yield, (56) 142.
 growth studies, (51) 538.

Grapes—Continued.

- Concord—Continued.
 growth yield relationship, use, (58) 237.
 pruning, (53) Mich. 40.
 pruning and chemical studies, (57) Md. 240.
 pruning and training, (54) 140.
 culture—
 at Newlands, (53) U.S.D.A. 840.
 commercial, (57) 140.
 experiments, (53) Ariz. 741; (54) Hawaii 136; (55) Miss. 235, Okla. 441; (56) Miss. 739; (57) N.Mex. 235; (58) Ark 332.
 in Arizona, (55) U.S.D.A. 438.
 in Australia, (52) 641.
 in Connecticut, (51) 346.
 in English greenhouses, (52) 341.
 in Italy, (58) 237.
 in Kansas, (59) Kans. 141.
 in Rumania, (53) 344.
 in Yugoslavia, (52) 142.
 liming for, (58) 249.
 treatise, (52) 641; (57) 341.
 drying, (52) Calif. 14.
 duty of water for, N.Mex., (54) 680; (55) 439, 478.
 effect of rye cover crop, (54) 40.
 fallacies in viticultural practice, (60) 234.
 fertilizer experiments, (52) N.Y.State 537, Mich. 740; (54) N.Y.State 538; (55) Ark. 36, N.Y.State 142; (56) N.Y.State 235; (58) 439, N.Y.State 835; (59) R.I. 633; (60) 541.
 fertilizing, unusual results, (54) 740.
 flower types, (58) 741.
 for export, packing experiment, (58) 541.
 forcing, (58) 437.
 fresh, export studies, (57) 140.
 fresh, exports from Victoria to England, (55) 441.
 fresh, preservatives for, (53) Calif. 744.
 from Almeria, Spain, embargo on, (53) 454.
 fruit weight relation to bud position, (53) Ohio 535.
 fruiting habits, (54) Mo. 738; (56) 237.
 grafted, value, (52) N.Y.State 443.
 grafting, (59) N.Y.State 43.
 harvesting and packing in California, (53) Calif. 690.
 hybrids, (55) 239.
 Illinois, pruning and training, (52) 641.
 improvement in Prussia, (52) 740.
 inheritance of characters in, N.C., (55) 236; (57) 236.
 insects affecting, (54) Mich. 354; (59) 555.
 introduction into Porto Rico, (53) 142.

Grapes—Continued.

- irrigation, duty of water project, (59) N.Mex. 231.
 irrigation experiments, (51) N.Mex. 483.
 Isabella, culture, (51) Hawaii 745.
 Isabella, pigments of, (57) N.Y.State 502.
 keeping qualities, Ill., (56) 234, 343.
 keeping quality, effect of wet weather, (58) Ill. 333.
 leaf and fruit color, correlation, (52) N.Y.State 729.
 muscadine, home utilization, (54) U.S.D.A. 87.
 muscadine, summer pruning, (55) Miss. 536.
 muscadine, yield, (59) Miss. 332.
 new early, (58) Mich. 439.
 new hardy seedless, (59) 531.
 new or noteworthy, (59) N.Y.State 233.
 nonsetting and shelling, (54) 751.
 nonvolatile acids in, (54) 7.
 notes, (52) N.Y.State 46; (55) Miss. 642.
 of Central Asia, cleistogamy in, (58) 741.
 of Pennsylvania, marketing, (58) 889.
 Ontario, notes, (60) Ill. 230.
 phylloxera resistance in, (53) Calif. 537.
 plant selection in, (60) 825.
 preparation for market, (59) U.S.D.A. 141.
 preservation by freezing, (52) Calif. 15.
 propagation, (54) Ohio 539; (59) Calif. 737; (60) Ark. 819.
 pruning, (51) Kans. 40, Nebr. 841; (52) Calif. 43, Wash.Col. 837; (54) Ill. 335, Nebr. 340; (59) N.Y.State 744.
 pruning and fruiting habits, (54) Mich. 340.
 pruning, cane v. spur, (59) Nebr. 832.
 pruning, effect on pollen germination and setting of fruits, (56) Calif. 238.
 pruning effects, (55) Calif. 440; (56) 141; (59) Calif. 737.
 pruning experiments, (53) 398; (56) Ill. 343, Kans. 833; (57) Nebr. 533; (60) West.Wash. 740, Ark. 819.
 pruning systems, (58) 237.
 ripening, changes during, (57) 140, 834.
 selection, (57) 140.
 selection of planting stock, (55) Calif. 440.
 shipments, (58) 840.
 shriveling, relation to excessive transpiration, (57) 55.
 spray schedules for, (51) N.J. 144, Mo.Fruit 841; (53) Mich. 37; (55) N.J. 38, Ohio 38.

Grapes—Continued.

- spraying directions for Japanese beetle, (51) N.J. 162.
 spraying experiments, (51) 549.
 standardization, (53) Calif. 744.
 sterility in, (58) 741.
 storage experiments, (60) Ill. 230.
 thinning effect, (53) Calif. 436.
 training, (53) N.Mex. 140.
 true female flowers of, (58) 741.
 variations of plat yields in field experiments, (54) 445.
 varieties, (51) Ohio 441; (53) Miss. 40; (54) S.C. 642; (55) 744; (56) Ariz. 739.
 varieties in California, (55) 440.
 varieties in Italy, (58) 237.
 varieties, new, (54) N.Y.State 643.
 varieties new for California, (52) 343.
 variety, new, (55) Ohio 39.
 variety, notes, (58) Ohio 138.
 variety, possible fusariose of, (59) 546.
 variety tests, (52) S.C. 537; (54) Fla. 334; (56) Ga.Coastal Plain 531, Miss. 739, Fla. 832; (57) N.J. 40, N.J. 735; (58) Miss. 37, 39, Ga. Coastal Plain 738.
 variety tests in Porto Rico, (56) 532.
 vinifera, in New York, (59) N.Y.State 744.
 volatile flavor in, distribution, (55) 711.
 wild, in Central Asia, (58) 742.
 wine, in South Africa, analyses, (53) 205.
 winter protection, (53) U.S.D.A. 141.
 Worden, fruiting habit, (58) 541.
 xenia in, (57) 140.
 yield and quality, effect of potash, (56) 644.
 yield, effect of fertilizers and pruning, (56) Ark. 341.
- Grapevine—
 black spot, winter treatment, (56) 850.
 canker, notes, (57) 540.
 diseases, studies, (58) 343.
 excorioso, notes, (58) 554.
 flea beetle, lesser, notes, (54) 152.
 grafts, diseased, notes, (53) 250.
 gummosis, (58) 250.
 leaf scorch, cause, (58) 343.
 moths, control in Switzerland, (54) 55.
 oedema, notes, (59) 535.
 pyralid, parasites of, (51) 255; (54) 458.
 root rot in Missouri, (53) 354.
 rougeau, description, (54) 149.
- Grapevines—
 alkaline chlorosis of, (54) 221.
 Concord, composition, seasonal changes in, (54) 444.
 Concord, root and top growth, relation to translocation of plant food, (54) 444.
 dusting, (52) Calif. 56.
 effect of drought, (59) 547.

Grapevines—Continued.

- effect of fertilizers, (55) 519.
 - growth, effects of fruiting, (56) 238.
 - injured, pruning, (54) 243.
 - maturity, importance of tannins to, (58) 23.
 - mulched, notes, (59) Nebr. 832.
 - vegetation, effect of iron sulfate, (59) 216.
- Graphioloa—
- cocoina, notes, (57) 640.
 - phoenicis, notes, (55) 346.
- Graphite, rôle in lubrication, (56) 577.
- Graphium—
- malorum n.sp., description, (56) 849.
 - ulmi, notes, (58) 853; (59) 647.
- Grapholitha inopinata n.sp., description, (59) 858.
- Graptolitha laticinerea, control, (53) 358.
- Grass—

- and clover mixtures, comparisons, (56) Can. 432.
- coleoptiles, growth, optimum temperatures, (54) 519.
- composition from woodland and open pastures, (55) 528.
- disease in horses, (54) 71; (58) 678.
- effect on fruit trees, (53) 842.
- fresh, vitamin C in, (58) 90; (60) 95.
- gall midges, notes, (52) 155.
- grown behind glass, antirachitic factor in, (57) 896.
- grown in dark, antirachitic factor in, (57) 896; (60) 96.
- grub beetle on turnips, (51) 764.
- grub, underground, in Tasmania, (60) 60.
- looper caterpillars, outbreaks in Porto Rico, (53) 156.
- looper, striped, studies, (52) 61.
- mixed hay, United States grades for, (52) U.S.D.A. 92.
- mixtures, (60) 533.
- mixtures for pasture, (57) 434.
- mixtures, seeding and pasturing tests, (53) U.S.D.A. 335.
- mixtures, studies, (56) Colo. 820.
- protein in, effect of frequency of cutting, (59) 129, 828.
- rotation experiments, (52) N.Y.Cornell 526.
- rusts of South America, (56) 844.
- seed, drying apparatus for, (55) 683.
- seed infestation in sheep, (59) 272.
- seed mixtures, (55) 740.
- seed mixtures, yields and duration, (51) 637.
- seed production, (52) 334.
- seed production and preparation, (60) 815.
- seed, soaking, effect on germination, (55) 826.
- seeds, characteristics, (55) 740.
- seeds, distinguishing characteristics, (57) 531.
- seeds, germination test, (54) 635.
- seeds, longevity, (52) 340.

Grass—Continued.

- seeds, methods of covering, (51) 139.
 - sickness in horses, (57) 183.
 - snow mold, notes, (56) 541.
 - stripe rust, studies, (57) Idaho 740.
- Grass-sedge bog, ecological study, (60) N.C. 423.
- Grasserie—
- of silkworms, (54) 457; (58) 346.
 - of silkworms, etiology and epidemiology, (53) 255.
- Grasses—*see also* Meadows, Pastures, and *specific kinds*.
- analyses, (51) N.Dak. 832.
 - and legumes in mixtures, tests, (54) R.I. 30.
 - artificial hybridization, (51) 431.
 - as green feed crop for poultry, (59) West.Wash. 433.
 - breeding experiments, (53) 230; (55) Oreg. 637; (56) Can. 432.
 - characteristics of roots, (56) 824.
 - classification, keys, (58) 734.
 - climax, on foothill range lands, (59) Calif. 727.
 - comparison, (56) 35.
 - composition, Wyo., (52) 368; (56) 134.
 - composition, factors affecting, (60) 574.
 - controlled pollination in, (54) 433.
 - cultivated, of secondary importance, (53) U.S.D.A. 336.
 - culture experiments, (51) 36; (52) Calif. 33, Ga.Coastal Plain 225, Guam 226; (53) Guam 430; (55) Alaska 433; (58) P.R. 531.
 - culture for seed, (60) 815.
 - culture in India, (57) 629.
 - culture in Sweden, (51) 592.
 - Danish and foreign strains, tests, (54) 434.
 - disease susceptibility, (56) 648.
 - economic value, determination, (57) 327.
 - effect of grazing on later hay yield, (55) 333.
 - fertilizer experiments, (51) Ohio 422; (54) 231; (56) Guam 228; (58) Del. 428; (59) 213, N.H. 222.
 - for hay, pasture, and lawn, tests, (56) Md. 133.
 - for winter pastures, (53) N.C. 835.
 - forage—*see also* Forage grasses.
 - and lawn, tests, (60) Guam 813.
 - effect of shading, (56) Wyo. 134.
 - imported into Porto Rico, (52) 530.
 - in Philippines, (54) 232.
 - value, (56) 823; (59) 130.
 - from Central America, new, (57) 726.
 - hay yields, (55) Minn. 527.
 - identification of seeds, (58) 331.
 - in Bechuanaland, chlorophyll in, (57) 77.
 - in crop rotation, value, (57) 726.
 - in East Africa, (56) 334; (58) 632.

Grasses—Continued.

- in south India, pest of, (56) 557.
 Indian, studies, (55) 229.
 mineral content, (56) Fla. 821.
 mixtures, for irrigated pastures. (59) Wyo. 223.
 monographs on, (51) 232.
 native, in Australia, studies, (58) 32.
 new species from United States, (60) 431.
 nomenclature, (52) 227.
 noxious tropical, (53) 839.
 nutritive value, (58) 564.
 of Burma, distribution and value, (51) 529.
 of central Andes, (58) 132.
 of Hawaii, (51) 232.
 of New South Wales, (52) 830.
 of Pennsylvania, manual, (52) 732.
 on moor meadows, time of mowing experiments, (55) 333.
 pasture and lawn, studies, Fla., (52) 224; (54) 325.
 pasture, growth, behavior, and productivity, (56) 821.
 perennial, growth studies, (58) 327.
 productivity, effect of height of water table, (57) 227.
 productivity tests, (51) Hawaii 740.
 range, analyses, (55) N.Mex. 462.
 range, digestion experiments, (59) Calif. 762.
 range, of California, (58) Calif. 224.
 range, seed germination in, (60) 538.
 reaction to chinch bug attack, (54) 531.
 seasonal productivity, (52) 133.
 seed characters, (54) 736.
 seed production, (55) Oreg. 637.
 Septoria diseases, (52) 448.
 sod-forming, root systems, (56) Fla. 821.
 South African, key, (53) 231.
 studies, (55) Fla. 824; (57) Calif. 225.
 tests, (60) Fla. 130, S.C. 732.
 treatise, bibliographic study, (54) 435.
 varieties, (51) 636, Idaho 830; (55) Hawaii 526; (57) Tenn. 126.
 varieties for three regions of State, (58) N.C. 828.
 varieties, forage value, (53) U.S.D.A. 132.
 variety tests, (51) Oreg. 529, 636, N.J. 636, Hawaii 740; (52) Kans. 433, Idaho 828; (53) N.Dak. 334, Guam 430, Can. 530, Ariz. 733; (54) Ga.Coastal Plain 130; (55) Oreg. 637; (56) Fla. 821; (57) Tex. 126, Okla. 226, Okla. 523; (58) Ark. 321; (59) Tex. 729, N.Dak. 825; (60) Fla. 130, Alaska 728, Oreg. 731.
 water requirements, (57) 227.
 wild populations, genetics of, (56) 728.
 wild, relation to sugar cane mosaic disease, (57) 260.

Grasses—Continued.

- wild, rôle in corn injury from sugar cane borer, (52) 61.
 zonate eyespot on, (53) 848; (60) 446.
- Grasshopper—
 catcher, power-driven, description, (59) 58.
 clear-winged, poisons and attractants for, (54) 657.
 clear-winged, studies, Minn., (52) 556; (55) 252.
 forest leaf-eating, as pine pest, (60) 844.
 lesser migratory, control, (59) 58.
 lesser migratory, notes, (53) 756.
 long-horned, on coconut palms, (52) 854.
 pellucid, poisons and attractants for, (54) 657.
- Grasshoppers—
 abundance and damage, estimating, (51) 356.
 biology, (51) 761.
 campaign against, (53) 154, 358, Wis. 451.
 collected in the State, list, (58) S.Dak. 755.
 control, (51) Wis. 453, 454; (55) 252; (56) Wis. 755, Colo. 855; (58) 256.
 control by airplane dusting, (56) 256.
 control in Colorado, (55) 455.
 control, organization, (51) 45.
 control, poison baits for, (59) 272.
 control, sawdust bait for, (55) 355.
 destruction, (53) 52.
 effect of carbon dioxide, (53) 254.
 elegant, summary, (53) 358.
 enemies, in France, (51) 761.
 experiences with, (53) Mont. 51.
 in Bulgaria, (55) 456.
 in coconut plantations, (58) 558.
 increase in numbers, cause, (56) Mont. 153.
 injurious to rice in Siam, (58) 858.
 injury to cranberries, (51) N.J. 659.
 migratory, destruction, (53) 858.
 migratory, new method of combating, (56) 856.
 migratory, of Senegal, control, (54) 258.
 mites in trachea of, (55) 660.
 notes, (52) Mich. 355.
 of British Columbia, (53) 756.
 on beets, (53) Utah, 254.
 on tobacco, (51) 55.
 outbreak of 1919-23 in Manitoba, (54) 152.
 poison baits for, (57) Nebr. 452, Mich. 558.
 poison baits for, danger to livestock, (59) 353.
 sodium fluosilicate in baits for, (56) 155.
 studies, (60) Mont. 751.
 synopsis, (52) Utah 454.
 transmission of potato spindle tuber by, (60) 61.

- Grasshoppers—Continued.
with parasites on lower wings, (56) 760.
- Grassland—*see also* Grasses, Meadows, and Pastures.
as source of rainfall, (51) 718.
changes in, (54) 25.
fertilizer experiments, (58) 224, 429.
fertilizer experiments, treatise, (51) 215.
formation and changes in, (53) 825.
grazing experiments, (58) 429.
improvement, (54) 435.
in peat soil, Chilean nitrate for, (52) 513.
in Scandinavia, experiments, (53) U.S.D.A. 336.
management, (60) 533.
management, new system, (59) 129.
- Grasslands—
Argentine Pampa, historical studies, (58) 429.
British, treatise, (58) 29.
in India, improvement, (51) 34.
in India, studies, (55) 229.
newly broken, fertilizer experiments, (56) Guam 229.
of central United States, (57) 525.
- Gravel—*see also* Road materials.
and stone, standard abrasion tests, relation, (60) U.S.D.A. 278.
- Gravimetric microchemical technique, notes, (52) 612.
- Gravitaia, characteristics and uses, (57) 131.
- Grazing—*see also* Range.
areas, improvement in India, (52) 830.
cost in England, (52) 391.
experiments, (60) 533.
experiments, cooperative, U.S.D.A., (53) 168, 574.
experiments, methods of conducting, (51) 34.
indicators, (57) 627.
industry in Finland, (51) 35.
of cattle and horses in pine plantations, (52) 842.
research, (53) 824; (54) 25.
systems, (51) 34.
- Greasewood poisonous to sheep, (59) Nev. 876.
- Great Lakes-St. Lawrence waterway—
project, farmer's interest in, (60) 883.
value to North Dakota, (56) N.Dak. 584.
- Green bottle fly larvae, effect of feeding period on sex ratio and size, (60) 458.
- Green bug—
in Minnesota, (57) 856.
notes, (56) 57; (57) Okla. 556.
parasite of, (52) N.Y.Cornell, 360.
recent outbreak in Minnesota, (56) 256.
survival expectancies, (56) 156.
- Green feed v. silage, feeding value, (51) 676.
- Green manure—
analyses, (58) 815.
crops, (51) Del. 132.
crops, comparisons, (54) Hawaii 132.
crops for Arizona, (53) Ariz. 419.
crops, legume and nonlegume, comparison, (52) N.J. 721.
crops, studies, (52) Md. 420.
crops, tests, Fla., (56) 821; (60) 130.
decomposition, (55) 512; (60) 516.
decomposition, plant food from, (57) 18.
decomposition under tropical conditions, (56) 420.
effect on carbon dioxide fertilization, (55) 815.
effect on soil bacteria, (51) 323.
effect on soil reaction, (59) Colo. 117.
from trees and shrubs in Bombay, (59) 513.
methods of handling, (52) U.S.D.A. 828.
nitrogen availability, (56) 420.
notes, (60) 327.
plants, growth and fertilizing value, (51) 623.
relation to soil nitrogen, (59) N.Y. Cornell 614.
rotations, (55) Miss. 624.
seeds, germination, (57) 233, 334.
value, (52) 121.
value at different stages of growth and decomposition, (52) 721.
- Green manuring—
effect on crop yields, (55) Tenn. 723.
effect on crops, (51) 816.
effect on soil bacteria, (51) 517.
experiments, (54) 515, 810; (57) N.J. 715; (58) 828; (59) N.J. 319.
experiments at Pusa, (51) 326.
factors affecting value, (51) 517.
for potato scab control, (52) 51.
papers on, (58) 518; (60) 511.
studies, (58) Ill. 316.
systems, effect, (53) Mo. 414.
tests in Java, (59) 317.
theory and practice, (51) 623.
treatise, (58) 19.
value, (53) U.S.D.A. 333.
value for soil improvement, (59) 513.
- Green oak tortrix, life history studies, (54) 659.
- Green soldier bug, notes, (55) 555.
- Green stinkbug, southern—*see also* Nezara viridula.
control, (59) 651.
notes, (55) 854.
- Green, W. J., biographical sketch, (53) 900; (54) Ohio 396.
- Greenhouse—
crop yields, analysis, (52) 233.
crops, effect of increased carbon dioxide, (60) 320.
culture, electric light in, (51) 188.
flower production, value of fresh soil, (56) Ill. 343.

Greenhouse—Continued.

- fumigation with calcium cyanide, (57) Mo. 451.
- grasshopper, notes, (56) 659.
- insects, summary, (52) Mich. 252.
- leaf tyer on celery, (52) Fla. 251.
- leaf tyer, studies, (52) 659; (59) Ohio 249.
- leafhopper, notes, (60) 248.
- pests, notes, (59) 652.
- pests, paper on, (59) 551.
- plant diseases, (51) 542; (53) 550.
- production of flowers and fruits, (60) 822.
- soil, formaldehyde treatment, (52) 233.
- soils, sterilization, (56) 46, Ohio 513, Kans. 843; (57) Ohio 144; (59) Colo. 236, Ohio 238; (60) 21.
- thrips in Sweden, (51) 762.
- thrips, maturation of parthenogenetic eggs, (60) 61.

Greenhouses—

- carbon dioxide distribution in, (52) 234, 327.
- construction, treatise, (59) 179.
- fumigation, (56) 256; (58) Ohio 346, 557.
- fumigation with hydrocyanic acid gas, (51) 357.
- plans and construction, (58) 782.
- substitution crops for, (51) Ohio 746.
- wireworms in, control, (56) 860.

Greensand as source of potassium, (55) 422; (56) 122.

Greensands of New Jersey, potash in, (51) 121.

Greenville trade territory, economic survey, (54) S.C. 685.

Grevillea robusta, notes, (51) 46.

Greyhounds, coat color inheritance in, (59) 822.

Grison vittatus, parasite of, (51) 285.

Grit in gizzard of fowls, function, (51) 473.

Grit requirement of growing chicks, (56) 166, Ohio 167.

Grocery trade, data, (56) 691.

Grosbeaks, food habits, (52) U.S.D.A. 354.

Grossularia echinella n.sp., description, (51) 825.

Ground squirrels, *see* Squirrels.Groundnuts, *see* Peanuts.

Grouse locust—

- inheritance in, studies, (52) Kans. 428.
- inheritance of color pattern, (54) 428; (55) Kans. 26; (60) 218.
- new dominant color pattern, (51) 633.
- parthenogenesis in, (56) 31; (60) 218.

Grouse—

- ruffed, diseases of, (53) 787; (54) 74.
- ruffed, fall food habits, (60) 647.
- ruffed, gizzard worm in, life cycle, (60) U.S.D.A. 876.
- ruffed, susceptibility to tularemia, (59) 472.

Grouse—Continued.

- sand, Mallophaga from, (60) 649.
- willow, disease of, (58) 679.

Growth—

- and mortality, prenatal, sexual difference in, (58) 629.
- and nutrition of children, photographic method of study, (52) 261.
- and reproduction on exclusive milk diet, (51) 266.
- as affected by irradiated air, (51) 270, 868.
- curves of man and other animals, comparison, (58) Mo. 762.
- data, interpretation, (54) 160.
- experiments with histidine substitutes, (56) 86.
- hormones, studies, (60) 630.
- in rats, food requirements, (58) 192, 592.
- on diets high in carbohydrate and fat, (51) 263.
- on synthetic diet containing small amounts of sodium, (60) 359.
- physicochemical conception, (55) 57.
- rate, difference in sexes, (51) 459.
- rate, relation to diet, (56) 191; (58) 592.
- standards for private school boys, (56) 394.
- studies, (52) 362.
- studies with domestic animals, Mo., (58) 352, 460, 762, 767, 768.
- studies with pumpkin seed rations, (51) 73.
- treatise, (60) 657.

Grubs, white, *see* White grubs.

Grylloblattaria of British Columbia, notes, (55) 659.

Gryllus domesticus, *see* Cricket.

Guam Station, report, (52) 299; (53) 496; (55) 196; (56) 299; (59) 598; (60) 899.

Guanidinium salts, preparation, (52) 212.

Guano, fish, *see* Fish guano.

Guano, Peruvian, fertilizing value, (53) Conn.Storrs 737.

Guanylurea sulfate—

- action on plant growth, (52) 122.
- decomposition in soil, (51) 817.
- fertilizing value, (52) 422.

Guatemala grass—

- fertilizer experiments, (55) Guam 131.
- flowering, (51) Hawaii 740.

Guatemala National University, notes, (60) 500.

Guava—

- fruit scab, notes, (53) 246.
- seedlings, variation in, (59) 529.

Guavas, improvement, (55) 744.

Guernia serratulae, biology, (56) 858.

Guggenheim Memorial Fellowships, (56) 800.

Guignardia—

- bidwellii, control, (51) 156.
- bidwellii, notes, (52) 549.
- vaccinii, notes, (56) 249.

- Guinea fowl—
 breeding, feeding, and marketing, (51) U.S.D.A. 177.
 color inheritance in, (55) 165.
- Guinea pig, extra toes in, (57) 722.
- Guinea pigs—
 aberrant ratios in E allelomorphic series, (54) 227.
 albino, genetical constitution in, (56) 428.
 albino series, allelomorphic factors, (54) 729.
 anaphylaxis as affected by inheritance, (54) 127.
 as diagnostic reagent for tuberculosis, (52) 682.
 castrated, effect on pulling power and endurance, (55) 860.
 characteristics, effects of age of parents, (58) 826.
 chromosomes in, (55) 819; (56) 727; (58) 823; (60) 323.
 early development, (55) 432.
 eight-factor cross in, (60) 630.
 hysterectomized, effect of follicular hormone injection, (57) 723.
 immunization against abortion, (52) Mich. 481.
 inheritance of characters, (52) Kans. 427; (53) 522.
 lowered birth rate in winter, cause, (52) 632.
 male, reversible dependent sexual character in, (58) 427.
 mixed infection in, (53) 885.
 mutations in coat pattern, (57) 623.
 new color factors in, (55) 820.
 nose spots and tail spots in, (60) 128.
 oxygen poisoning, (57) 181.
 raising, (54) 274.
 salmon-eyed gene in, (54) 227; (55) 732.
 scorbutic, bones of, composition, (58) 693.
 show type production, (58) 127.
 spermatozoa, development in, (60) 632.
 spontaneous infections, (57) 94.
 vitamin A deficiency in, (60) 393.
 white spots in, distribution and inheritance, (59) 522.
- Gulls, black-headed, insect food of, (58) 661.
- Gum arabic production in Sudan, (56) 539.
- Gummosis—
 of citrus trees, (57) 156.
 of fruit trees, notes, (55) Calif. 344.
- Gums, microbiology, (59) 202.
- Gutta-percha—
 diseases, (53) 148.
 trees, studies, (52) 145.
- Gymnoconia interstitialis—
 and *Kunkelia nitens*, distinction (55) 149.
 uninucleated aecidiospores in, (52) 451.
- Gymnosperms of British Columbia, treatise, (57) 143.
- Gymnosporangium—
 blasdaleanum, notes, (58) 154.
 clavariaeforme, overwintering, (57) 640.
 juniperi-virginianae, notes, (53) 43.
 juniperi-virginianae on apples, (54) Mo. 149.
 juniperi-virginianae, varietal susceptibility to, (51) 155.
 sabinae, control, (60) 56.
 yamadae, studies, (57) 650.
- Gynandromorphism, paper on, (55) 165.
- Gynandromorphs in *Habrobracon*, (56) 819.
- Gypona octolineata*, notes, (59) 250.
- Gypsum—
 adding to irrigation water, device, (60) U.S.D.A. 277.
 biochemical effect on Iowa soils, (53) 622.
 brands and composition, (52) Oreg. 515.
 effect of long-continued soil treatment with, (60) N.Y.State 422.
 effect on—
 acid soils, (52) 621.
 alkali soil, (60) Calif. 318.
 composition and yield of legumes, (54) Wash.Col. 122.
 crops, (54) Iowa 817.
 crops of Pusa soils, (51) 221.
 mechanical condition of soils, (51) 512.
 Palouse silt loam, (53) 516.
 plant growth and soil changes, (55) N.Y.Cornell 517.
 potassium availability, (52) Ky. 421.
 solubility of potassium, (56) 422.
 fertilizing value, (51) Wash.Col. 728; (52) 120; (55) Iowa 509, Idaho 825; (56) Wash.Col. 513.
 in 1922, (51) 518.
 inspection and analyses, (56) Mass. 625; (60) Oreg. 719.
 mining and use in Victoria, (56) 122.
 partitions, fire resistance, (55) 783.
 plasters, hard-finish, studies, (58) 183.
 production and use in 1924, (56) 23.
 solutions, limits of H-ion concentration, (51) 110.
 tests for cucumber beetle, (53) Mo. 450.
 use, (52) 121.
- Gypsy moth, *see* Gipsy moth.
- Gyrocera celtidis*, parasite of *Celtis australis*, (57) 541.
- Gyropidae, taxonomy, biology, and distribution, (51) 56.
- Gyropus ovalis*, control, (52) Calif. 59.
- Habetia defoliaria* n.sp., description, (52) 854.
- Habrobracon*—
 brevicornis, hosts of, (59) Iowa 55.
 brevicornis, studies, (56) 260.
 galechiae, notes, (54) Mich. 354.
 gynandromorphs and other irregular types, (56) 819.

- Habrobracon**—Continued.
 hereditary variation in, (56) 819.
 johannseni, biology, (53) 654.
 johannseni, oviposition, (51) 762.
 juglandis, inheritance of sterility and other defects, (53) 525.
 juglandis, notes, (60) 66.
 quadruple allelomorphs affecting eye color, (56) 223.
 variabilis, notes, (53) U.S.D.A. 54.
- Habrocytus languriae**, notes, (53) 363.
- Habronema**—
 larvae and bursattee, (57) 379, 872.
 larvae in pomace flies, (57) 659.
 spp. parasitizing equines, (52) 85.
- Habronemiasis**—
 cutaneous, in Brazil, (51) 786.
 in England, (53) 680.
 review of literature, (58) 472.
- Haddock**—
 liver oil, vitamin potency, (55) 694.
 nutritive value, (60) 189.
- Hadronotus antestiae**, sex ratios, (52) 333.
- Hadrotichum** (?) populi, notes, (54) 449.
- Haemaphysalis**—
 bispinosa in North Auckland district, (51) 681.
 bispinosa, relation to piroplasmiasis, (56) 877.
 bispinosa, studies, (54) 59.
 leporis-palustris, notes, (59) 472.
 punctata, notes, (51) 682.
 spp., notes, (57) 863.
- Haematobia irritans**, see Horn flies.
- Haematopinus eurysteruus** on cattle, control, (58) Ala. 450.
- Haematopota** spp., transmission of surra by, (59) 673.
- Haemodipsus**—
 setoni n.sp., description, (53) 53.
 ventricosus, notes, (53) 53.
- Haemogregarina canis**, studies, (53) 786.
- Haemonchus contortus**—
 in cattle, (57) P.R. 468.
 in cattle and sheep, (52) 280.
 notes, (57) 472.
 summary, (53) Conn.Storrs 785.
- Haiari**, black and white, insecticides from, (54) 258.
- Hail injury** to corn plant, effect, (59) 132.
- Hailstorms** in Michigan, (51) U.S.D.A. 616.
- Hair**—
 and leather trimmings, use in fertilizers, (51) 728.
 and wool, new information on, (51) 100.
 Angora, character, (54) 672.
 ball formation in rats, (51) 664.
 color changes in as affected by temperature, (52) 525; (54) 429.
 color, spectral analyses, (58) 732.
 effect of mild alkaline hydrolysis, (54) 501.
 extensibility, (54) 697.
 ingested, factor in gastric lesions, (53) 166.
- Hair**—Continued.
 swirls and abnormalities in animals, (57) 821.
 swirls in pigs, inheritance, (57) Okla. 521.
- Hairlessness**—
 in animals, (60) Ill. 217.
 inheritance of, Ill., (56) 225; (58) 320.
- Hairworms** in domestic water supply, notes, (56) 659.
- Hairy vetch**, see Vetch.
- Haitian Experiment Station**, notes, (51) 698.
- Hake liver oil**, vitamin A potency, (51) 864.
- Halisidota argentata** as pest of Douglas fir, (60) West.Wash. 756.
- Halogen salts**, effect on peptic digestion, (57) 788.
- Halogen salts**, effect on salivary digestion, (53) 761.
- Halogens**, iodometric determination, (55) 804.
- Haltica**—see also *Altica* and Flea beetle.
 ampelophaga, biology, (57) 64.
 chalybea, see Grape flea beetle.
- Haltichella rhyacioniae** n.sp., description, (57) 365.
- Halticus citri**—
 control, (51) Md. 454.
 on celery, (52) Fla. 251.
- Ham beetle**, red-legged—
 life history and control, (58) 257.
 notes, (59) 255.
 studies, (53) 758.
- Hampton Institute**—
 agricultural training in, (52) 298.
 notes, (52) 100.
- Hams**—
 fresh and cured, composition of marrow, (54) 789.
 palatability and keeping qualities, effect of salt quantity, (56) Kans. 866.
 souring, bacteriological study, (56) 189.
 transportation, (59) 868.
- Hannah Dairy Research Institute**, Scotland, establishment, (60) 797.
- Hanseniella unguiculata**, notes, (55) U.S.D.A. 148.
- Haploa lecontei**, notes, (52) Ky. 453.
- Haploidy** in pomace fly, (55) 523.
- Haplonyx tibialis**—
 notes, (56) 362.
 studies, (53) 56.
- Haplothrips tenuipennis**, control, (54) 455.
- Harding grass**, notes, Calif., (53) 430; (55) 331.
- Hardpan formation**—
 critical pH for, (55) 214.
 rôle of iron-depositing bacteria in, (58) 19.
- Hardwood cuttings**, propagation, (52) 837; (56) 43.

Hardwoods—

- Connecticut, studies, (54) 839.
 mixed, growth relation to thinning,
 (52) 841.
 of Western Australia, (51) 648.
 Hare, European, in North America, (52)
 551.
 Harelip, inheritance of, (54) 28.
 Hares and rabbits, crossing experiments,
 (53) 630.
 Harlequin bug—
 control, (52) Ky. 453; (60) Tenn.
 141.
 notes, (59) N.Mex. 249.
 Harmolita—
 graminicola, anatomical study, (56)
 862.
 graminicola, life history and habits,
 (57) 365.
 parasites of, (57) 365.
 tritici, *see* Wheat jointworm.
 vaginicola reappearance in Utah, (56)
 260.

Harmoliga fumiferana, *see* Spruce bud-
 worm.

Harpalus beetle on strawberry, (59) Colo.
 248.

Harrow disks, pearlitic manganese steel
 for, (58) 883.

Harrows, comparative tests, (53) 791.

Harvard Biological Institute in Cuba, (52)
 344.

Harvest labor in wheat belt, U.S.D.A., (51)
 295, 489.

Harvest weather forecasts of Weather
 Bureau, (53) 112.

Harvesting machinery, gray or black cast
 iron for, (59) 378.

Hat palm as host of coconut bud rot
 fungus, (58) P.R. 542.

Hatchery, accredited, factor in standardiz-
 ing poultry products, (51) 277.

Hawaii—

Station, notes, (55) 300; (60) 698.

Station, report, (51) 797; (54) 197;
 (55) 598; (57) 394; (59) 695.

University, notes, (56) 900; (60) 698.

Hawk moths, notes, (56) 659.

Hawks of New Jersey, (57) N.J. 255.

Hawthorn stocks, crown gall affecting, (56)
 653.

Hay—*see also specific kinds.*

and forage crops, economic conference
 on, (55) 585.

and silage, proportions for long year-
 ling steers, (52) Wash.Col. 767.

antirachitic properties, (56) 464.

areas, farm adjustment in, (59) Pa.
 680.

as cause of depraved appetite in cattle,
 (53) 632.

bag to increase accuracy in feeding
 hay, (58) 865.

baled, net energy value, (57) 865.

cereal, production, (54) Calif. 329.

composition and yield, effect of date
 of inclosing fields, (55) 333.

Hay—Continued.

concentrated fertilizers for, (54) Mass.
 123.

cost of production, (59) Wis. 483.

cost of production and profit, (58) Ill.
 379.

crop, effect of sheep grazing, (58) 267.

crops, annual, variety tests, (59)

Idaho 728.

crops, emergency, (51) Wis. 35, Wis.
 434; (55) Mich. 132.

crops, fertilizer experiments, (58) 29.

crops, tests, (59) Wis. 33.

crops, variety tests, (56) Can. 432,
 Minn. 524; (58) Minn. 828.

culture experiments, (58) Alaska 428.

curing and antirachitic properties,
 (59) Wis. 74.

curing, effect of attached and detached
 leaves, (55) 827.

drying tests, (56) Wis. 778.

fine and coarse, feeding value, (55)
 163.

for dairy cattle, (58) Ohio 671.

grasses in alfalfa, cutting tests, (56)
 Wis. 732.

grinding, value, S.C., (56) 568; (58)
 671; (60) 770.

grown on peat soil and on mineral
 soil, nutritive value, (59) 462.

handling, blowing stackers for, (59)
 378.

handling by ranches, equipment for,
 (56) U.S.D.A. 781.

heating, in flooded regions of Vermont,
 (59) 326.

hoisting by electricity, (60) Oreg. 781.

hoists, electric, (59) Wash.Col. 379.

importance in cattle rations, (60)
 Mich. 70.

in stacks, measurement, (60) Mont.
 778.

land, top-dressing, (51) N.H. 135.

lands, worn-out, treatment, N.H., (57)
 316; (59) 222.

leguminous, and silage crops, compari-
 son, (55) Fla. 824.

making with heated air, experiments,
 (55) 883.

market, Minneapolis and St. Paul, (58)
 589.

mixtures, culture experiments, (53)
 Md. 332.

mixtures, seeding experiments, (53)
 Md. 332.

mixtures, yields, (56) Ga.Coastal Plain
 523.

native Wyoming, for milk production,
 (55) Wyo. 468.

new standards for, (54) 560.

nutritive value relation to meteorologi-
 cal conditions, (59) 314.

of *Hyparrhenia rufa*, value, (52) 34.

prices, (58) Ill. 380.

production, (60) Mont. 730.

production, labor used in, (57) Ky.
 284.

Hay—Continued.

- production, power and labor requirements, (60) 79.
- production tests, (60) Alaska 728.
- Punjab, digestibility, (60) 852.
- replacement by other feeds, (52) 275.
- rotation experiments, (51) Minn. 636.
- seed mixtures for, (51) Oreg. 529.
- statistics, (53) U.S.D.A. 293.
- summary, (54) U.S.D.A. 34.
- summer annuals for, (51) Conn.Storrs 834.
- time of cutting, effect, (57) 33.
- use for milk production, (53) 377.
- v. straw for wintering heifers, (53) Can. 879.
- value and utility for horses, (54) 63.
- well cured, importance, (53) Mich. 780.
- yields, effect of clover inclusion in meadows, (59) Nebr. 824.
- yields, effect of precipitation and temperature, (56) 413.
- yields, effect of weather, (56) U.S.D.A. 714.
- yields, factors affecting, (57) Va. 426.
- Haying time, paper on, (55) Mich. 395.
- Haymaking, artificial, studies, (52) 688.
- Hays, W. M., editorial notes, (58) 706.
- Haystacks, spontaneous combustion in, (59) 282.
- Hazel, root system, (60) 642.
- Hazelnuts, culture, (58) 840.
- Head form in man, inheritance of, (51) 632.
- Headers, use in Algeria, (53) 287.

Health—

- and environment, treatise, (55) 589.
- and food, (60) Miss. 786.
- and nutrition, (56) 588.
- and sunlight, (55) 694.
- appeal in modern advertising, (60) 686.
- demonstration and nutrition, (52) U.S.D.A. 562.
- education program in Malden, Massachusetts, (60) 687.
- education program, outline, (53) 298.
- facilities, rural, (58) Ohio 287.
- in children, clinical signs, (56) 90.
- in rural sections, relation to dietary habits, (57) Va. 387.
- public, and diet, symposium, (52) 461.
- public, association of Pennsylvania, meeting, (57) 667.
- public, relation to milk supply, (53) 178; (55) 72, 471, 590; (57) 372; (58) 672; (60) 661.
- relation to melittensis-abortus group, (52) U.S.D.A. 580.

Heart—

- effect on blood regeneration, (53) 867.
- equine, atrio-ventricular system, (60) 574.
- seasonal changes in weight, (52) 669.

Heartwater—

- cytological studies, (57) 77.
- of livestock in South Africa, etiology, (55) 174.
- pathological studies, (60) 574.

Heat—see also Temperature.

- canker in plants, conditions for, (56) 648.
- conductivity of various materials, (53) 285.
- effect on botulinus toxin, (52) 464.
- effect on solubility of calcium and phosphorus in milk, (53) 881.
- flow in pistons, (56) 883.
- flow through a roof, (58) 483.
- fundamentals, treatise, (60) 280.
- loss in gas engines, (53) 85.
- loss through windows and walls, (51) 189.
- losses, reduction by insulation, (59) 85.
- of wetting for estimating colloidal material in soils, (52) 619; (53) 319.
- of wetting of soil colloids, (52) 418; (53) 817.
- of wetting of soils dried at different temperatures, (54) 418.
- of wetting of soils, effect of replaceable base, (55) 212.
- penetration, relation to pasteurization, (59) Calif. 488.
- production, effect of metabolism of nucleic acids, (51) 265.
- production in cattle, ratio of carbon dioxide to, (52) 168.
- production of poultry of different ages, (59) 362.
- resistance in functioning guard cells, (58) 215.
- resistance of bacterial spores, studies, (52) 113.
- sterilization, effect on vitamins, (57) 92.
- transfer and evaporation, treatise, (56) 78.
- transfer through wall, floor, and roof, determination, (51) 189.
- transmission, effect of radiator finish, (53) 389.
- transmission of insulating materials, papers on, (53) 684.
- transmission through building materials, (52) 288.
- transmission through buildings, coefficients, (59) 480; (60) 676.
- transmission through walls, (60) 583.
- Heather vole, Alpine life of, (53) 50.

Heating—

- and ventilating installations, data useful in, (53) 287.
- and ventilation, treatise, (60) 380.
- boilers, fuel savers for, (54) 395.
- domestic, from British viewpoint, (55) 95.
- domestic, with oil, (60) 883.
- electric, treatise, (60) 280.
- of residences and small buildings, (54) 395.
- plants, small, oil burners for, (52) 489.
- systems and warm-air furnaces, (60) 882.
- systems, gravity warm air, selecting wall stacks, (51) 486.

- Heating—Continued.
 systems, studies, (55) 296.
 systems, treatise, (58) 598.
- Hedgehog, chromosome numbers in, (53) 523.
- Hedges for Florida, discussion, (51) Fla. 842.
- Hedobia pubescens on Loranthaceae, (52) 554.
- Hegari—
 cracked, and tankage, feeding value, (53) Ariz. 774.
 feeding value compared with corn silage, (54) Ariz. 358.
 ground, feeding value, (56) Ariz. 765.
 preparations for finishing yearling steers, (54) Ariz. 360.
 smut, new strain, (57) 545.
 v. rolled barley, feeding value, (60) Ariz. 472.
- Heifer carcasses, quality, factors affecting, (59) Nebr. 863.
- Heifers—
 cost of raising, (51) Can. 579; (52) N.Y.Cornell 590.
 dehorning, (51) Can. 670.
 development, relation to feeding and age of calving, (52) Kans. 276.
 effect of bone meal on growth, (56) 73.
 effect of vitamin A-deficient ration, (60) Pa. 365.
 feeding experiments, (51) Can. 579; (56) S.C. 568; (57) 169; (59) Idaho 772; (60) Vt. 663.
 feeding, management, and cost, (58) U.S.D.A. 870.
 growth, factors affecting, (53) 175.
- Holstein, feeding experiments, (60) Wyo. 770.
- Jersey, milk and butterfat production, (54) Ky. 374.
- legumes for, Ohio (53) 579, 879.
- minimum protein requirements, (54) Mo. 768.
- pasturing experiments, (59) Ind. 772.
- pasturing on stump land, (51) Minn. 677.
- protein requirements, Mo., (52) 373; (53) 473.
- raising, (51) 579; (58) U.S.D.A. 768.
- wintering, (51) Ind. 875; (55) Ind. 66; (57) N.J. 73, Idaho 766, N.J. 767.
- Helianthus—
 argophyllus, roughage value and cellulose content, (59) 631.
 tuberosus dangeardi, inheritance in, (59) 520.
- Helicobasidium purpureum, studies, (60) 346.
- Heliophila subpunctata, notes, (55) 459.
- Heliotherapy—
 scientific principles, (54) 695.
 symposium, (54) 392.
 treatise, (57) 198.
- Heliothis obsoleta, *see* Chloridea obsoleta.
- Heliothis virescens, parasite of, (55) 561.
- Heliothis virescens, seasonal history and food habits, (56) 157.
- Heliothrips —
 femoralis, notes, (51) 762.
 haemorrhoidalis, *see* Greenhouse thrips.
 phaseoli, notes, (51) 762.
 rubrocinctus in Gold Coast, (60) 650.
- Heliotropism—
 and plant growth, (53) 623.
 in leaves, studies, (51) 521.
- Helix aspersa, attacks on young sycamores, (53) 252.
- Helix, predacious, in South Africa, (53) 856.
- Hellula undalis, *see* Cabbage webworm.
- Helminth—
 fauna of South Africa, (57) 77.
 ova, resistance to disinfectants, (54) 591.
 parasites of domestic animals and man, (54) 171.
- Helminthiasis among poultry, prophylaxy, (55) 177.
- Helminthiasis, effect on resistance of chickens to parasitism, (60) 665.
- Helminthiasis of fowls, (58) 678.
- Helminthic therapy, (58) 275.
- Helminthology, veterinary, advances in, (54) 274; (56) 571.
- Helminthosporium—
 allii on garlic, development, (57) 249.
 californicum in barley hybrids, inheritance of resistance to, (59) 146.
 californicum n.sp., description, (54) 745.
 californicum, notes, (60) 50.
 disease of rice, (56) 650, 651.
 giganteum, notes, (53) 848.
 giganteum on grasses, (60) 446.
 gossypii n.sp., description, (54) 846.
 gossypii, notes, (57) P.R. 442.
 gramineum, control, (59) 539.
 gramineum, facultative parasitism, (58) 543.
 gramineum, notes, (57) 445; (58) 442.
 gramineum, pathogenicity and physiology, (58) 145.
 guianensis, n.sp., description, (54) 51.
 heveae in Sumatra, (54) 654.
 heveae, notes, (59) 637.
 n.sp., notes, (54) 144.
 oryzae, notes, (59) 540.
 panic n.sp., description, (57) 643.
 parasitic species, life history, (57) 147.
 pedicellatum n.sp., description, (52) 649.
 root rot of wheat, (52) 347.
 sacchari growth, relation to maintained temperatures, (58) 50.
 sacchari in Porto Rico, (58) 446, 551.
 sacchari, notes, (53) 147, 250; (54) 547; (55) 244; (58) 343.
 sativum, control, (59) N.Dak. 841.

- Helminthosporium*—Continued.
sativum, notes, (54) U.S.D.A. 452; (55) N.Dak. 542; (56) 826; (58) 846; (60) 149.
sativum on barley, (60) 546.
sativum, pathogenicity, (51) Minn. 350.
sativum, physiologic specialization and mutation in, (57) 746.
sativum, physiologic specialization and parasitism, (56) Minn. 844.
sativum, resistance of barley to, (52) Minn. 244.
sativum spores, variations in length, (53) 749.
sorokinianum, new name, (51) 46.
 sp. in France, (57) 541.
 sp. notes, (57) 639, 640.
 sp. on corn, (53) 148.
 sp. on tobacco, (55) 445.
 sp. undescribed, on redtop, (57) 251.
 spp., notes, (52) 649; (53) 750; (54) P.R. 648; (55) 245, 346; (56) 448, Kans. 841; (58) 143.
 spp. on barley, (51) 47; (52) 347.
 spp. on cereals, (53) 542; (54) 246.
 spp. on sugar cane, (53) 147, 542.
 spp., studies, (59) 539.
tetramera n.sp., notes, (54) U.S.D.A. 452.
tetramera, studies, (55) 846.
turcicum, notes, (51) 46; (56) 449.
vagans, notes, (56) 647.
- Helminths from fowls in Natal, (57) 77, 879.
- Helomyzidae, monograph, (53) 560.
- Helopeltis—
antoni, notes, (58) 159.
bergrothi, notes, (55) 759; (60) 649.
 in tea, calcium cyanide for, (57) 60.
 spp. on cotton in Southern Nigeria, (56) 360.
theivora, notes, (58) 159.
- Helophorus spp., studies, (60) 851.
- Hemadas nubilipennis—
 notes, (59) N.J. 351.
 on blueberries, (58) 62.
- Hematoporphyrin, effect on deposition of calcium in rachitic rats, (51) 465.
- Hemerology, use of term, (51) 819.
- Hemerocampa leucostigma, *see* Tussock moth, white-marked.
- Hemiphila—
pariana in Pennsylvania, status, (58) 345.
pariana, life history and control, (56) 361.
pariana, notes, (53) 652.
pariana, present status, (52) 355.
pariana, summary, (51) 661.
subplagiata, notes, (53) 558.
- Hemicellulose—
 in apple wood, analysis, (51) 113.
 microbiology, (59) 202.
 reserve in apple trees, effect of acid hydrolysis, (58) 235.
- Hemicelluloses—
 of beech wood, (56) 10.
 of timber, constitution, (60) 416.
- Hemicrepidius decoloratus, notes, (60) Pa. 356.
- Hemileia vastatrix—
 notes, (51) 45; (54) 254; (55) 656, 755; (57) 444, 639, 640; (58) 241.
 teleutospores in, summary, (54) 254.
- Hemiptera—
 catalogue, (58) 454.
 feeding methods, (58) 455.
 from Italy, list, (52) 753.
 geographical distribution, (57) 553.
 of Delaware, studies, (58) Del. 454.
 on potato plant, feeding methods, (58) 848.
- Hemiptera-Heteroptera, North American, bibliography, (54) 553.
- Hemisarcoptes malus, relation to oyster-shell scale, (53) 260.
- Hemiteles—
apantelis, description, (57) 365.
areator, biological notes, (52) 561.
incisus, notes, (54) 259.
tenellus, notes, (57) U.S.D.A. 457.
- Hemizonia congesta, studies, (55) 325.
- Hemlock—
 and its environment, (53) 144.
 growth and silvicultural requirements, (52) 741.
 looper, control, (59) Wis. 56.
 looper, notes, (57) Mich. 654, 857; (59) Mich. 455.
 looper, parasite of, (60) 847.
 measuring worm, notes, (55) Mich. 54.
 released, increased growth, (60) 642.
 seed beds, (51) 842.
 spanworm, control, (57) 857.
 spanworm control by airplane dusting, (58) 664.
 spanworm outbreak, (56) Wis. 755.
 western, habits and characteristics, (52) 345.
- Hemochromatosis, cause, (53) 267; (55) 492.
- Hemoglobin—
 formation in rats, (59) 292.
 heat denaturation, (58) 502.
 horse, amino acids from, (60) 502.
 in blood of fowls, effect of sex hormones, (56) 769.
 in blood, standard method of recording, (57) 871.
 production, effect of diet, (56) 495.
 readings of laying hens, (57) N.C. 271.
 regeneration, effect of fruit and meat products in diet, (57) 795.
 regeneration in anemia, (52) 260.
 regeneration, significance of copper in, (60) 491.
- Hemoglobinuria—
 bacillary, summary, (59) Nev. 879.
 puerperal, papers on, (60) 867.

Hemophilia—

- inheritance of, (53) 427.
- inheritance through five generations, (58) 128.

Hemophilus ovis n.sp., description, (54) 678.

Hemorrhage, fatal, in cattle, cause, (51) N.Dak. 881.

Hemorrhages in young, relation to maternal diet, (58) 391, 594.

Hemorrhagic—

- disease, peculiar, in cattle, (51) Ind. 879.
- disease, unidentified, in cattle, Nev. (53) 478; (59) 879.
- septicemia, *see* Septicemia.

Hemp—

- and flax fibers, distinctions between (58) 95.

- breakdown of fiber strands, (53) 337.
- breeding experiments, (52) Mich. 334
- change of opposite to alternate phylotaxy, (58) 22; (60) 625.

- culture and handling, (59) Wis. 33.
- culture experiments, (51) 36; (59) Can. 524.

- economic status in Germany, (58) 226.
- fall seeding experiments, (52) 633.

- fertilizer experiments, Wis., (61) 435; (53) 432.

- fiber content, factors affecting, (54) 830.

- fiber, studies, (57) Calif. 225.
- fibers, characteristics, (58) 832.

- fibers, extensibility and strength, (55) 392.

- history and commercial status, (56) 297.

- in Germany, (53) 235.
- industry, profitableness, (53) Wis. 432.

- inheritance studies, (59) 223.
- international trade, (53) 296.

- irrigation experiments, (52) Calif. 33.
- nettle, effect of altering length of day, (55) 629.

- popular treatise, (55) 737.
- production, (56) Wis. 733.

- production in British Empire, (53) 530.

- pseudo winter, naturally selected, (54) 133.

- rejuvenations and rôle in sex problem, (60) 626.

- seed cake, feeding value, (53) 579.
- seed, factor essential for reproduction in, (53) 62.

- seed, vitamin E in, (54) 561.
- seeding experiments, (53) Wis. 432.

- sex and seed characters, relation, (58) 431.

- sex determination in, (58) 426.
- sex in, (54) 728.

- sex in, effect of age of pollen, (60) 535.

- sex in, effect of environment, (52) 525.
- sex reversal in, (54) 527.

Hemp—Continued.

- sex reversal in, effect of length of day, (51) 822.

- studies, (53) Can. 134.

- sun, as green manure and source of fiber, (53) 721.

- sun, breeding experiments, (51) Hawaii 740.

- sun, culture experiments, (54) V.I. 231.

- variety tests, (53) Wis. 432, Can. 530; (57) Can. 33, 227.

- yields and agronomic data, (52) Can. 733.

- yields, effect of depth of plowing, (59) Mich. 36.

Hen—

- crowing, genitalia of, (52) 333.
- feathering in Bantam crosses, (57) 28.

- flea, European, control, (57) 456.
- flea, European, in Connecticut, (59) Conn.State 455.

- flea, Gibson's, notes, (59) Mich. 455.

- ovary, action of follicular hormone, (52) 730.

- with male plumage, (57) 626.

Hendersonia—

- gigantispora corticola, notes, (59) 537.
- rubi, notes, (60) 553.

- sacchari, notes, (57) 540.

Henequen—

- and sisal, reciprocal crossings, (53) 332.

- fiber, production in Yucatan, (52) U.S.D.A. 337.

- international trade, (53) 296.
- production tests, Guam, (59) 523; (60) 814.

Hens—*see also* Chickens, Fowls, and Poultry.

- abscess in feet of, (56) 280; (57) 378.

- bisexual nature of, (58) 426.
- cost of maintaining, (56) Ill. 385.

- cost of production, (53) Okla. 174.
- date of sexual maturity, relation to egg production, (56) Mo. 167.

- diseases of reproductive organs, (53) 681.

- droppings, effect of calcium carbonate in diet, (54) 165.

- egg production, *see* Egg production.
- food passage through digestive tract, (57) 567.

- laying—*see also* Egg production.

- all-mash rations for, (56) Ohio 168; (58) S.Dak. 766.

- animal proteins for, (53) Iowa 778.

- calcium compound for, (58) Ky. 67.

- calcium metabolism in, Ky. (51) 176; (52) 75.

- dry mash mixtures for, (57) N.J. 766.

Hens—Continued.

laying—continued.

- effect of ultra-violet light, (53) 274.
 feeding and housing, (56) Wyo. 868.
 feeding experiments, (51) Iowa 471; (55) Ark. 64.
 feeding methods, (53) N.J. 472.
 hemoglobin readings, (57) N.C. 271.
 keeping indoors, (53) Ohio 874.
 life and structure, (55) 166.
 management, and feeding, (55) 869.
 new type of reel mash feeder for, (60) Ohio 173.
 protein feeds for, (52) Tex. 572.
 proteins and minerals for, Ohio (51) 472; (53) 577.
 rice by-products for, (58) Ark. 360.
 selection, (54) Ariz. 66.
 selection and breeding, (55) 266.
 short-time trap-nest records, (59) N.J. 363.
 sources of calcium carbonate for, (59) Iowa 71.
 supplements for grain and meat scrap ration, (56) Ohio 168.
 warm weather for winter, (56) Ohio 568.
 winter feeding, (58) West.Wash. 68.
 low-producing, effect of surgery for, (58) Ill. 360.
 molting, cystine requirements, (59) 869.
 molting, endogenous nitrogen of, (56) 165.
 molting, variation of blood constituents, (54) 166.
 prevention of death due to heat, (53) N.Mex. 173.
 productivity, time of molt as index, (51) Mo. 776; (53) 471.
 purebred and mongrel, comparison, (55) Minn. 365.
 rate of laying, relation to fecundity, (58) Mass. 766.
 rate of wing molt, (59) 869.
 registered, vigor and breeding power, (56) Can. 468.
 registration qualifications in Canada, (55) 869.
 selection of good layers, papers on, (55) 166.
 utilization of corn proteins by, (56) 166.
 v. pullets for fertility of eggs and mortality of chicks, (54) Can. 272.
- Hepatitis, necrotic—
 of sheep in Australia, (59) 174, 275; (60) 179.
 of sheep in Victoria, (57) 875.
- Herbaceous borders for amateurs, treatise, (55) 442.

Herbicides, use in California, (60) 437.

Herbs—

- culture, characteristics, and uses, (57) 45.
 North American, hibernation and rejuvenation, (54) 424.
- Herculia phoezalis* on cypress, (53) 158.
- Herd—
 expansion, studies, (51) 379.
 improvement during 25 years, (55) 571.
 improvement, testing cows for, (51) 677.
- Herdbooks, information necessary for, papers on, (53) 269.
- Hereditary factors—
 nature of, (56) 327.
 necessity for broader study, (52) 520.
- Heredity—
 and animal reproduction, (52) Kans. 427.
 and chromosomes, (53) 126.
 and descent, synthetic contributions to, (56) 126.
 and environment, (53) 430.
 and environment in South Africa, (56) 327.
 and eugenics, treatise, (51) 227.
 and evolution, treatise, (54) 628.
 and milking function, (55) 772.
 and plant diseases, (60) 831.
 and reproduction in animals, (56) Kans. 818.
 and selective pollen-tube growth, (58) 28.
 and sexuality fundamentals, (57) 722.
 and stimulation of plants, (58) 625.
 correlated, in oats, (56) W.Va. 519.
 correlated, in wheat, (56) 429.
 cytological basis, (55) 730; (60) 810.
 effect on sex control, (51) 230.
 enzyme theory of, (56) 429.
 human, Mendelism in, (52) 427.
 human, studies in, (58) 426.
 in barley, (52) 30, 31, Minn. 244; (53) 729.
 in barley hybrids, (56) 630; (59) 429.
 in beans, (55) 731; (58) 824.
 in beets, (54) 823.
 in cabbage, (58) 230.
 in canary birds, (60) 324.
 in castor beans, (60) 216, 217.
 in cats, (59) 521.
 in cattle, papers on, (54) 265.
 in cattle, review, (59) Me. 521.
 in cereals, Wash.Col., (54) 822; (56) 543.
 in corn, (53) 29.
 in corn and teosinte hybrids, (51) 430.
 in corn hybrids, (54) 824.
 in cotton, (53) 331.
 in *Crepis*, studies, (52) 30; (55) 224.
 in crossbred cattle, (57) Tex. 124.
 in *Cucurbita*, (60) 526.
 in dairy cattle, (52) 429.
 in domestic animals, (58) 628.
 in flax, cytoplasmic, (58) 219.

Heredity—Continued.

- in fowls, papers on, (59) 361.
- in foxtail millet, (53) 831.
- in *Fragaria*, (60) 528.
- in goldfish, (51) 828; (53) 832.
- in grafted Jerusalem artichokes, (58) 523.
- in grafted plants, (57) 29.
- in *Helianthus tuberosus* dangeardi, (59) 520.
- in *Hibiscus sabdariffa*, (52) 523.
- in hybrid warblers, (56) 521.
- in kafir, (52) 32.
- in mammals, (57) 323.
- in man, present knowledge, (53) 425.
- in mules, (55) 770.
- in oats crosses, (60) W.Va. 216.
- in peas, (57) 123, 423.
- in perennial ryegrass, (60) 217.
- in pigs, (52) 222.
- in plants, (57) 121.
- in plants, rôle, (52) 29.
- in poultry, (55) Conn.Storrs 26; (56) Kans. 817; (57) R.I. 423; (59) R.I. 623.
- in poultry crosses, (52) Kans. 430.
- in poultry, papers on, (58) 29.
- in *Primula sinensis*, (60) 810.
- in rabbits and guinea pigs, (53) 522.
- in radishes, (52) 523.
- in *Raphanus*, (52) 30.
- in rice, (57) 822.
- in sheep, (53) Okla. 427, Wyo. 630; (54) 224.
- in soy beans, (54) Ill. 333; (58) 219.
- in summer squash, (60) Conn.Storrs 526.
- in sweet potatoes, (53) 831.
- in tetraploid *Daturas*, (53) 227.
- in tobacco, (51) 826, 827; (52) 522; (54) 129, 823; (55) 328; (56) 631; (57) 622, 623; (60) 126.
- in tomatoes, (52) Pa. 522.
- in *Viola*, (57) 122.
- in Wensleydale sheep, (52) 332.
- in wheat, (55) 224.
- in wheat hybrids, (52) 521; (59) 821.
- independent, in *Oenothera*, (56) 521.
- intermittent, in Jerusalem artichokes, (59) 520.
- laws and mechanism, treatise, (53) 226.
- linked, in adzuki beans, (52) 333.
- Mendelian, precepts and rules, (60) 810.
- Mendelian, with assortive mating, (60) 31.
- method of, (51) Wash.Col. 128.
- mosaic, studies, (53) 729.
- new theory of, (60) 428.
- nonmendelian, (58) 525.
- of abnormalities of fingers, (54) 28.
- of abnormality in cattle, (60) 630.
- of abnormality in teeth, (57) 28.
- of absence of kidney in mice, (52) 524.
- of acquired characters, (51) 635; (53) 230; (54) 130; (56) 521; (58) 522.

Heredity—Continued.

- of acquired immunity, (53) 28.
- of adult build, mass studies, (51) 31.
- of agronomic characters in rice, (59) 520.
- of albinism, (52) 826.
- of albinism in beets, (60) 526.
- of alcohol resistance in rats, (57) 28.
- of aleurone color in corn, (51) 335.
- of anemia in mice, (54) 228.
- of anthocyanin in *Crepis*, (55) 126.
- of awnedness in rice, (58) 28.
- of awnedness in wheat, (58) U.S.D.A. 834.
- of awns in wheat crosses, (59) 127.
- of barren-sterile type in corn, (56) 518.
- of bighead in horses, (59) 276.
- of birth weight in rabbits, (52) 331.
- of black pigment in Silky fowls, (57) 624.
- of blood sugar in animals, (56) 225.
- of body weight in poultry, (53) R.I. 629.
- of bolting in sugar beets, (58) 432.
- of brown aleurone in corn, (52) N.Y.Cornell 727.
- of bunt resistance in wheat, (55) 129.
- of butterfat percentage in Jersey cows, (58) 127.
- of carbohydrates and fat in corn, (56) 29.
- of carbohydrates and fat in corn crosses, (56) Iowa 519.
- of central stem in broomcorn, (51) 32.
- of character acquired by grafting in Jerusalem artichoke, (54) 429.
- of cheek spots with black hairs in horses, (54) 127.
- of chemical characters in corn, (58) 424.
- of chemical characters in corn hybrids, Iowa, (53) 730; (55) 526.
- of chlorophyll characters in corn, (53) 229.
- of chlorophyll deficiencies in cotton, (54) Tex. 428.
- of chlorophyll deficiency in kafir, (59) Tex. 730.
- of chromosome shape, (57) 722.
- of color, *see* Color inheritance.
- of color patterns in grouse locust, (60) 218.
- of color patterns in Holstein cattle, (56) 223.
- of colored scutellum in corn, (56) 518.
- of concave kernels in corn, (56) 518.
- of corn characters, effect of hybridization, (51) Va. 735.
- of corn smut resistance or susceptibility, (59) Minn. 241.
- of deaf-mutism, (54) 430.
- of defective endosperm in corn, (51) 229; (55) W.Va. 129,

Heredity—Continued.

- of deformed leaves in Japanese morning-glory, (56) 521.
- of disease resistance, (57) 246.
- of disease resistance in cereals, (58) 43.
- of double ears in Brahman cattle, (51) 526.
- of drinking habit in a family, (53) 29.
- of ear notch in cattle, (54) 127.
- of earlessness and short ears in sheep, (53) 729.
- of earliness in oats crosses, (54) Pa. 26.
- of earliness in wheat, (52) 728; (58) 825.
- of egg color in silkworms, (53) 522.
- of egg production in Leghorns, (57) N.J. 28.
- of egg size in pomace fly, (52) 221.
- of egg-laying capacity in poultry, (55) N.Mex. 467.
- of eye abnormalities in rats, (54) 226, 821.
- of eye defects in rabbits, (56) Kans. 818.
- of fat percentage of milk, (54) 69.
- of fat production in cattle, Mo., (57) 423; (58) 425; (59) 822.
- of fecundity and mode of transmission, (51) Mich. 129.
- of fecundity in White Leghorns, (53) N.J. 29.
- of fertility and hatchability in poultry, (54) 865.
- of fertility in poultry, (51) Mass. 429.
- of fineness of wool in sheep, (54) 860.
- of flower color in Sea Island cotton, (55) 429.
- of flower spotting, (53) 628.
- of flower types in strawberries, (51) 736.
- of fowl typhoid resistance, (60) 181.
- of fruit shape in tomatoes, (54) 428; (57) 623.
- of Fusarium resistance in cabbage, (58) 547.
- of grain color in wheat, (53) 128.
- of Gromet pattern in sheep, (51) 734.
- of hair swirl in pigs, (57) Okla. 521.
- of hairlessness in animals, (56) Ill. 225.
- of hairlessness in cattle, (59) 521.
- of hairlessness in rats, (58) Ill. 320.
- of hardiness and growth habit in wheat crosses, (58) 228.
- of hardiness in plums, (55) Minn. 129.
- of harelip, (54) 28.
- of hatchability of eggs and livability of chicks, (58) Pa. 361.
- of head form in man, (51) 632; (53) 629.
- of hemophilia, (53) 427.
- of heterostyly in *Lythrum salicaria*, (57) 721.

Heredity—Continued.

- of hog cholera immunity, (54) Ill. 378.
- of horns in cattle, (58) 628; (60) 725.
- of horns in domestic animals, (55) 732.
- of horns in goats, (55) 525, 732.
- of horns, wattles, and color in goats, (56) 224.
- of human eye color, (59) 522.
- of human skeletal anomalies, (60) 32.
- of immunity from *Melampsora lini*, (58) 549.
- of intelligence, (56) 29.
- of lace or silky feathers in pigeons, (55) 327.
- of leaf rust resistance in wheat, (55) 128.
- of leaf shape in cotton, (59) 429.
- of mammae in pigs, (54) 126.
- of markings in grouse locust, (54) 428.
- of markings in rodents, (54) 824.
- of midcob color in corn, (58) 320.
- of milk production, (54) Me. 322; (55) 525; (57) 423, 823.
- of milk production of Holstein-Friesian cattle, (53) 72.
- of milk secretion, (58) 528.
- of morphological characters in poultry, (59) Conn.Storrs 430.
- of night blindness, (52) 430.
- of nitrogen in barley, (55) 633.
- of number of boll locks in cotton, (57) 520.
- of number of tail feathers and uropygial gland in pigeons, (57) 624.
- of oat crown rust resistance, (58) 126.
- of oat rust resistance, (57) 746; (60) 149.
- of oat smut resistance, (51) 229.
- of oat smut resistance in hybrids, (55) 429.
- of orange-eyed character in parasitic wasps, (56) 223.
- of osteoporosis in horses, (60) 32.
- of pale green seedlings in corn, (51) N.Y.Cornell 229; (54) 823.
- of pattern in Dutch rabbits, (55) 524.
- of pericarp color in corn, (52) 222.
- of petal spot in Pima cotton, (51) 429.
- of piebald seedlings in corn, (56) 518.
- of pied character in poultry, (59) 522.
- of pigmentation in mice, (55) 732.
- of pigments in corn, (56) 30.
- of plumage color and patterns in pigeons, (59) 522.
- of plumage color in Rhode Island Reds, (57) 624.
- of pod characters in beans, (60) 127.
- of polydactylism in man, (51) 526.
- of potato wart immunity, (56) 51.
- of production characters in Finnish cattle, (57) 27.
- of protogyny in corn, (51) 129.

Heredity—Continued.

- of pubescent nodes in wheat, (52) 332.
- of purple plumules in corn, (54) 629.
- of raspberry anthracnose resistance, (60) 155.
- of rate of feathering in poultry, (53) 427.
- of rate of shedding in cotton, (57) 622.
- of reaction to rust in wheat, (56) 544.
- of red plant color in cotton, (58) Ark. 27.
- of resistance to bacillary white diarrhea, (56) 478.
- of resistance to Danysz bacillus, (60) 176, 726.
- of resistance to fowl typhoid, (59) 278; (60) 726.
- of resistance to rusty blotch in barley, (59) 146.
- of retinal abnormality in white mice, (52) 429.
- of reversed badger-face pattern in sheep, (56) 28.
- of ridgelings in Angora goats, (59) Tex. 726.
- of root length in peas, (60) 429.
- of ruby eye in animals, (56) 428.
- of rumplessness in fowls, (54) 27.
- of rust resistance in wheat crosses, (57) 147.
- of salmon-eye color in guinea pigs, (54) 227; (55) 732.
- of scimitar pod in peas, (58) 824.
- of scrotal hernia of swine, (58) Ohio 677.
- of seed color in sorghums, (51) 30.
- of seed-coat structure and color in sorghum, (60) 628.
- of self- and cross-incompatibility in plants, (58) 728.
- of self-sterility in Veronica, (58) 731.
- of sex-linked barred pattern in fowls, (54) 228.
- of sickle cell anemia in man, (51) 129.
- of silkless ears in corn, (54) 630.
- of size and color in tomato, (55) Iowa 429.
- of size and conformation in cross-bred sheep, (59) N.H. 220.
- of size in beans, (54) Me. 323.
- of skin color in poultry, (58) 629.
- of smooth seeds in cotton, (58) 225.
- of soft and stiff hair in faces of sheep, (54) 127.
- of spring and winter growing habit in barley, (53) 830.
- of spurs in female fowls, (55) 820.
- of sterility in rice, (59) 127.
- of stiff wool tuft on rump of sheep, (54) 127.
- of stooling habit of sugar cane, (55) 126.
- of structural defects in descendants of X-ray treated mice, (52) 131.

Heredity—Continued.

- of structure of dorsosacrum in fowls, (60) 631.
 - of style length in buckwheat, (57) 31.
 - of susceptibility to tumors, (51) 633.
 - of tassel seed type in corn, (59) 821.
 - of tooth abnormality in rats, (54) 226, 821.
 - of trimorphism in *Lythrum salicaria*, (57) 123.
 - of twinning in Holstein cattle, (55) 225.
 - of twinning in mares, (60) 725.
 - of twinning tendency among Norwegians, (55) 430.
 - of twisted seedlings in corn, (54) 630.
 - of unilateral variations in man, (55) 225.
 - of vestigeal wing character in a cock, (60) 811.
 - of visceral abnormalities in mice, (53) 833.
 - of weak tassel in corn, (58) 527.
 - of weight in rabbits, (54) 432; (56) 330; (60) 631.
 - of wheat stem rust resistance, (58) 45.
 - of white color in canaries, (51) 429.
 - of white markings on head of cattle, (57) 624.
 - of white seedlings in corn, (52) 429.
 - of white spotting in cats, (60) 725.
 - of white spotting in guinea pigs, (59) 522.
 - of wilt resistance in flax, (59) 29.
 - of winter and spring habits in barley, (54) 629.
 - of wool characters, (51) 526; (56) N.H. 328.
 - of wool covering on face, ears, and legs of sheep, (60) N.H. 128.
 - of wool fineness, (57) 823.
 - of xantha seedlings in corn, (52) N.Y. Cornell 727.
 - of Y chromosomes, (58) 728.
 - physiological theory, treatise, (57) 819.
 - present knowledge of, papers on, (55) 730.
 - principles, (51) 227.
 - principles, treatise, (60) 428.
 - sex, and fertility, treatise, (58) 320.
 - sex-linked, economical significance, (59) N.J. 324.
 - studies, (51) 525; (53) 522.
 - studies with grain, (51) Wash.Col. 128.
 - textbook for agricultural students, (54) 188.
 - treatise, (53) 425; (55) 522.
 - valence in, hypothesis, (52) 521.
- Herman Frasch Foundation for Chemical Research—
- awards under, (60) 798.
 - editorial notes, (58) 601.
 - notes, (57) 498.
- Hermaphroditism—
- analysis, (58) 426.
 - experimental, in hens, (58) 426.
 - experimental, studies, (56) 663.

- Hermaphroditism—Continued.
 imperfect, in Hibiscus, treatment, (57) 422.
 in Cucurbita, (54) 431.
 in date palm, (55) 734.
 in Lebistes, (56) 431.
- Hernia—
 in horses, treatment, (60) 867.
 in swine, Wis., (51) 481; (56) 129, 774.
 scrotal, inheritance in swine, (58) Ohio 677.
- Heron in United States, (52) 650.
- Herpetomonas—
 donovani, studies, (55) 856.
 donovani, transmission by bedbugs, (51) 253.
 elmassiani in milkweed, (57) 246; (58) 55.
 elmassiani in milkweed, transmission, (51) 260.
 elmassiani, notes, (56) 54, 250.
 muscarum, cultivation of, (56) 862.
 spp., pathogenicity to vertebrates, (51) 54.
- Herring—
 cake decomposition, factors affecting, (53) 219.
 meal, effect on pork quality, (58) 167.
 meal, feeding value, (58) 270.
 meal v. soy bean meal for milk production, (60) Wash.Col. 862.
 nutritive value, (60) 189.
- Hertfordshire Institute of Agriculture, aims and work, (55) 690.
- Hessian fly—
 abundance and damage, estimating, (51) 357.
 behavior in emergency cages, (54) 555.
 control, (51) Iowa 452; (56) Oreg. 62.
 damage to wheat yield, (53) 361.
 free date for seeding wheat, (53) Iowa 754.
 free date, predicting, (52) 557.
 in California, (60) U.S.D.A. 457.
 in Montana, (53) Mont. 51.
 in northern Caucasia, (59) 553.
 in Poland, (53) 860.
 infestation, determination of percentage, (55) 459, 460.
 life cycle in Missouri, (51) Mo. 760.
 life history notes, (52) Kans. 452.
 notes, (51) Ind. 853; (53) Mo. 451, N.Dak. 652, N.Dak. 857; (54) Mo. 753; (56) Kans. 856; (59) Colo. 248.
 parasite of, (52) 663; (54) 856.
 parasite, polyembryonic development, (52) 360.
 parasite, synonymy, (53) 160.
 parasites, (53) N.C. 755; (59) 61.
 parasitism, determination of percentage, (55) 460.
 parasitism of, (55) N.Dak. 555.
 problem in Kansas, (53) 361.
 survey, Ohio, (52) 456; (57) 859.
- Heterakidae behavior in host, (56) Kans. 876.
- Heterakids, treatment, (51) Mich. 80.
- Heterakis—
 beramporia in chickens, (54) 381.
 gallinae, control, (52) Calif. 59; (53) 183.
 isolonche in pheasants, (52) 86.
 papillosa, studies, (56) 576; (60) Oreg. 774.
 spp. viability, (58) Ill. 368.
 vesicularis, control, (53) Calif. 449.
 vesicularis, notes, (53) Calif. 447; (59) 370.
 vesicularis, vector of black head protozoan, (57) 773.
- Heterocampa guttivitta outbreaks, natural enemies controlling, (55) 154.
- Heterodactyly in fowls, (55) 523.
- Heterodera radiculicola—
 depth distribution in soil, (52) 654.
 in Porto Rico, (55) 248.
 notes, (51) 248; (52) 551; (54) 649; (55) 244; (57) 640; (58) 51, 241, 658; (59) 45, 246, 541, N.C. 750.
 on Antirrhinum, (51) 46.
 use of paradichlorobenzene against, (58) 855.
- Heterodera schachtii—
 avenae, notes, (56) 541.
 biology, (59) 549.
 cysts, other nematodes inhabiting, (60) 645.
 life history on hops, (60) 350.
 notes, (58) 158, 446.
 physiology, (59) 52.
 sex ratios in, (59) 549.
- Heterodera spp. on beets, (57) 151.
- Heteronychus licas in Rhodesia, (55) 460.
- Heteropelma calcator, population, (60) 844.
- Heteroptera of eastern North America, (56) 659.
- Heterosis—
 effect of productivity of wheat, (58) 525.
 in beans, (60) 527.
 in beans, peculiar case, (58) 525.
- Heterosporium n.sp., description, (53) 656.
- Heterosporium gracile, notes, (59) 535; (60) 354.
- Heterostyly—
 genetic-physiological analysis, (56) 28.
 genetics of, (58) 525.
 in Lythrum salicaria, inheritance, (57) 721.
- Heterothallism in Penicillium, (56) 727.
- Hevea brasiliensis, see Rubber.
- Hexachlorethane—
 for treatment of flukes in cattle, (60) 478.
 use against clothes moth, (52) 554.
- Hexagenia bilineata, artificial fertilization, (55) 657.
- Hexamethylenetetramine—
 action on plants, (53) 326.
 as plant food, (58) 524.
 effect on bean plant, (53) 521, 726.

- Hexamethylenetetramine—Continued.
 for avian diphtheria, (57) 472.
 for control of bovine babesiosis, (57) 472.
- Hibbertia volubilis, feeding value, (55) 677.
- Hibernation and rejuvenation of herbs, (54) 424.
- Hibisceae, cytology, (58) 320.
- Hibiscus—
 cannabinus, gummosis in, (54) 151.
 cannabinus, inheritance studies, (59) 223.
 cannabinus, studies, (52) 634.
 diseases in West Java, (59) 246.
 mealybug, biological control, (60) 654.
 mealybug in Egypt, (56) 460.
 ornamental, breeding, (52) 143.
 root rot, notes, (57) P.R. 442.
 sabdariffa, inheritance in, (52) 523.
 sabdariffa, nematodes affecting, (54) 144.
 seedlings, notes, (54) P.R. 642.
 species from China, (57) 137.
 tiliaceus, partial wilting, (58) 252.
- Hickory—
 bark beetle, effect of rainfall, (52) 559.
 bitternut, in northern Minnesota, (56) 838.
 canker and disease, notes, (52) 353.
 insects affecting, (56) 555.
 propagation, (54) Mo. 739.
 relation to soil types, (56) 346; (60) 512.
 spiral borer, life history, (55) 764.
 trees, varieties, food and timber value, (56) Iowa 833.
 wood, decaying, succession of insects in, (52) 753.
- Hides and skins—
 anthrax-infected, disinfection, (51) 283.
 Chicago trade in, (51) 298.
 industry, treatise, (57) 386.
 manufacture and distribution, treatise, (55) 260.
 statistics, (58) U.S.D.A. 81.
- Hieroxestis subcervinella—
 on bananas, (60) 559.
 synonymy, (53) 256.
- High school, *see* Schools.
- Highway—
 bridge, location, (57) U.S.D.A. 475.
 curves and earthwork, treatise, (56) 76.
 design, trend, (57) U.S.D.A. 81.
 finance, urban aspects, U.S.D.A., (54) 680, 780.
 grading, power-shovel operation in, U.S.D.A., (58) 881; (59) 177, 281.
 improvement near Cleveland, plan, (60) U.S.D.A. 878.
 income from motor vehicles, (52) 687.
 planning survey for Cleveland, (58) U.S.D.A. 482.
 practice, English, impressions, (52) U.S.D.A. 783.
- Highway—Continued.
 railroad grade-crossing accidents in 1926, analysis, (58) U.S.D.A. 778.
- Research Board—
 activities, (54) 180.
 meeting, (58) U.S.D.A. 779.
 proceedings, (52) 687; (55) U.S.D.A. 583.
 slash, effect on infestation by western pine beetle, (56) U.S.D.A. 860.
 traffic and planning of State highways, (56) U.S.D.A. 384.
 traffic in California, (52) U.S.D.A. 585.
 traffic in the Cleveland area, (60) U.S.D.A. 278.
 transportation—
 costs, (52) 784.
 courses, place and content, (52) 687.
 relation to railroad abandonments, (54) U.S.D.A. 179.
 survey of Maine, (53) U.S.D.A. 483.
 survey of Ohio, (57) U.S.D.A. 677.
 survey of Vermont, (58) U.S.D.A. 582.
 surveys, (52) U.S.D.A. 184.
- Highways, *see* Roads.
- Himantia stellifera—
 in Porto Rico, (55) 248.
 notes, (55) 349.
- Hipocrita jacobaeae, notes, (56) 659.
- Hippeastrum—
 equestre, amoeboid bodies in, (51) 449.
 johnsonii mosaic, intracellular bodies of, (53) 851.
- Hippelates—
 flies of Coachella Valley, California, (56) 251; (60) 458.
 fly, notes, (57) Calif. 257.
 pusio, studies, (59) Calif. 755.
- Hippiscus apiculatus, mites in trachea of, (55) 660.
- Hippodamia—
 convergens, life history, (60) 653.
 convergens, notes, (60) 250.
 trideceum-punctata, bionomics, (53) 56.
- Hippology, elements of, treatise, (54) 678.
- Hippuric acid, synthesis, effect of experimental scurvy, (60) 296.
- Hispa armigera, notes, (52) 154.
- Histamine—
 antineuritic action, (51) 562.
 effect on nitrogen metabolism, (55) 260.
 effect on oestrous changes in spayed rats, (58) 529.
- Histeridis, myrmecophilous, bionomics, (57) 553.
- Histidine—
 and arginine, relation to creatine and purine metabolism, (54) 593.
 and arginine, relation to growth, (52) 859.
 and arginine, separation, (55) 714; (58) 12, 409; (60) 203.

- Histidine—Continued.**
 crystallization, (60) 413.
 determination, (51) 712.
 in proteins, (55) 306.
 in proteins, determination method,
 (55) 310.
 metabolism, studies, (53) 762.
 preparation, (60) 203.
 substitutes in diet for growth, (56)
 86.
 synthesis, (57) 90.
- Histochematin, notes, (60) 26.**
- Histology—**
 laboratory course in, guide, (58) 753.
 textbook, (54) 772.
 vegetable, treatise, (59) 24.
- Histomonas meleagridis, transmission by
 Heterakis vesicularis, (57) 773.**
- Histones and protamines, treatise, (60)
 202.**
- Hitchcock lectures on plant nutrition and
 crop production, (55) 605, 697.**
- Hitches—**
 for large teams, (60) Ill. 276.
 for tractor plows, (58) Ill. 373.
 tandem, studies, (56) Ill. 280.
- Hoary cress, control, (56) Mont. 133.**
- Hodgson extractor and uncapping machine,
 (54) 59.**
- Hog cholera—**
 anti-serum, types, value, (58) U.S.D.A.
 280.
 bacilli, studies, (60) 579.
 breeding for natural resistance, (56)
 Iowa 878.
 control, (51) 682; (53) 78; (55) 70;
 (58) 472; (59) 475, 675; (60) 867.
 control in movement of stock, (51)
 781.
 diagnosis from blood cell count, (60)
 873.
 East African, notes, (58) 474.
 epidemic in Sweden, (60) 867.
 etiology and pathology, (51) 785.
 immunity, effect of diet, (54) 678.
 immunity, inheritance of, (54) Ill. 378.
 immunity, permanent, in nately im-
 mune pigs, (56) Kans. 875.
 immunization, (51) 582; (53) Ind.
 179; (55) 574; (56) Ill. 379, 777;
 (58) 865.
 immunization of young pigs, (51) 285,
 482; (55) 371; (57) 179, Calif.
 278, 772; (58) 273; (60) 71, Ill.
 272, 273.
 immunization, post vaccination trou-
 bles, (52) 583.
 in young pigs, (59) 475.
 inheritance of resistance to, (56) Ill.
 276.
 notes, (54) 171; (60) 475.
 outbreaks, sources of infection, (51)
 781.
 papers on, (57) 377.
 prevention, technique of treatment,
 (59) 470.
 resistance, (60) Ill. 273.
- Hog cholera—Continued.**
 resistance, breeding for, (55) 578.
 serum and antigen, production, (57)
 Ind. 670.
 serum and virus, tests, (51) Ind. 879;
 (56) 574.
 serum, clarifying, (53) 384.
 situation in 1926, (59) 470.
 studies, (51) Ind. 878; (55) 274;
 (58) Ill. 369, N.Dak. 74.
 susceptibility of suckling pigs to, (60)
 479.
 susceptibility of weaned pigs to, (60)
 873.
 transmission, paper on, (59) 169.
 treatment, simultaneous and serum-
 alone methods, (60) 873.
 vaccination breaks, prevention, (57)
 876.
 virus, attenuation, (51) N.Dak. 882.
 virus, longevity, (51) N. Dak. 882;
 (57) Ind. 669.
 virus, studies, (54) Ky. 379.
- Hog influenza—**
 seasonal prevalence in Iowa, (58) 75.
 transmission and etiology, (59) 879.
- Hog lungworms, control, (60) 373.**
- Hog situation in Ohio, (55) Ohio. 97.**
- Hog worm, thorny-headed—**
 eggs and larvae, (60) 76.
 intermediary host, (57) 63; (58) 164.
 notes, (57) P.R. 468.
- Hogs—see Pigs.**
- Hokkaido—**
 Agricultural Experiment Station, notes,
 (57) 700.
 Imperial University, development, (52)
 396.
- Holcocera iceryaeella—**
 larvae as citrus pest, (52) 660.
 life history and control, (59) Calif.
 757.
 notes, (59) 655.
- Holcus bacterial spot, studies, (56) Iowa
 542.**
- Holly, Christmas, culture, (59) West Wash.
 44.**
- Hollyhock, crown gall affecting, (56) 653.**
- Holorygma, new genus, erection, (60) 655.**
- Holstein-Friesian Association of America,
 advanced registry system, (54) 265.**
- Home—**
 accounts, value and directions, (52)
 197.
 colonization in Spain, (51) 688.
 conveniences, treatise, (52) 890.
 decorating and furnishing, treatise,
 (54) 394.
 demonstration clubs, programs, (51)
 599.
 demonstration work, U.S.D.A., (51)
 796; (56) 589.
 demonstration work in France, (51)
 95.
 economics—see also Household.
 and chemistry, (56) 801.
 art in, bibliography, (54) 389.

Home—Continued.

- economics—continued.
 contribution to citizenship training, (53) 95.
 course for high schools, (54) 188.
 curricula in land-grant colleges, (53) 598.
 curriculum making in, (52) 298.
 curriculum making in Denver schools, (54) 389.
 curriculum, nursery school in, (54) 188.
 economics education, (52) 396.
 and extension, papers on, (53) 898.
 for 1924-25, (52) 196.
 in agricultural colleges, (54) 589.
 in Porto Rico, (57) 289, 290.
 in small high schools, (51) 195.
 objectives and degree in, (56) 588.
 organization and administration, (60) 890.
 papers on, (54) 188.
 service of Federal Board for Vocational Education, (54) 589; (56) 487.
 economics—
 elementary, treatise, (56) 690.
 essay contest, (54) 798.
 extension, (52) 196.
 extension, cooperative, (52) U.S.D.A. 898.
 extension of future, (51) 493.
 extension, papers on, (55) 587, 588.
 extension teachers, training, (58) U.S.D.A. 789.
 field of research in, (52) 597.
 high school curriculum in, (58) 688.
 in education, treatise, (52) 197; (60) 686.
 in elementary schools, (51) 493.
 in rural schools, outlines, (51) 397.
 papers on, (55) 384.
 problems, (54) 95.
 research at experiment stations, (54) U.S.D.A. 790.
 research, history of organization and administration at experiment stations, (58) U.S.D.A. 189.
 research in, papers on, (53) 598.
 research, laboratory equipment, (57) 487.
 schools in Saxony, (51) 598.
 studies, (53) Mo. 495.
 surveys in Denver, (54) 390.
 teachers, sources of information for, (53) 397.
 teachers, state schools for, in Norway, (51) 492; (53) 598.
 teacher-training courses in, (51) 493.
 teaching at Antioch College, (52) 396.

Home—Continued.

- economics—continued.
 teaching in cities, supervision, (51) 897.
 teaching, practice houses for, (54) 389.
 teaching, problems in, (53) 898.
 teaching, textbook, (60) 686.
 tests in, (51) 494.
 textbook, (55) 888; (57) 290.
 training in Norway, (51) 493; (53) 898.
 type instruction sheets in, (52) 96.
 vocational classes in, plant and equipment for, (58) 891.
 vocational, in Texas, (51) 395.
 workers, advanced degrees held by, (53) 7.
 furnishing and decorating, applied art in, (51) 599.
 grounds, development, (51) 243.
 grounds, planning and planting, (56) Ill. 646.
 grounds, planting, (52) 239.
 importance in rural improvement, (56) 889.
 improvement, short course, (54) 189.
 industries and agriculture, combining, (54) 287.
 life and industrial revolution, (59) 486.
 life on the farm, papers on, (54) 84.
 making—
 conferences on, (58) 197.
 courses in evening vocational schools, (51) 195.
 education, home project in, (56) 690.
 school cottages for training in, (54) 389.
 teaching, equipment for, (53) 898.
 textbook, (58) 688.
 treatise, (57) 493, 883.
 management and equipment, studies, (57) R.I. 493.
 management extension work in Western States, (54) U.S.D.A. 689.
 management extension work, 1914-1924, (58) U.S.D.A. 688.
 Management House Conference, (58) 197.
 planning, studies, (58) Ark. 395.
 relationships, teaching, (52) 794.
 repairs, handbook, (54) 394.
 Homeosoma electellum, notes, (59) Iowa 55, 552.
 Homes—
 building, furnishing, and management, (53) 694.
 for Kansas, design, (58) 683.
 improving appearance, (53) 398.
 Hominy—
 irradiated, effect, (53) 568.
 manufacture, studies, (55) 412, 615.

- Homona—
 coffearia, life history and control, (59) 253.
 coffearia, notes, (52) 361; (58) 159.
 menciana, notes, (53) 558.
- Homonopus luniger braconidis n.var., notes, (57) 264.
- Homoptera—
 cane, at Soledad, Cuba, (56) 858.
 Cuban, economic status, (55) 53.
 Strepsiptera and Hymenoptera parasitic on, (55) 854.
- Honduras, new genus, erection, (60) 655.
- Honey—
 and products of the hive, composition and use, (57) 862.
 color grading, (54) U.S.D.A. 206.
 combs, foulbrood infected, sterilization, (55) 56, U.S.D.A. 159.
 fermentation by yeasts, (60) Mich. 66.
 fermentation, cause, (59) Wis. 55; (60) Mich. 12.
 fermented, cause and cure, (60) 656.
 fermented, yeasts in, (59) 461.
 flora of Victoria, (54) 462.
 flow conditions, Iowa, (51) 452; (55) 554; (56) 856; (59) 55.
 from long-tubed flowers, (55) 56.
 granulation, causes, (56) Kans. 862.
 marketing in Maryland, (52) 663.
 marketing, papers on, (60) 66.
 moisture determination in, (55) 208.
 papers on, (58) 165.
 plants, American, (51) 764.
 plants in Cuba, (53) 57.
 plants, nectar glands, structure, (53) 324.
 plants, notes, (57) Tex. 162.
 plants of Australasia, (54) 261.
 plants of North America, (56) 461.
 production, (52) 663; (56) Wyo. 553.
 production and shipping, papers on, (54) 59.
 production, graded, (56) 64.
 production, papers on, (52) 858.
 production, relation to nectar, (60) 460.
 standards for, (57) U.S.D.A. 562.
 storing and ripening by bees, (54) 158.
 U.S. grades, color standards, and packing requirements, (59) U.S.D.A. 64.
 use in food preparation, (56) 461.
 use in the home, (53) Ind. 456.
 vinegar, home manufacture, (55) Mich. 114.
 vitamin content, (52) 64.
 yields, (55) N.Dak. 555.
- Honeybees, *see* Bees.
- Honeydew melons, harvesting and marketing, (56) Colo. 583.
- Honeydew seed, germination studies, (53) Colo. 146.
- Honeysuckle—
 eradication, (55) Va. 39.
 leaf roller, notes, (53) 257.
- Honohono feeding, effect on fat content of milk, (55) 673.
- Hookworm eggs in human excreta, disinfectants for, (56) 754.
- Hookworms—
 egg production, (51) 550.
 in cattle, (57) P.R. 468.
 in dogs, treatment, (57) 79.
 in foxes, control, (52) 182; (57) 879.
 in man, dissemination by pigs, (57) P.R. 468.
 in Paraguay, anthelmintics for, (53) 787.
 iodine solutions for, (54) Mich. 674.
 larvae, longevity and infectivity, (51) 550.
 of cattle, preparasitic stages, (52) 781.
 of dogs and foxes, (53) 552.
 treatment, (51) Mich. 80.
- Hop—
 crown gall, notes, (56) 653.
 diseases new to Great Britain, (52) 747.
 diseases, notes, (56) 747.
 downy mildew, mycelial invasion of host, (57) 150.
 downy mildew, notes, (56) 650, 847; (60) 345.
 downy mildew, perennial mycelium in, (57) 348.
 downy mildew, studies, (55) 749; (59) 51; (60) 348.
 drop, proposed name, (52) 748.
 gray mold, notes, (60) 644.
 mold, susceptible varieties, (60) 345.
 mosaic disease, studies, (52) 547.
 nettle head, studies, (59) 644.
 Peronospora in 1926, (59) 644.
 pickers in England, living conditions, (54) 84.
 powdery mildew, notes, (56) 748.
 red spider, studies, Oreg., (55) 659; (60) 753.
 wilt disease, (60) 832.
- Hoplisus costalis, notes, (53) 656.
- Hoplocampa—
 cookei, notes, (52) Wash.Col. 852.
 fruit worms in France, (51) 762.
 halcyon, life history, (56) 65.
 spp. on chokecherry, life history notes, (59) 660.
- Hoplocryptus incertulus, notes, (57) 62.
- Hoplolaimus coronatus, description, (58) 753.
- Hoplothrombium, new genus, description, (53) 656.
- Hops—
 dried spent, nutritive value, (58) 668.
 insects affecting, (56) 58.
 insects affecting in Great Britain, (53) 554.
 new varieties, testing, (56) 650.
- Hordein, definition, (54) 802.
- Horisminus fraternus, notes, (52) Iowa 358.
- Horistonotus uhleri, *see* Wireworms.
- Hormius basalis, notes, (52) 757.

Hormone—

- control of cyclic growth of female genital organs, (58) 630.
- female sex, assaying potency of, (55) 823.
- follicular, relation to development of secondary sex characters, (55) 822.
- follicular, standardization of preparations, (56) 226.
- follicular, variation in pig, cow, and human ovaries, (55) 822; (56) 226.
- mediums, preparation, (53) 582.
- testicular, indicator for, (59) 129.
- testicular, production, (56) 431.
- testicular, relation to secondary sex characters, (56) 130.
- testicular, source, (59) 823.

Hormones—

- growth, studies, (60) 630.
- in plants, studies, (54) 629.
- of gonads, antagonistic effect, (57) 424.
- of placenta and chorionic membranes, (57) 724.
- ovarian and placental, (60) 221.
- production in normal testes, (60) 633.

Horn flies, control, (58) Mo. 458.

Hornet, European, girdling shrubs, (58) 62.

Horns—

- development, effect of castration, (56) 663.
- growth in cattle and goats, (59) Wis. 28.
- in cattle, inheritance, (58) 628; (60) 725.
- in cattle, studies, (58) 127.
- in Cavicornia, transplantation and de-horning, (58) 473.
- in goats, inheritance, (55) 525, 732; (56) 224.
- in sheep, growth, effect of castration, (59) 29.
- production in domestic animals, hereditary analysis, (55) 732.

Horse beans—

- analyses, (52) Calif. 70.
- culture experiments, (55) Oreg. 637.
- electrocultural experiments, (54) 633.
- fruiting habits, (56) 827.
- studies, (53) 337.
- yield and quality, effect of seeding, (54) 437.

Horse—

- bots, *see* Botfly and *Gastrophilus*.
- disease, Kimberley, studies, (59) 676, 876; (60) 873.
- disease of unknown cause, (57) Nebr. 573.
- flesh, vitamins A and B in, (53) 764.
- labor cost on farms, (56) U.S.D.A. 286.
- labor on farms, (56) Ill. 285.
- power, Nation's, conserving, (57) 660.
- pulling investigations, (59) N.Dak. 881.

Horse—Continued.

- sickness, blood and circulation in, (57) 77.
- sickness in 1923, (51) 586.
- sickness in Senegal, (55) 275.
- skull from interglacial deposits near Pulawy, (56) 668.
- specialist, job of, (53) 571.

Horse-chestnut leaf blotch—

- and leaf scorch, notes, (60) Mich. 58.
- control, (55) N.J. 444.

Horseflies—*see also* Tabanidae and *Tabanus*.

- control, (51) U.S.D.A. 857; (55) Fla. 855.
- egg parasite of, experimental dissemination, (58) U.S.D.A. 759
- in Louisiana, notes, (51) 161.
- notes, (58) Ark. 344.

Horse-radish root rot, control, (51) 152, N.J. 652.

Horses—

- age determination, treatise, (51) 482.
- alfalfa for, (51) Mich. 576.
- alkali poisoning, (55) 173.
- American wild, history, (58) 669.
- anatomy, atlas, (57) 673.
- Argentine, spotting, (52) 219.
- as motors, studies, Iowa, (55) 579; (59) 81.
- big teams, harnessing and hitching, (53) 685.
- blood cells in, (57) 79.
- blood of, (52) 885; (53) 586.
- blood of, tests, (54) 478.
- breeding, (59) 464.
- breeding experiments, (55) Cau. 364.
- breeding in Hungary, (60) 565.
- breeding, textbook, (56) 72.
- breeds and types in Dutch East Indies, (56) 70.
- breeds, classification, (51) 176.
- breeds in Rumania, (55) 768.
- calcium and phosphorus balance, (51) 775.
- care and management, treatise, (60) 565.
- cheek spots with black hairs in, inheritance, (54) 127.
- chemical composition, (58) Ill. 359.
- chromosomes of, (54) 525; (58) 823.
- Clydesdale breed, studies, (59) 221.
- color inheritance in, (56) 728.
- cost of keeping, (51) Mich. 191.
- cost of keeping in New Zealand, (51) 593.
- cost of keeping on farms, (55) Calif. 183.
- cost of production, (59) Wis. 483.
- cost of using, (56) U.S.D.A. 785.
- development, (55) 265.
- digestion trials, (60) 467.
- diseases and treatment, (54) 678.
- diseases of, treatise, (57) 871.
- diseases, special report, (51) U.S.D.A. 84.
- draft, feed consumption and cost, (53) Can. 873.

Horses—Continued.

- draft, feed consumption and work done, (60) Mont. 766.
 draft, feeding experiments, (54) 63.
 draft, future shortage, (53) Ohio 873.
 draft, sugar beet tops as substitute for oats, (56) 71.
 draft, testing, (56) Iowa 682.
 effect of mercurochrome, (56) 678.
 effect of sweet clover hay as sole diet, (60) 477.
 efficient use of big teams on farms, (58) Ill. 780.
 endemic disease of, (53) 279.
 evolution of, (56) 29.
 evolution of, treatise, (56) 766.
 experiments, (58) Can. 565.
 exportation from Great Britain, (52) 280.
 farm, care and management, (52) U.S.D.A. 272.
 farm work, winter rations, (57) Mich. 867.
 fed exclusively on bran, mineral metabolism, (56) 72.
 feed cost of raising, (53) Can. 668.
 feeding, (60) Guam 858.
 feeding and breeding experiments, Can. (59) 160; (60) 564.
 feeding and maintenance, (60) Minn. 171.
 feeding experiments, (51) 775, Mo. 775; (52) Mich. 570, Can. 674, Mo. 772; (53) Ill. 71, Mo. 470; (54) S.Dak. 64, Conn.Storrs 469; (57) 762; (59) Wis. 70.
 feeds for, digestibility and energy values, (55) 163.
 French-Canadian, breeding work, (57) 662.
 head and neck, topographical anatomy, (51) 682.
 hitching, improved methods, (51) Ill. 789.
 hitching, studies, (58) Ill. 373.
 Holstein cavalry, body development, (55) 866.
 in Samoa, tumors on, (58) 281.
 in Spain, historical account, (54) 270.
 inheritance of coat color in, (51) 229.
 inheritance of twins in, (60) 725.
 length of stride, studies, (55) 63.
 lice, mange, and ticks of, control, (55) U.S.D.A. 578.
 losses due to liver disease, (59) Nchr. 876.
 lymphatic system, (60) 273.
 many teams of, measured pulling power, (60) Ill. 280.
 morphological types in differentiating, (59) 324.
 mules, and motor vehicles, (52) U.S.D.A. 695.
 native Kuban, analysis of metacarpal bones, (60) 468.
 nematode parasite of, (53) 280.
 nematodes in eyes of, (56) 678.

Horses—Continued.

- new anthelmintic for, (57) 871.
 on Ohio farms, (59) Ohio 482.
 on pasture, time used in foraging and resting, (52) 868.
 outlook, (57) Mo. 585.
 parasites, in New South Wales, (59) 170.
 parasites in Philippines, (54) 174.
 pasture values and methods for, (56) Kans. 865.
 pH of blood, (58) 677.
 poisoning by rayless goldenrod, (55) U.S.D.A. 372.
 pregnancy in, early determination, (55) 63.
 prices, index numbers, (54) Ohio 184.
 pulling power, machine for testing, (51) 698.
 rations for, (53) Okla. 66.
 Rhenish draft, early development, (54) 469.
 saddle, care, training, and riding, treatise, (55) 64.
 salt for, (55) Mich. 63.
 selection, management, and handling, (56) 668.
 shoeing, (60) 867.
 shoeing, farm, (58) U.S.D.A. 78.
 shoeing, principles and practice, treatise, (60) 363.
 situation, (53) Mich. 374.
 speed and massiveness, correlation, (52) 172.
 suppurations, vaccinothrapy, (57) 472.
 surface area, relation to body size, (60) Mo. 67.
 thoroughbred, in South Africa, early history, (51) 776.
 thoroughbred, measurements and running ability, (51) 672.
 thoroughbred race, breeding and management, (59) 464.
 thoroughbred, studies, (57) 220.
 training, (60) 859.
 treatise, (51) 176.
 use in winter wheat belt, (51) U.S.D.A. 389.
 utilization of feeds, (55) Mass. 561.
 vitamin B deficient, pathological anatomy, (58) 473.
 weight, determination, (59) 161.
 work, cost of production, (51) 176.
 work, feeding experiments, (52) N.Y. Cornell 770.
 work, wintering, (57) Mich. 662.
 Horsetails, control, (59) Wash.Col. 40.
 Horticultural—
 breeding work at experiment stations, (54) U.S.D.A. 726.
 experiments, interpreting results, (56) 640.
 experiments, probable error in, (53) 740.
 problems, (55) 741.
 production, development, (55) U.S.D.A. 784.

Horticulture—

- American, seventy-five years, (51) 343.
- American, tendencies in, (58) 36.
- clonal variety in, (53) 340.
- courses in Rhine Province, (52) 597.
- early leaders in, (58) 36.
- Federal and State research and information, (55) U.S.D.A. 796.
- for Pacific slope, textbook, (59) 137.
- instruction in Cornwall, (52) 597.
- statistical methods in, (58) 535.
- studies, textbook, (52) 696.
- textbook, (56) 891; (57) 290.

Hosiery—

- containing mixed fibers, dyeing, (58) 96.
- lengths, standard, (56) 397.
- wear, (51) Mo. 797.

Hotbeds—

- construction and management, (51) Ill. 39; (55) 438; (59) Colo. 41.
- electrically heated, (57) 336.
- flue-heated, description, (56) Miss. 181.
- manure and electric, (58) Wash.Col. 335.

Hotel markets for vegetables and poultry, (59) N.H. 284.

House flies—

- and intestinal myiasis, (53) 454.
- bacterial disease of, (52) 558; (57) 62.
- bacteriophage isolated from, (57) 658.
- breeding for insecticide tests, (60) 158.
- control, (51) U.S.D.A. 553; (58) Mich. 458.
- fumigation for, (57) S.C. 262, 859.
- life history and control, (57) 263.
- life history and rôle as disease carrier, (60) 850.
- parasitism by *Habronema muscae*, (51) 786.
- relation to manuring operations in Ceylon, (56) 557.

House heating, treatise, (58) 598.

House painting, paper hanging, etc., treatise, (52) 689.

Household—*see also* Home economics.

- accounts, uses, (59) Okla. 787.
- budget inquiries, methods, (56) 890.
- budgets, making, (56) 489.
- expenditures on Iowa farms, (56) Iowa 83.
- insects, control, (54) 53.
- management in Italy, teaching, (51) 95.
- management instruction for the farm, (55) 385.
- management, kitchen arrangement in farmhouse, (56) 597.
- management, training for farm women, (54) 187.
- refrigeration, list of references, (59) U.S.D.A. 695.
- standardization, (59) 898.
- work and management, manual, (55) 889.

Houses—

- financing, building, and upkeep, treatise, (57) 883.
 - model, treatise, (53) 694.
 - planning, decoration, and furnishing, (56) 690.
- Housing and equipment, list of Government publications on, (57) U.S.D.A. 598.
- Howardia zamiae, parasite of, (52) 663.
- Humic acid, absorption of potash by, (53) 420.
- Humidities, abnormal, physiological effects, (56) 897.
- Humidity—
- and forest fires, (53) 113; (55) 717.
 - atmospheric, control in a closed system, (59) 618.
 - effect on cotton elastic properties, (56) 898.
 - effect on cotton yarn, (56) 595.
 - effect on fading of dyestuffs, (58) 597; (59) 297.
 - effect on plants of arid regions, (59) 820.
 - effect on *Rhizopus* infection of sweet potato, (56) 150.
 - effect on strength tests in fabrics, (55) 492.
 - effect on thermal conductivity of cotton and wool, (54) 795.
 - in closed spaces, measurement, (54) 879.
 - relation to—
 - deterioration of evaporated apples in storage, (58) 713.
 - forest fires, (60) 206.
 - forest growth in North America, (54) 807.
 - moisture in fibers, (54) 895.
 - Rhizopus* infection of sweet potatoes, (53) 854.
- Humification of soil organic matter, determining, (53) 503.
- Humin formation in protein hydrolysis, (52) 108.
- Hummingbird, ruby-throat, pollination by, (56) 754.
- Hummingbirds, migration, (53) 51.
- Humulus* sp., new *Cercospora* on, (55) 546.
- Humus—
- acids, effect on phosphates, (54) 121.
 - acids, effect on plants, (54) 120.
 - extract, nonhumus constituents, (60) 510.
 - formation, (54) 215, 421.
 - formation, chemistry of, (60) 510.
 - formation, rôle of microorganisms in, (56) 620.
 - formation, theory, (60) 511.
 - in Assam soils, (56) 719.
 - in Brazilian coffee soils, (53) 418.
 - in soil, effect of lime and green manure, (55) Tenn. 723.
 - origin and nature, (56) 210, 421.
 - papers on, (60) 511.
 - properties, (52) 121.
 - soil, ammoniacal nitrogen in, (60) 715.

- Humus—Continued.
 soils, titration curves, (56) 17.
 soluble, removal from soil, effect, (54) 622.
 value for truck crops, (53) 142.
- Hunger fighters, treatise, (60) 591.
- Hunt, C. L., editorial notes, (56) 601.
- Hunt, T. F., editorial notes, (56) 601.
- Huntley Field Station work, (55) U.S.D.A. 196.
- Huntley Reclamation Project, work, (54) U.S.D.A. 197.
- Hurricanes, West Indian, and other tropical cyclones, (52) U.S.D.A. 416.
- Huxley, T. H., life and works, (53) 829.
- Hyacinth—
 bacterial rot, notes, (59) 534, 535.
 bulbs, culture and varieties, (54) 446.
 diseases, notes, (56) 541.
 growth, studies, (57) 518.
 root diseases, control, (60) 837.
 yellows, control, (58) 659; (59) 54.
 yellows, notes, (60) West.Wash. 746.
- Hyacinths—
 chromosome constitution and behavior, (60) 217.
 culture and varieties, (60) N.J. 441.
 experimental variation in, (57) 326.
- Hyaliodos vitripennis—
 descriptive notes, (54) 455.
 notes, (54) Mich. 354.
- Hyalomma—
 aegyptium, morphology and bionomics, (53) 260.
 aegyptium, notes, (53) 761.
 mauritanicum, notes, (60) 575.
- Hyalopora aspidiotus, aecial stage, (56) 354.
- Hyalopus albidus n.sp., description, (56) 849.
- Hybrid vigor—
 and tumors in mice, (56) 522.
 explanation, (55) 634.
 in poultry, (58) 629.
 in rice, (56) 131.
 in sorghum, (57) Tex. 432.
- Hybridization—*see also* Breeding, Animal breeding, Plant breeding, and specific animals and plants.
 in Malva, (55) 821.
 in nature, (57) 120.
 in Nicotiana, interspecific, (56) 632.
 inheritance in, (52) 29.
 of corn, effects, (51) Va. 742.
 papers on, (58) 525.
 study in evolution by, (53) 630.
- Hybrids—
 in pigeons, sex in, (55) 821.
 partially fertile, of interracial cross in *Drosophila*, (55) 821.
 polyploid gametes in, (57) 121.
 trigeneric, of *Aegilops*, wheat, and rye, (58) 320.
- Hydatid fluids, serological studies, (58) 772.
- Hydnobius luggeri n.sp., description, (58) Minn. 459.
- Hydnocarpic acid, refining and isolation, (59) 501.
- Hydnum—
 omnivorum n.sp., life history, (53) 544.
 septentrionale, notes, (56) 655.
 septentrionale, parasite of trees, (52) 646.
- Hydrangeas—
 color control in, (52) 143; (57) N.J. 735.
 culture, (57) N.J. 39.
 flower color in, (51) 628; (55) N.J. 37.
 lime studies with, (51) N.J. 647.
 soil acidity studies, (52) N.J. 738.
- Hydraulic engineering data, treatise, (58) 582.
- Hydraulic ram, use, (56) 779.
- Hydraulics and applications, treatise, (54) 875.
- Hydrellia—
 griseola, biology, (59) 860.
 nasturtii n.sp., description, (60) 64.
- Hydrocarbons, liquid, oxidation, action of accelerators and inhibitors, (60) 674.
- Hydrochloric acid—
 dilute administration with carbon tetrachloride, effects, (56) 572.
 effect on botulinus spores, (52) 165.
 milk for infant feeding, (51) 167.
 therapy in rickets, (51) 371.
- Hydrocyanic acid—
 absorption and retention by fumigated food products, (52) U.S.D.A. 561.
 determination in gaseous mixtures, (55) 206.
 for control of bedbugs, (51) Mont. 359.
 for insects, toxicity, (60) 454.
 forcing experiments with, (57) 416, 831.
 gas, action on weevils, (55) 663.
 gas, development of immunity to, (54) 454.
 gas fumigation—
 following copper fungicides, injury from, (56) 658.
 for rust mites, (55) 765.
 of American cotton in India, (59) 651, 794.
 of chick peas in warehouses, (52) 359.
 of cotton, (55) 663, 764.
 of greenhouses, (51) 357.
 of nursery stock, status, (52) 554.
 of tomato houses, (58) 557.
 of warehouses, (51) P.R. 855.
 studies, (53) Calif. 453; (55) Calif. 351; (56) 254.
 gas, toxicity, device for studying, (58) S.C. 662.
 in amygdalin, (51) 409.
 in grasses of Bechuanaland, (57) 77.
 in millet and sorghum, (53) 571.
 in sorghum as test for available soil nitrogen, (51) 419.

Hydrocyanic acid—Continued.

- in sorghum, effect on nitrates, (51) 624.
- liquid, fumigation costs, (52) 356.
- poisoning and avian polyneuritis, symptoms, (51) 563.
- powdered, manufacture, (55) 307.
- resistance of some insects to, (60) 454.
- strength of, determination, (55) 206.
- toxicity to plants, (53) 829.

Hydrodynamics, treatise, (52) 584.

Hydroelectric—

- handbook, (57) 777.
- power as a by-product of irrigation storage works, (53) 285.
- power in Washington, (52) 182; (56) 682.
- power systems of Italy, (52) 183.

Hydrogen—

- and carbon monoxide mixtures, (56) 576.
- burning in gasoline engines, (58) 483.
- cyanide, fumigation for pear psylla, (52) N.Y.State 854.
- determination in organic matter, (59) 414.
- electrode apparatus, description, (58) 11.
- electrode apparatus for soils, description, (54) 708.
- electrode cell, water-jacketed, description, (51) 313.
- exchangeable, determination in soils, (60) 112.
- peroxide action on manure, (56) 719.
- peroxide, effect on peroxidase determination, (58) 624.
- sulfide determination, (51) 713.
- sulfide generator, automatic, (59) 412.
- sulfide production by anaerobes, (55) 631.

Hydrogen-ion concentration—

- alkaline range, buffer mixture for, (55) 609.
- determination, (55) 12; (56) 503.
- by spectrophotometric method, (51) 611; (53) 714; (54) 205.
- in blood sera, methods, (60) 312.
- microelectrode for, (51) 804.
- new process, (56) 420.
- sources of error in, (57) 503.
- standardization of methods, (52) 111.
- treatise, (51) 504.
- with quinhydrone electrode, (56) 111.
- gradient in plants, (55) 22.
- measurements, (55) 615; (59) 709, 724.
- measuring, antimony electrode for, (59) 804.
- new method of stating, (58) 607.
- of soils, measurement, (52) 204; (55) 505.

Hydrogen-ion concentration—Continued.

- of solutions, determination, (54) 411.
- of sugarhouse products, (55) 112.
- relation to animal and plant growth, (53) 125.
- studies, application to entomology, (59) 550.
- theoretical foundations, (56) 13.
- Hydrology, elements of, treatise, (60) 276.
- Hydrometer—
 - for determining the colloidal content of soils, (57) 710.
 - method for soil analysis, (57) 809.
 - method of soils studies, (60) 18.
- Hydrophobia, *see* Rabies.
- Hydrophytes, manganese in, genesis and storing, (59) 821.
- Hydroporus palustris, parasite infesting, (58) 556.
- Hydroquinone, effect on—
 - animal metabolism, (51) 600.
 - growth and bone development in rats, (60) 792.
- Hydrosols, particle-size in, approximate estimation, (57) 805.
- Hydrotropism of roots, (54) 724.
- Hydroxyl-ion concentration, effect on walnut roots, (55) 22.
- Hygiene and preventive medicine, treatise, (56) 895.
- Hygrometry—
 - of buildings, (51) 888.
 - symposium on, (54) 114.
- Hylastinus obscurus, *see* Clover root borer.
- Hylemyia—
 - antiqua, *see* Onion maggot.
 - brassicae, *see* Cabbage maggot.
 - cilicrura, *see* Seed-corn maggot.
 - coarctata, notes, (59) 657.
- Hylesinus spp., parasite of, (58) 863.
- Hylobius—
 - abietis, biology and control, (59) 861.
 - abietis, generation of, (55) 854; (56) 856.
 - perforatus on olives, (52) 662.
- Hylotoma rosae, biology, (59) 660.
- Hymenia fascialis, studies, (57) Va.Truck 857.
- Hymenochaetae noxia, notes, (51) 248.
- Hymenolepididae, avian species of, (54) 580.
- Hymenolepis—
 - nana and H. fraterna, identity, (51) 759.
 - nana, evolution, (60) 67.
 - revision of genus, (54) 580.
- Hymenomycetes—
 - production and liberation of spores in, (54) 46.
 - soluble ferments produced by, (58) 524.
 - soluble ferments secreted by, (59) 517.
- Hymenophysa pubescens new in United States, (55) 832.

- Hymenoptera—
 aculeate, of Hongkong, list, (59) 461.
 and paratyphoid? (56) 362.
 biology, treatise, (57) 562.
 gynandromorphous, (57) 553.
 in Great Britain, (51) 60.
 leaf-mining habit in, (54) 558.
 method of mountain, (57) 553.
 new, in Canadian national collection,
 (51) 662.
 new parasitic, (52) 859; (53) 561;
 (56) 662; (57) 863.
 parasitic, from Java and Sumatra,
 (52) 361.
 parasitic, from south India, (58) 666.
 parasitic, importance in south India,
 (53) 861.
 parasitic, method of feeding, (53) 560.
 polyembryonic, origin of mixed broods,
 (56) 759.
 types in Academy of Natural Sciences
 of Philadelphia, (60) 252.
- Hyostromylosis in pigs, (59) 675.
- Hyostromylus rubidus, notes, (57) P.R.
 468; (59) 676.
- Hyparrhenia rufa, hay from, value, (52)
 34.
- Hypera punctata, *see* Clover leaf weevil.
- Hyperaspis—
 silvestri, notes, (53) 653.
 undulata, notes, (54) Mich. 354.
- Hypoglycemia in mice, (56) 225.
- Hyperinsulinism and dysinsulinism, (53)
 368.
- Hyperparasitism, studies, (57) U.S.D.A.
 457.
- Hypervitaminosis, studies, (60) 693, 694.
- Hyphantria cunea, *see* Webworm, fall.
- Hypohoma sublateralitum, notes, (54) N.Y.
 Cornell 851.
- Hypomyces of horses, studies, (52) 781.
- Hypocerambyx spinicornis, control, (54)
 157.
- Hypnum triquetrum, forms of growth in,
 (59) 429.
- Hypochlorite solutions, value for poultry
 disease control, (60) 77.
- Hypochlorites in drinking water for chicks,
 value (59) R.I. 677.
- Hypochnus—
 solani, artificial infection with, (60)
 49.
 solani, control, (57) 646.
 solani, studies, (54) 546; (60) 242.
 sp. on sugar beets, (54) 546.
- Hypoderaeum conoideum—
 frog as intermediate host of, (52)
 584.
 life history studies, (54) 172.
- Hypoderma—*see also* Cattle grubs, Ox
 warble, Warble flies, *etc.*
 larvae destruction, (52) 359.
- Hypodermella laricis, notes, (54) 751.
- Hypoglycemia—
 producing principle in vegetables, iso-
 lation, (52) 667.
- Hypoglycemia—Continued.
 production, (51) 66, 67.
 theory of milk fever, (58) 878.
- Hyponomeuta—
 malinella, parasites of, (51) 553.
 malinellus, parasites and hyperpara-
 sites, (57) 457.
 notes on genus in Great Britain, (60)
 560.
- Hypophyseal substance injection, effect on
 ovulation, (52) 631; (55) 824.
- Hypophysis as affected by castration in
 rats, (52) 480.
- Hypopta agavis larvae, morphology, (58)
 261.
- Hypopteromalus inimicus n.sp., description,
 (57) 365.
- Hyposoter pilosulus, (59) Ark. 252.
- Hyposulfites, formation by soil microorgan-
 isms, (54) 120.
- Hypotrachina in a family, (51) 229.
- Hypoxylon pruinatum—
 cause of poplar canker, (56) 250.
 notes, (58) 555.
- Hypsipyla robusta, notes, (56) 459.
- Hyssopus rhyacioniac, description, (57)
 365.
- Hysterectomy—
 and oestrous cycle of opossum, (53)
 732.
 effect on sex organs and sexual cycle,
 (58) 630.
- Hysteroneura setariae, *see* Plum aphid,
 rusty.
- Ibalia leucospoides, life history, (60) 252.
- Ice cream—
 as cause of epidemics, (56) 86.
 bacterial content, (52) 880; (54) 573.
 bacterial content, controlling, (57)
 Mich. 466.
 bacterial content, low, production, (51)
 Kans. 179.
 bacteriological standard, (56) Mich.
 377.
 Bacterium typhosum viability in, (55)
 69.
 bibliography on, (59) U.S.D.A. 169.
 business, Heller's guide, (58) 71.
 buttermilk powder in, (57) 376.
 chocolate, greenish discoloration in,
 (58) Pa. 364.
 cocoa v. chocolate liquor as flavor,
 (58) Pa. 364.
 colloidal chemistry of, (52) U.S.D.A.
 503.
 density, present status, (56) 873.
 density, variation in, reducing, (57)
 375.
 dipping losses, factors affecting, (58)
 Md. 873.
 effect of bacteria in air of plant, (57)
 Mich. 668.
 effect of carbon dioxide, (55) Iowa 573.
 effect of homogenization, (59) Iowa
 74.
 effect of ingredients on freezing
 process, (53) Mo. 77.

Ice cream—Continued.

- examining, bacteriological methods, (58) 873.
- factories, statistics, (53) 277.
- fat determination in, (53) 315, 809; (56) 615.
- fat test, Garrett-Overman, (60) 313.
- formulas and standardization, (52) Nebr. 580.
- freezing, time, temperature, and overrun in, (56) Pa. 171.
- gelatin determination in, (56) 806.
- gelatin in, effect of varying amounts, (55) 270.
- gelatins, (58) Ill. 364.
- grades of gelatin for, (60) Ill. 264.
- improvers, studies, (55) Okla. 172.
- industry, acidity problem in, (51) 381.
- industry, associated activities in, (57) 667.
- makers manual, (58) 573.
- making on the farm, (52) Mich. 775.
- making, principles, Nebr., (51) 878; (57) 572.
- malt extract powder for, (57) Okla. 572.
- manufacture—
 - and distribution, abstracts of literature, (58) 573.
 - effect of each ingredient, Mo., (51) 780; (54) 771; (58) 471.
 - effect of sugar in, (52) Mo. 679.
 - effect of various processes, Mo., (54) 771, 869.
 - problems, (52) Pa. 279.
 - relation of several ingredients, (55) Mo. 573.
 - studies, (53) Okla. 177, 883; (60) 366.
- mix—
 - acidity, Pa., (58) 365; (60) 367.
 - acidity in, control, (56) 874.
 - adding sugar to, methods, (59) 576.
 - bacterial content, effect of gelatin, (53) 883; (59) 169.
 - bacterial content, effect of homogenization, (54) 170.
 - calculating, (53) Calif. 476.
 - concentrated, (60) Pa. 367.
 - dispersion of fat in, effect of processing, (56) Mo. 570.
 - effect of acidity, (59) Wis. 75.
 - freezing point, calculation, (58) 573.
 - freezing point, effect of ingredients, (54) 170; (55) Ind. 69.
 - freezing point, factors affecting, (55) 676; (56) Pa. 172.
 - freezing tests, (53) 676.
 - neutralization and homogenization, (53) 676.
 - pasteurization by electricity, (58) Pa. 365.
 - pasteurization temperature, (60) 369.

Ice cream—Continued.

- mix—continued.
 - preparation and processing, (59) 271.
 - proportioning, algebraic method, (56) 172.
 - proportioning and standardizing, graphic method, (58) 573.
 - standardization, (51) Kans. 179; (58) Ill. 771.
 - viscosity, (52) Kans. 479; (55) 873; (57) N.H. 375; (58) 70; (59) N.H. 271, N.J. 368; (60) 573.
 - viscosity control, (55) 873.
 - viscosity or plasticity, (54) 869.
 - viscosity, relation to gelatin, (57) 376.
 - whipping quality, factors affecting, (58) 170.
- mixes of varying fat content, processing, (60) 368.
- mixes, variations in, (60) 369.
- overrun, (52) Idaho 880.
- overrun and quality, (53) 677; (59) Mich. 469.
- overrun and quality, relation to butterfat, (58) 69.
- overrun and quality, relation to solids-not-fat, (59) Mich. 75.
- papers on, (57) 372; (58) 672; (60) 661.
- plant and manufacture, treatise, (52) 377.
- problems, papers on, (52) U.S.D.A. 574.
- properties, effect of carbon dioxide, (55) Iowa 676.
- properties, effect of percentage of butterfat, (53) Mo. 76.
- prune, preparation, (58) 71.
- quality, effect of acidity, (56) Vt. 570.
- quality, effect of methods of homogenization, (54) Pa. 375.
- quality, factors affecting, (51) 79; (52) Ill. 479.
- quality, measuring, (51) 79; (52) 775.
- quality, relation to viscosity, (55) 472.
- quality, studies, (56) Ill. 273.
- rôle of gelatin in, (57) 871.
- sale and advertising, (51) 179.
- sampling and testing, (55) N.J. 172.
- sandiness in, (52) Ind. 880.
- sanitary control, (55) 471; (60) 570.
- sanitary quality, methods for determining, (60) 265.
- shipping containers, iceless, thermal efficiency, (60) Pa. 367.
- shrinkage, factors affecting, (53) 883; (56) Ill. 376.
- source of fat for, (58) Pa. 364.
- studies, (56) Wis. 773, Kans. 873.
- sugar substitutes in, (52) Mich. 377.
- testing for fat, (59) Conn.Storrs 468.
- testing, scoring, and judging, (58) 871.

- Ice cream—Continued.
 tests, (60) Ill. 263.
 textbook, (58) 873.
 texture, (51) 581; (53) N.Y.State 475.
 total solids in, determining, (53) 109.
 use of prunes and figs in, (57) Calif. 276.
 volume weight study, (57) 769.
 yield, factors affecting, (52) Ind. 880.
- Ice—
 dry, for refrigeration of fruits, (59) 138.
 houses, planning and construction, (52) 890.
 making in Australia and New Zealand, (52) 890.
 making in Mexico and Central America, (51) 790.
 storage, (51) 885.
- Icelandic community in North Dakota, economic and social development, (54) 887.
- Icerya purchasi, *see* Cottony cushion scale.
- Ices, water, manufacture, (56) N.Y.State 189.
- Ichneumon flies—
 revision, (57) 264, 658.
 tribe Paniscini, (51) 555.
- Ichneumonidae—
 hibernation, (53) 760.
 of Japan, (56) 462; (60) 847.
 parasitism among, (55) 663.
 studies, (60) 564.
 synopsis, (54) 159.
- Ichneumonids, biology, (53) 57.
- Ichtargan, treatment for bovine piroplasmiasis, (58) 175.
- Icterohematuria among sheep, (53) Colo. 179.
- Icterohemoglobinuria in cattle, (52) Calif. 81; (54) 677; (60) Oreg. 774.
- Icterus, bacterial, of sheep, (60) 574.
- Idaho—
 Station and extension bulletins available, (51) 599.
 Station, notes, (51) 496; (52) 398; (55) 300, 396; (57) 98, 495, 797; (58) 397, 697; (59) 197, 696; (60) 399, 796.
 Station, publications available, (52) 899; (58) 395.
 Station publications, list, (56) 398.
 Station, report, (51) 898; (52) 899; (55) 898; (57) 796; (59) 796.
 University, notes, (51) 496, 695; (55) 300; (57) 98, 495, 797; (58) 397, 697; (59) 197, 696; (60) 399, 796.
- Idiocerus spp.—
 control, (52) 554; (59) 554.
 life history notes, (52) 155.
 notes, (57) 655; (59) 257.
- Illinois—
 Station, notes, (51) 97; (52) 98, 498; (54) 397; (57) 300; (59) 899.
 Station, report, (52) 496; (54) 395; (56) 299, 398; (58) 396; (60) 298.
- Illinois—Continued.
 University, notes, (51) 97; (52) 98, 498, 697; (53) 97; (54) 397; (55) 98; (57) 300; (59) 899.
- Imhoff tanks—
 bacteria in, fluctuations, (53) 892.
 differences in behavior, (51) 890.
 experiments, (57) N.J. 780.
 fauna of, (54) N.J. 584.
 foaming, rôle of microscopic animals in, (53) 288.
 operating and resting, studies, (52) N.J. 890.
 protozoa in, (57) N.J. 781.
 studies, (51) N.J. 685.
 unusual gases in, (54) 283.
- Imidazoles, synthetic, availability in diets deficient in histidine, (56) 86.
- Immigrants and American agriculture, (53) 894.
- Immunity—
 acquired, inheritance of, (53) 28.
 and cell sap reaction, (57) 246.
 and vitamin deficiency, (59) 394.
 bacterial, new principles in, (51) 80.
 in insects, (56) 856.
 in natural infectious disease, treatise, (53) 581.
 in plants, (57) 146, 637.
 local, studies, (52) 580.
 permanent acquired, and tissue resistance, (52) 680.
 relation to anaphylaxis, (56) 676.
 response, mechanism, (53) 677.
 symposium on, (52) 882.
- Immunization—*see also specific diseases.*
 experiments with germ-free filtrates, (53) 78.
 local, treatise, (56) 775.
 methods, treatise, (51) 477.
 studies, treatise, (54) 574.
- Imperata cylindrica as weed in Belgian Congo, (53) 839.
- Imperial—
 Botanical Conference, proceedings, (55) 322.
 Bureau of Animal Genetics, establishment, (60) 798.
 College of Tropical Agriculture, notes, (57) 100, 699.
 Economic Committee, functions and work, (59) 486.
 Forestry Institute, courses of study at, (52) 793.
- Implement sheds, plans and construction, (60) Mich. 482.
- Imports and exports in foreign countries.
 Government control, (55) U.S.D.A. 82.
- Inanition—
 and malnutrition, effect on growth and structure, (54) 692.
 biological and sociological aspects, treatise, (52) 564.
 effect on adrenal glands, (60) 594.
 effect on structure of testes, (56) 664.

- Inanition—Continued.
relation to vitamin B deficiency in pigeons, (58) 893.
- Inbreeding—
and relationship, coefficients, application, (51) 228.
effect on fertility, (60) 727.
human, for eight generations, (52) 825.
in livestock, calculating coefficients, (54) 324.
in livestock, critical review, (56) 729.
in livestock, measuring degree, (55) 525.
principles, (51) 635.
with White Leghorns, (54) 324.
- Income—
in various states, sources and distribution, (54) 880.
tax, farmers', 1923-1924, (51) 489.
tax schedules, English, information, (51) 489.
- Incubating plant, electrically equipped, (52) 586.
- Incubation—
and brooding experiments, (55) N.Mex. 467.
and brooding of chickens, (58) U.S.D.A. 766.
artificial, (55) Mo. 165.
artificial, in China, (55) 65.
artificial, in New Mexico, (53) N.Mex. 878.
artificial, optimum conditions, (53) 877.
artificial, principles and practice, (55) 869.
artificial, scientific principles, (53) 71.
at high altitudes, Wyo., (59) 264; (60) 768.
care and management of eggs during, (57) Idaho 71.
date of, (58) Minn. 868.
Egyptian methods, (59) 361.
experiments, (52) 676.
hatching percentage, effect of adding moisture to egg chamber, (59) 265.
in solutions, (55) Conn.Storrs 26.
mortality during, relation to abnormal embryos, (60) 660.
of eggs, amount of turning, (56) Ill. 372.
of eggs, effect of turning, (57) N.C. 272; (58) S.Dak. 766.
of eggs in vertical position, effect, (56) 769.
of eggs, popular account, (59) 666.
optimum temperature, (53) Ind. 173.
physics of, (53) 672.
practices, (54) N.J. 766.
problems, (52) Utah 773.
studies, (52) Kans. 474; (54) Can. 64, Can. 65, Pa. 369, Mont. 671; (57) 370.
systems, comparison, (54) Can. 763.
treatise, (51) 276.
- Incubator, multiple temperature, for use with cotton insects, (53) 755.
- Incubators—
bacteria in, effect of disinfectants (60) Mich. 470.
carbide gas as source of heat for, (55) Ind. 75.
comparison, Can., (51) 672; (54) 64, 65.
disinfection, experiments, (59) 583.
disinfection with formaldehyde, (60) 581.
electric, cost of operating, (59) 586.
electrically operated, (59) Mich. 99.
humidity in, effect, (54) Can. 272.
mammoth, in Philippines, (55) 467.
variation in temperature, (56) S.Dak. 669.
- Index—
animalium, (53) 551.
Kewensis, history of compilation and use, (53) 122.
numbers—
and prices of farm products, (55) S.C. 588.
constructing, (55) Mo. 589.
of farm prices, (55) 686, Iowa 686.
of farm taxes, (54) Ohio 386; (56) N.Y.Cornell 686; (58) Ohio 684.
of freight rates, (54) N.Y.Cornell 883; (56) Ohio 182.
of prices in Canada, (55) 785.
of prices paid by farmers for commodities, (60) U.S.D.A. 287.
of production, wages, and prices, Ohio, (53) 898; (54) 184, 389, 588; (55) 82, 482, 684; (56) 183, 285, 581; (57) 299, 494, 697; (58) 381, 684; (59) 180, 482, 783; (60) 183, 483.
of wholesale prices, revised, (58) 686.
of farming costs, (59) Iowa 86.
purchasing power, development by counties, (55) 686.
- Indian Central Cotton Committee, report, (57) 828; (60) 434.
- Indian farmers' institute, notes, (51) 199.
- Indian fig, new Saccharomycete of, (57) 155.
- Indian meal moth—
control by fumigation, (52) 359.
in cereals, fumigation experiments, (60) 840.
larvae, revival after fumigation, (57) 855; (60) 457.
notes, (57) 64; (60) 652.
parasite of, (60) 66.
- Indiana Station—
Moses Fell Annex, report, (51) 797; (53) 497; (56) 195; (57) 697; (59) 695.

Indiana Station—Continued.

- notes, (52) 98, 599; (53) 97, 697; (54) 599; (55) 496; (56) 699; (57) 900; (58) 697; (59) 299, 797; (60) 600.
- report, (51) 898; (53) 194; (55) 96; (57) 697; (59) 796.

Indicator, methyl orange, for use in artificial light, (55) 410.

Indicators—

- adsorption by serum, (53) 610.
- apparent dissociation constants, (51) 611.
- behavior in titrations, (59) 805.
- dissociation constants, determination, (53) 714.
- mixed, application, (58) 503.
- mixed, for carbonate-bicarbonate titrations, (52) 203.
- one-color, use of methoxytriphenyl carbinsols, (58) 714.
- oxidation-reduction, penetration, (59) 619.
- salt error of, (55) 506; (60) 503.
- use, treatise, (56) 312.

Indigestion, treatise, (55) 596.

Indigo seeds, bacteria in, (55) 818.

Indigofera spp. as green manure and cover crop, (52) 732.

Indole derivatives, condensation with aldehydes, (52) 108.

Industrial—

- revolution and the home, (59) 486.
- wastes, fertilizing value, (55) 625.
- wastes, treatment, (60) 676.

Industry—

- and agriculture in Russia, cyclical fluctuations in, (60) 586.
- and agriculture, price balance, (53) 492.
- elimination of waste in, (53) 597.
- self-government in, (52) U.S.D.A. 574.

Infantile paralysis, *see* Poliomyelitis.

Infantilism in farm animals, (60) 464.

Infants—*see also* Children.

- acidified milk for, (51) 867; (53) 367.
- atrophic, calcium and fat metabolism, (52) 563.
- basal metabolism, prediction, (59) 592.
- blood calcium, seasonal variation, (58) 493.
- cereal feeding for, (53) 457.
- cholesterol metabolism, (54) 292.
- clinical dietetics, (54) 592.
- copper absorption and excretion by, (51) 64.
- effect of carbon arc irradiation, (58) 896.
- effect of ultra-violet irradiation on health, (56) 91.
- feeding, (52) 64; (60) 290.
- and nutritional disorders, (54) 889.
- citric acid in milk for, (59) Wis. 92.
- curd character of milk for, (59) Utah 790.

Infants—Continued.

feeding—continued.

- diet, papers on, (60) 786.
- gelatin and egg yolk, (58) 292.
- hydrochloric acid milk in, (51) 167.
- in Tropics, (51) 556; (56) 493.
- lactic acid milk in, (51) 167.
- milk modifications in, (56) 292.
- recent advances in, (53) 366.
- review of literature, (54) 790.
- review of literature for 1923, (52) 362.
- test of curd strength for, (51) 379.

food requirements, (53) 263; (60) 492.

gastric contents, pH value, (51) 166, 167.

metabolism, effect of various foods on, (58) 593.

mineral metabolism, effect of heat treatment of milk, (52) 764.

mortality, excess of males in first year, (55) 227.

newborn, phosphorus in blood, (54) 792.

newborn, respiratory metabolism, (53) 366.

on soy bean milk diet, development, (60) 492.

premature and undersized, energy metabolism, (54) 694.

premature, growth studies, (52) 362.

rachitic, irradiated milk for, (54) 492.

respiratory metabolism, (52) 261.

stools, H-ion concentration, (51) 664.

susceptibility to rickets, prenatal factor, (60) 898.

vitamin B deficiency, symptomatology, (60) 195.

weaned, self selection of diet, (60) 592.

Influenza—

- bovine, studies, (57) 377, 378.
- equine, *see* Pleuropneumonia, equine.
- of swine, (59) 470.

Infra-red irradiation—

- effect on *Demodex*, (58) 475.
- effect on growth of rachitic rats, (60) 694.

Inheritance, *see* Heredity.

Inorganic—

- constituents in wild rice, (51) 163.
- constituents of soil, determination, 314.
- salt in milk as affected by diet, (51) 166.

Inostemma—

- boscii*, parasite of *Perrisia pyri*, (60) 657.
- sp. notes, (56) 661.

Insane asylums, dietaries in, (54) 88.

Insect—

- and Pest Act, new regulations, (52) 355.
- attacks and internal conditions of plants, (57) 357.

Insect—Continued.

- brain, comparative anatomy, (57) 554.
 ecology, studies, (60) 648.
 eggs, aquatic, parasites of, (60) 656.
 embryology, (57) 554.
 flagellates, pathogenicity to vertebrates, (51) 54.
 galls, new, (59) 652.
 galls on blueberry plants, (59) N.J. 351.
 larvae growth curves, analysis, (56) 355.
 larvae, leaf-mining, ecology, (57) 262.
 olfactometer, description, (55) 552.
 outbreaks, forecasting and control, (60) 158.
 outbreaks, relation to migration, (58) 856.
 pest gauge, description, (57) 655.
 pest important in Queensland, (56) 757.
 pest law of Colorado, (58) 158.
 pests, notes, (55) 455.
 pollinizers, effect of dusting, (59) 856.
 preparations for class work at Oka Institute of Agriculture, (58) 158.
 punctures, swellings and other skin phenomena from, (58) 158.
 repellents, tests, (60) 162.
 secretion, irritation due to, (56) 757.
 sense organs, nervous system, morphology, (55) 253.
 sociology, study, (57) 450.
 thorax, morphology and mechanism, (57) 655.
 tissue, determination of arsenic in, (58) 13.
 toxicology, proposed term, (55) 658.
 types in collections of Illinois State Natural History Survey and University, (57) 358.
- Insecticidal action of plant products, relation to constitution, (57) 557.
- Insecticide—
 and fungicide guarantee in Canada, (52) 253.
 commercial liquid, tests, (57) 557.
 industry, chemical problems of, (53) 110.
 law of Connecticut, (52) Conn.State 537.
 machinery, report, (57) 855, 856.
 problems, (59) 553.
 tests, (54) 152.
- Insecticides—see also *Sprays and specific forms*.
 adsorbed, studies, (55) 52.
 against flies, testing, (60) 161.
 analyses, (51) N.J. 39, Me. 344; (52) Conn.State 537; (53) N.J. 37, Me. 539; (54) Conn.State 642, Oreg. 739; (55) Me. 138, 759; (56) Can. 534, Me. 534, N.J. 534; (58) Me. 728, N.J. 738; (60) N.J. 438, Can. 557.
 application by airplane, (57) 656, 856, 857.

Insecticides—Continued.

- application by airplane, apparatus, (60) Oreg. 754.
 arsenical, electric charges, (53) 452.
 as stimulators of plant growth, (60) 162.
 complexity factor in, (55) 52.
 composition, (58) Oreg. 838.
 contact, studies, (55) 852; (56) 155, 358; (57) 557; (58) 452; (59) 352.
 desirable qualities, (52) Wis. 56.
 distribution, visibility, (53) 452.
 dust, use of selfmixer in, (56) 243.
 effectiveness, method of computing, (53) 452.
 evaluation, (60) 839.
 fluorides v. fluosilicates, (56) 157.
 for apple sucker in egg stage, tests, (59) 855.
 for codling moth, tests, (60) Wash. Col. 843.
 for plum curculio, tests, (59) 63.
 for potato beetles, tests, (58) Minn. 862.
 for potato insects, (56) Minn. 554.
 for root mealybugs and aphids, (57) 358.
 for slugs, tests, (53) 252.
 formulas, (54) 455; (57) 160.
 from plants used as fish poisons, (54) 258.
 fungicides, and weed killers, treatise, (54) 656.
 inspection and analyses, (55) N.J. 38.
 lubricating oils for, (58) 346.
 manufacture and sale, laws, (51) 501.
 new, (59) 854.
 new, for Mexican bean beetle, (52) 555.
 new, preparation, (53) 452.
 nonarsenical, for biting insects, tests, (60) 840.
 nonarsenical, studies, (52) 158.
 notes, (51) 542; (56) S.C. 553; (59) Iowa 55.
 petroleum, tests, (55) 759.
 respiratory, effect of carbon dioxide, (60) 454.
 soil, arsenates for, (55) 552.
 soil, for Japanese beetle, (53) N.J. 258; (60) 562.
 stomach, comparing efficiency, (56) 657.
 studies, (54) Tenn. 257; (60) 162.
 tests, (54) Ill. 353; (56) Ky. 157; (57) 855; (59) 57, Conn.State 455.
 tests, rearing insects for, (60) 158.
 toxicity, apparatus for testing, (52) 356.
 toxicity under Ceylon conditions, (57) 855.
- Insects—
 affecting flower gardens, (55) U.S.D.A. 852; (57) 57.
 and disease control, treatise, (58) 661.

Insects—Continued.

- and disease of man, treatise, (54) 258.
 and mites in Colorado, (51) 252.
 and parasites affecting livestock, (57) Tex. 160.
 and pests, control, (58) S.C. 662.
 and pests in Bulgaria, (58) 450.
 and pests in Scotland, (57) 358.
 and plant diseases, control, (55) 663.
 and roundworms, interrelation, (58) 754.
 aquatic, artificial fertilization, (55) 657.
 aquatic, bibliography, (54) 752.
 as disseminators of anthrax, (51) La. 879.
 as disseminators of plant diseases, (51) 543.
 as household pests, (58) 858.
 as mushroom disease carriers, (59) U.S.D.A. 52.
 as test animals in vitamin research, (59) 593.
 as transmitters of potato mosaic, (57) 359.
 attraction to plants by smell, (56) 558.
 autohemorrhage of, signification, (58) 856.
 beneficial—
 introduction, (55) Calif. 352.
 introduction into Hawaii, (53) 653; (56) 253.
 parasitic forms, (51) Ohio 856.
 propagation and distribution in Hawaii, (57) 654.
 studies, (57) Calif. 257.
 trapped in bait pails, (57) 357.
 biological control, (59) 648.
 biological control and parasite introduction in continental areas, (59) 551.
 biological control in California, status, (55) 354.
 biology, (59) 648.
 biology, syllabus, Coleoptera, (56) 860.
 birds and other checks on, (59) 853.
 biting, insecticidal work with, (60) 840.
 blood of, pH value, (53) 856.
 blood of, studies, (51) 54; (53) 51.
 bloodsucking, salivary secretions, relation to blood coagulation, (59) 172.
 boring, detection, (52) 662.
 breeding for insecticide tests, (60) 158.
 captured in New Jersey lookout stations, (57) 358.
 caught in light traps, (56) 757.
 causing defects in timber, (58) U.S. D.A. 57.
 chemotropic responses, (60) 556.
 chemotropic studies of, evaporation cup for, (56) 854.
 chewing, control, (56) Wis. 756.
 chewing, nonarsenicals for, (53) 357.

Insects—Continued.

- chewing, studies, (54) 854.
 climatic relations, Mont., (54) 352; (60) 752.
 cold hardiness in, (59) 550; (60) 247.
 collected in Canadian Arctic Expedition, (51) 551.
 collecting in Panama, (52) 852.
 common names, approved by American Association of Economic Entomologists, (58) 557.
 common names, revised list, (54) 151.
 communism among, (57) 357.
 control, (51) West.Wash. 397; (53) 856; (57) 552; (58) 661; (59) 853.
 and internal therapy of plants, (57) 57.
 biological methods, (58) 255, 557, 858.
 by airplane, (60) 60.
 by birds, (51) 657.
 by parasites, (55) 354.
 by vacuum, (54) 753.
 factors affecting, (57) 853.
 in France, (59) 553.
 in Iowa, (59) 551.
 in New Jersey, (53) 253; (59) 854.
 in New York, (60) 842.
 in Pennsylvania, (52) 646.
 in Washington, (59) 552.
 injection experiments for, (59) 57.
 lowering cost of, (56) Mont. 153.
 nicotine for, (52) 535.
 recent advances in, (60) 60.
 recommendation chart, (59) Idaho 740.
 rôle of vertebrates in, (57) 356.
 with light traps, (59) 551.
 cost of control in Canada, (58) 57.
 crop damage from, factors affecting, (51) 158.
 destructive and useful, textbook, (60) 648.
 developing immunity to insecticides, (54) 454.
 development and weight, effect of vitamins, (59) 648.
 development, relation to temperature, (58) W.Va. 753.
 dipterous parasites of, (51) 763.
 diseases caused by filtrable virus, (56) 554.
 dissemination by air currents, (53) 357.
 economic—
 control, (53) 856.
 in Burma, (55) 556.
 in central Europe, (57) 854.
 in Ceylon, (59) 249.
 in Florida, (53) 856; (54) 53.
 in France, (51) 761.
 in Germany, (60) 844.
 in Illinois, (51) 550.
 in India, (57) 162.
 in Indiana, (57) 755.

Insects—Continued.

- economic—continued.
 in Kansas, (51) 551.
 in Malaya, life history and control, (58) 257.
 in New Jersey, (55) N.J. 51.
 in Norway, (53) 755.
 in Pennsylvania, (52) 657.
 in Poland, (58) 157.
 in Porto Rico, (52) 453; (58) 57.
 in Punjab, (58) 257.
 in Silesia, (57) 759.
 in streams, (57) Utah 556.
 in Sweden, (51) 551; (57) 655.
 in Uganda, (52) 554.
 in western Wales, (58) 57.
 notes, (59) 455.
 papers on, (58) 158.
 effect of surgical shock, (60) 750.
 entomophagous, use in agriculture, (53) 653.
 food eaten by, (54) 551.
 food habits and vegetation, (51) 252.
 food habits, ratios, (53) 253.
 forest, *see* Forest insects.
 freezing points, effect of environmental temperatures, (54) 551.
 garden, *see* Garden insects.
 glutathione distribution in, (57) 57.
 greenhouse, control with calcium cyanide, (57) 656.
 habits, (54) 256.
 heating of grain by, effect of fumigation, (52) 555.
 hibernating cage for, (58) 557.
 household, control, (54) 53; (59) Ind. 652.
 household, fumigation for, (55) 52.
 immature, preservation, (60) 839.
 immunity to sprays, (51) Wash.Col. 157.
 important in Mysore, (54) 753.
 important to public health, key-catalogue, (59) 856.
 imported, in Pennsylvania, (58) 345.
 in Australia and New Zealand, (57) 359.
 in Brazil, systematic catalogue, (59) 552.
 in British Guiana, (60) 557.
 in Canada, (53) 554; (58) 346.
 in Central Europe, Hymenoptera, (57) 659.
 in Ceylon, (58) 257.
 in Connecticut, guide, (58) 663.
 in flour mills, fumigation for, (59) 352.
 in Hudson Valley, (57) 853; (60) 842.
 in India, (60) 60.
 in India, catalogue, (51) 54; (56) 358; (59) 855.
 in India, list of publications, (54) 257; (58) 858.
 in India, orders and families, keys, (54) 753.

Insects—Continued.

- in Indiana, (56) 755; (58) 256; (60) 59.
 in Jamaica, (58) 346.
 in Malaya, (56) 458.
 in Malaya, and food plants, (56) 857.
 in Malaya, effect of climatic conditions, (59) 648.
 in Mandalay, (52) 554.
 in New Jersey, supplement to Diptera list, (58) 458.
 in New York, list, (58) N.Y.Cornell 754.
 in Ohio, (60) 59.
 in Ontario, papers on, (56) 458.
 in Porto Rico, check list, (51) 659.
 in Porto Rico, check list, supplement, (53) 51.
 in Province of Moscow, (59) 855.
 in Quebec, indexes, (53) 358.
 in Quelpart Island, (52) 554.
 in Saskatchewan, (60) 843.
 in Scotland, (58) 257.
 in south India, notes, (52) 155.
 in South Rhodesia, control, (58) 57.
 in southern Nigeria, food plants and habits, (58) 662.
 in Texas, (58) 257.
 in western North America, textbook, (56) 553.
 index of reports, (53) 154.
 infesting stored products, fumigation, (59) 856.
 injurious—
 and parasites from Italy, list, (52) 753.
 cost to Canada and United States, (60) 844.
 in Argentina, (55) 758.
 in Barbados, (54) 553.
 in Bengal, (59) 352.
 in Brazil, (60) 557.
 in Brazil, survey, (56) 856.
 in British Columbia, (53) 253; (59) 352.
 in British Guiana, (56) 253.
 in Bulgaria, (55) 456.
 in Burma, (59) 553.
 in California, (54) 256; (58) 157.
 in Canada, (51) 761; (52) 355; (54) 553; (59) 352; (60) 843.
 in Ceylon, (51) 252; (60) 845.
 in Colorado, (58) 256.
 in Connecticut, (60) 845.
 in Denmark, (55) 758.
 in Dominican Republic, (58) 662.
 in Dutch East Indies, (54) 144.
 in Egypt, (54) 257.
 in England and Wales, (60) 161.
 in France, (59) 652.
 in French West Africa, (56) 756.
 in Gold Coast, (65) 756.
 in Great Britain, (51) 245, 252; (53) 51.
 in Guam, (55) Guam 151.
 in Haiti, (55) 758.
 in Hawaii, (56) 357.

Insects—Continued.

injuriously—continued.

- in Hokkaido, (57) 258.
- in Illinois, (59) 652.
- in Italy, (55) 759; (58) 857; (59) 855.
- in Jamaica, (53) 555; (59) 652.
- in Kansas, (56) Kans. 856.
- in Kenya Colony, (53) 156; (54) 153, 553.
- in Labuan, (53) 253.
- in Madras, (52) 154.
- in maritime provinces, (54) 152.
- in Mauritius, (54) 455.
- in Michigan, Mich., (51) 157, 452.
- in Mississippi, (53) 51.
- in Montana, Mont., (53) 51; (54) 352.
- in New Brunswick, (52) 852.
- in New Jersey, N.J., (51) 658; (57) 755.
- in New York, (57) 853.
- in New Zealand, (53) 855.
- in Nova Scotia, (59) 552.
- in Pennsylvania, (54) Pa. 352.
- in Philippines, (54) 455; (58) 858.
- in Poland, (53) 857; (57) 162; (58) 558.
- in Poltava, (59) 855.
- in Porto Rico, (56) 552.
- in prairie provinces of Canada, (54) 257.
- in Punjab, (59) 554.
- in Pusa, (55) 556; (59) 456.
- in Quebec, (55) 253.
- in Queensland, (58) 857.
- in Rhodesia, (60) 845.
- in Samoa, (52) 356; (58) 755.
- in Scotland, (54) 257.
- in Sierra Leone, (58) 662.
- in South Africa, (60) 649.
- in South Dakota, (51) 252.
- in South Rhodesia, (56) 57.
- in southern England, (59) 552.
- in Sumatra, (55) 759.
- in Tennessee, (51) Tenn. 357; (57) 853.
- in the Sudan, (58) 858.
- in Uganda, (56) 756.
- in West Indies, (59) 352.
- in Western Australia, (54) 753; (60) 845.
- in Yorkshire, (57) 854.
- on west coast of Mexico, (54) 553.
- susceptibility to dust mixtures, (54) N.Y.State 552.
- to crops, *see specific crops*.
- to household, treatise, (56) 857.
- treatise, (54) 551.
- instructions for killing, use in India, (52) 155.
- intracellular symbionts of, (51) 660.
- introduction, propagation, and distribution in Hawaii, (53) 253.
- leaf mining, convergent development in, (54) 551.

Insects—Continued.

- leaf mining, ecology and classification, (59) 853.
- leaf mining, oligophagy, (57) 553.
- leaf mining, treatise, (59) 651.
- light and suction-fan trap for, (59) 457.
- menace of, (55) 852.
- metamorphosis, (56) 657.
- Mexican, in National Museum of Natural History, list, (52) 154.
- migration, (53) 856.
- migratory distribution, (54) 457.
- mutilation of twigs by, (57) Mich. 554.
- natural "cleaning up" habit, (56) 251.
- natural control, papers on, (52) 355.
- new light trap for, (51) 357.
- newly established in New York State, (57) 451.
- night activity, causes, (60) 247.
- number of generations in, prediction, (56) 856.
- of arable land at Rothamsted, (58) 557.
- of 1922, (51) 54.
- of the season, (54) 153.
- on imported nursery stock, (52) 554.
- on nursery stock, (54) Mo. 753.
- on nursery stock in Oregon, (60) 845.
- on truck crops, control, (51) 55.
- oviposition response of, (53) U.S.D.A. 253.
- papers on, (57) 553, 554.
- penetration of oil sprays into tracheal tubes, (58) 253.
- personality of, (52) 750.
- phoresy in, (57) 554.
- photographing, (53) Conn.State 450.
- physiology of, (60) 839.
- pollination of fruit blossoms by, (56) 756.
- polyhedral diseases of, (58) 346.
- positive phototropism in, (58) 451.
- prairie, (57) 556.
- prediction of abundance, (59) 454; (60) 250.
- protective resemblance to fire blackened areas, (57) 554.
- quarantine control, (54) 154.
- rate of development as affected by temperature, (51) 551.
- reaction to lights of various colors and intensities, (58) 346.
- recently introduced into Connecticut, (55) 554.
- regulatory work, legal aspect, (55) 354.
- relation to man, (55) 658.
- relation to man, textbook, (54) 752.
- relation to plant diseases, (57) Ind. 653; (58) 451.
- relation to plant pollination, (59) 454.
- relation to slash disposal, (58) U.S.D.A. 159.

Insects—Continued.

- relation to the people and the State, (60) 452.
- relation to weather, (55) 354.
- research, in North Caucasian region, (59) 553.
- resistance to fumigation, effect of temperature, (52) Calif. 57.
- resistance to hydrocyanic acid gas, (60) 454.
- respiratory metabolism, effect of arsenicals, (56) 553.
- response and adaptation to external stimuli, (60) 839.
- responses to smell and taste, (60) 556.
- revival after fumigation, (57) 855.
- rising tide of, (57) 160.
- root-feeding, method for life history studies, (59) 555.
- Russian, parasites of, host list, (59) 855.
- scale, *see* Scale insects.
- senses of, (51) 759.
- sensibility to chemical stimulants, (59) 154.
- sensitivity, studies, (58) 253.
- social life among, (51) 54; (53) 156.
- social, origin and evolution, (60) 59.
- soil-infesting, control, N.J., (55) 51; (57) 59.
- soil-infesting, paper on, (54) 53.
- soil-infesting, studies, (59) 651.
- specificity of acquired immunity in, (58) 557.
- status, biological control in Hawaii, (60) 453.
- structure and life, treatise, (53) 357.
- subcortical, temperature as limiting factor, (51) 759.
- subterranean, soil treatment for Wash.Col., (51) 157; (52) 851; (56) 554; (60) 842.
- succession in decaying hickory, (52) 753.
- sucking, control, (52) 646; (56) N.Y.State 252.
- survival and freezing at low temperatures, (55) 658.
- symbiosis in, (53) 856.
- teratology, (58) 253.
- transmission of virus diseases by, (60) 243.
- tree and shrub, manual, (53) 252.
- undercooling and freezing points in, (60) 750.
- used as food in Burma, (52) 155.
- warfare against, (54) 152.
- water conservation in, (60) 556.
- winter hardiness, cause, (57) 451.
- Institute for research in land economics and public utilities, (60) 587.
- Institute of Experimental Biology at Moscow, work, (51) 525.
- Institute of Soils and Plant Nutrition, activities, (55) 808.

- Institutions for town and country, (55) Wis. 84.
- Insulating materials—
 - effect of moisture on electrical properties, (57) 777.
 - heat transmission of, (53) 684.
 - tests, (53) 285.
- Insulation—
 - building, economic thickness, (59) 98.
 - building, value, (59) 85.
 - of roofs, (53) 486.
- Insulin—
 - action and use in diabetes, (53) 462.
 - action, nature, (51) 65, 559; (53) 63.
 - action on blood sugar, mechanism, (51) 271.
 - action, rôle of liver in, (53) 166.
 - adsorption and dialysis experiments, (55) 110.
 - amount in pancreas of domestic animals, (51) 502.
 - and carbohydrate metabolism, treatise, (55) 694; (60) 687.
 - and nature of diabetes, (52) 464.
 - chemical examination, (55) 307.
 - chemical properties, (54) 409, 410, 804.
 - chemical reactions, (51) 410.
 - clinical assaying, (52) 667.
 - clinical use, (51) 668.
 - convulsions, blood phosphate after, (51) 769.
 - convulsions in mice, effect of sugars, (52) 567.
 - crystalline, (55) 204.
 - effect on—
 - blood fat of avitaminous dogs, (55) 91.
 - blood phosphorus, (51) 271.
 - blood sugar of fowls, (55) 770.
 - carbohydrate and phosphorus metabolism, (52) 766.
 - composition of blood, (51) 466.
 - corn seedlings, (55) 817.
 - glucose fermentation, (52) 110.
 - glucose in vitro, (51) 66.
 - glucose-fermenting action of *Bacillus coli*, (52) 611.
 - glycogen formation, (51) 560, 768.
 - ion content of blood, (51) 502.
 - lactic fermentation of glucose, (52) 203.
 - metabolism of normal dogs, (51) 559.
 - morphological blood picture, (54) 791.
 - normal and diabetic blood, (52) 765.
 - phosphate excretion, (52) 566.
 - polyneuritis, (54) 894.
 - respiratory exchange, (51) 769.
 - sugar metabolism, (53) 64.
 - for treatment of diabetes, (51) 271, 366; (52) 865; (60) 899.
 - from codfish, (52) 804.

Insulin—Continued.

- hypoglycemia, effect of dihydroxyacetone, (56) 109.
- in tissues and method of estimation, (53) 612.
- injection, effect on milk composition, (51) 9.
- intoxication, effect of various substances, (53) 462.
- intradermal v. subcutaneous injection, (52) 366.
- lecture on, (52) 265.
- manufacture in England, (52) 11.
- newer clinical knowledge, (60) 786.
- precipitation reactions of, (51) 66.
- preparation, (51) 410; (53) 804.
- preparation, improvements in, (51) 502.
- present status, (51) 502.
- properties and preparation, (51) 609.
- purification by sorption on charcoal, (51) 502.
- reduced sensitivity to, (55) 91.
- solutions, ultrafiltration and electro-dialysis, (54) 410, 611.
- sources, (51) 559.
- studies, (52) 611; (54) 791.
- treatment, effect on fat metabolism, (55) 90.
- treatment of undernutrition, (55) 295.
- treatment of depancreatized dogs, results, (51) 769.
- use, (52) 366.
- use, treatise, (54) 791.

Insulin-like—

- substance in citrus fruits, (51) 768.
- substance in various tissues, (51) 668.

Insurance—

- accident, for agricultural laborers in France, (53) 90, 193; (55) 81; (59) 88.
- fire, *see* Fire.
- unemployment, for agricultural workers, (57) 480.
- weather, developments, (53) 615.

Intarvin—

- fat, use in diabetes, (52) 264.
- food value, (52) 264.
- in diabetic diets, value, (52) 666, 766; (53) 569; (54) 894.
- metabolism, (52) 666.
- physiological behavior, (52) 264.

Intelligence, inheritance of, (56) 29.

International—

- agricultural organizations, list, (58) U.S.D.A. 490.
- Association of Dairy and Milk Inspectors, report, (53) 580; (55) 470; (57) 371; (58) 672; (60) 569.
- Botanical Congress, notes, (57) 499.
- Commission of Women's Institutes, report, (55) 385.
- Conference on Soil Science, (51) 399.
- Congress—
 - for production of Bovine Species, report, (53) 269.

International—Continued.

Congress—Continued.

- for study of bird protection, proceedings, (56) 456.
- of Agriculture, announcement, (56) 300.
- of Agriculture, arrangements for, (52) 200.
- of Beekeepers, proceedings, (56) 662.
- of Entomology, editorial, (59) 601.
- of Entomology, notes, (58) 200.
- of Genetics, announcement, (56) 100.
- of Plant Sciences, (53) 699.
- of Plant Sciences, editorial, (55) 101.
- of Silviculture, proceedings, (60) 641.
- congresses, prospective, editorial, (54) 401.
- corn borer investigations, (60) 651.
- Cotton Congress in Egypt, (57) 828.
- Country Life Commission, proceedings, (59) 288.
- Country Life Commission, report, (56) 889.
- dairy organizations, (52) U.S.D.A. 574.
- Economic Conference, resolutions on agriculture, (58) 78.
- Education Board, grant of, (60) 500.
- Education Board, reports, (55) 289.
- Home Economics Conference at Paris, (51) 299.
- Horticultural Congress, notes, (57) 800.
- Institute of Agricultural Ecology, organization and work, (54) 412.
- Institute of Agriculture—
 - enlarged representation of United States, (51) 99.
 - general assembly, notes, (57) 400.
 - general assembly, proceedings, (53) 597.
 - organizing dairy statistics, (52) U.S.D.A. 596.
 - permanent committee, meetings, (54) 885.
 - rural improvement activities, (56) 889.
 - work, (60) 381.
- office dealing with contagious diseases of animals, (55) 874.
- organization for parasite introductions, plan for, (60) 60.
- Organization of National Farm Associations, (59) 482.
- Physiological Congress, notes, (60) 500.
- Rabies conference, reports, (59) 173.
- Rubber Conference, proceedings, (52) 346.
- Seed Testing Association, proceedings, (55) 534.
- Seed Testing Congress, (51) 500.
- Society of Microbiology, (60) 844.

International—Continued.

Society of Soil Science—

- first congress, (55) 499; (56) 400.
- first congress, editorial, (57) 101.
- first congress, proceedings, (60) 507.
- meeting of second commission, (56) 17.
- message to highway engineers, (57) U.S.D.A. 677.
- organization, (51) 400.

Society of Sugar Cane Technologists, proceedings, (53) 857.

- trade in staple commodities, treatise, (60) 589.
- yearbook of agricultural legislation, (56) 485; (59) 482.
- yearbook of agricultural statistics, (52) 792; (54) 289; (56) 790; (58) 188.

Intersexuality and gynandromorphism in animals, (56) 224.

Intestinal—

- absorption, search for low residue diet, (59) 189.
- autointoxication, theory, (52) 364.
- chemistry, (52) 862; (55) 190; (56) 192.
- contents, effect of food intake on enzymatic concentration, (53) 457.
- contents of dogs, pH value, (57) 788; (58) 897.
- contents, reaction, relation to diet and flora, (52) 163.
- motility, effect of vitamin B deficiency, (57) 691.
- parasites, tenacity of eggs, (58) Ill. 367.
- parasites, thermal therapy for, (54) 657.
- protozoa of man, host-parasite relations, (57) 854.
- roundworm, control, (53) 184.
- stasis, effect of vitamin deficiencies, (51) 463.
- tract of rachitic rats, acidity, effect of sunshine, (59) 193.
- tract of rodents, pH value, (57) 789.
- tract, pH value, effect of vitamin D, (58) 91.
- worms of poultry, (55) N.J. 75, Ohio 75; (59) 370.

Intramine—

- effect on piroplasmosis and other diseases, (58) 773.
- experiments with, (59) 673; (60) 266.

Inulin—

- absorption and utilization in rats, (58) 590.
- food value, (54) 791.
- history and preparation, (51) 409.
- in Jerusalem artichokes, (56) 515; (59) 217.
- in treatment of diabetes, (54) 894.
- migration in grafted Helianthaceae, (55) 22.

Inulin—Continued.

- movement in grafts of Compositae, (53) 726.

Inventory account book, (53) 194.

Invertase—

- action, characteristics, (51) 608.
- industrial applications of, (54) 8.
- purification and concentration, (51) 112.

Iodamoeba bütschlii, notes, (53) 553.

Iodide, iodine determination in, (54) 8.

Iodides, soluble, determination, (57) 408.

Iodine—

- absorption of compounds, changes in, (52) 517.
- administration for endemic goiter, (51) 72.
- alkaline solutions, oxidation of glucose in, (58) 11.
- as disinfectant against nematodes, (57) 179.
- determination, (52) 712.
- determination in biological material, (52) 613.
- determination, methods, (58) 507.
- dietary source from dried kelp, (52) 366.
- effect on chick growth, (60) Ill. 260.
- effect on growth and metabolism of yeasts, (60) 894.
- effect on rats on vitamin A free diet, (60) 853.
- feeding experiments, Iowa, (53) 769, 777.
- for livestock, (58) 762.
- gradient of permeability to, in seed coats, (52) 29.
- hyperactive, therapeutic value, (51) 79.
- in Cape Cod cranberries, (60) 687.
- in food and drink, relation to goiter, (52) 68.
- in foods and body fluids, determination, (56) 312.
- in iodides, determination, (54) 8.
- in milk, (59) Ohio 774.
- in milk, effect of heat, (59) 291.
- in milk powder, (59) 791.
- in mineral mixtures, determination, (59) 709.
- in nature, (53) 201.
- in nutrition, (53) 63.
- in prophylaxis of goiter, (58) 898.
- in Rhodophyceae, (60) 29.
- in soil and water, (60) S.C. 708.
- in soil and water, relation to goiter in India, (58) 595.
- in thyroid gland, estimation, (55) 411.
- in water, relation to goiter, (51) 668; (53) 369; (58) 497, 897; (59) 12, N.Mex. 203.
- in water supply of Michigan, (52) 265; (53) 86.
- injections for foot-and-mouth disease, (59) 471.
- losses from iodized salt, (57) 803.

- Iodine—Continued.
 number determination in fats and oils, (53) 315.
 number of soy bean oil, (52) 636.
 numbers of cottonseed and coconut oils, (52) 205.
 relation to goiter, (55) 490; (57) 297.
 salt mixture for goiter in animals, (54) Mont. 379.
 solution, standard, (57) 503.
 solutions for control of worms, (54) Mich. 674.
 treatment for rinderpest, (55) 273.
 uses on poultry farms, (56) 679.
 vermicide value, (51) Mich. 79.
 vermicide pills, efficacy, (57) 879.
 vermicide, standardization, (59) Mich. 477.
- Ionolization, use of term, (52) 29.
 Ionopsis utricularioides, notes, (57) 851.
- Ions—
 action on colloids, (54) 320.
 antagonistic influences in plants, (55) 323.
 effect on hydration, absorption, and permeability, (54) 22.
 in colloidal systems, effects, treatise, (54) 108.
- Iowa—
 Beekeepers' Association, proceedings, (60) 65.
 College, notes, (51) 98, 798; (52) 98, 900; (53) 498; (54) 397; (55) 397, 698, 797, 900; (56) 699; (57) 395, 797; (58) 97, 499, 798; (59) 299, 499; (60) 99, 399, 499, 698.
 Cooperative Livestock Shippers, proceedings, (52) 168.
 Station, notes, (51) 798; (52) 98; (53) 498; (55) 797, 900; (56) 699; (57) 797; (58) 97, 499, 798; (59) 499; (60) 99, 399, 499, 698.
 Station, report, (51) 495; (53) 798; (55) 598; (56) 899; (59) 99.
- Ipobracon—
 grenadensis, notes, (53) 156.
 tucumanus, description, (58) 266.
 tucumanus, notes, (59) 562.
- Ips—
 genus on Stanford campus, (57) 862.
 spp., life history and habits, (53) 259.
 spp., notes, (52) Calif. 58.
 spp., paper on, (57) 553.
- Irbisia solani, notes, (55) 56.
- Iridomyrmex—
 detectus in Australia, (53) 57.
 humilis, *see* Ants, Argentine.
- Iris—
 aphid, notes, (58) 59.
 bacterial soft rot, (54) 151.
 borer, notes, (57) Mich. 857; (59) Mich. 456, 557, 558; (60) Md. 842.
 bulbs, production, (59) U.S.D.A. 443.
 disease, notes, (59) 646.
 dwarf bearded, (57) N.Y.Cornell 439.
 leaf spot, notes, (59) 534; (60) 354.
- Iris—Continued.
 pod borer, parasite of, (54) 462.
 wild blue, problem of species in, (60) 235.
- Irises—
 bearded, culture, (53) 644.
 breeding experiments, (57) Can. 237; (60) 826.
 culture and breeding, (51) 346; (52) 741.
 culture, treatise, (57) 242; (58) 143.
 garden, (54) U.S.D.A. 742.
 handbook, (52) 143; (60) 341.
 notes, (60) Can. 639.
 Palestine, production, (58) U.S.D.A. 541.
 propagation and culture experiments, (58) Alaska 435.
 sterility in, (54) 838; (57) 537.
 varieties, (55) Can. 835.
- Irish Free State, economic survey, (59) 486.
- Irish moss mucilage, determination, (57) 409.
- Iron—*see also* Ferric and Ferrous.
 absorption by soils, (56) 417; (60) 516.
 accumulation in corn plants, (53) 247.
 action in base-exchange reactions, (59) Ariz. 614.
 and fat rôle in anemia recovery, (51) 864.
 and isolated nutrition, (56) 515.
 and zinc, comparative physiological importance, (53) 364; (54) 891.
 assimilation by plants, (54) 427.
 assimilation, relation to vitamin E, (57) 296.
 availability as affected by ammonium sulfate, (52) 326.
 availability for *Chlorella*, effect of pH, (59) 24.
 availability for plants, factors affecting, (52) 326.
 availability for wheat, (52) 123.
 bacteria, status of knowledge, (60) 511.
 cast, fatigue strength, (57) 881.
 cast, relation to automotive industry, (56) 882.
 cast, relative merits of gray and black, (59) 378.
 color test for, (58) 714.
 compounds, effect on soy beans, (56) 723.
 compounds, relation to water clarification, (53) 683.
 consumption of children, (56) Ohio. 493.
 crucibles for alkali determinations, (53) 714.
 deficiency and human disease, (53) 161.
 deficiency in pigs, (52) 271.
 deficient swine rations, (57) 761.
 determination in biological substances, (52) 411.

Iron—Continued.

- determination in blood, tissues, and urine, (55) 613.
 determination in small amounts, (55) 12; (56) 805.
 distribution in chlorotic pear trees, (54) 539.
 effect on blood regeneration, (53) 867.
 effect on rats on vitamin A free diet, (60) 853.
 from organic compounds, comparison, (51) N.J. 631.
 galvanized, containers, zinc from, (51) 163.
 hydroxide, anion effect on precipitation reactions and dispersion, (59) 716.
 in animal body, distribution, (58) Mo. 460.
 in animal tissues, (58) 191.
 in diet of children, (57) 688.
 in feeding stuffs, (60) Ill. 259.
 in grains, effect of irrigation water, (53) 735.
 in meat, (55) 591.
 in nutrition, (54) 193, 293; (55) 614; (57) 92, 194; (59) 892.
 in plant and animal foods, (59) 687.
 in plants, distribution, (54) 221.
 in plants, studies, (55) N.J. 22.
 in raw cotton, (57) 899.
 in soils and waters, (60) S.C. 708.
 in soils of Southeastern Coastal Plain, (60) 512.
 in spinach, (53) 456.
 injection into chlorotic apple trees, (60) Mont. 749.
 inorganic, relation to nutritional anemia, (58) 297.
 leaching from soil by neutral salts, (59) 511.
 losses from mustard and turnip greens in cooking, (60) 190.
 machinability and wear, (58) 779.
 phosphate and tricalcium phosphate, comparison, (54) 20.
 phosphate, assimilability, (51) 220.
 relation to nutritional anemia, (56) 494.
 relation to origin of life, (58) 724.
 requirement for *Chlorella*, (60) 519.
 requirement of rice plants, (57) 416.
 reserve in liver and spleen, (59) 392.
 salts, toxic action on sugar cane, (53) 829.
 solubility in culture solutions, effect of pH, (52) N.J. 725.
 solubility in nutrient solutions, (52) Calif. 27.
 soluble and colloidal, distribution in soils, (60) 23.
 soluble, and colloids, relation, (55) 511.
 sources for plants, (55) 518.

Iron—Continued.

- sulfate—
 anthelmintic value, (52) Ohio 84.
 effect of long-continued soil treatment with, (60) N.Y.State 422.
 effect on alkali soil, Calif., (52) 21; (60) 318.
 effect on chlorotic pear trees, (54) 241.
 effect on fruit tree chlorosis, (53) N.Mex. 146.
 effect on grapevines, (59) 216.
 supply in nutrient medium, (52) 624.
 tolerance limit of seedlings for, (60) 623.
 transformations in nature, (58) 622.
 Ironing board, proper height, (57) 695.
 Ironwood culture in Arizona, (55) U.S.D.A. 438.
 Irradiated animals, effect on nonirradiated, (54) 491.
 Irradiation—
 effect on calcium and phosphorus in blood of dogs, (54) 293.
 effect on calcium balance in humans, (58) 896.
 from a carbon arc lamp, effect on infants, (58) 896.
 sun and sky, apparatus for study, (57) 322.
 Irrigated land, maintaining productivity, (51) Utah 787.
 Irrigating streams, weirs for measuring, (58) Ariz. 582.
 Irrigation—
 and agriculture in California, (54) 680.
 and crop production, (59) 626.
 and drainage, studies, (51) Colo. 684.
 and drainage water, comparison of composition, (52) 486.
 and power, coordination, (54) 580.
 by flooding in Big Bend section of Washington, (57) 879.
 by overhead sprinkling, (56) 779.
 by pumping, (54) 177.
 canals, small concrete-lined, construction, (51) Ariz. 287.
 channels, water flow in, (58) 778.
 companies, mutual, (57) Utah 482; (60) U.S.D.A. 888.
 construction and agricultural development, (58) Calif. 285.
 demonstration farm unit, labor requirements, (53) N.Dak. 591.
 developing new land under, (56) Wash.Col. 479.
 development of West under, (52) 182.
 district laws of California, (53) 282.
 drainage waters, seasonal variation in salinity, (55) 780.
 economic use of water in, (55) 478.
 effect on calcareous soil, (53) 218.
 effect on pH of rice soils, (60) Ark. 803.
 effect on root behavior and crop yield, (54) 130.

Irrigation—Continued.

effect on soil temperature, (53) 318.
 engineering principles, treatise, (51) 885.
 enterprises, financing, (57) 482.
 experiments—*see also special crops.*
 (51) N.Mex. 483; (52) Utah 783;
 (53) N.Dak. 529; (59) Calif.
 176, Colo. 279, 376; (60) Wash.
 Col. 877.
 at Umatilla, U.S.D.A., (53) 387;
 (57) 676.
 farming, crop varieties for, (55) Oreg.
 637.
 farming in New South Wales, (53)
 588.
 in British Empire, (58) 679.
 in California, cost of water for, (53)
 587.
 in central Nebraska, studies, (56) 20.
 in India, (51) 386; (55) 681; (57)
 879.
 in Jefferson River basin, Montana,
 (57) 81.
 in Kansas, (53) 282; (57) 676.
 in Punjab, (52) 886.
 in Spain, (59) 684.
 in Spain, plan for aid of, (53) 282.
 methods, (55) Oreg. 681.
 methods and systems, (59) 478.
 of cotton, (59) U.S.D.A. 628.
 of lower Rio Grande Valley, (52) Tex.
 493.
 of orchards by contour furrows, (59)
 478.
 of small grain, (59) U.S.D.A. 678.
 of soils, papers on, (60) 513.
 overhead, (58) 679.
 overhead, as citrus frost protection,
 (54) 540.
 papers on, (58) 887.
 possibilities in Madison River basin,
 Montana, (54) 780.
 practice, engineering problems, (54)
 479.
 problems in Kansas, (54) 876.
 problems, application of hydrodynamic-
 ics to, (57) Calif. 580.
 problems in Gallatin Valley, (56)
 Mont. 778.
 project, Carlsbad, rock structure near
 reservoir site, (57) 81.
 project, Owyhee, report, (60) 877.
 projects, crops for new land on, (54)
 Wash.Col. 434.
 projects, development, Senate hearing,
 (52) 182.
 projects, Federal, use of water on,
 (60) 779.
 projects for Portuguese East Africa,
 (51) 386.
 projects of U. S. Bureau of Reclama-
 tion, (57) 184.
 projects, success on, treatise, (60)
 686.
 pump, results, (59) Nebr. 678.
 pumping, electricity for, (53) 389.

Irrigation—Continued.

pumping for, economic limit, (60)
 Oreg. 183.
 pumping plants for, (51) U.S.D.A.
 483; (59) Calif. 176.
 relation to silt in Colorado River
 basin, (59) U.S.D.A. 82.
 relation to soil moisture and plant
 growth, (57) 775.
 requirements of orchards, (57) Calif.
 184.
 siphons, discharge measurements, (53)
 281.
 spray, in Eastern States, (58)
 U.S.D.A. 77.
 spray, value, (52) 287.
 sprinkling, on vegetable farms, (58)
 N.J. 679.
 studies, (51) Wash.Col. 186; (53)
 Ariz. 789; (54) Wash.Col. 875,
 (55) 581; (56) Utah 576, Wash.
 Col. 576, Ariz. 779; (57) Calif. 283,
 N.Mex. 283; (59) Wash.Col. 82,
 N.Mex. 279.
 supplemental, for Willamette Valley,
 (52) Oreg. 287.
 treatments, residual effects on later
 crops, (58) 223, 881.
 use of water in, (55) 780.
 water—
 adding gypsum to, apparatus for,
 (60) U.S.D.A. 277.
 brackish, effect on crops, (51)
 Hawaii 787.
 delivery, (59) U.S.D.A. 82.
 duty and control, (58) 679.
 duty of, (53) N.Mex. 185,
 U.S.D.A. 387; (54) N.Mex.
 680; (55) Oreg. 681; (60)
 Mont. 778, Oreg. 779.
 duty of for alfalfa, (55) N.Mex.
 478.
 duty of in Great Basin, (54)
 U.S.D.A. 382.
 duty of in Salt River Valley, (58)
 Ariz. 581.
 effect on composition of corn,
 (54) 331.
 effect on composition of grain,
 (51) 530.
 effect on cotton plants, (53) 837.
 effect on mineral content of grain,
 (53) 735.
 measurement, (52) Mont. 287;
 (55) Colo. 276.
 pumping from wells, (59) Nev.
 881.
 saline, studies, (52) Calif. 21.
 use and effect in soil composition,
 (59) Wash.Col. 18.
 use and waste, (53) Ariz. 281.
 use by native farmers in Dutch
 East Indies, (58) 181.
 wells, capacity, (54) Mont. 876.
 west of Cascades, (59) Wash.Col. 678.
 with artesian water, (53) 483.
 with treated sewage, (56) 779.

Irrigation—Continued.

- works, cost estimation, (58) 374.
- works of Ajmer-Merwara District, report, (52) 687.

Isaria—

- barberi, notes, (56) 557.
- clonostachoides n.sp., notes, (51) 154.
- farinosa, infection of European corn borer by, (59) 459.

Isariopsis griseola, notes, (57) 444.

Ischaemum spp., germination tests, (54) 635.

Isle of Wight disease, *see* Acarine disease.

Isoelectric theory, (55) 609.

Isometabolic point, use of term, (57) 838.

Isophrictis—

- rudbeckiella n.sp., description, (56) 257.
- similiella denotata n.sp., description, (56) 257.

Isoptera from Italy, list, (52) 753.

Isospora n.sp., in cattle, (58) 472.

Isotoma longiflora, feeding experiments, (51) 881.

Isotonodes on sugar cane, effect, (59) 352.

Istle, international trade, (53) 296.

Italian Institute of Colonial Agriculture, report, (54) 85.

Itoplectis conquisitor, notes, (56) Va. 556; (59) Me. 558.

Iwerne Minister Home Farm, cost accounts, (53) 688.

Ixodes—

holocyclus, cause of paralysis in man and animals, (56) 476.

holocyclus, cause of paralysis in pigs, (56) 678.

pilosus, notes, (59) 276.

ricinus, notes, (51) 680, 682; (58) 279.

spp., notes, (57) 863.

Ixodiphagus caururtei—

egg laying in larval ticks, (60) 461.

overwintering in Massachusetts, (59) 660.

Ixodoidea, monograph, (55) 859.

Jack beans, globulins of, (54) 309.

Jack fruit, tests, (56) 532.

Jack pine stands, conversion to red and white pine, (55) 41.

Jagziekte and progressive pneumonia of sheep, comparison, (57) 673.

Jalysus spinosus affecting tomato, (52) 60.

Jams, flavors in, effect of fruit acids, (56) 589.

Janus piri n.sp., studies, (54) 59.

Janus-green milk, culture for study of nodule organisms, (54) 725.

Japanese, basal metabolism of, (54) 487.

Japanese beetle—

carrier of brown rot among fruits, (60) 352.

cold hardiness in, (60) 459.

control, (51) N.J. 162, 760; (54) 551; (55) 552, 553; (56) 259; (59) Conn.State 455; (60) 556, 840.

control, contact spray for, (58) 263.

Japanese beetle—Continued.

control in lawns, (54) 461.

control in New Jersey, (53) 253.

development, effect of temperature, (59) 648.

foreign parasites of, (51) 162.

grubs, control, (57) 859.

imported parasites of, progress, (60) 563.

in Connecticut, (57) Conn.State 161.

in Delaware, (57) 57.

in golf courses, (51) 58.

in New York State, summary, (58) 560.

in Pennsylvania, (52) 657; (58) 345.

in roots of nursery stock, hot water and other insecticides for, (60) 562.

in soil of potted plants, destruction, (56) 259.

insecticides for, (52) 158; (58) 350.

larva, cold hardiness, development, (59) 860.

larvae in cranberry bogs, effect of winter submergence, (57) N.J. 758.

larvae in roots of perennial plants, destruction, (53) U.S.D.A. 455.

life history notes, (53) 455.

notes, (52) Mich. 458; (54) Kans. 461; (57) N.J. 57, 451.

olfactory response, (57) 561.

parasites of, (51) 260; (53) 455; (56) U.S.D.A. 860; (57) 862.

present range in America, (57) 859.

present status, (53) 755.

quarantine, (54) 154; (56) 253; (59) Conn.State 99.

quarantine requirements, (59) 854.

soil insecticides for, (53) N.J. 258.

soil stages, insecticides for, (51) 763.

sprays for, (54) 261.

spread and control, (60) Conn.State 751.

status in 1923, (51) 162.

status in 1924, (54) 461.

summary, (53) 51, Ohio 557; (55) U.S.D.A. 158; (57) 63.

toxicity of acid lead arsenate on, (57) 658.

traps, (60) 65.

Japanese cane—

fertilizer experiments, (54) Fla. 230; (55) Guam 131; (59) Guam 523;

(60) Guam 814.

irrigation experiments, (55) Fla. 824.

Japanese—

cedar fungus diseases, control, (58) 752.

children, constitutional and nutritive states, (57) 893.

Imperial Government Institute for Nutrition, (60) 786.

medlar, fungus parasites of, (54) 453.

Serica, notes, (57) 451.

Society of Veterinary Science, meeting, (58) 473, 474.

Jaragua grass, behavior, (52) Fla. 224.

Jasmine, water content of leaves, hourly variations, (57) 320.

- Jassid injury in Sweden, (55) 854.
- Jaundice—
 cause, (60) 72.
 infectious, notes, (57) 278.
 leptospiral, in dogs, (52) 782.
- Jellies—
 and gelatinous precipitates, (54) 6.
 and jams made with and without ex-
 tracted pectin, (58) 83.
 flavors in, effect of fruit acids, (56)
 589.
 formation, rôle of sugar in, (51) Del.
 411.
 recipes, (57) 890.
 rôle of pectin in, Del., (56) 392;
 (57) 592.
 rôle of salts in, (55) Del. 385.
 strength measurements, (54) 690;
 (55) Del. 87; (60) 89.
 studies, (51) 209; (54) Del. 691.
- Jelly—
 formation, action of calcium chloride
 on, (52) 62.
 making, pectin requirements, (55) 13.
 making, principles, (54) Colo. 87.
- Jellying—
 factors affecting, (56) Fla. 894.
 properties of pectin solutions, studies,
 (54) Del. 691.
 tests with citrus pectin, (53) U.S.D.A.
 13.
- Jewish—
 Agricultural Society, report, (53) 592.
 ceremonials and food customs, (60)
 687.
- Jocurula agriperda n.g. and n.sp., descrip-
 tion, (54) 755.
- John's disease—
 causative organism, (60) 578.
 control, (58) 174.
 diagnostic agent, preparation, (60)
 270.
 diagnosis and treatment, (59) 474.
 in cattle, (51) Wis. 481; (57) La. 772.
 in cows, (60) Ky. 266.
 in Lombardy, (58) 676.
 Johnin test for, (59) 174, 474.
 monograph, (59) Wis. 174.
 notes, (59) Wis. 77.
 organism, biological properties, (59)
 174.
 organism, culture, (59) 275.
 studies, (55) 72; (57) 874; (58) 277;
 (59) 876.
 treatment with formalin, (58) 773.
 water transmission, (59) 581.
- Johnin—
 as diagnostic agent, (59) 174, 474.
 preparation, (60) 270.
- Johnson grass—
 as noxious weed in Sudan grass, (55)
 134.
 as weed in Cuba, (54) 239.
 as weed in Ohio, (54) 641.
 control, N.Mex., (57) 224; (59) 222.
 eradication, (53) N.Mex. 839; (59)
 U.S.D.A. 137.
- Johnson grass—Continued.
 hay, marketing studies, (60) U.S.D.A.
 485.
 hybrids, partial sterility in, (58) 131.
 leaf spot, notes, (58) 647.
 origin, distribution, and characteris-
 tics, (55) U.S.D.A. 134.
 studies, (56) Tex. 635.
- Johnson's mixture, toxicity studies, (51)
 N.H. 47.
- Joint disease of cattle in Sumatra, (58)
 279.
- Joint ill—
 in foals, (59) 780; (60) Ky. 266.
 in foals, etiological factor in, (54)
 478.
 in foals, inoculation of mare for, (53)
 279.
 in lambs, (54) 174.
 treatment, (54) Can. 73.
- Joints—
 lap soldered, strength, (56) 479.
 soldered and riveted, strength tests,
 (60) 380.
 threaded pipe, strength tests, (56) 479.
- Jointworms, parasites of, (57) 365.
- Jolly bodies and anaplasma, differentiation,
 (58) 474.
- Journal bearings, behavior, effect of oil-
 ness, (52) 186.
- Journal of Agricultural Research, editorial
 policy, (58) U.S.D.A. 497.
- Journalism, agricultural, textbook, (56)
 390.
- Jowar—
 disease, notes, (58) 242.
 improvement work, (60) 134.
 moth borers, studies, (59) 554.
 natural cross-fertilization in, (56) 631.
 varieties and pure strains in Surat,
 (60) 535.
- Judas tree leafhopper, notes, (51) 253.
- Jujubes—
 Chinese, culture in United States, (51)
 U.S.D.A. 443.
 culture experiments, (59) Guam 529.
 in Texas, (55) Tex. 838.
 tests, (57) Tex. 136.
- June beetle—*see also* Lachnosterna, May
 beetles, and Phyllophaga.
 green, behavior of larvae, (55) 663.
 green, control, (58) 560.
 green, habits and bird enemies, (54)
 757.
 green, larva in tobacco plant beds,
 (55) U.S.D.A. 258.
 green, notes, (54) Kans. 461.
 notes, Mich., (57) 654; (59) 455.
- Juniper webworm, eradication, (59) 355.
- Junipers, hardiness tests, (55) Iowa 535.
- Jute—
 cellulose, studies, (53) 812.
 culture in India, (57) 628.
 disease, notes, (57) 540.
 fiber, strength characteristics, (54)
 298.

Jute—Continued.

- history and commercial status, (56) 297.
- industry in Scotland during the war, (57) 289.
- international trade, (53) 296.
- physical characteristics, (53) 634.
- plant diseases, studies, (54) 248.
- stem rot, notes, (54) 246.
- yarn strength, effect of raw material, (54) 895.

Kafir—

- and feterita crosses, seed color inheritance, (51) 30.
- chlorophyll deficiencies in, (53) 27.
- chlorophyll deficiency, inheritance, (59) Tex. 730.
- cultivation tests, (53) Okla. 133.
- culture, (52) U.S.D.A. 828; (57) Okla. 523, Okla. 524.
- ground, feeding value, (54) Kans. 769.
- head stems, composition and digestibility, (51) Tex. 467.
- hybrids, studies, (55) Tex. 333.
- inbreeding experiments, (57) Tex. 126.
- inheritance studies, (52) 32.
- nutritional value, (53) Okla. 66.
- phosphorus in, (60) 204.
- preparation for hogs, (57) Okla. 566, 761; (58) Okla. 268.
- seed, ground, feeding value, (52) Kans. 477.
- seed, longevity and viability, (59) 629.
- seeding experiments, (53) Okla. 133, Nebr. 433.
- spacing experiments, (59) Tex. 730.
- v. corn for hogging down, (52) Kans. 469.
- varieties, (52) U.S.D.A. 827.
- variety, new, (59) Tex. 729.
- yields, effect of outside rows, (55) 132.
- yields in rotations, (54) Mo. 732.

Kafirin, definition, (54) 802.

Kainit, effect on nitrogen transformation in moor soils, (53) 118.

Kaki, vitamin C in, (57) 197.

Kala-azar—

- Indian, development of parasite in sandfly, (55) 856.
- studies, (54) 57.
- transmission by bedbugs, (51) 253.

Kale—

- as green feed crop for poultry, (59) West.Wash. 433.
- black rot, description, (53) Va.Truck 851.
- culture in British Columbia, (57) 34.
- effect on flavor and odor of milk, (58) U.S.D.A. 69.
- fertilizer experiments, (53) 142; (57) Va.Truck 832; (58) Ill. 333; (60) West.Wash. 732.
- marrow stem, nutritive value, (58) 565.
- proteins of, (56) 709.
- tumors in, (58) 341.

Kale—Continued.

- variety tests, (51) Hawaii 740; (56) Can. 432.
- yellows, notes, (60) 348.
- Kalimat, chemotherapeutic tests, (56) 543.
- Kalimat, seed treatment data, (56) 649.
- Kallstroemia maxima as weed in Cuba, (54) 239.
- Kalotermes minor, control on power-line poles, (52) Calif. 59.
- Kamala—
 - anthelmintic value, (55) 178, 271; (58) 481.
 - anthelmintic value for poultry, (57) N.J. 773, 775.
 - use for tapeworms in sheep, (60) 373.
- Kans, eradication in India, (57) 234.
- Kansas—
 - College, notes, (51) 496, 900; (52) 99, 198, 498, 599, 697; (53) 196, 799; (54) 397, 699; (55) 98, 397, 698; (56) 96, 497, 900; (57) 395, 798; (58) 499, 600; (59) 197, 696, 797; (60) 600, 698.
 - Entomological Commission, report, (58) 557.
 - Station, notes, (51) 496, 900; (52) 198, 398, 697; (53) 196, 799; (54) 397, 699; (55) 397, 698; (56) 96, 497, 900; (57) 798; (58) 499, 600; (59) 197, 696, 797; (60) 400, 698, 900.
 - Station, recent publications, (53) 398; (55) 299; (60) 199.
 - Station, report, (52) 496; (56) 899.
- Kaoliang—
 - diseases near Nanking, control, (57) 640.
 - varieties, (52) U.S.D.A. 827.
- Kaolin—
 - effects of electrolytes, (56) 717.
 - suspension, rates of sedimentation, (54) 811.
- Kaolins, treatment affecting gel or so formation, (53) 418.
- Kapok—
 - and substitutes, (59) 196.
 - and uses, (54) 234.
 - culture and preparation in Java, (58) 132.
 - culture experiments, (58) 429.
 - experiments in Philippines, (55) 434.
 - international trade, (53) 296.
 - papers on, (57) 131.
 - production and uses, (53) 634.
 - production in British Empire, (55) 829.
- Karnyothrips flavipes, notes, (58) 454.
- Karwinskia humboldtiana poisonous to livestock, (59) U.S.D.A. 171.
- Karyokinesis, neurogenic theory, (56) 221.
- Kata-thermometer, use, (53) 764.
- Katharometer, description, (59) 618.
- Katjang-idjoe sprouts, vitamin A in, (55) 192.
- Kauri wood, value for paper pulp, (56) 647.

- Kelp—
brines, potassium chloride from, (51) 610, 728.
dried, use for iodine deficiency in diet, (52) 366.
potash from, (51) 818.
- Kemp—
fibers in Merino sheep, (52) 768; (54) 268.
papers on, (55) 393.
- Kentucky—
Station, notes, (52) 198; (53) 97, 399, 498; (54) 398; (56) 498; (59) 899; (60) 499.
Station, report, (51) 898; (52) 496; (54) 395; (56) 195, 598; (58) 96, 396; (60) 199, 298.
University, notes, (52) 198; (53) 97, 399, 498; (54) 398; (56) 498; (59) 899; (60) 499.
- Keratin—
bibliography on, (60) 97.
converting into state of colloidal solution, (57) 407.
- Keratomalacia, etiology, (53) 460.
- Kerosene emulsion for *Toumeyella* scab, (54) 554.
- Ketosis—
and respiratory exchange in children, (55) 793.
study, cage device for, (54) 890.
- Kew Index, history, character, and uses, (53) 122.
- Khaki weed destruction, (56) 40.
- Kidney—
ash, effect on blood regeneration in anemia, (60) 695.
epithelium, calcification, effect of vitamin A deficiency, (60) 689.
in diet for pernicious anemia, (59) 194.
inheritance of absence of, (52) 524.
respiratory activity and vitamin B content, (52) 65.
stones, cystine from, (56) 109.
worm in swine, (58) 75; (60) Fla. 176.
worm in urinary bladder and ureters of host, (60) 373.
worm, life history study, (60) P.R. 774.
- Kidneys—
abnormalities in progeny of X-rayed mice, (55) 27.
abnormalities in X-rayed rats, (51) 229.
effect of excess food elements in diet, (56) 591.
effect of high protein diet, (51) 71; (54) 391, 890; (55) 592.
effect of intravenous mercurochrome, (52) 680.
effect on hemoglobin production, (56) 495.
of chickens, tumors in, (60) 874.
seasonal changes in weight, (52) 669.
toxic action of cystine on, (58) 293.
- Kikuyu fowl disease, notes, (54) 171.
- Kikuyu grass—
characteristics and botanical description, (52) 533.
notes, (59) Calif. 726.
value for poultry, (52) 372.
- Killifish chromosomes, crossing-over, (60) 30.
- Kinghead seed, feeding value, (55) N.Dak 565.
- Kitchens—
convention, plans, (53) 694; (56) U.S.D.A. 298.
farm, studies, (56) 597; (59) Nebr. 898.
modern, arrangement and equipment, treatise, (53) 899.
Nebraska rural, analysis, (58) 395.
- Kjeldahl digestion apparatus, (57) 310.
- Kleidotoma—
marshalli, notes, (59) 660.
sp., notes, (52) Iowa 358.
- Klendusity, use of term, (57) N.Y.State 549.
- Knitting products and processes, (57) 298
- Knots and splices, studies, (57) 582.
- Kohlrabi—
electrocultural experiments, (54) 633.
proteins of, (56) 709.
yellows, notes, (60) 348.
- Kose disease in cattle, (58) 474.
- Kosher beef trade, (59) 662.
- Koufri—
effect on physical properties of soil, (52) 622.
organic nitrogen in, value, (51) 726.
- Krimpsiekte, paper on, (57) 77.
- Kudzu—
bacterial spot, (59) 344.
culture experiments, (52) N.J. 732.
leaf spot, studies, (59) 447.
notes, (56) Conn.Storrs 821.
varieties, behavior, (56) Guam 228.
winter behavior, (53) Ohio 529.
- Kuehneola desmium, notes, (60) 241.
- Kuehneola gossypii, notes, (56) 351.
- Kumquats, jelly from, (56) Fla. 894.
- Kunai, effect in coconut plantations and control, (60) 188.
- Kunkelia nitens and *Gymnoconia* interstitialis, distinction, (55) 149.
- Kurtomathrips morrilli n.g. and n.sp., description, (58) 757.
- Kutter's n determinations in pipe sewers, (53) 890.
- La Carlota Experiment Station, work of, (53) 835.
- Labor—*see also* Agricultural labor.
costs in potato warehouses, (54) Minn. 388.
organization on Welsh farms, (60) 386.
- Laboratory—
animals, biometrical measurements, (55) 26.
Montana's, for study of insect-borne diseases, (60) 557.

Lac—

- cultivation in Burma, (54) 259.
- industry, scientific study, papers on, (55) 661.
- insects, Grassi's disease of, (58) 451.
- insects, life cycle, effect of temperature, (53) 858.
- insects, systematic monograph, (51) 660.
- notes, (59) 554.
- secretion, dynamics, (58) 451.

Lace bugs—

- of British Columbia, paper on, (55) 659.
- of New Jersey, (60) 556.

Laces, treatise, (54) 290.

Lachnopus n.spp., description, (51) 59.

Lachnosterna—*see also* June beetle, May beetles, and *Phyllophaga*.

- portoricensis*, control, (56) 552.
- sp., control, (53) 860; (54) 53.
- sp., notes, (53) Utah 254.

Lachnus spp., life history studies, (56) 858.

Lactalbumin, feeding value, (53) 172.

Lactalbumin, nutritive value, (51) 665.

Lactase in alimentary tract of chickens, (51) 473.

Lactates, chaulmoogryl derivatives, (60) 204.

Lactation—

- and fertility, dietary requirements, (60) 293, Ark. 899.
- dietary needs for, (52) 176, 464.
- effects of synthetic diets, (58) 193.
- in rats, calcium and phosphorus balances during, (60) 592.
- vitamin B requirement during, (57) 897; (58) 791; (60) Ill. 294.

Lactic acid—

- bacteria in milk, enzymatic studies, (52) 879.
- bacteria, length of life, (53) 581.
- bacteria, physiology, (56) 73.
- color reactions with carbazole and sulfuric acid, (58) 510.
- detection, (56) 505.
- determination, (56) 505; (58) 114.
- effect on carbon dioxide production, (52) 626.
- excretion of scorbutic guinea pigs, (60) 96.
- feeding value, (51) Mass. 173.
- fermentation, (53) 474; (55) 571.
- in milk, effect on bacteria in fowls, (53) N.C. 786.
- in whey, determination, (51) 317.
- manufacture, fermentation processes in, (52) 315.
- milk for infant feeding, (51) 167; (57) 687.
- milk mixtures, preparation, (57) 893.
- production by bacteria, forms, (55) 710.
- production in diabetes after insulin injection, (52) 265.
- production in milk, (54) 770.

Lactic acid—Continued.

- rôle in intestinal diseases of poultry, (54) 175.
 - streptococci, effect on ripening of cheese, (51) 179.
- Lactobacilli, growth, effect of surface tension, (60) 772.
- Lactobacillus—
- acidophilus—
 - and acidophilus milk, (55) Mich. 692.
 - and *L. bulgaricus*, comparison, (52) 611; (54) Ill. 375.
 - in milk culture, therapeutic value, (60) Nebr. 593.
 - medium for growth and consumption, (54) Mich. 673.
 - milk, preparation, (56) Ill. 274.
 - therapy, monograph, (55) 88.
 - therapy, permanence of results, (54) 191.
 - bulgaricus* and *L. acidophilus*, comparison, (52) 611; (54) Ill. 375.
 - bulgaricus*, effect of *Streptococcus lactis*, (60) 772.
 - casei, casein splitting ability, (51) 579.
 - pentoceticus*, notes, (53) 66.
 - thermophilus*, description, (52) 278.
- Lactose—
- and sucrose solutions, solubility relationships, (60) 503.
 - daily administration, effect on blood volume, (60) 492.
 - determination in milk, (51) 207.
 - determination methods, (51) 316; (52) 411; (53) 110.
 - feeding, effect on pH of ceca in chicks, (54) Calif. 277.
 - form in condensed milk, (55) 504.
 - in milk, excess, effect on infants, (60) 192.
 - manufacture from whey, (53) 277.
 - metabolism in women, (60) 893.
 - propionic fermentation rate, (51) 109.
 - residues, feeding value, (55) 769, 772.
 - review of literature, (54) 307.
 - solubility and crystal formation, (56) 612.
 - utilization by chickens, (51) 473.
- Ladybeetle, Chinese—
- life history, (57) 456.
 - notes, (56) Fla. 855.
- Ladybird beetle—
- Australian, biological studies, (60) 654.
 - on potato, (57) 655.
 - parasitism of pupa, (55) 857.
 - small black, enemy of coconut scale, (59) Guam 554.
 - two-spotted, notes, (60) 250, 653.
- Ladybird beetles—
- as aphid predators, (60) 559.
 - for control of citrus aphid, life histories, (60) 653.
 - notes, (52) Mich. 354; (56) Guam 251; (60) Guam 844.

- Laetilia coccidivora*—
 attacking mealybugs, (52) Fla. 251.
 notes, (54) Fla. 352.
- Laetiporus speciosus*, notes, (54) 150.
- Lagenaria vulgaris*, culture in New Zealand, (56) 334.
- Lagoa crispata*—
 life history and hair structure, (55) Ark. 50.
 life history and poison apparatus, (53) 256.
- Lake level, relation to rainfall and sunspots, (53) 316.
- Lake waters of Wisconsin, pH value, (53) 386.
- Lamb, dressed, market classes and grades, (57) U.S.D.A. 170.
- Lamb dysentery—
 cause, (60) 179, 272.
 field experiments, (55) 475.
 immunity, transference from ewe to lamb, (60) 372.
 studies, (58) 279, 280; (60) 372.
- Lamb—
 flavor, effect of wheat screenings, (60) Mont. 761.
 preparation and serving, (60) U.S.D.A. 89.
 prices, statistical data, (57) 786.
 trade in Great Britain, (55) 186.
 vitamin A in, (54) 390.
- Lambs—*see also* Sheep.
 and wool for market, (52) 870.
 best time for selling, (53) Can. 869.
 breeding, Can., (53) 868, 869.
 breeding for meat, (51) 172.
 crossbred, characteristics, (52) 871.
 crossbred v. purebred, Can., (51) 573; (53) 869.
 culls, cause of condition, (57) Ohio 866.
 dipping, (60) 362.
 disease known as "stiff lambs", (60) Mont. 773.
 disease of, fatal, (54) 174.
 diseases of, (53) Wis. 478; (54) Colo. 277.
 docking and castrating, (52) 270; (54) Pa. 363; (60) Pa. 362.
 docking methods, (56) Ariz. 763.
 docking, searing iron v. knife for, (56) S.C. 561.
 early, production in Arkansas, (53) 170.
 early v. late weaning, (51) Can. 572.
 effect of good feeding of ewes, (60) Ill 257.
 fattening, (51) Okla. 572, Can. 573; (52) Nebr. 568; (54) Ky. 362, Ariz. 565, S.C. 664, Wash.Col. 860; (55) Oreg. 665; (57) Minn. 268; (58) Mo. 463; (59) Colo. 663, N.Dak. 866, Nebr. 866; (60) Mont. 762, Oreg. 762.
 for early market, Mo., (54) 759; (57) 460.
- Lambs—Continued.
 fattening—continued.
 for late winter market, (54) Oreg. 363.
 in cornfields, (57) Ohio 866.
 losses of, (57) 660.
 salt consumption, (57) 659.
 types, (59) Ind. 765.
 feeding and finishing, (59) Nev. 865.
 feeding and management, (58) Ind. 267.
 feeding data, statistical interpretation, (58) 865.
 feeding experiments, (51) U.S.D.A. 172, Wash.Col. 172, Ind. 870; (52) 171, Kans. 467, Kans. 468, Ill. 468, Nev. 468, Ohio 468, Wash.Col. 672, Idaho 871; (53) 68, Ill. 68, Ohio 468, Ohio 574; (54) Can. 61, Ind. 363, Wyo. 759; (55) Nebr. 60, Iowa 262, Kans. 262, N.Dak. 564, Nebr. 665, Idaho 863; (56) Ill. 367, Idaho 368, Kans. 368, Nebr. 562; (57) N.Mex. 69, Ohio 170, Nebr. 565, U.S.D.A. 661; (58) 167, Ill. 356; (59) N.Mex. 260, Tex. 260, Idaho 764; (60) Wyo. 763, Wash. Col. 856.
 feeding to decrease death losses, (59) Colo. 260.
 finishing, (53) Okla. 170; (59) Nev. 865, N.Dak. 866.
 forage crops for, (52) S.Dak. 170.
 gastrointestinal parasites, control, (57) 761.
 goiter control in, (56) Mont. 173.
 grazing in cornfield, (51) N.Dak. 870.
 growth rate, effect of age of ewe, (56) 729.
 growth, relation to milk yield of ewes, (59) N.H. 260.
 heather and Merino, wool fibers, (54) 860.
 bothouse, production, (57) Pa. 368.
 improvement in range flocks, (59) Nev. 865.
 lameness in, (56) 175.
 losses in feed lots, (54) Colo. 73.
 lung affection, (58) 474.
 maintenance and fattening, (60) Ill. 69.
 maintenance and production requirements, (59) 864.
 Merino and Zigaya, birth weight, (58) 65.
 prices, index numbers, (59) N.Dak. 885.
 purebred v. crossbred, Can., (51) 573; (53) 869.
 quality in wool and meat, determining, (58) 865.
 raising, (52) 871.
 raising, effect of rainfall, (58) 14.
 raising in New South Wales, (52) 672; (54) 566.
 raising in range flocks, (58) Nev. 65.

Lambs—Continued.

- raising, methods and costs, (59) N.C. 360.
- raising on cow's milk, (58) 577, 866.
- ram, for fattening, (60) Ohio 462.
- ram, sterilizing, (60) 574.
- range, feeding and finishing, (53) Nev. 467.
- range, improvement, (56) Nev. 263.
- rate of gain, effect of sex, (57) 762.
- saving a greater proportion, (58) 66.
- segregation at birth and feeding of cow's milk, (58) 577.
- self-feeding, (60) Ill. 257.
- septic gangrene in, (54) 477.
- sheared and unsheared, gains in, (56) Ky. 164.
- shipping and shrinkage, (59) N.Dak. 866.
- spring, fattening, (56) Ky. 163.
- stomach and nodular worms in, (55) Ohio 176; (57) 182, 183.
- stomach worms in, (53) Wis. 479; (60) Ill. 272.
- suckling, feeds for, (51) 670.
- temporary pastures for, (57) Ky. 763.
- twin, compared with singles, (56) 71.
- weaning, early v. late, (53) Can. 869.
- winter feeding, (54) Can. 61; (55) 465.
- wintering, (59) N.C. 764.

Lameness in lambs, (56) 175.

Lamium, cytological and experimental studies, (57) 120.

Lamprophorus tenebrosus, habits and life history, (52) 552.

Lamps, kerosene and gasoline, lighting rural homes by, (60) 497.

Lamsiekte—

and loin disease, comparison, (52) Tex. 84.

of cattle in South Africa, (57) 77, 875.

Laucentilla Experiment Station, Honduras, (59) 799.

Land—

abandoned plowed, reclamation with forage grasses, (59) Colo. 34.

Administration Board of Queensland, report, (60) 587.

agricultural, in South Wales, rents and prices, (58) 888.

agricultural, taxation, (55) Tex. 80.

allotment system in Japan, (59) 382.

and agricultural bank of Union of South Africa, (51) 91.

and agriculture in Mexico, (53) 596.

and the nation, treatise, (54) 587.

area for feed production of horses, (56) Ohio 581.

arid and semiarid, of Missouri and Arkansas basin, irrigation requirements, (59) U.S.D.A. 176.

classification for taxation, (58) 888.

classification, theory and practice in, (55) 380.

Land—Continued.

clearing, (57) U.S.D.A. 474.

by-product, (55) Minn. 583.

devices, (53) 387.

equipment and methods, (57)

Calif. 282.

in Minnesota, (54) 281.

of rocks, cost, (60) 278.

projects, (51) Minn. 684.

studies, (52) Minn. 88; (59)

Calif. 781.

use of explosives in, (55) Ala.

879.

with explosives, demonstration

equipment, (54) 499.

with goats, (60) Oreg. 762.

clubs in Spain, provident, (51) 596.

Company estate, system of manage-

ment, (53) U.S.D.A. 893.

containing sodium salts, reclamation,

(56) 118.

cover studies, relation to soil survey,

(53) 814.

credit, *see* Agricultural credit.

cultivated, area, relation to popula-

tion, (55) 884.

cultivated, in Japan, increasing area,

(51) 294.

cut-over, *see* Cut-over lands.

Division of Great Britain Ministry of

Agriculture, report, (59) 382.

economic survey, Michigan, (60) 381,

382.

economics, instruction and research in,

development, (57) 684.

economics, treatise, (51) 598.

forest, *see* Forest lands.

grant colleges, *see* Agricultural col-

leges.

holdings in Spain, reform, (51) 687.

legislation in New Zealand, (57) 883.

management in Russia, (56) 888.

nationalization in England, (51) 294.

new, development under irrigation,

(56) 479.

planning in United States, treatise,

(55) 884.

plaster, *see* Gypsum.

policies, public, history, treatise, (53)

88.

policy for public domain, (54) Utah

284.

problems in United States, (53) 894.

public, policy in Australia, (57) 481.

purchase for National forests, (51)

U.S.D.A. 750.

purchase in northern Ireland, (52) 91.

question in Finland, (52) 392.

reclamation, Federal subsidy in, (58)

887.

reform in Czechoslovakia, treatise, (51)

392.

reform in Finland, (53) 190.

reform in Ireland, (53) 291.

reform in Mexico, (55) 184.

register in Spain, (51) 688.

Land—Continued.

- rent and prices of commodities, (57) 684.
- resources, utilization, (51) U.S.D.A. 791.
- revenues in Great Britain, (52) 743.
- sandy, *see* Sand and Sandy.
- settlement, (52) Calif. 91.
 - and colonization in Great Lakes States, (52) U.S.D.A. 893.
 - and Crown lands in South Africa, (51) 91.
 - and holdings in Argentina, (53) 591.
 - for disabled ex-service men, (54) 483.
 - in Argentina, (51) 192.
 - in Australia, (52) 95.
 - in Australia, history, (54) 585.
 - in England and Wales, (56) 686.
 - in New Zealand, (57) 883.
 - in Scotland, (59) 884.
 - in United States, (55) 884.
 - in Western Australia, group plan, (57) 784.
- organized, after reclamation, (52) 182.
- policy, (55) Minn. 283.
- policy of United States Bureau of Reclamation, (58) 887.
- practical policies, (54) 284.
- state policies in, (55) 685.
- situation, English, (51) 189.
- subdivision, in Sweden, (52) 788.
- swamp, *see* Swamp.
- system, public leasehold, in United States, (54) 284.
- system, town proprietors of New England colonies, (54) 182.
- tax in Austria, (55) 381.
- tax value, relation to sales value, (57) Ohio 189.
- tenancy—
 - for cash rent, (54) 182.
 - in central Illinois, (58) 785.
 - in North Carolina, (51) 392.
 - in Rumania, (51) 192.
 - share, in France, (53) 591.
 - share, in Italy, (51) 392.
 - share in rice districts in Philippines, (52) 189.
 - studies, (60) Ill. 283.
 - system of Great Britain, reform, (57) 481.
- tenure—
 - American, inheritance in, (57) 382.
 - and farm investment, (53) Nebr. 189.
 - and settlement in New Zealand, (51) 492.
 - and unemployment in England, (54) 882.
 - development in England, (55) 884.
 - in England, history, treatise, (52) 91.

Land—Continued.

- tenure—continued.
 - in England, reconstruction proposals, (54) 586.
 - in Knox Co., Illinois, (59) 682.
 - in Missouri, (54) Mo. 783.
 - in tropical Africa, (54) 182.
 - in Tropics, (58) 785.
 - in Wales, history, (54) 185.
 - international problems, (53) 290.
 - place of tenancy in, (53) 689.
 - relation to plantation organization, (52) U.S.D.A. 293.
 - Spanish, in Philippines, (52) 189.
 - studies, (52) Nebr. 589.
 - systems in China, (60) 587.
 - systems of Mexico, history, (51) 294.
- trend toward more effective use, (56) U.S.D.A. 685.
- unimproved, in Australia, taxation, (54) 80.
- utilization, (58) Ohio 381.
 - and population in Sweden, (55) 80.
 - and soil, (59) N.J. 316.
 - field of, (55) 482.
 - in Ohio, Ohio, (57) 299, 697.
 - in southern Michigan, (55) Mich. 97.
 - trend in United States, (60) 507.
- valuation, papers on, (58) Mo. 489.
- value appraisals in Iowa, symposium on, (57) 481.
- value policy of taxation, (53) 592.
- value relation to land income, (51) U.S.D.A. 593; (53) 189.
- values and agricultural credit, (55) 586.
- values and roads in Indiana counties, (55) 685.
- values, assessed and sale, ratios, (59) Oreg. 784.
- values in Canterbury, (57) 883.
- values, 1915 to 1925, index numbers, (56) Ohio 581.
- values, relation to cotton value, (58) S.C. 684.
- values, relation to rents, (52) Tex. 189.
- wet and white, drainage and improvement, (57) Oreg. 880.
- winter-fallowed, cultivation, (53) 214.
- Landscape gardening, *see* Gardening, landscape and ornamental.
- Landslides, relation to roads, U.S.D.A., (57) 186; (60) 378.
- Lansium domesticum, root disease of, (59) 548.
- Lantana—
 - control in India, (57) 631.
 - effect of sodium arsenite, (52) 830.
 - flies, economic importance, (53) 257.
 - gall-fly and seed-fly, descriptions, (53) 654.
 - insects, introduction into Hawaii, (52) 356.
 - stumps, destruction, (54) 232.

- Lanzone, new, tests, (60) Guam 820.
 Lanzones, root disease on, (59) 548.
 Laphygma exigua, *see* Beet army worm.
 Laphygma frugiperda, *see* Army worm, fall.
 Larch—
 and fir forests, timber growing and logging practice, (58) U.S.D.A. 336.
 canker, European, in America, (58) 449.
 case bearer, life history and habits, (51) Conn.State 852.
 European, injury from red squirrel, (59) 153.
 European, seeding experiments, (59) 838.
 forests, natural regeneration, (58) 645.
 height growth, (51) 540.
 honeydew, manna, and honey, (58) 755.
 leaf cast, notes, (54) 751.
 sawfly mortality, factors affecting, (59) 461.
 sawfly parasite, introduction and establishment, (59) 562.
 western, germination, factors affecting, (52) 541.
 western, nursery practice, (55) 648.
 Lard, cold storage holdings, (55) U.S.D.A. 686.
 Lard, glycerids, (51) 709.
 Larkspur—
 hardy, pollination by bumblebees, (54) 757.
 leaf miner, injury caused by, (60) 562.
 poisonous to livestock, Wyo., (56) 572; (60) 776.
 Sclerotium disease, notes, (59) 852.
 Larvae, device for inflating, (52) 56.
 Lasiocampidae, data, (56) 358.
 Lasioderma serricorne, *see* Cigarette beetle.
 Lasiodiplodia tubericola on potatoes in Egypt, (59) 642.
 Lasiosiphon anthylloides as poisonous plant, (60) 574.
 Lasius interjectus, life history notes, (60) U.S.D.A. 356.
 Laspeyresia—
 caryana, notes, (60) Fla. 160.
 molesta—*see also* Peach moth, oriental.
 and *L. prunivora*, differentiation, (57) 61.
 palmetum n.sp., description, (59) 858.
 pomonella, *see* Codling moth.
 stirpicola n.sp., description, (57) 162.
 Laspeyresiinae, revision, (54) 756.
 Laterite and lateritic soils in Sierra Leone, (59) 811.
 Latex—
 movement in latex vessels. (58) 854.
 treatise, (58) 240.
 vessels, anatomical-physiological relations, (60) 425.
 Lathromeris johnstoni n.sp., description, (56) 362.
 Lathyrism in bovines, studies, (58) 878.
 Lathyrus—
 aphaca seeds, nutrient value, (54) 160.
 Pacific coast species, (54) 735.
 Latifundia in Sicily, (51) 294.
 Latola bicolor, new pest of dry rice, (59) 253.
 Latrodectes mactans—
 habits and injury from, (58) 855.
 notes, (55) 858; (56) 251; (57) 655; (60) 657.
 Laundering—
 colored goods, (54) 494.
 methods and equipment, (55) U.S.D.A. 393.
 of fabrics containing synthetic fibers, (55) 393.
 rayon, (54) 494.
 Laundry—
 chemistry, treatise, (55) 598.
 operations, control, (54) 494.
 power, washroom practice in relation to dyed fabrics, (58) 797.
 processes, improvements, (60) 599.
 research and textile industry, (54) 393.
 wet wash, smoke damage, (56) 898.
 wet wash, winter damage, (56) 595.
 Laurel—
 culture, (60) N.J. 342.
 leaf beetle, biology and control, (52) Me. 661.
 Lavender-scab, notes, (56) 748.
 Law of diminishing returns, (55) 283.
 Law of diminishing returns, treatise, (53) 290.
 Lawn—
 and golf course problems, (59) Ohio 222.
 grasses, studies, (55) Fla. 824.
 turf, fertilizer experiments, (60) Conn. State 728.
 Lawns—
 and lawn making, (54) Mo. 136.
 brown patch of, control, (54) Ohio 351.
 damage from Asiatic beetle, (60) 850.
 fertilization, (55) 739.
 fertilizer requirements, (55) Wis. 122.
 links, and sportsfields, treatise, (51) 233.
 making, treatise, (53) 139.
 moss destruction on, (53) Can. 340.
 new pest of, (59) Conn.State 98.
 Lead—
 acetate, basic, preparation, (52) 501.
 arsenate—
 acid, action of solution of calcium hydroxide on, (58) 254.
 acid, toxicity for Japanese beetle, (57) 658.
 acid, use as soil insecticide, (55) 553.
 and lime-sulfur, combining, methods, (59) Iowa 39.

Lead—Continued.

- arsenate—continued.
 and lime-sulfur spray, chemical studies, (52) N.Y.State 501.
 coating with metallic soap, use. (54) 551.
 commercial brands, (51) 253.
 determination of lead and arsenic in, (52) 711.
 determination of water-soluble arsenic in, (52) 712.
 effect on codling moth, (55) Calif. 355.
 in sulfur-lime dry mix spray, decomposition, (56) 854.
 injury to cherries and prunes, (58) N.Y.State 844.
 injury to cranberry bogs, (59) N.J. 351.
 method of showing on sprayed surfaces, (54) 153.
 situation, (59) 552.
 solubility in digestive fluids of bee, (52) 560.
 spraying, injury to foliage, (54) 819.
 sprays, substitutes, tests, (60) 560.
 value for eggplant pests, (54) Ill. 353.
 boring beetle, notes, (52) 662.
 colloids, antiknock properties, (60) 780.
 compounds, effect on wheat, (54) 515.
 determination as a cyanide, (57) 804.
 determination in its alloy, (56) 804.
 determination in lead arsenate, (52) 711.
 hydrogen arsenate and lime, relation, (55) N.J. 51.
 hydrogen arsenate, sticker for, (52) N.J. 751.
 in soil from smoke gases, effect on plants, (58) 521.
 nitrate, fertilizing value, (54) 423.
 number of maple products, determination, (52) 713.
 number of vanilla extracts, (52) 713.
 refineries, injury to vegetation, (51) 348.

Leaf—

- beetles of New Jersey, (58) 459.
 blights, studies, (55) 543.
 case bearer, control, (56) Fla. 862.
 cells of Elodea, protoplasmic movement in, (54) 723.
 cells, permeability, variations in, (54) 627.
 crumpler, notes, (52) U.S.D.A. 255.
 footed bug, notes, (54) Fla. 257.
 gummosis, (53) 148.
 material, dried, carbon dioxide absorption, (57) 817.
 miner, natural control, (54) 460.
 pigments, preparation and properties, (59) 122.

Leaf—Continued.

- plasticity and xeromorphic structure, (60) 215.
 roller—
 dusky, studies, (56) Pa. 156.
 four-banded, life history notes, (57) 857.
 life history studies, (54) Pa. 352.
 oblique-banded, notes, (59) Guam 555.
 red-banded, biology and control, (59) Va. 60.
 red-banded, on apples, control, (55) Conn.State 252.
 red-banded, studies, (53) 558; (54) Pa. 458; (55) 555.
 sprays for, (51) Wash.Col. 158.
 rollers attacking orchard trees, (53) 859.
 rollers of Nova Scotia, (60) 843.
 rollers, studies, (51) Wash.Col. 157; (55) Oreg. 662; (56) Pa. 154.
 scorch, physiology of, (51) 46.
 shape in cotton, inheritance, (59) 429.
 shot hole, notes, (56) 747.
 stomatal guard cells, heat resistance in, (58) 215.
 structure, mobile equilibrium in, (60) 425.
 structure of conifers, relation to light and moisture, (60) 122.
 temperatures, factors affecting, (58) 123.
 tips, physiological anatomy, (55) 729.
 tissue fluids of phanerogamic epiphytes, electrical conductivity, (57) 25.
 tissue, transpiring power and conductivity, seasonal variation, (57) 320.
 variegation and bacteria, studies, (56) 629.
 variegations, studies, (59) 445.
- Leafhopper—
 attacking leather leaf fern, (57) 360.
 injury to apple trees, (56) 59; (58) 257.
 new species, on apple in Ohio, (55) 556.
 red saddle-backed, studies, (58) Del. 454.
 six-spotted, notes, (55) 854.
 six-spotted, transmission of aster yellows by, (55) 756; (56) 54; (58) 251.
 three-banded, notes, (52) Mich. 355.
- Leafhoppers—
 affecting apple and potato, correct names, (52) 855.
 American, revision of genus, (56) 59.
 biology, notes, (56) 555.
 control of alfalfa yellowing, (59) 241.
 control, (58) 61; (59) Mich. 556.
 of Ithaca region, synopsis, (52) N. Y. Cornell 758.
 of Ohio, synopsis, (60) 558.
 on cranberry bogs, (50) 249.
 transmission of mosaic by, (56) Wis. 756.

Leather—

- beetles, breeding for insecticide tests, (60) 158.
- belting, methods of testing, (51) 88.
- chrome v. vegetable-tanned, (51) 614.
- garments, cleaning, (58) 696.
- gloving and clothing, dyeing, (60) 598.
- jacket, notes, (60) 161.
- scrap, solubilized, fertilizing value, (57) 717.
- sheep, chrome and vegetable tanned, (59) 694.
- shoe, properties, (55) 494, 897.
- shoes, selection and care, (57) U.S.D.A. 298.

Leatherjackets, control, (56) 63.

Leatherleaf fern—

- brown leafspot of, (57) 159.
- leafhopper affecting, (57) 360.

Leaves—

- absorption of CO₂ by, (54) 23.
- anthocyanin in, origin, (53) 726.
- area, measurement with photo-electric cell, (60) 26.
- assimilation and respiration, effect of ionized air, (60) 522.
- calcium arsenate injury to, (58) 661.
- carbohydrate and water content, relation, (52) 425.
- carbohydrate metabolism, (53) 821.
- carbohydrates in, variations during daylight, (59) 216.
- chlorosis and premature fall, (53) 325.
- dead, carbon dioxide assimilation, (57) 118.
- deficient in chlorophyll, chemistry of, (57) 514.
- deformed in Japanese morning-glory, inheritance, (56) 521.
- development and form, factors affecting, (58) 725.
- development and theory of periclinal chimeras, (59) 428.
- developmental movements, torsion in, (56) 326.
- diaheliotropic attitude, (51) 521.
- diurnal sleep of, (56) 326.
- dried, absorptive capacity for carbon dioxide, (52) 425.
- drying, transpiration in, (60) 425.
- functional decay, (57) 420.
- functional decay, critical note, (57) 421.
- green and chlorotic, mineralization in, (59) 427.
- green and white, photo-electric changes in, (53) 222.
- green, yellow and red, chemical characters, (59) 516.
- growth rate, photographic method of study, (56) 123.
- isolated, blade and root production, (57) 25.
- lacking chlorophyll, chemistry of, (60) 215.
- living, extraction of sap from, (58) 726.

Leaves—Continued.

- mesophytic, wound healing, (56) 27.
 - nerivation in, physiological rôle (53) 827.
 - nitrogen in, diurnal variations in, (52) 326.
 - of trees, variation in, during autumnal yellowing, (59) 217.
 - photosynthesis in, relation to water content, (58) 23.
 - phototropic movements, (54) 626.
 - power to withdraw moisture from fruit, (58) 738.
 - reflection of light from surfaces, (58) 726.
 - rust infection of, study in Petri dishes, (52) Conn.State 647.
 - sap extraction from, (53) 223.
 - specific action of excitants on, (57) 119.
 - sprayed, apparatus for obtaining measured areas, (60) 13.
 - starch formation in, (55) 728; (58) 624.
 - starch in, physiological rôle, (59) 216.
 - structure, and number of stomata, (57) 321.
 - structure in some Australian plants, (57) 320.
 - tree, chlorophyll in, (60) 828.
 - variations in mineral matter during autumnal yellowing, (59) 821.
 - water content, relation to assimilation, (58) 318.
 - water-vapor loss from, measurement, (60) 523.
 - wound responses of, (52) 518.
 - yellowing, movement of nitrogenous substances from, (53) 325; (59) 25.
- Lebistes—
- location of eighteen genes in, (58) 627.
 - reticulatus gonads, dependence of male characteristics on, (56) 430.
 - reticulatus, loss of male secondary characteristics in, (56) 130.
- Lecaniobius capitatus n.sp., description, (53) 561.
- Lecaniodiaspis tessellata, notes, (55) Miss. 555.
- Lecanium—
- corni, studies, (57) 260; (59) 759.
 - corrugatum, notes, (55) Miss. 555.
 - scale outbreak in Vancouver, (55) 659.
- Lechriops psidii n.sp., description, (51) 59.
- Lecithin—
- in blood, determination, (56) 14.
 - in milk and in mammary gland, (52) U.S.D.A. 576.
 - in plants, (59) 608.
 - vitamin A in, (51) 368.
- Leeches in horses, studies, Fla., (56) 874; (60) 175.
- Leeks, fertilizer experiments, (58) Ill. 333.
- Leg weakness in chicks, (51) N.J. 185; (54) Mich. 679.
- Legerella hydropori n.sp., description, (58) 556.

Legume—

- bacteria, bacteriolytic agent active against, (60) 524.
- bacteria in Iowa soils, (59) 826.
- bacteria, isolating, (52) Wash.Col. 822.
- bacteria, longevity in soil, (51) Mo. 719.
- bacteria viability on stored inoculated seed, Can., (56) 513; (59) 331.
- culture distribution, new policy, (59) Mich. 99.
- cultures, preparation, (59) 816.
- diseases in Manitoba, (56) 541.
- forages with corn and cane for silage, (53) Ark. 465.
- hay crops, effect of fertilizers, (51) 216.
- hay, feeding to chickens, (58) Ohio 669.
- hay, feeding value, (58) Ark. 357.
- hay v. tankage for wintering brood sows, (56) Ark. 369.
- hay, value for dairy heifers, (60) Ark. 862.
- hays as substitute for green feed for chickens, (55) Ohio 671.
- hays for brood sows, (60) Ark. 858.
- hays for lime needs of dairy cows, (56) Ill. 271.
- hays for milk production, (60) U.S.D.A. 473.
- inoculants, inspection, N.J., (51) 641; (53) 238; (55) 235; (57) 532; (59) 228.
- leaflets, movements, effect of moonlight, (51) 823.
- leaves, effect on water in stems during curing process for hay, (55) 827.
- mixtures, comparison, (55) Idaho 825.
- seed certification in Germany, (57) 133.
- seed treatment to decrease hard seed, (51) 34.
- seeds, hard, germination, (60) 137.
- seeds, hard, growing experiments, (52) 831.
- seeds, inoculation and sterilization, (58) Miss. 31.
- seeds, longevity, (52) 340; (60) 228.
- seeds, sterilization, (56) Iowa 822; (59) 27.

Legumes—

- analyses, (58) 815.
- and cereal mixtures, tests, (59) 130.
- and cereals, production in Spain, (53) 396.
- and Sudan grass, ensiling, (52) 68.
- as cover crops, inferior stands, (60) Wash.Col. 821.
- as cover crops, tests, (55) Oreg. 645.
- as nurse crops for mahogany, (60) P.R. 742.
- as source of nitrogen, (60) Oreg. 716.
- classification, keys, (58) 734.
- comparison, (56) 35.

Legumes—Continued.

- comparison for hardness and manuring value, (54) 31.
- containing inulin, food value, (54) 791.
- culture experiments, (52) Calif. 33, S.C. 528; (53) Idaho 528; (54) 635; (55) Ark. 31, V.I. 333.
- culture for seed, (60) 815.
- culture in India, (57) 629.
- disappearance of nodule bacteria from roots, (53) 123.
- effect of different strains of nodule bacteria, (59) Wis. 34.
- effect of gypsum, (55) Idaho 825.
- effect on crop yields, (60) Ark. 803.
- effect on following crop, (54) N.Y. Cornell 829; (56) 825; (58) Ark. 315.
- effect on soil fertility, (59) Miss. 318.
- experiments in Philippines, (55) 434.
- experiments with, Ill., (54) 329; (56) 230, 335; (58) 327.
- factors affecting successful growth, (54) 434.
- fermentation characters of nodule bacteria, (58) 314.
- fertilizer experiments, (59) 213.
- for acid soils, (51) 34, Iowa 433.
- for dairy heifers, Ohio, (51) 475; (53) 579, 879.
- for forage and green manure, (60) S.C. 732.
- for forage crops, culture experiments, (55) Nebr. 637.
- for green manuring, tests, (52) 132; (60) Wash.Col. 821.
- for hay, variety tests, (52) Fla. 224.
- for intercrop pastures, (60) 533.
- for livestock, (53) 66.
- for milk production, (57) Ohio 175.
- for Texas beekeepers, (57) Tex. 562.
- forage value, (57) La. 522.
- germination, physiology and chemistry of changes during, (58) 523.
- germination studies, (56) Wash.Col. 526.
- growth, relation to soil acidity, (58) 17.
- gypsum and sulfur for, (51) Wash.Col. 728.
- in corn, value, (51) Miss. 134.
- in crop rotation, value, (57) 726.
- inoculation, (51) Wash.Col. 137, Mo. 530; (52) N.J. 732, Mich. 796; (53) 123, Can. 530; (55) U.S.D.A. 529, Oreg. 637; (56) Wis. 734; (57) 34, Iowa 34; (60) Oreg. 731.
- inoculation, value, (58) Ill. 829.
- interplanting in corn, effect, Ark., (58) 322; (60) 36, 812.
- mycorrhizal fungus in roots, (52) 645, 746.
- new, characteristics and green manure value, (52) 830.
- nitrogen experiments, (52) 123.

Legumes—Continued.

- nitrogen fixation in, factors affecting, (54) Wash.Col. 813.
 nurse crops for, (57) Idaho 726.
 optimum soil reaction, (60) Ark. 813.
 pH of sap, effect of soil reaction, (58) 623.
 planting dates, (60) Ala. 130.
 planting tests, (57) Calif. 225.
 protein characters of species, (60) 426.
 proteins of, (56) 708.
 resistance to acid soil conditions, (58) Ark. 315.
 root tubercles, studies, (57) 120.
 rotation experiments, (52) Alaska 528; (54) 31.
 sowing with small grains, (55) Ark. 30.
 stability of chemical composition, (58) 829.
 tests, (56) S.C. 525.
 under varying shade intensities, (59) Wash.Col. 32.
 urease in root nodules, (52) 28.
 utilization, symposium, (51) 799; (54) 132.
 v. nonlegumes for soil improvement, (57) N.J. 19.
 value, (56) Ark. 333.
 value for orchards, (53) Pa. 439.
 varieties, (51) 636.
 varieties for three regions of State, (58) N.C. 828.
 variety tests, (51) N.J. 636; (52) Guam 226, Idaho 828; (53) Ariz. 733; (54) Fla. 325; (56) 525, Ariz. 731, Fla. 821; (57) Tex. 126, Okla. 226; (58) Ga. Coastal Plain 732; (59) Tex. 729; (60) Fla. 130, Ga. Coastal Plain 132, Oreg. 731, Ark. 812.
 wild, and soil fertility, (58) 515; (60) 124.
 winter and summer, tests, (58) S.C. 632.
 winter, as cover crops, (59) Calif. 727.
 winter, hardness, (59) Ala. 625.
 winter, tests, Fla., (55) 824; (60) 130.
 winter, variety tests, (60) S.C. 732.
 yields, (51) Nebr. 831.

Leguminosae—

- bacterial root symbiosis in, (58) 25.
 hard seeds in, (56) 826.

Leis sp., notes, (55) Calif. 352; (56) Fla. 855.

Leishmania—

- and herpetomonads, biological relationships, (54) 752.
 donovani cultures, feeding of larvae of sand flies on, (55) 856.
 species in goats, (57) 77.

Lemon—

- Alternaria rot, notes, Calif., (52) 53; (56) 249.
 anthracnose, notes, (57) 851; (60) 835.

Lemon—Continued.

- black pits, notes, (59) Calif. 748.
 blue mold rot, control, (52) 451.
 die-back in Messina, (57) 852; (58) 250.
 juice—
 and outer peel, constituents, (59) 93.
 and peel, vitamin content, (57) 489.
 antiscorbutic fraction, (52) 710; (55) 309; (56) 311; (58) 391; (60) 595.
 antiscorbutic fraction, concentration, (51) 503.
 antiscorbutic fraction, precipitation, (57) 488.
 antiscorbutic fraction, solubilities, (57) 309.
 antiscorbutic value after cold storage, (53) 567.
 decitrated, conservation of antiscorbutic potency, (51) 568.
 in milk, value for infants, (51) 867.
 vitamin C in, (54) 194; (57) 790; (60) 595.
 leaf spot, notes, (56) 748.
 leaves, internervial maculate chlorosis in, (58) 449.
 oil for red spider control, (52) 300.
 pectin, analyses, (53) U.S.D.A. 13.
 peel, protopectin from, (51) 310.
 plants attacked by *Colletotrichum gloeosporioides*, effect of manganese sulfate, (60) 831.
 Pleospora rot, notes, (59) 346.
 products, vitamins in, (51) 666.
 pulp, dried, digestibility, (58) Calif. 761.
 rind tincture, vitamins in, (57) 790.
 rind, vitamin B in, (55) 593.
 rind, vitamin C in, (56) 696.
 shellbark, notes, (53) Calif. 449.
 tree decortification, (54) Calif. 351.
 trees, intraseasonal cycles, (59) 442.
 trees, shoot formation in, (55) Calif. 322.

Lemons—

- bud variants of, (51) U.S.D.A. 749.
 coloration, hastening, (51) 646.
 effect of oil film sprays, (56) 555.
 fungi affecting, (58) 343.
 growth and fruit bud differentiation, (52) Calif. 39.
 internal decline, (51) 757, 758; (53) Calif. 449; (55) 344; (58) 250; (59) Calif. 748.
 nonvolatile acids of, (58) 711.
 notes, (57) Tex. 136.
 production, consumption, and trade, (60) Calif. 587.
 propagation studies, (59) Calif. 737.
 respiration as affected by ethylene, (52) 626.
 rough, propagation from leaves, (55) Fla. 833.

- Lemons—Continued.
 rough, use as stock, (55) 644.
 shoot formation in, (55) Calif. 338.
 toxic and insulin-like substances in,
 (51) 768.
 variety and rootstock experiments, (56)
 45.
 variety in Porto Rico, (56) 532.
 variety, notes, (59) Tex. 740.
 variety tests, (58) 39.
 witches' broom affecting, (51) 549.
- Lens antibodies in rabbits, absence of pre-
 natal effects, (51) 336.
- Lens antisera effect on reproduction and
 progeny, (51) 337.
- Lentils—
 fall seeding experiments, (52) 633.
 inheritance studies, (59) 223.
 nutritive value, (51) 665.
- Lentinus lepidus—
 notes, (52) 55; (54) 255.
 resistance to sodium fluoride and zinc
 chloride, (56) 853.
- Lenzites—
 sepiaria and *L. trabea*, comparison,
 (54) 255.
 sepiaria, growth reaction toward acid-
 ity, (53) 225.
 sepiaria, toxicity of pine oil to, (56)
 655.
 spp., notes, (52) 55.
 spp. resistance to sodium fluoride and
 zinc chloride, (56) 853.
 trabea and *L. sepiaria*, comparison,
 (54) 255.
- Leochilus labiatus, notes, (57) 851.
- Leopard moth—
 control, (58) 61.
 in Palestine, life history and control,
 (60) 164, 844.
- Lepidium sativum grown in salt water, ef-
 fects, (53) 626; (54) 125.
- Lepidoderma albohirtum, notes, (52) 853;
 (56) 358; (59) 352, 658.
- Lepidoptera—
 British, revised handbook, (59) 556.
 diurnal, North American, check list,
 (55) 662.
 from eastern Texas, (56) 257.
 genitalia, preparation and study, (56)
 758.
 life history and habits, (56) 258.
 larvae, control, (60) 556.
 larvae, immunity, rôle of antibodies in,
 (51) 161.
 larvae, poison apparatus, (55) 762.
 new genera and species, descriptions,
 (57) 262.
 number and maturation of eggs im-
 portant to forestry, (60) 844.
 of Japan, notes, (52) 660.
 of New York, (52) N.Y. Cornell 455.
 of north and central Europe, paper on,
 (57) 553.
 with abnormal habits, (58) 451.
- Lepidosaphes—
 beckii, see Purple scale.
 destefanii, new enemy of olive, (56)
 555.
 from Japan, (54) 554.
 intermittens, description, (53) 653.
 newsteadi, notes, (55) Miss. 555.
 ulmi, see Oyster-shell scale.
- Leporidae, existence of, (56) 330.
- Leptinotarsa decemlineata, see Potato beetle,
 Colorado.
- Leptobyrza rhododendri, summary, (58)
 160.
- Leptochloa nealleyi, striped grass looper af-
 fecting, (52) 61.
- Leptocoris—
 spp. in Kuala Pilah district, (54) 754.
 varicornis, notes, (56) Guam 251.
- Leptodictya tabida, notes, (56) 155.
- Leptogenys falcigera, notes, (55) 858.
- Leptoglossus spp., control, (60) Guam 845.
- Leptohylemyia coarctata, life history and
 bionomics, (60) 653.
- Leptomeria spp., root parasitism of, (57)
 48.
- Leptomonas pyraustae n.sp., notes, (58)
 260.
- Leptosphaeria—
 avenaria n.sp., notes, (52) 448.
 coniothyrium, notes, (55) Oreg. 650;
 (58) 53; (59) 535.
 grossulariae n.sp., description, (59)
 537.
 herpochloides in France, (57) 541.
 herpochloides, notes, (54) U.S.D.A.
 452; (58) 340.
 sacchari, notes, (54) 547; (55) 244,
 245, 349; (57) 443, 639.
 sp., notes, (60) 150.
 tritici, notes, (51) 46.
- Leptospira—
 icterohaemorrhagiae in dogs, (52) 782.
 icterohaemorrhagiae, in rats, (51) 782;
 (52) 55; (58) 772.
 icteroides cultures, effect of yellow
 fever mosquito extracts, (60) 63.
 spp. in mosquitoes, fate, (58) 262.
- Leptothrips mali, notes, (54) Mich. 355.
- Leptothyrium pomi, notes, (54) 247.
- Lepturini of America north of Mexico,
 keys, (60) 654.
- Lepus europaeus pallas in North America,
 (52) 551.
- Lepyronia quadrangularis—
 biology and morphology, (51) 551.
 injury to corn, (52) 454.
- Lespedeza—see also Clover, Japan and Ko-
 rean.
 breeding experiments, (54) Tenn. 231.
 culture experiments, (55) Miss. 228.
 culture methods, (56) Miss. 731.
 dodder control in, (59) Tenn. 228.
 hay, feeding value, (52) Miss. 275.
 improvement, (57) Tenn. 628.
 Kobe, tests, (53) La. 528.
 Korean, as new forage crop, (51)
 U.S.D.A. 743.

Lespedeza—Continued.

- Korean, culture experiments, (52) Tenn. 528.
- varieties, (55) N.C. 228; (57) Tenn. 126.
- variety tests, (53) N.C. 735; (55) La. 433; (57) Okla. 523; (60) Miss. 34, Ill. 223.

Lethal factors—

- balanced, in *Drosophila*, (51) 129; (56) 521.
- behavior and inheritance, (56) 329.
- in cereals, (51) 128.
- occurrence, (54) 127.

Lethol, test for ox warbles, (52) 359.

Lettuce—

- and cabbage resistance to low temperature, varietal differences, (51) 733.
- anthracnose in New South Wales, (60) 153.
- anthracnose in Ontario, notes, (58) 41.
- anthracnose, notes, (54) 746.
- bacterial slime, notes, (56) 245, Ariz. 745.
- breeding experiments, (59) Hawaii 626; (60) Pa. 337.
- breeding for tipburn resistance, (59) 147.
- breeding, pure line, (59) Conn.State 28.
- cold storage studies, (60) 541.
- culture, (51) N.J. 642; (52) Ill. 440; (55) Colo. 235, N.Mex. 439.
- culture under high altitude conditions, (55) Colo. 536.
- diseases, control, (51) 152; (56) Pa. 50, Pa. 145; (59) Fla. 541.
- diseases, control with formaldehyde, (55) 848.
- diseases in Minnesota, (57) 150.
- downy mildew, notes, (55) 346.
- effect of pH of soil, (60) 338.
- effect of superphosphate, Ariz., (56) 739; (59) 138.
- effect of various lengths of day, (56) 640.
- electrocultural experiments, (54) 633.
- fall sowings, (59) N.Mex. 231.
- fertilizer experiments, (54) Ill. 335; (55) Colo. 536; (56) Colo. 831; (60) Ohio 140.
- germination, studies, Calif., (57) 231; (59) 736.
- grading, packing, and handling, (52) 394.
- gray mold, notes, (54) 745.
- gray mold, relation to geranium disease, (55) 145.
- green and white, vitamin A in, (57) 895.
- greenhouse culture, (52) U.S.D.A. 441; (55) Mich. 139.
- greenhouse, fertilizer experiments, (56) Ill. 641; (58) Ohio 137.
- growth, effect of carbon dioxide, (53) Ohio 519.

Lettuce—Continued.

- growth, effect of lime, (54) Mich. 338.
 - growth in artificial light, (51) 25.
 - head, bacterial content, (54) 191.
 - head, growing, (53) N.Mex. 140.
 - head, growing and handling, (54) Calif. 38.
 - head, variety for greenhouse culture, (55) Can. 835.
 - hypoglycemia-producing principle in, (52) 667.
 - irradiated, effect, (53) 568.
 - Japanese, as green feed crop for poultry, (59) West.Wash. 433.
 - leaf spot, description, (54) 148.
 - leaf spot organism, notes, (57) 843.
 - leaves, irradiated, antirachitic properties, (52) 763.
 - market for, (57) N.Mex. 284.
 - marketing, (55) U.S.D.A. 483.
 - mildew immunity, inheritance, (56) 245.
 - mildew, notes, (59) 535.
 - mosaic, seed transmission, (53) 851.
 - New York, planting tests, (60) Mont. 737.
 - New York, strain test, (60) Oreg. 738.
 - paper mulch experiments, (57) 40.
 - pollination and life history studies, (57) Calif. 436.
 - prices and shipments from Florida, (59) 886.
 - production, distribution, and consumption, (57) 86.
 - ring spot, notes, (56) 747.
 - rosette and drop, control, (54) Ohio 344.
 - rust, notes, (56) 748.
 - seed germination, (52) 737; (59) Calif. 634.
 - seed production, (55) Calif. 339.
 - seeding experiments, (57) N.Mex. 235.
 - slime rot, causes, (60) West.Wash. 746.
 - slime rot, effect of fertilizers, (60) West.Wash. 741.
 - storage and transportation diseases, (57) Mich. 642.
 - strain tests, (51) R.I. 746; (52) Idaho 836.
 - time of planting, (56) Mont. 138.
 - tipburn and slime diseases, (58) 147.
 - tipburn, factors affecting, (59) N.C. 751.
 - tipburn, notes, (55) Calif. 344; (56) Colo. 49, 440; (57) 249, 348, 748.
 - tipburn relation to leaf temperature, (59) 344.
 - tipburn, relation to water in tissue, (55) Colo. 246.
 - varieties, (55) R.I. 236.
 - varieties, improvement, (58) Pa. 335.
 - variety, notes, (51) Ohio 441.
 - variety tests, (57) Tex. 136.
 - vitamins in, (59) Iowa 92.
- Leucaemia and pseudoleucaemia in fowls, (59) 370.

- Leucaena glauca* as green manure and cover crop, (52) 732.
l-Leucic acid formation, (52) 611.
Leucite, potash manufacture from, (51) 423.
Leucocyte count, effect of yeast ingestion, (53) 458.
Leucocytes—
 monograph, (52) 281.
 relation to mammary secretion, (52) 376.
Leuconostoc mesenteroides enzyme, inversion activity, (58) 149.
Leucophaea surinamensis, intermediary host of eye worms of poultry, (58) 481.
Leucopholis irrorata in Philippines, control, (54) 57.
Leucopic luteicornis n.sp., description, (53) 55.
Leucoptera coffeella, see *Coffee leaf miner*.
Leucosin in flour, studies, (59) 112.
Leucotermes flavipes, control, Mich., (51) 856; (54) 655.
Leucothrips nigripennis on greenhouse ferns, (55) Mich. 853.
Leunaphos, fertilizing value, (60) N.C. 719.
Leunaphoska, fertilizing value, (60) N.C. 719.
Leunaspeter—
 effect on phosphate and potassium availability, (60) Ala. 120.
 fertilizing value, (56) Fla. 811.
Leurocerus ovivorus, notes, (52) 361.
Levuana iridescens—
 notes, (52) 853.
 on coconuts, (53) 859; (56) 660.
Levulose—
 manufacture, (53) 613, 810.
 tolerance, effect of carbon tetrachloride intoxication, (55) 677.
Lewes community, farm business of, (51) 293.
Liberal Land Committee in Great Britain, report, (54) 587.
Library opportunities in State, equalizing, (60) S.Dak. 287.
Libythea, paper on, (57) 553.
Lice—
 American, revision of genus, (56) 59.
 biting, control, (52) Calif. 59.
 body, biology, (51) 552.
 of horses, control, (55) U.S.D.A. 578.
 sucking and biting, of cattle, control, (60) 266.
 sucking, of rabbits, (53) 53.
Lichens—
 action on church window glass, (53) 50.
 destruction of mosses by, (51) 127.
 dyes from, use, (60) 598.
 purple bacteria as symbionts of, (55) 818.
Lictonic, feeding value, (54) Can. 863.
Life—
 duration in *Drosophila*, (51) 128, 737.
 duration in *Drosophila* and density of population, (58) 29.
- Life*—Continued.
 every day, science of, treatise, (53) 693.
 history data, importance of, (56) 250.
 nature of, treatise, (54) 219.
 origin, relation of iron to, (58) 724.
 phenomena, chemical dynamics of, treatise, (54) 6.
 physical basis, (57) 117.
 without oxygen, address, (51) 501.
Light—see also *Sunlight*.
 action on dyed colors, (60) 696, 697.
 action on textiles, (53) 531.
 and temperature, interrelation in plant growth, (53) 222.
 antirachitic function, (54) 194.
 artificial—
 effect on egg production, (52) Pa. 272; (53) Ind. 173, Iowa 778, N.C. 779; (54) Pa. 369; (55) 379, Nebr. 669, N.J. 866; (56) 181, S.Dak. 567; (57) N.J. 765; (58) Del. 168, S.Dak. 766, 781; (59) Oreg. 665; (60) Minn. 172, 861.
 effect on hens, (55) N.C. 265.
 effect on plant growth, (52) 625; (54) 624, 625.
 for pullets, (56) Del. 372.
 heliotherapy by, (54) 294.
 in chicken house, automatic switch for, (52) Mich. 476.
 treatments, (54) 392.
 biological action, (54) 263.
 colored, effect on plant growth, (54) 625.
 distribution in plant organs under unilateral illumination, (60) 215.
 effect on absorption of mineral matter by plants, (59) 215.
 effect on animal organism, (51) 865.
 effect on dyed fabrics, (51) 716; (57) 598; (58) 695; (59) 297.
 effect on etiolated plants, (56) 424.
 effect on fat deterioration, (51) 202.
 effect on fertilizer requirements of plants, (51) Wis. 424.
 effect on flower and fruit production in plants, (60) 806.
 effect on growth of excised root tips, (56) 125.
 effect on plants, (52) 327; (56) 217, 325, 813; (57) 117; (59) 617, 820.
 effect on rickets, (54) 393.
 effect on seed germination, (54) 724.
 effect on stomatal behavior of plants in winter, (54) 321.
 effect on tannin formation, (59) 518.
 effect on textiles, (54) 394.
 effect on tobacco seed germination, (57) 718.
 effect on vitamin A in cod-liver oil, (57) 894.
 effect on water loss from mesophyll, (58) 725.
 factor, relation to plant distribution, (57) 417.

Light—Continued.

- growth reaction of *Basidiobolus*, (53) 423.
 intensities, effect on plant growth, (59) Mich. 426.
 intensity and sensitivity, (54) 723.
 intensity effect on pH of plant fluids, (59) N.J. 321.
 of different wave lengths—
 effect on chlorophyll development, (60) 808.
 effect on permeability of plant cells, (59) 820.
 effect on plants, (58) 124.
 effect on rate of reproduction of *Volvox*, (56) 517.
 period, daily—
 adaptation of plants to, (53) 518.
 effect on flowering and growth, (54) 519.
 effect on plants, (55) 727; (56) 640; (58) 216.
 localization of response to, (54) 518.
 rays, short-wave, effects, (53) 828.
 reaction of insects to, (58) 346.
 reflection from leaf surfaces, (58) 726.
 reflection from textiles and luster, (54) 895.
 relation to soil moisture phenomena, (56) 415.
 requirements for growth of conifers, (59) 336.
 requirements of coniferous seedlings, (56) 627.
 response of European corn borer to, (55) 762.
 sources, spectral characteristics, (59) 495.
 therapeutic action, (54) 695.
 therapeutic value, (54) 393.
 transmission through various papers, (59) Mich. 41.
 trap for insects, new type, (51) 357.
 traps as indicators of cutworm moths, (59) 656.
 traps, experiments with, (58) 451.
 treatment at infant welfare center, (57) 93.
 Lighting plant, private, fuel costs, (55) Mich. 379.
 Lightning—
 growth changes in sycamore due to, (56) 518.
 injury to tomatoes, (54) 50.
 protection of buildings from, (56) U.S.D.A. 482.
 storms and forest fires in State of Washington, (57) U.S.D.A. 507.
 Lignin—
 and methozyl in wood, relation, (51) 311.
 chemistry of, (51) 501; (57) 202.
 from corncobs, preparation and examination, (58) 802.
 of pine wood, (55) 202.
 Lignocellulose gelatinization, (51) 109.

- Ligyrodes relictus*, notes, (54) Kans. 461.
Ligyryus gibbosus, notes, (54) Kans. 461.
Ligyryus rugiceps, *see* Sugar cane beetle.
 Lilac—
 bacterial disease, notes, (58) 658.
 bacterial leaf blight, notes, (60) West. Wash. 746.
 blight in United States, (59) 247.
 cuttings, studies, (60) 441.
 disease, new in Verona; (55) 351.
 disease, notes, (60) 354.
 leaf blight, notes, (54) 745.
 leaf miner, paper on, (54) 152.
 miner, notes, (52) Wash.Col. 852.
 Phytophthora disease, description, (56) 456.
 Phytophthora disease, epidemic outbreak, (55) 250.
 Lilacs—
 breeding experiments, (57) Can. 237.
 effect of ringing, (52) 125.
 oyster-shell scale affecting, (53) Colo. 154.
 treatise, (60) 543.
 Lilies—
 breeding experiments, (57) Can. 237.
 culture and propagation, (59) U.S.D.A. 43.
 culture in North America, (59) 443.
 day, new varieties, (54) 839.
 diseases of, (60) 646.
 for outdoor culture, (54) 839.
 of eastern Asia, treatise, (54) 244.
 orange day, capsules, seeds, and seedlings, (56) 443.
 Regal, propagation and culture, (56) U.S.D.A. 743.
 seedling, (53) 538.
 varieties, (55) Can. 835.
 Lily foot rot, notes, (58) 555.
 Lima beans, *see* Beans, Lima.
 Limberneck in poultry, (51) 85; (52) Ill. 86, West.Wash. 386; (55) Ind. 69.
 Limberneck-like disease in fowls, cause, (51) 682.
 Lime—*see also* Liming.
 additions, excessive, injury from, (55) 816.
 analyses, (51) N.J. 222, 625; (53) N.J. 220; (55) N.J. 223, 803; (57) R.I. 115; (59) N.J. 23.
 analyses in Maryland, (56) 423.
 analyses, in Ohio, (51) 222.
 and sodium fluosilicate, (59) 455.
 behavior in soil, (51) 819.
 burnt, incorporations in two soil zones, fate, (58) 621.
 carriers containing magnesium, value, (55) Mich. 21.
 caseinate spreader, tests, (58) 256.
 chemical hydrated, for preparation of Bordeaux mixture, (60) 49.
 chlorinated, deterioration, (54) U.S. D.A. 711.
 constituents, determination, (59) 113.
 control law of Oregon, (52) Ore. 515.

Lime—Continued.

- deficiency and soil acidity, studies, (52) 21.
 deficiency determination, (57) 134.
 deficient rations, effect on calves, (59) Mich. 466.
 deficient rations, effect on pigs, (53) Minn. 477.
 effect on—
 alfalfa, (57) N.J. 35.
 alfalfa hay, (59) N.J. 318.
 assimilation of phosphorus, (52) Ohio 213.
 availability of phosphoric acid, (52) 212.
 biological activities of soil, (55) Oreg. 620.
 black alkali soil, (52) Calif. 21.
 cane soils in Philippines, (51) 221.
 corn, (59) Ala. 625.
 corn and wheat, (57) Va. 427.
 cotton, (59) Ala. 625.
 crop yield, (56) 623.
 decomposition of organic matter, (52) 323.
 humus and nitrogen in soil, (51) Tenn. 320.
 hydrangeas, (52) 143.
 lettuce, (54) Mich. 338.
 muck soils, (55) 516.
 nitrification, (51) 516; (56) 509.
 nitrogen utilization, (51) 726.
 nodulation of soy beans, (52) 339.
 peat soil, (56) 824.
 percolation of water through adobe soils, (51) 625.
 phosphate in soil solution, (59) Ala. 617.
 physical properties of soil, (54) 219, Nebr. 315; (57) Nebr. 511.
 potash content of soil, (56) 622.
 potassium in soil solution, (59) Ala. 617.
 sludge digestion, N.J., (57) 779, 781.
 soil bacteria, (55) 320.
 soil conditions and plant growth, (55) 723.
 soil reaction, (55) 222.
 soil treated with manure, (55) 220.
 soy beans, (51) Del. 132, N.J. 369; (55) N.J. 34.
 yield and nitrogen in soy beans, (52) N.J. 735.
 fertilizing value, (51) 120; (52) Del. 119, 120; (55) Ark. 18, Mo. 219, Miss. 527; (56) N.Y. Cornell 335; (57) Mich. 614.
 fixation, cause, (54) 816.
 for poultry, source, (52) Calif. 75.
 forms and manufacture, in England, (51) 221.
 forms and method of mixing, effect on Bordeaux mixture, (57) 444.
 forms, comparison, (52) 818.

Lime—Continued.

- forms, effect on soil bacteria, (56) 215.
 forms, effect on sulfate formation, (56) 215.
 forms, resistance to decomposition by acid solutions, (56) 322.
 high-calcium and high-magnesium, effect on soil reaction, (52) 324.
 hydrated, analysis, (57) 504.
 hydrated, toxicity, (55) N.H. 843.
 in agriculture, rôle and importance, (52) 818.
 in agriculture, treatise, (56) 624.
 in cylinder soils, (52) 119.
 in soils, (58) 723, 724.
 inspection and analyses, (53) Mass. 22; (58) Mass. 724, Vt. 818; (60) Oreg. 719.
 inspection and analyses in Maryland, (52) 623.
 leaching experiments, (51) 212.
 loss from soil by leaching, (53) 117.
 milk of, regulating density, (59) 507.
 niter, *see* Calcium nitrate.
 nitrogen, *see* Calcium cyanamide.
 of different forms, value, (57) Pa. 716.
 on Norfolk sandy loam, value, (60) N.C. 623.
 on soil treated with manure, fate and effects, (56) 322.
 on truck crops, effect, (60) Ohio 140.
 phosphoric acid factor, studies, (51) 724.
 plant response to, relation to soil requirements, (59) Ala. 22.
 products, inspection, (51) Mass. 23.
 products, inspection and analyses, Mass., (54) 722; (56) 625.
 relation to crop production, (52) Va. 422.
 requirements of pigs, (59) 868.
 requirements of soils, *see* Soils, lime requirements.
 solubility, effect of fineness, (54) 219.
 spray mixtures and lead arsenate, (58) 254.
 spreader, simplex, description, (51) Mich. 290.
 status of soils, effect of phosphatic slag, (56) 121.
 symposium, (57) 608.
 test, (55) Miss. 624.
 tests for cucumber beetle, (53) Mo. 450.
 use, (56) W.Va. 23.
 use on different soils and crops, (55) 422.
 uses in agriculture, (53) 621.
 water purification by, (52) 389.
 Lime (fruit)—
 blossom blight and withertip, notes, (57) 145.
 blossom blight, notes, (55) 243; (56) 455.
 die-back, description, (56) 455.

Lime (fruit)—Continued.

- fruit, coloring matter in rind, (53) 717.
- fruit, pectin extraction from rind, (51) 709.
- juice, calcium citrate and citric acid from, (55) 14.
- tree borer in Mysore, (53) 259.
- tree borer, notes, (57) 655.
- tree looper, notes, (53) Conn.State 450.
- trees, fertilizer experiments, (57) 835; (59) 443.
- trees, ligneous zonation and die-back in, (54) 253.
- withertip, cause, (57) 851; (59) 152.
- withertip in Dominica, (55) 350.
- withertip, notes, (55) 656; (56) 455; (60) 344.

Limekiln, plans and specifications, (52) 819.

Limequats, tests, (57) 835.

Limestone—

- analyses in Maryland, (56) 423.
- analyses, in Ohio, (51) 222.
- as source of calcium carbonate for hens, (59) Iowa 71.
- brands and composition, (52) Oreg. 515.
- deposits of the State, (59) N.C. 319.
- effect of fineness, (51) Del. 122; (54) Ill. 313; (57) Mo. 412.
- effect on calcium and magnesium in soil, (51) 320.
- effect on pastures, (51) 232.
- effect on phosphoric acid in superphosphate, (52) 514.
- effect on sulfate losses from soils, (56) 214.
- feeding value, (56) Wis. 765.
- fertilizing value, (53) 218.
- fineness, effect on decomposition of organic matter, (53) 323.
- for pullets, effect of grade, (60) Ky. 261.
- geological sketch, (59) 121.
- grinding, degree of fineness, (58) Mo. 419.
- grit v. oyster shell for poultry, (52) Calif. 75.
- ground, fertilizing value, (52) Ohio 23.
- in rations, effect on egg production, (52) Ky. 76.
- land, clearing, cost studies, (60) 278.
- making more available for farmers, (52) 819.
- pulverizing on the farm, (60) Tenn. 673.
- resources of Illinois, (53) 621.
- separates, disintegration, effect of zone of incorporation, (55) 122.
- soils from tropics, profiles, (60) 512.
- soils, glacial, of Ohio, (54) Ohio 511.
- soils, maintenance of fertility on, (57) 33.
- value for calves, (60) 360.

Lime-sulfur—

- and calcium arsenate spray, (56) 107.
 - and lead arsenate, combining, methods, (59) Iowa 39.
 - and lead arsenate spray, chemical effect of spreader, (54) 710.
 - and lead arsenate spray, chemical studies, (52) N.Y.State 501; (54) 709.
 - as egg-killing wash, (53) 357.
 - dry-mix, fungicidal value, (53) N.J. 847.
 - dry-mix spray, chemical studies, (58) 254.
 - for San José scale, (51) 361.
 - fungicidal value, (51) Ohio 246; (54) Ill. 350.
 - injury, (55) 543.
 - liquid, v. sulfur dust for apples, (52) Ind. 141.
 - solution and substitutes, tests, (55) Mass. 254.
 - solutions, effect of added arsenic, (53) N.H. 444.
 - sprays for vineyards and orchards, (53) 250.
 - sprays, spreaders for, (51) Mo. 746.
 - substitutes for San José scale, (54) U.S.D.A. 658.
 - tests, (51) 252.
 - times for spraying with, (53) 246.
 - toxicity, (60) 60.
 - v. Bordeaux mixture, (51) Ohio 748.
 - v. Bordeaux mixture for brown rot, (51) 548.
 - v. oils for scale control, (59) N.C. 758.
- Liming—see also Lime.
- and soil acidity, (55) 517.
 - crop response to, relation of soil reaction, (52) 17.
 - delayed effect, (58) 122.
 - effect on—
 - availability of phosphorus in superphosphate, (59) 425.
 - availability of soil potash, (57) Tenn. 615; (58) 621.
 - biochemical activity of acid soils, (56) Conn.Storrs 624.
 - crop yields, (55) Tenn. 723.
 - grassland, (51) 216; (54) 435.
 - movement of soil compounds, (59) 115.
 - plant growth, (53) 219.
 - red and sweet clover, (57) Ohio 114.
 - sulfate retention in soil, (53) 320.
 - sulfur oxidation, (59) 720.
 - tomato wilt, (54) Mo. 744.
 - truck crops, (51) 143.
 - experiments, (53) Ohio 217; (54) Ohio 123, Tenn. 217; (55) Miss. 517; (57) 616; (58) Ill. 316.
 - for acid soils, (54) 422.
 - for ammonium sulfate and sodium nitrate fertilization, (57) 813.

Liming---Continued.

- in western Ohio, (52) 422.
- materials, analyses, (57) N.J. 214.
- materials in Maryland, analyses, (55) 422.
- materials, relative value, (55) Ind. 18.
- materials, tests, (57) N.C. 213.
- New York soils, (51) 423.
- of podsol soils, (54) 518.
- of red laterite soils, effect, (54) 811.
- papers on, (60) 511.
- practical information, (55) Calif. 223.
- returns from, calcium as indicator, (53) 819.
- studies, (52) Guam 214; (58) 723.
- use of marls for, (51) Ky. 423.
- value on Cecil clay loam, (60) N.C. 622.

Wisconsin soils, (51) Wis. 221.

Limnaea stagnalis, development of liver fluke in, (52) 584.

Limnerium crassifemur, variability of life cycle, (52) 561.

Limnobaris rectirostris, notes, (53) 363.

Limonium pectoralis, notes, (60) 654.

Limothrips cerealium, notes, (56) 659.

Limu, nutritive value, (58) 83.

Lincoln Memorial Library dedication at South Dakota College, (57) 601.

Linden disease, (58) 252.

Linden seedling structure, (56) 538.

Lindorus lophanthæ, notes, Guam, (56) 251; (59) 554; (60) 844.

Linen---

- cloth production, processes, (55) 796.
- effect of washing agents, (54) 597.
- in paper pulp, determination, (55) 14.
- industry, relation to research, (53) 530.

Industry Research Association, report, (51) 37; (57) 597; (59) 694.

weaving, ancient and modern, (53) 530.

Linkage---

- and synthetic lethality in barley, (56) 630.

- between flower color and self-sterility factors, (55) 732.

- between sweet-defective and sugary endosperm in corn, (54) 825.

- effect of X-rays and temperature, (53) 428; (54) 324.

- from offspring of selfed heterozygotes, estimation, (60) 630.

- group, third, in *Oenothera*, (56) 130.
- groups IV and VI in *Drosophila virilis*, (54) 324.

- in barley, (60) 726.

- in corn, (55) 526.

- in corn seed characters, variability, (57) U.S.D.A. 29.

- in inheritance between albinism and brown pigmentation in rabbits, (54) 29.

Linkage---Continued.

- in Japanese morning-glory, (58) 825.
- in mice, (57) 625; (58) 528; (60) 219.

- in *Oenothera*, (52) 431; (59) 126.

- in plants, (55) 28.

- in rabbits, (57) 323.

- in rats and mice, sex difference in, (56) 130.

- in rats and mice, variations in, (52) 128.

- in rice, (54) 128; (58) 825.

- in soy beans, (54) 825.

- in sweet peas, (53) 331.

- in wheat, (57) 29.

- intensities, calculating, (58) 425.

- of albino allelomorphs in rats and mice, (53) 129.

- of dark-eye and color in mice, (53) 523; (55) 225.

- of Dutch, English, and Angora in rabbits, (51) 430.

- of hereditary factors in animals, (55) 732.

- of pubescent node and beard factors in wheat, (56) 130.

- of size, shape, and color genes in tomato, (60) 527.

- relations in sex chromosome of fowls, (54) 325.

- studies, (58) 526.

- values, calculating, (51) 736; (56) 521.

Linognathus---

- piliferus*, notes, (53) 53.

- vituli* on cattle, control, (58) Ala. 450.

Linseed---

- hybrids, studies, (51) 30.

meal---

- and cottonseed meal, comparative nutritive value, (58) 864.

- and tankage, feeding value, (53) Wis. 470.

- cake, feeding value, (51) Kans. 74, 676.

- feeding, effect on quality of hog and milk fats, (58) 568.

- feeding value, (51) Mo. 776; (53) Ind. 175, Iowa 779; (54) 160,

- Fla. 367, Mo. 762; (55) 163,

- Ohio 160, Ohio 674; (56) Ohio 261, Wis. 762; (57) Mo. 267;

- (58) Mo. 467; (59) N.C. 773, Wis. 66.

- nutritive value for different animals, (59) Ohio 258, 862.

- prices and index, (56) Ohio 285.

- v. meat scraps for laying hens, (59) Ohio 263.

- value for egg production, (53) Mo. 471.

- oil and meal, uses, (54) N.Dak. 332.

- oil characteristics, (58) S.Dak. 226.

- oil, effect on calcium and phosphorus assimilation, (51) 374.

- oil, irradiated, antirachitic properties, (52) 762.

Linseed—Continued.

- oil, irradiated, effect, (53) 568.
- oil, oxidation, effect of carbon pigments, (55) 495.
- oil production in Argentina, (52) 228.
- oil soap, germicidal properties, (54) 393.
- varnishes and oils, free fatty acid in, (53) 810.
- wilt, notes, (57) 540; (58) 143; (60) 546.

Linum—

- genus, genetics, (60) 324.
- species, chromosomes, number, size, and shape, (59) 621.
- usitatissimum, bast fibers of, (56) 697.

Lions, mountain, in Arizona, habits, (56) 656.

Liothrips spp. on lilies, (53) 858.

Liothrips vaneeckei, notes, (53) 52.

Lioy, P., as a dipterologist, (57) 553.

Lipa leaf spot, notes, (55) 244.

Lipeurus heterographus, notes, (52) 355.

Lipid—

- content of blood, relation to menstrual cycle, (57) 91.
- excretion, source and purpose, (55) 693.
- excretion, studies, (57) 91.
- use of term, (55) 201, 693.

Lipids, antirachitic value, (60) 197.

Lipins—

- and sterols as sources of error in buttermilk tests for fat, (60) 313.
- effect on interchanges between cells, (53) 822.

Lipochromes in etiolated wheat seedlings, (52) 610.

Lipoid phosphorus in blood, determination, (53) 12.

Lipoids—

- effect on gluten quality, (52) 202.
- in flour, noodles, etc., determination, (51) 205.
- rôle in permeability, (59) 122.

Liponyssus—

- bacoti in South Australia, (58) 166.
- bursa, control, (60) 266.

Liquids, colloidal, drying apparatus, (58) 112.

Liquors, malted, dietetic value, (52) 365.

Listroderes—

- apicalis, notes, (57) 655.
- noeiva, buff-colored, notes, (51) 662.
- noeiva, studies, (52) 662.
- obliquus in California, (58) 164.

Listrionotus—

- latiusculus, economic importance, (55) 560.
- latiusculus, studies, (52) 758; (58) 561.
- rudipennis, life history notes, (55) 560.
- rudipennis, notes, (56) Iowa 855.

Litchi—

- notes, (57) Hawaii 335.

Litchi—Continued.

- nut, Chinese, vitamins A and B in, (58) 691.

propagation studies, (55) Hawaii 535.

Lithobius mordax, notes, (55) Ark. 50.

Lithocolletis platani, parasite of, (52) 663.

Lithuanian Agricultural Academy, notes, (57) 499.

Lithurgus apicalis, injury to telephone poles, (53) 154.

Litmus milk culture for study of nodule organisms, (54) 725.

Litter for poultry houses, (56) Ohio 271.

Liver—

- action of tartar emetic on, (58) 676.
- active principle effective in pernicious anemia, (59) 692.

ash, effect on pernicious anemia, (59) 793; (60) 695.

cocktail for pernicious anemia patients, (57) 898.

cooking for pernicious anemia, (60) 289.

diet for anemia and other diseases, (60) 899.

diet for pernicious anemia, (58) 92, 196, 596, 897; (59) 193, 495, 598; (60) 695.

effect on blood regeneration, (53) 867.

extracts, preparation, (58) 93.

fats and lipoids in, following phosphorus poisoning, (51) 370.

fatty, cause of death in ewes, (54) 171.

flake—

development, (52) 584; (58) 667.

disease in Australia, treatment and prevention, (59) 172.

disease in sheep, (54) 173.

extracts, anaphylactic experiments, (60) 868.

in cattle, (57) P.R. 468.

in goats, treatment, (58) 176.

in New Zealand, intermediate host, (58) 679.

in sheep and braxy-like disease, (58) 676; (60) 179.

in sheep, artificial infestation, (60) 478.

in sheep, course of invasion, (59) 475.

in sheep, treatment, (58) 279, 577.

intermediate host, (56) 175.

injury from carbon tetrachloride, effect of diet, (52) 584.

lesions in pigs farrowed dead, (57) Ind. 669.

nature of fraction favorable to pernicious anemia, (58) 92.

of cats and dogs damaged by carbon tetrachloride, factors affecting, (56) 572.

of rats, vitamin C persistence in, (53) 866.

relation to carbohydrate metabolism, (53) 461.

respiratory activity and vitamin B content, (52) 65.

Liver—Continued.

- rôle in action of insulin, (53) 166.
- rot of cattle, treatment, (59) 172.
- rot of sheep, male fern extract for, (57) 673.
- rot of sheep, notes, (56) 659; (59) 876.
- rot of sheep, treatment, (55) 474; (60) 373.
- seasonal changes in weight, (52) 669.
- toxic action of cystine on, (58) 293.
- vitamin A in, (60) 195.
- vitamin C in, from chickens on scorbutic diet, (53) 671.

Livers, human and animal, relative vitamin A values, (58) 390.

Livestock—*see also* Animals, Cattle, Sheep, *etc.*

- activities on range, (58) Tex. 763.
- admission, State sanitary requirements, (51) U.S.D.A. 281.
- and animal products, statistics, (55) 887.
- and animal products statistics of Canada, (52) 95, 792.
- and Meat Board, National, paper on, (52) 168.
- and poultry raising, textbook, (54) 290.
- and products, marketing, (56) Kans. 886.
- auction sales organizations, (56) Ky. 788.
- breeding and feeding practices, (60) Okla. 463.
- breeding and improvement, (56) 760.
- breeding, bearing of lethal factors on, (60) 630.
- breeding, formalism in relation to genetics, (53) 369.
- breeding methods, European, (57) 660.
- breeding on the farm, (60) Okla. Pan-handle 795.
- breeds of Australia and New Caledonia, (52) 167.
- breeds, pure, Mendelian analysis, (51) 228, 525; (54) 430; (56) 817.
- British, observations, (57) 660.
- Chicago trade in, (51) 298.
- college, at 1923 international, (51) Mich. 96.
- cooperative marketing, (54) Nebr. 784; (55) Wis. 81; (60) N.Dak. 888.
- cooperative marketing in United States, (52) 93, 192.
- cooperative sale in Germany, (51) 296.
- cooperative sales organization, (57) Wis. 288.
- cooperative shipments, prorating expenses, (54) 183.
- cost of production, Ohio, (59) 681; (60) 83.
- crisis in La Plata region, effect, (52) 394.
- dipterous enemies of, (54) 459.
- disease production from molded silage, (51) 382.

Livestock—Continued.

- diseases, (56) Fla. 878.
- effect of loco weed, (54) Kans. 72.
- enterprises, treatise, (60) 686.
- estimating, problems in, (59) 482.
- experimental work, factors in, (51) 569.
- extension work, coordination, (57) 660.
- farming for mountain region, systems, (60) N.C. 678.
- farming in Black Prairie Belt, systems, (58) U.S.D.A. 382.
- feeding, (51) 670.
- feeding and care, distance walked in, (58) Ohio 684.
- feeding experiments, (57) 761, 763; (58) U.S.D.A. 166; (59) Colo. 663; (60) Colo. 68.
- feeding in France, colonial products for, (51) 274.
- feeding, relation to health, (51) 180.
- feeding, rôle of minerals and vitamins, (54) 561.
- feeding, treatise, (51) 569; (52) 866; (56) 69; (57) 168, 366.
- financing, (54) U.S.D.A. 80.
- French colonial, exploitation, (53) 167.
- husbandry on range and pasture, (60) 357.
- imported, acclimatization, (60) 869.
- improvement, (52) 674.
- improvement in Philippines, treatise, (60) 854.
- improvement, manual, (56) 728.
- improvement, methods, (53) U.S.D.A. 95.
- in China, future for, (51) 193.
- in Germany, worm parasites of, (60) 355.
- in mythology and religion, (60) 461.
- industry and corn borer infestation, (57) 763.
- industry, financing, treatise, (57) 481.
- industry, new set of index numbers, (57) 762.
- industry, parasite problems, (57) 377.
- industrial, prosperity, relation to parasitological research, (59) 777.
- industry, rôle of phosphorus in, (52) 670.
- Insects and parasites affecting, Tex., (55) 355; (57) 160; (59) 759.
- inspectors, classes for, (55) 677.
- insurance in Belgium, (51) 489.
- interstate movement, regulations, (53) U.S.D.A. 667.
- iodine for, (58) 762.
- judging, (53) 397.
- judging and selection for type, (54) 265.
- judging and selection, treatise, (53) 867.
- judging, elements, treatise, (58) 688.
- judging, manual for club members, (51) 797; (52) 196.
- Kentucky, marketing, (57) Ky. 786.

Livestock—Continued.

- laws and regulations of Kansas, (58) 472.
- losses at stockyards, (59) Ohio 284.
- marginal production, (53) 571.
- market classes and grades, (55) U.S.D.A. 562.
- marketed in Canada, origin and quality, (51) 274; (54) 466; (56) 761.
- marketing, (54) Ky. 387; (55) 885; (57) Ohio 188, Ind. 680.
- associations, cooperative, (60) Iowa 485.
- at South St. Paul, (58) 589.
- by terminal associations, (59) U.S.D.A. 89.
- Commission, Saskatchewan Overseas, report, (60) 679.
- cooperative, (54) Nebr. 784; (55) Wis. 81; (60) N.Dak. 888.
- cooperative, future, (52) 168.
- cooperative, in United States, (52) 93, 192.
- in France, (53) 192.
- in Great Britain, (58) 889.
- organization in United States, (53) 297.
- treatise, (59) 487.
- mineral deficiencies in, (53) 573.
- mineral nutrition, (55) 57.
- mineral requirements, (51) Wash.Col. 670, Ill. 771; (53) 369; (55) 260; (57) Wis. 64.
- numbers in Province of Buenos Aires, (54) 264.
- on farms in Sweden, (51) 592.
- parasites, calendar for, (59) U.S.D.A. 777.
- parasites in Great Britain, treatise, (58) 661.
- parasites of, combating, (59) 170.
- parasites of, in America, (57) 771.
- pedigree, effect on ordinary farm animals, (51) 73.
- pedigrees, calculating coefficients of inbreeding and relationship, (54) 324.
- physiology, textbook, (54) 71.
- poisoning—*see also* Sheep poisoning, Plants, poisonous, and *specific plants*.
- arsenical, (53) 380.
- by alkali water, (52) 199.
- by bracken, (55) 574.
- by chokecherry, Nev., (55) 371; (59) 276.
- by death camas, (51) U.S.D.A. 679.
- by Nuttall's death camas, (54) U.S.D.A. 772.
- by plants in Great Britain and Ireland, (56) 572.
- by rayless goldenrod, (55) U.S. D.A. 372
- by Solanaceae species, (57) 873.
- by spoiled sweet clover, N.Dak., (59) 272, 879.
- by sweet clover hay, (59) 470.

Livestock—Continued.

- poisoning—continued.
- etiology, (60) 867.
- from grasshopper bait, (59) 353.
- with purple vetch, (58) 878.
- with wild tobacco, (58) U.S.D.A. 874.
- production—
- and prices, trends, (55) 786.
- farm costs and practices in, (59) Wis. 483.
- in Southwest, (60) U.S.D.A. 184.
- on Belle Fourche Project, (53) U.S.D.A. 390.
- yearbook statistics, (51) U.S.D.A. 795.
- productive feeding, treatise, (55) 56.
- products, export, trends in, (57) 763.
- pure breeds, Mendelian analysis, (51) 228, 525; (56) 817.
- range, experiment station, (57) 659.
- range, food of, (58) 166, 564.
- range, kind and nature of browse, (57) 863.
- relation to fertility maintenance, (51) 725.
- review for 1927, (60) U.S.D.A. 187.
- Sanitary Association, proceedings, (57) 179.
- saving from starvation during droughts, (53) U.S.D.A. 168.
- scientific feeding, treatise, (51) 569.
- shipping associations, (58) Ill. 378.
- shipping associations, cooperative, (55) U.S.D.A. 689.
- shipping, cooperative, (51) 893; (52) Ohio 788.
- shipping, feeding and handling, (56) 761.
- shipping in Ohio, (51) Ohio 893.
- short courses, (59) U.S.D.A. 685.
- showing by colleges, (57) 660.
- slaughtering methods, origin and evolution, (58) 566.
- statistics, (53) 597.
- statistics of Canada, (54) 187.
- transportation investigation, (53) 268.
- trucking by Illinois shipping associations, (60) Ill. 679.
- twin and multiple births in, (56) 761.
- types and market classes, treatise, (51) 274.
- vitamins for, (51) Ill. 771.
- water suitable for, (52) 671.
- young, prevention of losses, (57) U.S.D.A. 771.
- Living conditions on farms of Schoharie Co., N.Y., (53) U.S.D.A. 692.
- Living, cost of, *see* Cost of Living.
- Lixophaga diatraeae, bionomics, (60) 249.
- Lixus punctiventris, notes, (57) 264.
- Lizards—
- of Kansas, insect food and feeding habits, (60) 355.
- Porto Rican, food of, (53) 51.
- Lloyd's Alkaloidal Reagent, notes, (52) Calif. 59.

- Lobster, canned, discoloration in, (51) 206.
- Lochhead, W., life of, (60) 844.
- Loco weed, effect on livestock, (54) Kans. 72.
- Locust—
 black, culture, (60) 145.
 black, plantations, (52) Idaho 842.
 black, plantations, cuttings in, (56) Pa. 142.
 black, root distribution, (60) Pa. 342.
 borer, control, (57) 859.
 fungus, effects on host, (56) 459.
 tree bark, proteins of, (54) 203.
- Locustacarus trachealis in tracheal system of Orthoptera, (55) 660.
- Locusts—
 behavior amidst dusted plants, (60) 162.
 control with contact insecticide, (56) 857.
 egg parasite of, (54) 154.
 epidemic among, in Southwest Africa, (54) 154.
 in South Africa, (54) 455.
 migratory—
 control, (56) 256.
 data for Philippines, (59) 458.
 effect of temperature, (56) 360.
 in Hungary, (57) 554.
 in the Sudan, (56) 459.
 in Vera Cruz, (54) 54.
 infestation with bacterial disease, (59) 856.
 mass invasion in northern Caucasasia, (59) 553.
 new scelionid parasites of, (60) 656.
 notes, (54) 258.
 of tropical America, dipterous parasites of, (56) 262.
 organization for combating, status, (56) 59.
 variability, bibliography, (59) 853.
 varying color in, (57) 553.
 notes, (59) 652.
 nymphs, notes, (59) 553.
 outbreak in India, (58) 663.
 periodical, *see* Cicada, periodical.
 summary, (60) 649.
- Loeffleria nevermanni—
 cause of foot-and-mouth disease, (51) 680.
 n.g. and n.sp., description, (52) 179.
- Loess, composition, (53) 418.
- Loganberries—
 nonvolatile acids of, (58) 711.
 preservation by freezing, (52) Calif. 15.
- Loganberry—
 beverages, notes, (52) Calif. 14.
 crown borer, paper on, (51) 55.
 crown gall, notes, (56) 653.
 diseases, notes, (55) Oreg. 650.
 dwarf, notes, (57) 849; (60) Oreg. 745.
 dwarf, transmission by aphids, (58) 151.
- Loganberry—Continued.
 juice, chemical composition, (55) 408.
 mosaic disease, notes, (51) West.Wash. 655; (56) 249.
 worm, notes, (60) West.Wash. 756.
- Logging—
 aerial photography in, (52) 345.
 machinery, description, (54) 583.
 time studies, (52) Calif. 47.
- Logs—
 bark deductions from, tables, (54) 447.
 shrinkage rate, effect of bark removal, (51) 444.
 transportation on sleds, (54) 877.
- Loin disease of cattle, notes, Tex., (52) 83; (54) 379; (55) 97, 371; (57) 180; (59) 776.
- Lolium—
 perenne, self- and cross-fertilization in, (57) 131.
 spp., endophytic mycorrhiza in roots, (58) 821.
 spp., relationships and characteristics, (51) 232.
- Longevity—
 effect of nutrition, (60) 787.
 of offspring, relation to age of parents and birth rank, (54) 28.
- Longitarsus—
 menthae and L. menthaphagus, synonymy, (55) Mich. 357.
 menthae n.sp., description, (52) Mich. 758.
 menthae, notes, (52) 499.
 menthaphagus, studies, (55) Mich. 357.
 nigripennis, life history notes, (58) 760.
 parvulus, notes, (59) 855.
 sp., notes, (54) Mich. 656.
- Longspurs, food habits, (52) U.S.D.A. 354.
- Lophobaris, new genus, erection, (60) 655.
- Lophoptilus eloisella—
 habits and life history, (58) 59.
 parasite of, (58) 863.
- Lophyrus sertifer parasites, biology, (58) 863.
- Lopidea davisii, summary, (58) Md. 858.
- Loquats, fungus parasites of, (54) 453.
- Loranthaceae—
 celastroïdes, physiology of, (51) 226.
 of India and host plants, (56) 752.
- Loranthus—
 parasitic, notes, (57) 838.
 pentandrus, notes, (53) 153.
 spp., notes (53) 148; (54) 254.
- Loroglossoides in orchids, (58) 524.
- Loroglossum hircinum, fungicidal action of tubers, (55) 351.
- Loss of head in standard elbows and tees, tests, (51) 788.
- Lotta Educational Fund, editorial notes, (58) 601.
- Lotus—
 borer, notes, (59) Iowa 55.
 crown gall, germicides for, tests, (57) Calif. 244.

Lotus—Continued.

Indian, ancient but still viable fruits, structure, (55) 836.
seeds, longevity, (51) 39.

Louisiana—

State Livestock Sanitary Board, report, (52) 280.

Stations, notes, (51) 398, 900; (53) 196, 499; (54) 699; (55) 198; (59) 198, 397, 599.

Stations, report, (51) 898; (53) 599; (55) 495; (57) 598.

Sugar Station, notes, (58) 97.

University, notes, (52) 698; (53) 196, 499; (54) 699; (55) 198, 698; (59) 198, 397, 599, 797.

Louping-ill, notes, (54) 71; (55) 72; (57) 182.

Loxa flavicollis, irritation due to secretion from, (56) 757.

Loxophaga sp., notes, (60) Fla. 160.

Loxostege sticticalis, *see* Beet webworm.

Luargol, treatment for bovine piroplasmiasis, (58) 175.

Lubricants—

American, treatise, (59) 178.

effect on mechanical friction, (51) 87.
flow through crank shaft and connecting rod bearings, (58) 376.

for different types of machinery, (54) 583.

Government specifications, (52) 784.
petroleum, studies, (58) 377.

viscosity at high pressure, (51) 88.

Lubrication—

and lubricants, (54) 583.

data from cooperative fuel research, (56) 578.

fluid film and surface action, (56) 577.

industrial, rôle of oiliness in, (56) 577.

little understood factors in, (56) 578.
mechanism, (52) 186.

of bearings, theory, (52) 687.

of plain bearings, (55) 882.

rôle of graphite in, (56) 577.

theory, (56) 577.

theory and practice, treatise, (57) 502.

viscosity of oil, and power, (56) 578.

Lucern, *see* Alfalfa.

Lucilia sericata—

larvae, effect of feeding period on sex ratio and size, (60) 458.

notes, (58) 163; (60) 562.

parasites of, (56) 862; (59) 660.

Luciliini, separation of sexes, tables, (51) 661.

Ludius—

aeripennis, life history and control, (57) 860.

noxius, rearing, (52) 856.

spp. in Pacific Northwest, (53) 363.

virens, notes, (60) 654.

Lugol's solution for foot-and-mouth disease, (56) 378.

Lumbang oil, llinolic acid derivatives, (58) 201.

Lumber—*see also* Timber and Wood.

air seasoning in Douglas fir region, (56) 647.

American, recommended standards, (51) 44.

Chicago trade in, (51) 298.

decay due to *Poria incrassata*, (54) 255.

fire-killed, borer injury, (51) 554.

industry of Philippines, (54) 143.

kiln drying, demonstration courses in, (52) U.S.D.A. 496.

market, Australian, (55) 841.

operations, outline for study, (51) 693.

production and products in 1923, (54) 841.

production in Shansi, (54) 840.

rot, control, (51) 156.

seasoning, handling, and care, (60) 779.

small dimension, manufacture and use, (58) 181.

softwood, air seasoning, (60) U.S.D.A. 743.

softwood, short-length, industrial uses, (55) U.S.D.A. 540.

storage rots, studies, (55) 351.

Lumbering operations, handbook, (51) 245.

Lung disease of lambs and sheep, (60) 475.

Lung fat, effect on growth, (53) 367.

Lunger disease of sheep, (59) Mont. 80.

Lungs, effect of diet, (55) 895.

Lungworms—

in equines, (57) 357.

in foxes, treatment, (53) 787.

in pigs and cattle, (57) P.R. 468.

in pigs, life history studies, (55) 374.

in pigs, nodules produced by, (57) 876.

in pigs, viability, (58) Ill. 368.

in sheep and goats, (59) 475.

in silver-black foxes, (55) Ore. 677.

Luperodes thorsicus, notes, (57) 456.

Luperodes varicornis, notes, (60) S.C. 754.

Lupine—

alkaloids, toxicity, (54) 871.

nodules, notes, (58) 822.

seedlings, reduction of nitrates during autolysis, (55) 426.

Lupines—

culture experiments, (51) 36.

decomposition in soil, (53) 418.

development and seed alkaloid content, (55) 424.

effect of acid soil, (54) 213.

effect of calcium cyanamide, (57) 150.

importance in agriculture, (51) 502.

migration of alkaloids in, (58) 421.

monograph, (54) 223.

nitrogen fertilization experiments, (52) 123.

nodules in, (60) 123.

papers on, (57) 729.

poisonous to livestock, (60) Wyo. 776.

- Lupines—Continued.
 silvery, poisonous to sheep, (54) Wyo. 772.
 solar energy used by, (53) 508.
 spray irrigation for, (52) 287.
 variety tests, (57) 227.
- Luteal cells in fowl ovary, studies, (53) 329.
- Lycanidae, classification, (57) 554.
- Lycchee stink bug, notes, (55) 457.
- Lycidocoris mimeticus, notes, (58) 57.
- Lycopersicum—
 genetic studies in, (54) 428.
 linkage of size, shape, and color genes in, (58) 525.
- Lycosa spp., habits and injury from, (58) 855.
- Lycotocoris campestris, notes, (56) Va. 556.
- Lycetus planicollis, temperatures fatal to, (52) 458.
- Lycetus powder-post beetles, control, (55) U.S.D.A. 55.
- Lyda signata, parasites of, (51) 55.
- Lygaeonematus erichsonii mortality, factors affecting, (59) 462.
- Lygidea mendax, *see* Apple redbugs.
- Lygocerus niger, notes, (57) 60.
- Lygus—
 elisus on cotton, studies, (58) U.S.D.A. 58.
 pabulinus, biology, (52) 658.
 pabulinus, feeding methods, (58) 455.
 pabulinus, studies, (60) 846.
 pratensis, *see* Tarnished plant bug.
- Lymantria—
 dispar, supermale, development of sex organs, (54) 128.
 monacha, *see* Nun moth.
- Lymnaea—
 pervia as intermediate host of liver flukes, (56) 175.
 spp., notes, (54) 463.
- Lymph glands, regional, of food animals, (59) U.S.D.A. 876.
- Lymph, seed, virulency, (58) 473.
- Lymphangitis—
 bovine, studies, (58) 474, 774; (59) 174; (60) 478.
 epizootic, rôle of staphylococci in, (52) 483.
 epizootic, treatment, (58) 876.
- Lynchia maura, bionomics, (58) 451.
- Lynx, trematode affecting, (55) 373.
- Lyonetia clerckella, biology and control, (56) 758.
- Lyonetia speculella, notes, (51) 256.
- Lytotropic series and ξ -potential, (60) 503.
- Lyperostia—
 exigua, disseminator of surra, (58) 678.
 irritans, *see* Horn flies.
- Lysimeter—
 drainage waters, composition, (60) 509.
 movable, for soil studies, (55) 509.
 percolates, effect of plants, (51) 321.
 studies, (58) 116; (60) N.Y.State 419.
- Lysine, synthesis, (53) 204, 261.
- Lysiphlebus sp., notes, (52) Mich. 354.
- Mabolo, vitamin B. in, (57) 94.
- Macadamia nut—
 and oil, analyses, (54) 109.
 culture experiments, (59) Hawaii 632.
 notes, (57) Hawaii 335.
- Macdonald College, notes, (55) 498.
- Machilidae, importance, (57) 553.
- Machinery, *see* Agricultural machinery.
- Machines, calculating, use in finding correlation coefficients, (56) 330.
- Macracanthorhynchus hirudinaceus—
 intermediary hosts of, (58) 164.
 notes, (57) 63, P.R. 468; (60) 76.
- Macranthera lecontei, cross-pollination by rubythroat, (56) 754.
- Macrocentrus—
 abdominalis, biology, (57) 366.
 ancylivora, biology, (55) 460; (60) N.J. 62.
 ancylivora, notes, (59) Conn.State 61; (60) Conn.State 751, Md. 841.
 sp., notes, (57) N.J. 756.
- Macroductylus subspinosus, *see* Rose chafer.
- Macrophoma—
 corchori, notes, (54) 246.
 corchori on jute, (54) 248.
 eucalyptorum, notes, (57) 450.
 musae, notes, (59) 246, 547.
 phaseoli, notes, (54) S.C. 648; (58) 147.
 phaseoli, spore cultures, (58) S.C. 646.
 salicis, notes, (58) 449.
 theicola, notes, (56) 851.
- Macrophomia phaseoli n.comb., studies, (60) 346.
- Macrosiphum—
 cornelli, biology, (57) 452.
 cornelli, parasites of, feeding habits, (56) 862.
 gei, notes, (56) 58; (58) 663.
 gei, transmission of mosaic disease by, (57) 359.
 rosae glauca, notes, (58) 261.
 rosae, parasite of, (52) N.Y.Cornell 360.
 solanifolii, feeding methods, (58) 455.
 solanifolii, notes, (56) N.Y.State 253; (57) 645; (58) 452.
 synonymy and history, (58) 859.
 urticae, parasite of, (53) 260.
- Macrosporium—
 cucumerinum, notes, Del., (52) 843; (54) 647.
 cucumerinum, studies, (54) 48.
 infection phenomena, (58) 543.
 leaf blight of cantaloupe, notes, (57) 343.
 lycopersicum, notes, (58) 647.
 parasiticum, notes, (51) 847.
 solani, control, (51) 156; (52) N.J. 744.
 solani, notes, (54) Fla. 342; (55) N.J. 43; (57) 845; (59) Va.Truck 244.
 sp., notes, (52) 748; (54) Del. 647, Fla. 245; (59) 534, 540.

Macrosporium—Continued.

spp., control, (51) 152.

tomato, notes, (55) 346; (57) 640.

Madonna lily, production, (53) U.S.D.A. 441.

Madremyia saundersii, notes, (59) Me. 558.

Maggots, corrosive sublimate treatment for, (56) N.Y.State 846.

Magnesia—

effect on tobacco, (59) N.C. 735.

toxicity, buffering effect of silica, (53) 517.

Magnesium—

ammonium arsenate, precipitation and conversion to pyroarsenate, (58) 714.
ammonium phosphate crystals in Brucella cultures, (57) 469.

arsenate for Mexican bean beetle control, burning from, (60) S.C. 755.

calcium, and phosphorus in diet, effect of variations in, (59) 862.

carbonate in soil, decomposition, (51) Tenn. 320.

chemistry, manufacture, and use, (53) 621.

chloride for neutralization of water distilled in metallic vessels, (56) 323.

chloride, hygroscopic properties, (55) 796.

content of rats, (57) 892.

crop-producing power, (59) 514.

deficiency of sandy soils, (59) N.C. 721.

determination in animal substances, (52) 614.

determination in bone, (56) 14.

determination, methods, (55) 205; (57) 311, 312.

effect of manure and irrigation, (53) 218.

exchangeable, relation to soil type, (60) 208.

fixation from burnt limes, limestone, and dolomite incorporations in soil, (56) 214.

in animal body, distribution, (58) Mo. 460.

in soils and waters, (60) S.C. 708.

in sugar cane juice, determination, (58) P.R. 508.

leaching experiments, (51) 212.

limestone, effect on sand-drown of tobacco, (53) 735, N.C. 854.

losses from limed soils, (56) 721.

losses from soils, (51) Tenn. 320; (56) 213.

metabolism in avitaminosis, (52) 66.

metabolism of cows, effect of protein in rations, (52) Mo. 478.

metabolism on purified diets, (55) 894.

oxide dust injury to crops, (56) 27.

oxide effect on calcium and magnesium in soil, (51) 320.

oxide fumes, effect of inhalation by animals, (58) 674.

Magnesium—Continued.

perchlorate trihydrate, use as drying agent, (51) 410.

preparation, water-soluble, fertilizing value, (54) 423.

pyrophosphate reduction by carbon, (59) 413.

salts, stimulating effect, (57) 718.

salts, toxicity and accumulation in arid soils, (52) N.Mex. 318.

sulfate action on Portland cement, (56) 281.

sulfate administration with carbon tetrachloride, effects, (56) 572.

sulfate, anthelmintic value, (52) 777.

sulfate, daily administration, effect on blood volume, (60) 492.

sulfate, effect of long-continued soil treatment with, (60) N.Y.State 422.

Magnolias, treatise, (57) 341.

Magpies—

control in Wyoming, (58) 450.

life history and control, (58) U.S.D.A. 343.

Maguey, production tests, (60) Guam 814.

Magyars, dietary habits, (55) 188.

Mahogany—

cobweb disease, (57) 652.

culture experiments, (55) V.I. 339.

diseases and pests, (57) 652.

forests in British Honduras, reproduction in, (58) 843.

insects affecting, (56) 459.

trees, distribution and culture, (56) 46.

value for reforestation, (60) P.R. 742.

Maine—

Station, abstracts of papers, (52) 497; (58) 396.

Station bulletins, index, Me., (56) 299; (58) 396.

Station, notes, (53) 697; (55) 98; (56) 299; (57) 98; (58) 300, 900; (59) 899.

Station, organization list and papers, (54) 396.

Station, papers, bulletins, etc., index, (59) 598.

Station, report, (59) 598.

University, notes, (53) 197, 697; (57) 98; (58) 97, 300.

Maize, *see* Corn.

Mal de caderas, treatment, (51) 83, 382; (52) 582.

Malacophagula neotropica n.sp., description, (54) 460.

Malacosoma americana, *see* Tent caterpillar, apple and eastern.

Malacosoma disstria, *see* Tent caterpillar, forest.

Malaria—*see also* Anopheles and Mosquitoes.

absence around Amsterdam where mosquitoes occur, (60) 561, 652.

absence of, in Egypt, relation to clover cultivation, (59) 559.

carriers and control, (59) 356.

- Malaria—Continued.
 control at Quantico, Virginia, (60) 652.
 control in Illinois, (57) 166; (59) 652.
 epidemic in Alabama, (57) 166.
 host resistance and types of infection, (55) 678.
 importance of animal prophylaxis in, (52) 155.
 in Australia, (52) 557.
 in birds, cause, (58) 678.
 in Italy, spontaneous regression, (59) 356.
 prevention, (52) 480.
 prevention and the engineer, treatise, (56) 58.
 problem in Porto Rico, (58) 349.
 relation to anopheline mosquitoes, (54) 260.
 transmission in Philippines, (60) 652.
- Malarial parasite, new, of birds, (60) 580.
- Male fern—
 anthelmintic value, (55) 271.
 for liver rot in sheep, extracts, (57) 673.
 toxicology and use, (53) 586.
- Maleuterpes phytolymus, control, (58) 665.
- Mallein—*see also* Glanders.
 injections, formation of antibodies following, (52) 180.
- Malleins, valuation, (52) 885.
- Mallophaga—
 and Anoplura, host relations, (57) 554.
 of sand grouse, (60) 649.
- Mallow rust, variability in, (52) 746.
- Malnutrition—*see also* Undernutrition.
 and inanition, effect on growth and structure, (54) 692.
 basal metabolism in, (53) 458.
 determining, weight-height-age tables, (51) 663.
 diseases due to, (51) 267.
- Malpighamoeba mellifica n.sp., notes, (56) 856; (59) 461.
- Malt—
 amylase, isoelectric point, (53) 106.
 analyses, (52) 530.
 and malt extract, vitamins B and C in, (56) 894.
 diastase, optimum pH, effect of temperature, (53) 9.
 diastatic power, effect of nitrogen in grain, (59) 627.
 dietetic value, (52) 365.
 extract in doughs, effects, (54) 790.
 extract, vitamin B in, (60) 94.
 manufacture, fermentation processes in, (52) 315.
 vitamins in, (52) 564.
- Malta fever, *see* Undulant fever.
- Maltose—
 determination in presence of other sugars, (53) 504.
 fermentation by *Bacterium pullorum*, (60) 180.
 propionic fermentation rate, (51) 109.
- Malus, genus, cytological studies, (57) 221.
 Malva, hybridization in, (55) 821.
 Malva leaves, analyses, (52) Calif. 70.
- Mammae, inheritance and variation in pigs, (54) 126.
- Mammalogy, medical, (58) 874.
- Mammals—*see also* Animals, Livestock, and *specific kinds*.
 albino, eye pigmentation in, (57) 625.
 cestodes of, (58) 556.
 chromosome homology in, comparison, (60) 219.
 chromosomes of, (54) 821.
 domestic, natural history, treatise, (56) 662.
 domestic, physiology, textbook, (54) 71.
 domestic, spermatogenesis, (56) 475.
 female domestic, sexual cycle, (60) 574.
 fertility and sex ratio, seasonal variations in, (60) 531.
 form of skull, calculating, (54) 563.
 injurious, in Sweden, (57) 655.
 injurious to agriculture, control, (54) Kans. 654.
 intersexuality in, (59) 577.
 male and female, equipotentiality of tissues, (59) 523.
 meiotic phase in, (56) 127.
 microscopic examination of organs, (56) 675.
 newborn, weight, factors affecting, (54) 432.
 North American, field book, (60) 59.
 North American, recent list, (51) 656.
 of Mount Rainier National Park, (57) 853.
 oogenesis in, (52) 727.
 predatory, and balance of nature, (53) 251.
 predatory, food predilections, (53) 251.
 sex determination and differentiation, (53) 524.
 sex of embryos, possibility of change, (60) 33.
 sex ratio in, (51) 230; (57) 30.
 spermatozoa of, movement and evolution, (57) 424.
 sweat glands of, studies, (55) 875.
- Mammary cancer in mice, (59) 726.
- Mammary gland substance, effect on uterine function, (53) 525, 526.
- Mammary glands—
 activity, (59) 667.
 in opossum, stimuli regulating growth, (57) 723.
 of male guinea pigs, effect of placental extract, (59) 726.
 of Siberian cattle, (60) 473.
 secreting and dry, chemical composition, (60) 366.
 secretion, rôle of leucocytes in, (52) 376.
 secretion, studies, (52) 364; (55) 368, 694.

Mammary glands—Continued.
 supernumerary, in cows, functional activity, (54) 169.

Mammary microflora, relation to cheese making, (53) 581.

Mammitis, *see* Mastitis.

Man—
 and plants, treatise, (56) 123.
 body temperatures, variations in, (53) 884.
 descent of, Darwin's theory, present status, (58) 627.
 effect of tropical climate, (53) 764.
 inheritance of head form in, (53) 629.
 protozoa of, catalogue, (53) 855.
 relation to insects, (55) 658.
 relation to soil, treatise, (58) 15.
 sex ratios in, (51) 335, 634.
 stature, relation to length of appendages, (51) 734.
 varietal formation in, (53) 628.

Manchuria Botanical Garden and Museum, notes, (56) 500.

Mandarin leaves, internerval maculate chlorosis in, (58) 449.

Mandarins—
 notes, (55) 644.
 unusual fruit conditions in, (51) 251.

Manfreda virginica, variation and correlation in inflorescence, (54) 222.

Manganese—
 action in base-exchange reactions, (59) Ariz. 614.
 as active base in soils, (59) 511.
 as cure for chlorosis of spinach, (53) 819; (54) 450.
 association with vitamins, (51) 459.
 biological function in animal metabolism, (56) 793.
 chloride, stimulation, toxicity, and antagonism, (60) 27.
 deficiency in lime-induced chlorosis, (59) 721.
 deficiency in soils and fertilizers, (58) 210.
 determination, (58) 310, 609.
 determination, rapid method, (60) 205.
 effect on crops, (52) 426.
 effect on growth, (57) 892.
 effect on nitrification of ammonia, (53) 322.
 effect on vegetation, studies, (52) 515.
 feeding to plants through stomata, (58) 317.
 fertilizing value, (59) R.I. 615.
 in food materials, (58) 290, 411.
 in hydrophytes, genesis and storing, (59) 821.
 in Kentucky bluegrass, (56) 804.
 in plants, (54) Ky. 308, 427.
 in plants, function, (52) Ky. 426.
 in vegetables, raw and cooked, (59) 191.
 in vegetables, variations in, (59) 708.
 interference in o-tolidine test for chlorine, (59) 14.

Manganese—Continued.
 occurrence and distribution, (58) Ky. 20.
 occurrence and function, (53) 310.
 pyrophosphate, determination, (57) 12.
 sulfate, effect on lemon attacked by *Colletotrichum gloeosporioides*, (60) 831.
 sulfate, effect on oats and soy beans, (60) N.C. 319.
 sulfate, fertilizing value, (53) 517.
 toxic action on sugar cane, (53) 829.

Mange—*see also* Scabies and specific hosts.
 demodectic, in cattle, (58) 475.
 demodectic, in goats, (54) 478; (58) 474; (60) 574.
 demodectic, radiant therapy in, (58) 177.
 of horses, notes, (54) 171; (55) U.S.D.A. 578; (57) 278.

Mangel—
 blackleg, notes, (58) 442.
 downy mildew, (57) 51.
 fly, notes, (60) 161.
 heart rot, notes, (54) 448; (58) 442.
 roots, proteins of, (56) 708.
 rust, notes, (58) 442.
 seedling root blight, notes, (54) 448.
 seedlings, Collembola injury, (57) 259.
 seeds, disinfection, (58) 144.

Mangels—
 analyses, (51) N.Dak. 832; (53) Can. 135; (60) Can. 36.
 as affected by salt, (51) 36.
 as orchard intercrop, (58) Can. 837.
 bolting in, (57) 230; (60) 538.
 breeding experiments, (52) 437; (53) 230.
 cost of production, (51) West.Wash. 391.
 crown gall affecting, (56) 653.
 culture, (59) Can. 432.
 culture experiments, (55) Alaska 433; (57) Alaska 522, 524.
 culture in British Columbia, (57) 34.
 culture on peat land, (55) Minn. 527.
 effect on following crop, (52) R.I. 23.
 feeding value, Can., (51) 578; (54) 764.
 fertilizer experiments, (53) Can. 530; (55) Minn. 332; (59) 20; (60) 25.
 losses in during storage, (58) 32.
 manuring experiments, (56) 231.
 nitrogen in, inheritance, (60) 224.
 Phoma betae affecting, (60) 150.
 seeding experiments, (57) Calif. 225.
 storage, (51) West.Wash. 391.
 v. corn silage for cows, (54) Can. 473; (57) Okla. 569.
 v. dried beet pulp for cows, (53) Can. 674.
 varieties, West.Wash., (51) 397; (60) 732.
 varieties, classification, (56) Can. 432.
 variety tests, (51) Minn. 133, Oreg. 529, Hawaii 740, N.Dak. 833; (53) Minn. 130, N.Dak. 334, Can. 530;

Mangels—Continued.

variety tests—continued.

- (54) 530; (55) Minn. 332, Oreg. 637; (56) Can. 432, Minn. 524; (57) Okla. 523; (58) Minn. 828; (60) Miss. 34, N.Dak. 34, Minn. 132, Oreg. 731.

yields, (59) Micn. 524.

Manginia ampelina, notes, (56) 850.

Mango—

- anthracnose, cause, (59) 152.
anthracnose in Philippines, (59) 646; (60) 57.
anthracnose, notes, (56) 843; (57) 640, 851.
flowers and fruits, shedding, (60) 46.
hoppers, control, (52) 554; (59) 554.
hoppers, life history notes, (52) 155.
hoppers, notes, (57) 655.
inflorescence blight, notes, (55) 445.
mildew, notes, (55) 346.
seed weevil, life history, (57) 562.
seedlings, notes, (60) P.R. 740.
trees, transplanting, (59) 529.
twig borer, notes, (59) 257.
wither tip, notes, (58) 449.

Mangoes—

- cause of low yield, (55) 543.
cold storage, (53) 538.
culture experiments, (59) Hawaii 632.
damage by leaf beetles, (60) Guam 845.
grafting, (51) Hawaii 745; (55) 644.
new varieties, (51) Hawaii 744.
notes, (57) Hawaii 335.
propagating methods, (55) Hawaii 534.
propagation, (54) 140; (57) 336.
ringing and notching experiments, (60) 144.
tests, (56) 532; (57) P.R. 435.
variety tests, (58) 39.

Mangosteens—

- in America, (60) 440.
tests, (57) P.R. 435.

Mania maura, notes, (56) 659.

Mannite decomposing power of soil, index of fertility, (51) 620.

Mannitol-fermenting bacteria, fermentation products, (54) 203.

Manoilov reaction—

- and other tests, (57) 621.
test for metabolic level and sex, (60) 129.

Manson's eye worm of poultry, (56) Fla. 874, 900; (58) 481; (60) Fla. 175, 579.

Mantis, Chinese, beneficial insect in New Jersey, (60) 556.

Mantis, praying, parasite of, (53) 157.

Mantoidea of South Dakota, (51) 252.

Manure—see also Cow manure.

- and phosphate experiments, (55) Minn. 220.
artificial, from straw, (59) N.Y.State 22.
artificial, making, (54) 421.
artificial, tests, (54) 720; (59) Iowa 19.

Manure—Continued.

- composition, effect of weathering and storage, Mo., (51) 719; (58) 420.
composts, biological activities in, (56) 514.
decomposition and action of nitrogen and carbon compounds in, (60) 718.
decomposition, conditions of, (57) 316.
decomposition, effect of hydrogen peroxide, (56) 719.
decomposition, effect on soil potash, (53) Wis. 415.
decomposition in soil, (53) 418.
decomposition in soil and utilization by plants, (56) 320.
decomposition under tropical conditions, (56) 420.
displacement by mineral nitrogenous fertilizers, (53) 20.
effect of nitrifying bacteria, (53) 321.
effect of time and manner of application, (52) 722.
effect on—
availability of phosphorus of floats, (51) 423.
black alkali soil, (52) Calif. 21.
calcareous soil, (53) 218.
carbon dioxide fertilization, (55) 815.
carbon dioxide of air, (51) 724.
composition of corn, (54) 331.
crops, (51) 816; (52) Calif. 23.
crops in rotations, (55) U.S.D.A. 132.
decomposition of cellulose, (52) 323.
potassium availability, (59) 212.
soil temperature, (51) 325.
tobacco, (59) Conn.State 734.
fertilizing value, (51) 120; (52) Minn. 36, Del. 119, Kans. 440; (55) Minn. 219, Mo. 219, Iowa 321, (56) N.Y. Cornell 335; (57) U.S.D.A. 628; (58) 720; (60) Oreg. 718.
hot fermented, action of nitrogen in, (53) 722.
in Mauritius, preparation and storage, (60) 120.
liquid, conservation, (51) 120.
liquid, drilling on oats, (54) 422.
liquid, effect on mineral constituents of soil, (54) 422.
liquid, nitrogen loss from, prevention, (53) 514.
liquid, utilization, (55) 815.
loss of nutrients since war, (51) 725.
losses of plant nutrients from, (60) Oreg. 717.
nitrification, (52) 622; (59) 317; (60) 718.
nitrogen in, conservation and transformation, (54) 421.
nitrogen, use in soil, (55) 722; (56) 422.
organic, availability of plant food, (54) 421.

- Manure—Continued.
 organic, mechanical conservation, (56) 81.
 organisms in, factors affecting, (60) 718.
 relation to nutritive and vitamin value of grain, (52) 212.
 replacement by commercial fertilizers, (55) 515.
 sheep v. horse, value, (57) Ohio 414.
 shrinkage, (51) Ohio 422.
 spontaneous ignition in, (59) 479.
 storage, studies, (52) 120.
 substitutes for, (60) R.I. 718.
 substitution by other fertilizers, (53) R.I. 723.
 synthetic, composition and loss of fertilizing constituents, (59) Ohio 212.
 synthetic, from straw, (58) 720, Mo. 721; (59) 119.
 time of application, (53) U.S.D.A. 333.
 transformations of nitrogen in, (60) 510.
 use, new method, (54) 815.
 utilization, (55) 815.
 v. cover crops for vegetables, (56) Ill. 234.
 v. fertilizers, (51) Ohio 422.
 value, (56) Tenn. 422.
 value for truck crops, treatise, (52) 421.
 value per ton, (51) Md. 816.
- Manures—
 and fertilizers, treatise, (53) 819.
 and manuring, textbook, (59) 22.
 nature, functions, and application, (58) 720.
- Manuring experiments, (51) Minn. 622; (54) Tenn. 217; (57) Ohio 615.
- Maple—
 bladder gall, control, (54) 454.
 borer on sugar maple, notes, (55) 253.
 disease, (58) 252.
 leaf cutter, notes, (55) 253.
 leaf disease, notes, (57) 354.
 leaf scorch, control, (55) N.J. 444.
 products, analysis, effect of centrifugal clarification, (57) 12.
 products, lead number, (52) 713.
 scale, cottony, notes, (51) Ind. 853; (59) N.Mex. 249.
 sirup, cost of production, (55) Mich. 80.
 sirup making, (51) Mich. 43.
 sugar, borer, notes, (55) 253.
 sugar production and weather, (52) Mich. 416.
 tar spot, notes, (60) Mich. 58.
 wilt, description, (55) U.S.D.A. 454.
 wilt, studies, (51) 52.
- Maples—
 chromosome behavior in, (51) 734.
 hard, carbonization, dissolved tar from, (53) 718.
 Manitoba, *Coryneum* twig blight, (56) 355.
- Maples—Continued.
 sugar, translocation of carbohydrates in, (52) 27; (53) 24.
 sugar, volume of trees, (53) Mich. 346.
- Maps, topographic and geologic, interpretation, (54) 75.
- Marabu, problem of, (57) 734.
- Marasmus—
perniciosus, notes, (57), 443; (58) 152.
sacchari in Porto Rico, (55) 248.
sacchari, notes, (57) 442, 639.
scandens, notes, (52) 150.
 sp., notes, (59) 637.
tritici n.sp., description, (57) 840.
- Marasmus treatment by Ostelin, (59) 494.
- Mares—
 brood, wintering, (53) Mo. 471.
 infection in genital tract, (54) Ky. 378; (57) 280.
 inoculation to prevent joint ill in foals, (53) 279.
 oestrous cycle in, (54) 633.
 sterility in, (51) 682; (56) Ky. 172.
 sterility in, bacteriology of reproductive organs, (60) Ky. 776.
- Margarine—*see also* Oleomargarine.
 air content, (52) 775.
 butter fat in, determination, (56) 615; (59) 808.
 sorting, rapid method for, (56) 615.
- Margarines—
 coconut and palm fats in, estimating, (53) 806.
 nut, manufacture, (51) 14.
 sesame oil determination in, (51) 411.
- Margarodes hirsutissimus*, description, (53) 653.
- Margarodidae, classification, (59) U.S.D.A. 857.
- Margaronia dimorpha*, parasite of, (58) 666.
- Margaropus annulatus*, *see* Cattle ticks.
- Marigold—
 bacterial wilt, studies, (59) 537.
 inflorescence abnormality, (55) 818.
- Marine—
 animal oils and cod-liver oil, antirachitic value, (60) 198.
 borers, control, (52) Calif. 60.
 borers on Atlantic coast of Canada, (56) 657.
 borers, studies, (52) N.J. 750; (58) 450.
 piling, protection against borers, (59) 247.
 products, can corrosion and blackening in, (55) 889.
- Marjoram oil, formation and composition, effect of pH value, (59) 411.
- Market—
 farm, advertising survey, (54) 686.
 movements of livestock, (58) Ohio 188.
 prices, analysis, (53) 294.

Market—Continued.

reports, U.S.D.A., (51) 193, 394, 491, 692, 795, 893; (52) 192, 296, 493, 595, 693, 789, 895; (53) 92, 392, 491, 691, 794; (54) 81, 183, 388, 484, 686, 786; (55) 82, 186, 383, 588, 685, 785; (56) 185, 289, 387, 789, 888; (57) 288, 484, 686, 885; (58) 188, 287, 490, 589, 787, 889; (59) 89, 286, 486, 684, 886; (60) 87, 187, 385, 485, 680, 785.

Marketing—

agricultural products—

bibliography, (53) U.S.D.A. 91.
by parcel post, (58) U.S.D.A. 786.
effect on increasing costs, (56) 685.
in England, (54) 81; (59) 88.
in Germany, American study, (59) 400.
in Minneapolis and St. Paul, papers on, (58) 589.
in Wayne County, (54) Ind. 386.
treatise, (54) 389; (55) 885; (56) 489; (57) 386.

and financing agricultural products, effect on prices, (53) 190.

and production, papers on, (57) 87.
attitudes of farmers, (57) Minn. 482.
city, (59) Me. 598.

cooperative, (54) Wash.Col. 687, Nebr. 784, U.S.D.A. 784; (58) Mo. 490; (59) Wis. 86, U.S.D.A. 89; (60) U.S.D.A. 385.

and agricultural prices, (53) 493.
and city marketing problems, (52) 192.

and price control, (56) Ky. 789.

cooperative, associations—

business set-up, (56) U.S.D.A. 485.
financing, (58) 686.
in United State, treatise, (51) 296.

management problems, (55) U.S.D.A. 587.

membership relations, (56) U.S.D.A. 587.

social aspect, (54) 288.

cooperative—

central, organization, (52) Minn. 93.

commodity plan, (52) U.S.D.A. 593.

contracts, (60) 681.

effects, papers on, (57) 83.

farmer's part in, (59) Okla. 385.
in Canada, (53) 91.

in England and Wales, (54) 484.
in United States, (53) 598; (54) 484.

in United States, social aspects, (56) 889.

method of financing, (53) 691.

of grain in United States and Canada, (60) 386.

organization, publicity and field service, (60) 681.

Marketing—Continued.

cooperative—continued.

papers on, (60) 330.

possibilities and limitations, (54) Calif. 82; (56) Mo. 388.

relation to agricultural production, (53) 895.

reports of Federal Trade Commission, (60) 588.

selling, price policies, and pooling, (60) 682.

teaching, (55) 289.

textbook, (60) 680.

courses in, (51) 189.

dairy products, (52) U.S.D.A. 593.

definitions of terms, (55) 184.

direct-to-consumer, value, (55) Mo. 184.

education, (51) 693; (60) 188.

enterprise of Scottish Milk Agency, (60) 590.

improvement in England, (59) 485.

in North Carolina, N.C., (51) 93; (52) 94, 296, 393.

institutes, cooperative, in Wisconsin, (54) 499.

introductory readings in, (58) 589.

movement, cooperative, sociological implications, (52) 791.

of Primary Products Act of New South Wales, analysis, (58) 188.

of Spokane Valley farm products, (59) Wash.Col. 87.

Officials, National Association, proceedings, (59) 588.

organized, for peach crop, (55) Ill. 185.

principles, readings in, (56) 187.

principles, textbook, (58) 686.

programs for cooperative organizations, (52) U.S.D.A. 591.

questions and answers on, (51) 493.

readings in, treatise, (53) 694.

research in, (54) 199; (57) 87.

roadside, data, (57) W.Va. 86.

roadside, in Maryland, (55) Md. 381.

studies, (51) N.Dak. 889; (52) Calif. 92; (54) Ky. 387; (55) 587; (58) 586; (59) 382.

treatise, (54) 86, 290.

Markets—

American, data, (54) 586.

and fairs in England and Wales, (57) 885; (60) 386.

and farms law of New York State, (54) 81.

for agricultural products, effect of European conditions, (52) 693.

for farm products of Billings trade area, (59) Mont. 588.

hotel, for vegetables and poultry, (59) N.H. 284.

municipal, of Trenton, N.J., organization and operation, (58) 589.

new, creation for farm products, (60) Ill. 485.

- Marl—
deposits of the State, (59) N.C. 319.
digging demonstrations, (52) Mich. 24.
excavating, equipment for, (53) 588;
(55) Mich. 681.
- Marls for liming soils, (51) Ky. 423.
- Marog—
effect on physical properties of soil,
(52) 622.
organic nitrogen in, value, (51) 726.
- Marrow stem kale, nutritive value, (58) 565.
- Marsdenia rostrata poisonous to livestock,
(54) 71.
- Marsh—
birds of North America, life histories,
(57) 357.
district in Leningrad, development,
(58) 718.
elder, cause of bitter milk, (59) Colo. 272.
land agriculture, fundamentals, (60) 117.
lands of northern Michigan, mapping,
(52) 17.
lands of Porto Rico, (56) 512.
meadows, fertilization, (51) 623.
soils, fertilizers and crops for, (57) Wis. 20.
soils, hydrogen peroxide catalase in,
(54) 513.
- Marshall, C. E., editorial notes, (56) 601.
- Marsonia potentillae, notes, (52) 352;
(57) 55.
- Marssonina—
juglandis, notes, (56) 748.
(Marssonia) nigricans, notes, (54) 247.
panattoniana, notes, (54) 746; (56) 747, 748; (58) 41; (59) Fla. 541.
salicicola, notes, (58) 449.
spp., notes, (60) 153.
- Marsupials, chromosome numbers, (54) 226.
- Martens—
breeding in captivity, (59) 823.
raising, (54) 274.
- Martynia bacterial disease, notes, (52) 846.
- Maryland—
Crop Improvement Association, meet-
ing, (57) 32.
State Beekeepers' Association, report,
(52) 663; (56) 64.
Station, notes, (51) 98; (52) 698;
(53) 600; (57) 496; (60) 299.
Station, report, (53) 398; (56) 195;
(57) 796; (59) 498.
University, notes, (52) 198, 698; (53) 600; (54) 97; (57) 98, 496; (58) 199; (59) 899; (60) 299, 400.
- Mash feeder, description, (53) Ohio 892.
- Mash hoppers for poultry, construction,
(58) N.J. 169.
- Mashes for crate fattening poultry, (54) Can. 765.
- Masicera? abdominalis, notes, (56) 361.
- Masonry arches, philosophy of, (60) 376.
- Massachusetts—
College, notes, (51) 98, 497, 695, 900;
(52) 198, 599; (53) 197; (54) 398,
900; (55) 98, 397, 698, 900; (56) 700, 900; (57) 99, 300, 698, 798;
(58) 300, 798; (59) 198, 798; (60) 400, 600, 698, 796.
Station, bulletin summary, (51) 899.
Station, notes, (51) 98, 497, 695; (52) 599; (54) 398, 900; (55) 600, 900;
(56) 196; (57) 99, 698, 798; (58) 300, 600, 798; (59) 198; (60) 600, 698.
Station, report, (52) 899; (54) 698;
(58) 599.
- Massey, W. F., tribute to, (59) N.C. 796.
- Mastitis—
bacteria isolated from, (59) 79.
bacterial content of milk from, (54) 173.
bacteriological findings, (54) 477.
control, (54) 871; (60) 867.
diagnosis, (52) 885; (60) 867.
due to *Pseudomonas aeruginosa*, (56) 477.
immunization, (54) 173.
in cattle in Netherlands, (60) 179.
in cattle, use of vaccines in treatment,
(56) 777.
in cows, effect of streptococcic vaccine,
(60) 871.
in ewes, (54) 71.
infecting agents, (57) 673.
papers on, (52) U.S.D.A. 583; (55) 371.
relation to *Bacillus pyogenes*, (54) 476.
streptococcic, of cattle, treatment, (59) 674.
studies, (51) 179; (52) Conn.Storrs 681; (54) 71; (55) 72; (57) 181.
- Mastotermes darwiniensis, notes, (56) 358.
- Materials—
building, fundamental properties, (53) 284.
heat conductivity of, tests, (53) 285.
of construction, treatise, (53) 284.
resistance of, treatise, (53) 684.
strength, treatise, (53) 185; (54) 580.
testing, laboratory manual, (57) 81.
testing, treatise, (54) 681.
- Matgrass, studies, (54) 321.
- Mathematics and agronomy, (56) 332.
- Matricaria nigellaefolia, intoxication due to, (52) 82.
- Matthiola—
crosses between mutant and ancestral types, (52) Calif. 40.
incana, bud variation and chimeras in,
(55) 523.
incana, reversionary character in,
(52) 330.
- Maturity, sexual, age of attainment in mice,
(55) 28.
- Mauritian apple manure, studies, (55) 626.
- May apple rust, expulsion of aecidiospores by, (52) 450.

- May beetles—*see also* June beetle, *Lachno-*
sterna, and *Phyllophaga*.
biology and control, (59) 853.
control, (57) 362.
in Germany, life cycles, (54) 261.
in Haiti, (59) 357.
in Iowa, survey, (59) 460.
in Mississippi, (60) Miss. 166.
in South Carolina, (60) 249.
in United States and Canada, (60)
459.
oviposition, (58) 560.
period of development, (58) 755.
periodicity in, (56) 856.
- May flies, stains produced by, (60) 599.
- Mayetiola destructor, *see* Hessian fly.
- Mayetiola phalaris n.sp., notes, (59) 854.
- Mayonnaise—
manufacture, suggestions, (51) 766.
standardization of oil for, (58) 891.
- McNary-Haugen plan applied to wheat,
(56) 787.
- McSweeney-McNary Act, editorial, (59)
407.
- Meadow—
fescue, *see* Fescue.
foxtail, methods of covering, (51) 139.
grass, methods of covering, (51) 139.
mouse, biology and control, (57) 853.
plant bug, life history notes, (56)
Ky. 57.
soils, physical properties, (53) 113.
- Meadows—*see also* Grasses, Grassland, and
Pastures.
establishing on moor soils, (57) 427.
establishment and management, (51)
337.
fertilizer experiments, (52) 723; (55)
420; (59) 21.
management, (54) 635.
management in Ozark region, (54) Mo.
30.
mixtures for and methods of renovat-
ing, (60) Minn. 132.
nitrogen fertilization, (52) 513.
resources of Finland, (51) 35.
seeding, fertilization, and management,
(55) 739.
subirrigated, yields, (57) Nebr. 523.
- Meadowsweet leaf beetle, biology and con-
trol, (52) Me. 661.
- Meal worms, biology, (58) 164.
- Mealie rust, life cycle, (53) 245.
- Meals—*see also* Diet and Menus.
guide for junior homemaker, (54)
U.S.D.A. 790.
- Mealybug—
citrophilus, in California, (52) 455,
855; (58) 559.
citrophilus, in California, new natural
enemies, (60) 455.
citrophilus, native home, (59) 455.
citrus, as vector of mosaic disease,
(54) 457; (55) 754.
citrus, notes, (54) 254.
Comstock's, biology and control, (53)
Va. 756.
- Mealybug—Continued.
described as *Dactylopius calceolariae*,
identity, (54) 456.
giant, control, (58) 859.
of British Isles, biology, (52) 855.
on Paspalum grass in Queensland, (60)
559.
on pear trees, control, (52) Calif. 57.
parasite, notes, (54) Fla. 352.
root-feeding, affecting sugar cane, (57)
856.
- Mealybugs—
control, (52) Fla. 251; (54) Fla. 352;
(56) 360, 460; (59) Guam 555,
Calif. 755.
dipterous predator of, (57) Calif. 257.
in Guam, (56) Guam 251.
of economic importance in Hawaii,
(53) 653.
summary, (58) 559.
- Measurements, optical, for chemist and
physician, (55) 201.
- Meat—*see also* Beef, Pork, etc.
and bone by-products, definitions and
analyses, (55) 260.
and bone scraps proteins, growth
value, (59) 568.
and meat products, foreign import
duties on, (53) 595.
and meat products, methods of an-
alysis, (51) 700.
and meat products, protein determi-
nation in, (60) 14.
and meat products, treatise, (54) 664.
and milk hygiene, (57) 377; (59) 170.
animals and their fat, effect of feed-
ing, (58) 63.
bill, reducing, (52) 62.
canned, *Bacillus botulinus* in, (51)
766.
canning manual, (54) 87.
chilling and freezing in atomized brine,
(58) 683.
commercial cuts, (51) U.S.D.A. 374.
connective tissue in, determination,
(57) 763.
consumption in Spain, (55) 485.
consumption, liberal quantity, effect on
rats, (56) 590.
cooking, official methods, (59) N.Dak.
891.
course, organization and teaching, (57)
660.
cured, cheese skipper in, (56) U.S.D.A.
859.
curing, N.C. (55) 866, 889.
curing, bacteriology of, (56) Iowa 893.
curing on the farm, (53) 67.
curing with sodium nitrate, (55) 86,
591; (56) 188.
diet of Eskimos, effect, (57) 291.
dietary value, (56) Iowa 893.
distribution and prices in Great Bri-
tain, (52) 693.
dressed, inspection, (57) 771.
export shipments, routing, (53) 295.

Meat—Continued.

- export trade in South Africa, investigation, (53) 268.
 extract, moisture determination in, (55) 804.
 feeding, effect on nursing rats and litter growth, (56) 590.
 food value and healthfulness, (51) 860.
 fresh and cold storage, vitamin B in, (51) 268.
 frozen, British trade in, (51) 274.
 frozen, molds on, (51) 365; (53) 657.
 fumigated, hydrocyanic acid absorbed by, (52) U.S.D.A. 561.
 ground market, bacterial flora, (60) 189.
 hygiene, textbook, (53) 278.
 in mixed diet, effect on reproduction and lactation, (56) 492.
 incipient putrefaction in, tests, (57) Mich. 593.
 industry, Australian, (58) 764.
 industry, economic situation, (57) 660.
 industry, history and development, (58) 566.
 inspection, handbook, (52) 881.
 inspection in Canada, (58) 472.
 inspection in Michigan cities, (51) Mich. 96.
 inspection, principles and practice, (59) 674.
 inspection stamp, value, (55) U.S.D.A. 472.
 inspection, state, (59) 170.
 iron in, (55) 591.
 iron in, availability, (56) 494.
 irradiated, effect, (53) 568.
 marketing in Great Britain, (55) 785.
 marketing, retail, (53) U.S.D.A. 491.
 meal, amino acid deficiencies in, (59) 164.
 meal, feeding value for poultry, (51) Can. 276; (55) N.C. 265; (57) N.C. 271; (59) N.C. 770.
 meal, new, feeding value, (60) Mont. 763.
 meal v. dried milk for poultry, (59) 665.
 meal v. fish meal, feeding value, (55) Fla. 863.
 meal v. fish meal for poultry, N.C., (53) 779; (55) 265.
 meal v. meat scraps for egg production, Ohio, (55) 164; (56) 299.
 military, and dairy hygiene, treatise, (53) 783.
 of British Empire, (51) 896.
 packer as distributor of dairy products, (52) U.S.D.A. 574.
 packing industry, by-products in, (59) 863.
 packing industry, treatise, (51) 170.
 powdered dried, digestibility, (52) 259.
 preservation by refrigeration, (59) 591.

Meat—Continued.

- production and consumption in France, (53) 167.
 products, effect on hemoglobin regeneration, (57) 795.
 products, nutritive value, (56) 290.
 products, proteins, nutritive value, (55) 188.
 protein value, relation to connective tissue in, (57) 593.
 proteins, maintenance values, (51) 365.
 putrefaction, relation to bacterial count, (52) 460.
 quality and palatability, cooperative study, (57) 499, 660.
 quality and palatability, effect of temperature and time of cooking, (58) 492.
 quality and palatability, factors affecting, (54) U.S.D.A. 563; (57) Mo. 459, 763; (58) Mo. 461; (59) Iowa 65; (60) Ark. 854.
 quality and palatability, relation to cooking, (56) 791.
 quality, factors affecting, (57) Nebr. 564; (59) Nebr. 863; (60) Ill. 253.
 quality, studies, (58) Ill. 355.
 raw, for laying hens, (51) Can. 276.
 refrigeration, studies, (56) 466, 892.
 residue, vitamin B in, (56) 491.
 retail marketing, consumer habits and preferences, (56) U.S.D.A. 388.
 retail marketing, margins, expenses, and profits, (56) U.S.D.A. 288.
 retail marketing, methods and practices, U.S.D.A. (54) 183; (56) 288.
 roasting, shrinkage and speed in, (56) 85.
 scrap, feeding value, (52) Tex. 572.
 scrap grades, feeding value, (52) Calif. 74.
 scrap percentages in poultry mash, (54) Ky. 370.
 scrap rations, mineral requirements, (59) Ind. 769.
 scrap v. linseed meal for laying hens, (59) Ohio 263.
 scrap v. milk products for poultry, (54) Ky. 370.
 scraps, amount for laying hens, (51) Ohio 472.
 statistics of United Kingdom, (57) 287.
 trade, frozen, of Great Britain, (55) 288.
 value in diet, (57) Mo. 592.
 vitamin A in, (52) 65.
 vitamin B in, (53) 570; (54) 90.
- Meats—
 cold storage holdings, (55) U.S.D.A. 686.
 import requirements in Germany, (52) U.S.D.A. 297.
 unusual, preparation, (58) Mo. 491.
 Mechanics, popular, for farmers, handbook, (53) 84.
 Mechanochemistry and the colloid mill, treatise, (59) 708.

- Media, *see* Culture media.
- Medical Research Council of Great Britain, report, (55) 590; (59) 288.
- Medicinal agents, tests, (51) Mich. 180.
- Medicinal plants, *see* Drug plants.
- Medicine—
 advancement in through biochemistry, (59) 592.
 German-English dictionary of terms, (52) 580.
 modern, physiology and biochemistry in, treatise, (57) 590.
 progress in, contributions of chemistry to, (55) 502.
- Medicines, microchemistry, treatise, (51) 280.
- Mediterranean fever, *see* Undulant fever.
- Mediterranean flour moth, *see* Flour moth, Mediterranean.
- Medlar, Japanese, fungus parasites of, (54) 453.
- Megachile spp., studies, (52) Calif. 59.
- Megalophye opercularis, notes, (55) 555.
- Megalospora gemmicida n.g. and n.sp., description, (60) 216.
- Megamelus sp., notes, (55) Guam 151.
- Megapariopsis opaca, notes, (52) U.S.D.A. 256.
- Megastes grandalis, notes, (56) 361.
- Meibomias, new American, (52) 831.
- Meiosis—
 in anthers of *Oenothera muricata*, (56) 428.
 in mammals, studies, (56) 127.
 in *Ranunculus acris*, (57) 122.
- Melaleuca leucodendron, notes, (51) 46.
- Melampsora—
chelidonii-plerotii n.sp., description, (57) 745.
lini development, factors affecting, (57) 745; (58) 651.
lini, immunity from, inheritance, (58) 549.
lini, resistance of flax to, (52) 645.
liniperda, control, (56) Minn. 245.
 on *Salix* and *Caeoma* on *Chelidonium*, relationship, (57) 745.
- Melampsorella ricini, notes, (54) 648; (55) 346.
- Melanconis—
 and *Diaporthe*, differentiation, (60) 643.
juglandis n.comb., notes, (54) 654.
marginalis n.comb., notes, (60) 643.
- Melanconium—
fuligineum, notes, (52) 549; (55) 453.
juglandinum, notes, (57) 354.
oblongum, notes, (54) 654.
oblongum on butternut, (53) 650.
sacchari, notes, (55) 349; (57) 442.
- Melandrium—
 seed, male and female, germination, (57) 120.
 Y-linked gene in, (57) 121.
- Melanoplus—*see also* Grasshoppers.
femoratus on cranberry bogs, (51) N.J. 659.
- Melanoplus—Continued.
 spp., transmission of potato spindle tuber by, (60) 61.
- Melanose, control, (54) Fla. 342.
- Melanosporopsis subulata n.g. and n.sp., description, (60) 216.
- Melanotus—
communis, notes, (60) Pa. 356.
 sp. on sugar cane, (52) 454.
 spp., biology, (55) 559.
 wireworms, temperature relations, (60) 563.
- Mele wool, studies, (54) 268.
- Melibiose, purification and concentration, (51) 112.
- Meligethes aeneus—
 notes, (58) 158.
 trap control experiments, (52) 554.
- Melilotus downy mildew, notes, (55) 346.
- Melinis minutiflora, toxicity to cattle tick, (53) 156.
- Melioidosis—
 in a horse, (58) 678.
 relation to glanders, (53) 678.
- Meliola—
glabra, notes, (53) 147.
guianensis n.sp., description, (54) 51.
- Melipotis indomita, notes, (53) 158.
- Melitin, Burnet's, treatment for undulant fever, (60) 478.
- Melittia gloriosa, notes, (60) 651.
- Melittia satyriniformis, *see* Squash borer.
- Melittobia—
acasta, host selection, (57) 357.
 sp., notes, (57) 64.
- Melolontha—
melolontha, development of reproductive organs of female, (59) 853.
melolontha, notes, (59) 561.
 spp., in south central Europe, (60) 249.
 spp., life cycles, (54) 261.
vulgaris, night activity, causes, (60) 247.
- Melolonthidae, Japanese, studies, (51) 553.
- Melolonthinae, life cycles, (54) Kans. 460.
- Melon—
anthracnose, notes, (57) 640.
 aphid, control, (51) Md. 454; (54) V.I. 258; (55) U.S.D.A. 458.
 aphid, notes, (51) Iowa 659; (53) Iowa 755; (55) Va.Truck 253; (56) U.S.D.A. 449; (57) Okla. 556.
 aphid, primary food plant, (56) 60.
 aphid, resistance to hydrocyanic acid gas, (60) 454.
 aphid, studies, (57) Tex. 162.
 aphid, summary, (55) Me. 153.
 aphid, variability, (58) 347.
 beetle, notes, (51) 157.
 blights, control, (55) N.J. 444.
 diseases, control, (54) Iowa 148.
 hybrids, notes, (54) P.R. 642.
 worm, notes, (55) Va.Truck 253.
 worms, control, (54) V.I. 258.
- Melons—
 breeding studies, (58) P.R. 537.

Melons—Continued.

- carload shipments of, (53) U.S.D.A. 91.
 composition, changes during ripening and storage, (60) Calif. 339.
 crown gall affecting, (56) 653.
 culture in English greenhouses, (52) 341.
 flower types in, inheritance, (59) Calif. 633.
 insects affecting, (51) Mo. 760, Ind. 853; (52) Kans. 452; (54) V.I. 257.
 ripening, effect of ethylene, (60) 822.
- Melophagus ovinus, *see* Sheep ticks.
- Melting points, paper on, (51) 700.
- Membracidae—
 of Kansas, (51) 551.
 of South Dakota, (51) 252.
 synonymy and geographical distribution, (58) 454.
- Membrane—
 equilibria, theory, (51) 100.
 filters, use in analytical work, (51) 503.
- Membranes, permeability for electrolytes, (59) 723.
- Mendel, J. G.—
 and Galton, centenary of, (51) 28.
 and his contemporaries, (51) 28.
 letters to Carl Nägeli, (58) 25.
 life, work, and accomplishments, (55) 631.
- Mendelian class frequencies, application of goodness of fit tests, (59) 621.
- Mendelism—
 bearing on the origin of species, (51) 28.
 principles, (55) 631.
 treatise, (60) 322.
- Menhaden—
 fish meal, effect on calcification of bones in animals, (58) N.Y.Cornell 166.
 oil and fish meals, effect on calcification, (57) 458.
- Meningitis—
 due to *Bacillus enteritidis*, (56) 677, 877.
 epizootic cerebrospinal, of horses, (56) 878.
- Meningococcus—
 as source of growth factor for *Streptothrix corallinus*, (60) 412.
 effect of soap on, (54) 796.
- Menopon—
 biserialatum, control, (52) Calif. 59.
 spp., control, (60) 266.
- Menotoxin, effect on viability of spermatozoa, (52) 524.
- Menstrual cycle of monkeys, (57) 824.
- Menstruation—
 effect of follicular and corpus luteum secretions, (59) 624.
 effect on basal metabolism, (60) 392.
 without ovulation in a monkey, (57) 723.

Menus—*see also* Diet and Meals.

- and recipes for every day in the year, (56) 792.
 planning, handbook, (58) 292.
- Mercerization—
 of cotton, theory and science in, (54) 298.
 test for, (55) 597.
- Mercetiella reticulata n.g. and n.sp., description, (55) 858.
- Mercurialis—
 annua, dimorphism in, (56) 517.
 colorless chromogen from, (58) 215.
- Mercuric chloride—
 diagnostic agent for *Trypanosoma sudanense*, (60) 869.
 effect on seed germination, (53) Colo. 146.
 for control of turf diseases, (57) 346.
 solutions, fungicidal value, effect of hardness of water, (52) 647.
 solutions, preparation, (54) 747.
 treatment, effect on seed-bed diseases, (51) 161.
- Mercurochrome—
 action in bacterial infections, (54) 675.
 action on horses, (56) 678.
 changes in lung from use, (53) 884.
 for genito-urinary diseases, (53) 783, 784.
 injection, effect on kidneys, (52) 680.
 stains, studies, (60) 198.
 use, (53) 677.
- Mercury—
 chlorophenol for brown patch control, (57) 345, 346.
 compounds as dips and dusts, value, (59) Idaho 748.
 compounds, fungicidal value, (58) 545, 648.
 compounds, organic, for stored seeds, (59) 57.
 compounds, organic, tests, (59) Miss. 339.
 compounds v. corrosive sublimate for potato seed disinfectants, (59) Mich. 542.
 disinfectants for seed corn, tests, (60) Miss. 747.
 dusts, organic, for seed potato treatment, (54) 652.
 fungicides in repeated use, (58) 144.
 metallic, insecticidal value, (52) 554.
 organic, fungicidal value, (55) Oreg. 650.
 salts, organic, application in plant pathology, (57) 839.
- Mercury-phenol compounds for corn seed treatment, (60) 151.
- Meredith, E. T., editorial notes, (59) 101.
- Merezhkovskii's bacillus for rodent control, (60) 555.
- Merinus laevis larva and pupa, description, (53) 557.
- Merisus spp., notes, (59) 62.

- Merker grass—
 breeding experiments, Fla., (52) 224;
 (54) 325.
 notes, (54) 230.
- Meropleon cosmion, notes, (53) 361.
- Merulius—
 lacrymans, cultural characters, (54)
 255.
 lacrymans, notes, (51) 53; (52) 452;
 (57) 158, 552.
 spp., notes, (52) 55.
- Mesembryanthemum downy mildew, studies,
 (55) 748.
- Mesocestoides tapeworms, life history, (58)
 252.
- Mesochorus melanothorax, parasites of, (60)
 656.
- Mesohomotome tessmanni, notes, (60) 649.
- Mesoleius tenthredinis, introduction and
 establishment, (59) 562.
- Mespilus germanica on Crataegus monogyna,
 graft hybrids from, (58) 825.
- Mesquite—
 beans, composition and digestibility,
 (51) Tex. 467.
 cutworm, notes, (53) 158.
 gum, *l*-arabinose from, (55) 10.
 gum, composition, (56) 409.
 tree disease, notes, (56) Ariz. 745.
- Mestocharella javensis n.sp., description,
 (52) 361.
- Metabolism—
 acid base, (51) 63.
 and photosynthesis of plants, (54) 21.
 basal—
 effect of excess vitamins, (55)
 794; (56) 592.
 effect of high temperature and
 humidity, (53) 161.
 effect of increased diet, (56) 692.
 effect of temperature and dress,
 (53) Mo. 457.
 effect of ultra-violet radiations,
 (58) 496.
 effect on endocrine glands, (55)
 385.
 expressing by surface area deter-
 mination, (58) 591.
 fixity, (55) 292.
 in health and disease, (57) 291.
 in New Orleans, (56) 691.
 in prolonged fasting in man, (56)
 90.
 in undernutrition, (53) 458.
 in vitamin B deficiency, (52) 262.
 in vitamin B starvation, (58) 494.
 measurement, rest period preced-
 ing, (54) 692.
 notes, (58) 591.
 of adults, (60) 389.
 of adults, effect of age, (60) 391.
 of Australian aborigines, (60)
 894.
 of chickens, (57) 663.
 of chickens, effect of age, sex, and
 castration, (57) 663.
- Metabolism—Continued.
 basal—continued.
 of children, (54) 291.
 of girls, (53) 862; (55) 895.
 of infants, prediction, (59) 592.
 of inhabitants of Salta, Argenti-
 na, (60) 688.
 of medical students, (59) 289.
 of obese subjects, (53) 60.
 of Orientals, (54) 487.
 of pigs, (51) 671.
 of the Chinese, (60) 893.
 of women, variations in, (52)
 160.
 of young women, (59) Ohio 288;
 (60) 393.
 problems, (51) 556.
 seasonal variation, (60) 392.
 standards, (59) 488.
 studies, (60) 291.
 treatise, (52) 362; (53) 764.
 values of Du Bois surface area
 formula, (55) 592.
- before, during, and after pregnancy,
 (54) 88.
 cage, description, (52) 63; (54) 890.
 calcium and fat, of atrophic infants,
 (52) 563.
 carbohydrate, *see* Carbohydrate metab-
 olism.
 determination, differential calorimeter
 for, (58) 189.
 determinations, effect of small break-
 fast, (51) 556.
 effect of menstruation, (60) 392.
 effect of temperature, (53) 268; (55)
 693.
 effect of testes, (55) 766.
 effect of ultra-violet light exposure,
 (57) 93; (60) 898.
 effect of yeast in diet, (60) 91.
 energy, of premature and undersized
 infants, (54) 694.
 estimation from carbon dioxide produc-
 tion, (51) 262.
 experiments, methane determination in,
 (57) 12.
 gaseous, of man during and after
 exercise, (55) 207.
 in pregnancy, (53) 365; (54) 88, 292.
 intermediary, stimulating action of
 food, (52) 64.
 mineral, *see* Mineral.
 nitrogen, in fungi, (53) 122.
 nitrogenous, in apple trees, (54) Pa.
 319; (57) 802.
 numerical factors in, determining, (51)
 557.
 of animals, biological function of
 metals in, (56) 793.
 of cattle, (60) 359.
 of cattle during standing and lying,
 (53) 271; (58) 763.
 of cocks, effect of caponizing, (59)
 362.

Metabolism—Continued.

- of fasting steers, (57) 863; (58) N.H. 763.
- of man on prolonged diabetic diet, (53) 562.
- of plants, intermediate products, (56) 515.
- of rabbits on vitamin-free rations, (53) 766.
- of rats during fasting and digestion, (51) 370.
- of ruminants, studies, (53) 663.
- of undernourished children, (56) 395; (60) 91, 892.
- of women, (56) 193; (57) 91.
- pathology in cultivated plants, (60) 524.
- racial, of browns and blacks in Jamaica, (60) 390.
- racial, of Mayas in Yucatan, (60) 391.
- racial, respiration apparatus for, (59) 391.
- rate in Cladocera, (54) 229.
- ratio of nitrogen to sulfur in, (55) 491.
- respiratory, in children, (55) 792; (58) 593.
- respiratory, of infants, (53) 366; (58) 593.
- rôle of vitamin B in, (53) 566.
- studies with cow's and goat's milk, (54) 694.

Metachroma—

- antennalis, notes, (51) 856.
- interruptum, notes, (51) Ind. 853.
- interruptum on apples, (51) 263.

Metal fume fever, studies, (58) 674.

Metaleurodicus minimus, notes, (56) 552.

Metallic coatings, protective, treatise, (59) 178.

Metallus rubi, biology and control, (59) N.Y.State 254.

Metals—

- and wood, strengths and related properties, (52) 887.
- cooking utensil, solubility experiments, (55) 189.
- corrosion and milk flavor, (60) 865.
- corrosion, symposium on, (57) 608.
- effect on contraction, expansion, and plasmolysis of cell masses, (54) 22.
- fatigue of, (52) 386, 387; (55) 76.
- fatigue of, treatise, (58) 374.
- heavy, effect on respiration of Aspergillus, (59) 25.
- in foods, (59) 391.
- salts of, effect on barley germination, (57) 119.
- sliding over soil, friction between, (53) 588.
- use in agricultural machinery, tests, (53) 286.

Metaplasia and vitamin A deficiency, (60) 292.

Metarrhizium anisopliae, notes, (52) U.S.D.A. 256.

Metastrongylus—

- apri in pigs, (52) 283.
- apri, notes, (58) 74.
- apri, viability, (58) Ill. 368.
- elongatus, histological changes in lung tissue of hogs due to, (55) 374.
- elongatus, notes, (57) 876.
- spp., control, (60) 373.
- spp. in pigs in central Wales, (57) 183.
- spp., life history studies, (55) 374.
- Metator spp., notes, (53) 756.
- Metaxenia in date palm, use of term, (59) 521.

Meteorological—

- and crop data, correlation, (51) 499, 718.
- committee of air council, report, (55) 414.
- conditions along airways, (55) 617.
- conditions and plant diseases, (53) 813.
- conditions, effect of crop plant cover, (60) 709.
- conditions, effect on fertility in sheep, (56) 508.
- conditions in 1816, (52) U.S.D.A. 715.
- data of world, (57) 612.
- events in Belgium up to 1834, (54) 116.
- factors, periodicity, (51) 717.
- fallacies, (52) 114.
- literature, bibliography, (51) 719.
- observations, (51) U.S.D.A. 14, Mass. 115, Minn. 115, Wyo. 115, U.S.D.A. 413, U.S.D.A. 414, Mass. 615, U.S.D.A. 615, Minn. 616, N.J. 616, U.S.D.A. 795, U.S.D.A. 810, Mass. 811, N.Dak. 811; (52) U.S.D.A. 115, Guam 208, Mass. 208, U.S.D.A. 315, U.S.D.A. 316, U.S.D.A. 414, Ky. 415, Me. 415, Mass. 415, Mont. 415, U.S.D.A. 415, Alaska 507, Mass. 617, U.S.D.A. 617, U.S.D.A. 715, N.J. 716, Wyo. 716; (53) Guam 113, U.S.D.A. 210, U.S.D.A. 211, N.Dak. 316, Guam 413, Mass. 413, U.S.D.A. 508, U.S.D.A. 509, Wyo. 615, U.S.D.A. 718, Guam 719, U.S.D.A. 719; (54) R.I. 14, U.S.D.A. 115, U.S.D.A. 116, Mass. 209, V.I. 209, Ky. 311, Me. 311, Mont. 311, Pa. 312, Mass. 413, U.S.D.A. 413, U.S.D.A. 615, Mass. 712, U.S.D.A. 712, Wyo. 712; (55) N.J. 15, U.S.D.A. 115, Guam 116, Mass. 116, Ohio 116, U.S.D.A. 116, U.S.D.A. 312, Mass. 313, U.S.D.A. 313, V.I. 313, U.S.D.A. 413, La. 495, U.S.D.A. 508, Mass. 617, U.S.D.A. 617, Minn. 717; (56) Mass. 16, U.S.D.A. 16, Ky. 114, Mont. 114, U.S.D.A. 114, Ky. 195, Guam 207, Me. 207, Guam 299, U.S.D.A. 313, Mass. 414, U.S.D.A. 414, Minn. 507, Wyo. 507, Mass. 616, U.S.D.A. 713; (57) N.J. 14, Ohio 113, Mass. 207, Minn. 207,

Meteorological—Continued.

observations—continued.

U.S.D.A. 207, Okla. 226, V.I. 313, U.S.D.A. 313, R.I. 494, U.S.D.A. 506, Alaska 507, U.S.D.A. 507, Mass. 508, La. 598, U.S.D.A. 686, N.J. 796, U.S.D.A. 806, Mass. 807, Mont. 807; (58) Ky. 14, U.S.D.A. 205, Me. 312, Mass. 312, Pa. 313, Alaska 413, U.S.D.A. 414, Me. 717, U.S.D.A. 717, Me. 808, U.S.D.A. 809; (59) U.S.D.A. 34, Mass. 204, U.S.D.A. 204, Ohio 205, U.S.D.A. 205, Wyo. 205, Ga. 298, N.Mex. 298, N.J. 314, V.I. 417, Guam 508, Me. 508, U.S.D.A. 508, R.I. 695, U.S.D.A. 715; (60) U.S.D.A. 17, N.Dak. 98, Fla. 113, U.S.D.A. 113, Mass. 114, Minn. 199, Ky. 207, Pa. 314, U.S.D.A. 314, Mass. 315, U.S.D.A. 418, U.S.D.A. 506, Alaska 709, U.S.D.A. 709, Mass. 710, Mont. 710, Wyo. 710, Guam. 802.

at Aberystwyth, (59) 508.

at Belle Fourche, (57) U.S.D.A. 599.

at College of Agriculture, Philippines, (53) 316.

at Dry-Land Field Station, S.Dak., (58) U.S.D.A. 313.

at East Malling Research Station, (55) 508.

at Geneva, (56) N.Y.State 207.

at Helwan Observatory, Egypt, (55) 508.

at Lansing, (59) Mich. 417.

at Rothamsted, (58) 14.

at Scotts Bluff Field Station, U.S.D.A., (51) 115; (58) 599.

at Umatilla Field Station, (57) U.S.D.A. 696.

at Waseca, (55) Minn. 211.

for Oceania, (56) U.S.D.A. 807.

for State College, (56) Pa. 114.

for tropical South America, (59) U.S.D.A. 809.

in Arizona, (55) U.S.D.A. 414.

in Assam, (55) 807; (56) 16.

in Don district, (57) 14.

in Gold Coast, (60) 207, 802.

in Madagascar, (53) 615.

in West Indies, (54) 14.

on Huntley project, (54) U.S.D.A. 132.

use in agriculture, (55) 715.

observers, marine, instructions to, (60) U.S.D.A. 617.

periodicities, papers on, (57) U.S.D.A. 206.

statistics, (55) U.S.D.A. 717.

studies, value in forest fire prevention, (57) 14.

tables, (51) 115; (55) 807.

tables for Michigan, (52) 316; (54) 615.

Meteorology—*see also* Climate, Rainfall, Temperature, Weather, *etc.*

Meteorology—Continued.

agricultural, organization in Germany, (52) 16.

agricultural, proceedings of commission, (58) 511.

American, in past quarter-century, (59) 714.

and agriculture, papers on, (56) 113; (59) 313.

and climatology of Pinheiro, (56) 207.

and forecasting of crops, (55) 806.

application to astronomical cycle of 744 years, (54) 807.

applications to agriculture, (60) 206.

applications to agriculture and travel, (55) 15.

comparative, treatise, (60) 113.

manual, (57) 14.

new ideas in, (54) 508.

papers on, U.S.D.A., (51) 413, 615, 810;

(52) 315, 414, 715; (53) 210, 508,

718; (54) 116, 413, 712, 808; (55)

115, 312, 508; (56) 16, 313, 713;

(57) 207, 506, 806; (58) 205, 414,

809; (59) 204, 715; (60) 17, 314,

507.

statistics, (59) U.S.D.A. 486.

world, and long-range forecasting, (54) 209.

Meteorus—

datanae, notes, (59) Me. 558.

komensis n.sp., description, (58) 666.

margaroniae n.sp., description, (58) 666.

trachynotus, notes, (57) 62.

Methane—

determination in metabolism experiments, (57) 12.

effect of antiknock compound in, (57) 778.

Methanol—

determination in presence of ethyl alcohol, (57) 504.

in alcohol, estimation, (59) 506.

tests for, (59) 16.

Methozyl and lignin in wood, relation, (51) 311.

Methyl alcohol—

detection in presence of ethyl alcohol, (52) 714.

effect on barley growth, (56) 125.

for soil moisture determination, (59) 113.

in ethyl alcohol, test, glycerin as disturbing factor, (51) 505.

Methyl xanthines, ingestion, effect on uric acid excretion, (60) 193.

Methylene blue—

effect on germination and growth of plants, (57) 416.

ingestion by flies, (51) 57.

iodometric evaluation, (58) 311.

penetration into living cells, (59) 619.

reduction by iron compounds, (51) 13.

reduction test, (51) N.H. 178, (60) 570.

reduction test, papers on, (53) 580.

Methylene blue—Continued.

- reduction test, reliability, (54) 411, 868.
 reduction test standards, (53) Wis. 411.
 reduction test v. direct microscopic count in grading milk, (54) 169.
- Methylglyoxal, color reactions with carbazol and sulfuric acid, (58) 510.
- β -Methylindolinone, antineuritic properties (56) 92.
- Metritis in mares—
 bacilli in, relation to bacilli of human origin, (60) 179.
 encapsulated organisms from, (58) Ky. 71.
- Metroliaesthes lucida in chickens, (55) 657.
- Metropolitan Certified Milk Producers, meeting, (59) 575.
- Mexican revolution, agrarian phase, (52) 789.
- Mice—*see also* Mouse.
 absence of kidney in, inheritance, (52) 524.
 age of sexual maturity, (55) 28.
 agouti hair in, (60) 631.
 albinism and brown pigmentation in, inheritance, (55) 732.
 albino, oestrous cycle, (56) 663.
 alcoholic, reproduction in, (58) 320; (60) 33.
 altering coat color by X-ray exposure, (58) 730.
 American lemming, revision, (58) U.S. D.A. 56.
 black-and-tan character in, (60) 725.
 chromosome numbers in, (56) 727; (59) 623.
 control, bacterial method, (60) 555.
 control in orchards, (56) Mo. 355.
 effect of copper carbonate treated wheat, (56) 457; (58) 845.
 epidemics among, (59) 579.
 epizootic among, (58) 172.
 fertility and sex ratio in, (58) 221.
 fertility in, (52) 826.
 field, and voles, (59) 553.
 field, problem in Moscow region, (59) 852.
 genetics, (60) 324.
 hairless, (54) 28.
 hereditary adiposity in, (57) 721.
 hereditary doubling in, (56) 222.
 house, outbreak in California, (57) 159.
 in fields and orchards, control, (51) U.S.D.A. 252.
 inheritance of retinal abnormality in, (52) 429.
 intrauterine anemia in fetuses, (52) 628.
 irradiated, hereditary visceral abnormalities in, (53) 833; (55) 27.
 Japanese waltzing, origin and genetics, (57) 323.
 linkage in, (53) 523.

Mice—Continued.

- linkage of factors for short ear and density, (58) 528; (60) 219.
 litter size, birth weight, and growth, (53) 627.
 meadow, biology and control, (57) 853.
 meadow, breeding, feeding, and habits, (52) 153.
 meadow, Danysz' virus for, manufacture, (59) 153.
 meadow, individual and age variation in, (52) 452.
 meadow, relation to biota of a Lake Champlain island, (59) 153.
 melanotic pigment of hide, (55) 524.
 mutations in, symbols for, (56) 728.
 oestrous cycle in, effect of alcohol, (52) 632.
 on synthetic diets, growth and maintenance, (60) 688.
 oxygen poisoning, (57) 181.
 parasite of, (58) 665.
 physiology of reproduction in, (59) 221.
 piebald, isolation of pattern variety in, (53) 427.
 prenatal growth, (58) 528.
 prenatal mortality, determining, (52) 631.
 sex ratio in, (52) 630; (55) 733.
 species cross in, (58) 527.
 spermatogenesis, (56) 475.
 structural defect of retina, (55) 821; (56) 129; (57) 821.
 types and development of hair in, (56) 68.
 uteri, distribution of fetuses in, (59) 220.
 white, nutritive requirements, (55) 292.
 white, oogenesis in, (56) 127.
 X-rayed, hereditary structural defects in descendants, (52) 131; (54) 429; (55) 824.
- Michaelmas daisy mildew, notes, (58) 443.
- Michigan—
 College, notes, (51) 98, 600, 900; (52) 300, 499, 698; (53) 97, 799; (54) 495; (55) 600, 699; (56) 196, 399, 600, 798; (57) 200, 395, 496, 698; (58) 698, 798; (59) 398, 697; (60) 99, 400.
- State Veterinary Medical Association, proceedings, (54) 475.
- Station, notes, (51) 98, 600; (52) 99, 300, 499, 698; (53) 97; (54) 495, 700; (55) 600; (56) 196, 600, 798; (57) 200, 395, 698; (58) 698; (59) 100, 398, 697; (60) 299, 600, 698, 796.
- Station, quarterly bulletin, (51) 96, 599; (52) 97, 497, 796; (53) 398, 798; (54) 598; (55) 97, 395, 697; (56) 398, 899; (58) 498; (59) 99, 598; (60) 498.
- Station quarterly bulletin, index, (55) 395.

Michigan--Continued.

Station, report, (51) 197; (52) 397;
(54) 698; (55) 899; (57) 697;
(59) 498.

Microbic dissociation, (56) 775.

Microbiology--

and serology, technique, (54) 71.
international society, (60) 844.
laboratory manual, (56) 187; (60)
890.
of soil, (58) 615.
soil, applications, (59) 512.
soil, treatise, (57) 113.

Microbracon--

gelechiae, notes, (59) Va.Truck 251;
(60) Md. 841.
gemmaecola n.sp., description, (57)
560.
kirkpatricki n.sp., description, (58)
666.
leafmansi, notes, (52) 361.
mellitor, parasite of pink bollworm in
Hawaii, (58) U.S.D.A. 457.
meromyzae, notes, (54) S.Dak. 555.
revision of genus, (53) 861.
spp., notes, (52) 858.
variabilis, notes, (54) Mich. 354.

Microburette, new, description, (60) 504.

Microcera coccophila, studies, (60) 808,
834.

Microchemistry, textbook, (56) 201.

Micrococci--

classification, N.Y.State, (52) 520;
(60) 427.
differentiating, (55) N.Y.State 326.
Gram staining properties, (55) 427.
studies, (52) N.Y.State 519.

Micrococcus--

bombycis n.sp., studies, (57) 453.
ephestiae n.sp., description, (60) 652.
freundenreichii, notes, (59) 79.
melitensis--see also Bacterium meli-
tensis.
and Bacillus abortus, agglutinin
isolates, (60) 267.
and Bacillus abortus, differentia-
tion, (53) 381, 886; (54) 476;
(58) 276, 673; (60) Conn.
Storrs 576.
immunization of goats against,
(59) 276.
in goats, (51) 583.
infection, melitin test for, (51)
480.
notes, (59) 580.
pathogenicity for monkey and
man, (60) 870.
pathogenicity for rats and mice,
(53) 582.
neurotomae, notes, (51) 363.
ovalis, metabolism, (52) 162.
prodigiosus on potato tubers, (57) 545.
spp. from milking machines, (54) N.Y.
State 377.
spp. in cow's udder, (59) N.Y.State
269.

Micrococcus--Continued.

spp. resistant to pasteurizing temper-
atures, (59) N.Y.State 269.
ulmi, notes, (58) 853; (59) 647.
ulmi on beech and poplar, (58) 154.
ulmi on maple and linden, (58) 252.
ulmi, provisional name, (55) 656.

Microdus crossi n.sp., description, (58) 266.

Microdus crossi n.sp., notes, (59) 562.

Microfilaria immitis infection, treatment,
(58) 473.Microfungi, action on textile fabrics, (55)
598.

Microgaster--

sticticus, description, (57) 168.
tibialis, parasite of European corn
borer, (60) 560.

Microgravimetric determinations, tech-
nique, (52) 612.Microorganisms--see also Bacteria and
Organisms.

action on silk, (55) 195.
causing cellulose decomposition, (56)
211.
effect on absorption of nutritive ele-
ments from soil, (56) 20.
effect on carbon-nitrogen ratio in soil,
(53) 818.
effect on pH in soil, (56) 419.
energy sources in soil, (51) 18.
fats in, formation and decomposition,
(58) 502.
formation of plant growth-promoting
substances by, (56) 220.
from foci of infection, localization in
animals, (55) 874.
growth, effect of pH, (53) 582.
growth in planted and unplanted soil,
(56) N.Y.Cornell 318.
growth, relation to culture media,
(60) 411.
implantation in intestinal tract, (53)
266.
in alluvial soils, (55) La. 513.
in cane juices, effect of filtration,
(53) 612.
in milk and synthetic butter, proteoly-
tic action, (56) 610.
in soil--
and activators, (57) 17.
assimilation of nitrates by, (58)
120.
effect of partial sterilization, (51)
18; (52) N.J. 720.
effect of rice culture, (52) Calif.
23.
effect of sulfur, (56) 122.
fluctuations in, (54) 622.
numbers, (52) N.J. 720.
numbers, effect of soil treatments,
(59) Iowa 210.
oxidation of sulfur by, (54) 120.
relation to crop yields, (51) N.J.
624.
studies, (52) N.J. 720; (54) 418.
in souring hams, (56) 189.

Microorganisms—Continued.

- in synthetic media, continuous reproduction, (54) 221, 308.
 increasing virulence, (56) 675.
 iodine elimination and storage by, (53) 202.
 method of cultivating, (57) 181.
 nonspore-forming, effect of age on heat resistance, (58) Vt. 771.
 nonspore-forming, thermoduric, description, (58) N.Y.State 770.
 physiology, vitamin effects in, (58) 296.
 removal from sirup, (51) La. 808.
 Rickettsia-like, in insects, (51) 551.
 rôle in solution and precipitation of iron, (58) 622.
 rôle in transformation of organic matter in forest soils, (59) 814.
 saprophytic, on plants, toxic action, (53) 424.
 stain for, (52) 378.
 synthesis of vitamins by, (60) 294.
 thermal resistance, (58) Vt. 770.
 thermophilic and thermoduric, from milk, (58) N.Y.State 770.
 transmitted in ticks, (53) 783; (57) 77.
- Micropelite, use of term, (55) 509.
- Microphthalma spp. and related forms, (56) 661.
- Micropteryx calthella, paper on, (57) 554.
- Microscope—
 use in dairy industry, (55) 268.
 vertical illumination, in insect anatomy, (57) 553.
- Microscopy—
 analytical, aims and methods, treatise, (51) 611.
 of cheese, (56) 275.
 textile, treatise, (59) 693.
- Microsiphones—
 ammonification of amine nitrogen by, (52) 512.
 of the soil, (51) 416.
 urea production by, (54) 120.
 utilization of mineral nitrogen by, (52) 512.
- Microsphaera—
 alphitoides in Bulgaria, (54) 255.
 grossulariae, notes, (56) 748.
 quercina perithecia on oak leaves, (57) 551.
 spp., studies, (56) 843.
- Microsporogenesis—
 in cucumbers, (57) 237.
 in Cucurbita maxima, (56) 27.
- Microsublimation apparatus, (51) 203.
- Microterys—
 claripennis n.sp., description, (59) 358.
 flavus, notes, (52) 557.
 species, key, (57) 168.
 speciosus n.sp., life history and bio-nomics, (53) 160.
- Microtitration method, (54) 8.
- Microtus montanus yosemite, individual and age variation in, (52) 452.
- Middlings—see also Wheat middlings.
 feeding value for pigs, (60) Ohio 461.
- Migration—
 European, effect on development of South America, (54) 185.
 problems, papers on, (59) 386.
- Mikania scandens as green manure and cover crop, (52) 732.
- Mildew—see also host plants.
 control, (52) 848.
 control with sulfur, (59) Calif. 747, Tex. 750, Tex. 751.
 damage to fabrics, (59) 297.
 downy, on cucurbits, studies, (51) Del. 147.
 in cotton goods, (56) 98; (59) 47, 897.
 powdery, of Croatia, (56) 654.
 powdery, on Dipsacus fullonum in Crimea, (60) 49.
- Mildews and sooty molds on trees, notes, (60) Mich. 58.
- Milk—
 absorption of gas, odors, and flavors, (55) 775.
 acid formation in by heating, (57) 373.
 acidification with vinegar for infants, (53) 367.
 acidified, use, (55) 590.
 acidified with lemon juice, value, (51) 867.
 acidity in, development, (51) 278.
 acidity, relation to composition and properties, (52) 313.
 acidity tests, (55) 571.
 acidophilus—
 commercial application, (60) Nebr. 593.
 preparation, properties, and uses, (54) 191.
 production, (51) 613; (56) Ill. 392; (60) 491.
 temperature studies, (51) 65.
 therapeutic value, (51) 164; (55) Mich. 692.
 action of rennet and heat on, (51) 506.
 activated, (60) 661.
 adulteration, (54) 572.
 adulteration in France, (53) 505.
 adulteration, papers on, (60) 662.
 adulteration, testing, (51) 807.
 advertising in Connecticut, (52) 676.
 alcohol test as index of quality, modification, (59) 874.
 amylase in, (52) U.S.D.A. 503.
 analysis, (51) 207.
 analysis, bacterial, (52) Mich. 377; (53) 581; (54) Pa. 375; (55) 471; (57) 372, 667, 768; (58) 672; (60) 569, 570.
 analysis, fluorescence in, (58) 114.
 analysis, methods, (53) 715.

Milk—Continued.

- analysis, photographic records, (57) 667.
- analysis, standard methods, (51) 579; (57) 805.
- and beef characters, inheritance, (54) 265.
- and butter fat records, stating, (54) 265.
- and cream contests, suggestions for, (55) U.S.D.A. 370.
- and its products, treatise, (53) 581; (60) 864.
- and meat hygiene, (59) 170.
- and products, testing, modern methods, (58) 870.
- and products, testing, treatise, (52) 12.
- and science, treatise, (52) 373.
- antirachitic property, increasing, (56) 771.
- antiscorbutic value, (55) 193.
- areas, production and consumption, seasonal adjustments, (60) 884.
- as sole diet, growth and reproduction on, (51) 266.
- Bacillus coli in, detection, (57) 869.
- bacteria—
- character and source, (56) 873.
 - count, effect of pH of agar media, (60) 570.
 - count limits and transportation, (59) N.Y.Cornell 366.
 - count, relation to that of cream and skim milk, (54) 572.
 - counting, (51) 779; (54) 169; (56) Ill. 274; (59) Calif. 773; (60) 864.
 - decomposition products, (51) 280.
 - destruction after drying, (54) 70.
 - destruction of botulism toxin by, (60) 570.
 - new and corrected names, (53) 881.
 - proteolytic action, (56) 610.
 - seasonal variations, at Pusa, (59) 168.
- bacterial—
- changes produced in, effect of temperature, (59) 366.
 - flavors and odors in, Iowa, (53) 782; (59) 74.
 - pin-point colonies, cause, (57) 767.
 - plating, factors affecting size of colonies, (55) Calif. 370.
- bactericidal property, (53) 474.
- bacteriological examination in Wales, (55) 572.
- bacteriological tests, (56) Vt. 570.
- bacteriology, papers on, (52) U.S.D.A. 576.
- bitter, cause, (55) Can. 68; (59) Colo. 272.
- boric acid determination in, (51) 112.
- bottle caps, bacterial counts on, (51) 778.

Milk—Continued.

- bottled, butter fat content of various parts, (52) Calif. 81.
- bottles, sterilization, new method, (60) 473.
- bottles, sterilization, relation to tubercle bacilli, (60) 663.
- bottles, sterilizing, apparatus for, (55) 572.
- bottles, washed, bacteriological content, (57) 667.
- bread, standards for milk content, (52) U.S.D.A. 505.
- Brucella abortus infection in, (57) 874; (59) 672.
- buffers of, and buffer value, (57) 805.
- business, management, (56) 673.
- butter and dairy products, treatise, (55) 471.
- calcium and phosphorus in, effect of heat, (53) 881.
- calcium in, determination, (54) 411; (55) 311.
- cans, bacteria in, (51) N.Y.State 78.
- cans steaming over a jet, (52) Ill. 278.
- cans, washing and sterilizing, (59) Wis. 75.
- cans, washing and sterilizing equipment, requirements, (55) Calif. 370.
- cardboard taste in, cause, (60) 571.
- care and handling, textbook, (57) 178.
- casein, *see* Casein.
- certified and pasteurized, tests, (53) 580.
- certified, relation to bacteriological standard, (53) 380.
- cheese factory, production returns, (54) N.Y.Cornell 585.
- chemical tests, (56) 274.
- chemistry and physiology, textbook, (57) 178.
- chemistry of, research studies, (60) N.Y.State 474.
- chlorinated, feeding to rats, (53) 781.
- chlorine determination in, (51) 714.
- citric acid in, (55) Iowa 203.
- clarification, (55) Idaho 873.
- clarifiers and filters, (56) S.Dak. 673.
- clean—
- and cold, production, N.Y.State, (51) 78; (57) 668.
 - competitions, awarding high marks in, (59) 575.
 - competitions in England, (53) 176.
 - cost of production, (59) 382.
 - papers on, (59) 170.
 - production, (51) 178, 577; (55) N.J. 370, 468; (56) 274; (57) 178, 667; (58) Tex. 470, Utah 870.
 - production and distribution, (57) 667.
 - relation to profitable dairying, (52) 676; (55) 572.
- coagulation by rennin, (52) 177.
- coagulation during sterilization, (52) U.S.D.A. 503.

Milk—Continued.

- coagulation temperature, (51) 112.
- colloidal chemistry of, (52) U.S.D.A. 503.
- colloidal problems of, (52) 10.
- color, measuring, (58) Ill. 362.
- color value, (51) 476.
- composition, (56) 610.
- composition and energy, (56) Ill. 392.
- composition, as affected by insulin, (51) 9.
- composition, variation in, (51) 577; (55) 773; (58) 870.
- concentrated, sanitary quality, (60) 570.
- condensed—
 - and dried, use, (52) U.S.D.A. 562.
 - bacterial content, (52) N.Y. Cornell 479.
 - colloidal chemistry of, (52) U.S.D.A. 503.
 - density, (60) Pa. 368.
 - density, relation to composition, (60) 367.
 - feeding value, (55) N.C. 265.
 - freight rates, (56) Ohio 285.
 - organisms causing thickening, (56) 75.
 - specific gravity determination, (53) 314.
 - standardizing, (56) 873; (58) 873.
 - thickening, (52) U.S.D.A. 503.
 - treatise, (56) 75; (59) 576.
- Conference, National, in London, (51) 577.
- constituents, rates of secretion, (56) 473.
- consumption, effect on growth in children, (60) 192.
- consumption in small Alabama communities, (60) 892.
- consumption, papers on, (52) U.S.D.A. 562; (60) 661, 662.
- contamination, Endo's medium in locating, (51) 579.
- contamination, factors affecting, (55) 69.
- contamination with zinc, (51) 163.
- control in Copenhagen, (60) 867.
- control, papers on, (53) 270; (57) 372, 666, 667; (58) 672; (60) 570, 660, 661.
- Cooledge pH test, practicability, (53) 580.
- cooling, (57) Mich. 571, 667.
- cooling and storing, (53) 580.
- cooling, spray and flood methods, (52) Calif. 80.
- cooling tanks, insulated and uninsulated concrete, (52) Calif. 80.
- copper in, (59) 168; (60) 491.
- cost of production, (51) Wash. Col. 191, Calif. 487, 689; (52) Wash. Col. 292, U.S.D.A. 590; (53) Can. 674, N.C. 894; (56) Ill. 284; (60) Ohio 83, Ill. 282.

Milk—Continued.

- cost of production in Denver area, (55) Colo. 285.
- cost of production, relation to feeding, (51) 577.
- cream layer, effects of agitation, (60) 864.
- cream line formation, Pa., (52) 279; (60) 368.
- creaming ability, factors affecting, (54) U.S.D.A. 69.
- cryoscopy, (51) 207.
- curd character, relation to infant nutrition, Utah, (57) 594; (59) 790.
- curd, strength test, (51) 379.
- detection of sterilized concentrated milk in, (51) 208.
- dietary deficiencies, (55) 791.
- digestibility for pigs, (54) 467.
- distribution and manufacture, papers on, (60) 661, 662.
- distribution in Twin Cities, (58) 589.
- dried—
 - analyses, (51) 316.
 - and evaporated, comparison, (53) 766.
 - antiscorbutic properties, variations in, (55) 193.
 - as a food, (52) U.S.D.A. 562.
 - bacterial content, (60) 866.
 - bacterial purity in, (52) U.S.D.A. 576.
 - fat determination in, (51) 208.
 - fat in, susceptibility to oxidation, (56) 611.
 - for school children, (53) 659.
 - fumigated, hydrocyanic acid absorbed by, (52) U.S.D.A. 561.
 - human, experimental feeding, (52) 864.
 - moisture determination in, (59) 608.
 - papers on, (60) 661.
 - pellagra-preventive action, (53) 662.
 - properties, (52) 775.
 - summer- and winter-produced, antirachitic properties, (57) 491.
 - v. meat meal for poultry, (59) 665.
- drinking habits of school children, (58) 291.
- drying apparatus, (58) 112.
- drying, roller process, destruction of bacteria in, (54) 70.
- effect of freezing, Mo., (57) 373; (58) 471.
- effect of freezing on marketability, (54) Mo. 772.
- effect of heat, (56) 291.
- effect of heat treatment on mineral metabolism of infants, (52) 764.
- effect of homogenization, (59) Iowa 74.
- effect of protein substitutes, (53) 673.
- effect of proteins in rations, (54) 471.

Milk—Continued.

- effect of sweet clover pasture or silage, (55) 571.
- effect on calcium deposition as affected by diet and management of cow, (52) 66.
- effect on hemoglobin production, (56) 495.
- effect on production and health in poultry, (59) N.C. 770.
- electrical conductivity as indicators of internal reactions, (59) 874.
- energy value, related to composition, (56) Ill. 490.
- evaporated—
 - and dried, comparison, (53) 766.
 - and pasteurized, comparative value, (58) 290.
 - Association, fellowships, (53) 200.
 - bitter flavor in, (51) Mich. 177.
 - destruction of vitamin B in, (58) 692.
 - heat coagulation, (55) Wis. 408.
 - role of bacteria in curdling, (51) Wis. 477.
 - sediments of, (52) U.S.D.A. 504.
 - stability in sterilizer, (55) 710.
 - testing for butter fat, (60) Pa. 368.
 - vitamin A in, (58) 294.
 - vitamin B in, (52) 201; (56) 190.
- "Ever Fresh," examination, (51) Mich. 177.
- examination, cryoscopic method, (51) 13.
- examination, direct microscopic, (59) 668.
- examination methods, treatise, (57) 805.
- fat—
 - adulterants in, determination, (52) 314.
 - and cod-liver oil, comparative amounts of vitamins, (56) 490.
 - autoxidation, (52) 10.
 - Babcock test, adulteration for, (57) 805.
 - Babcock test, principles and uses, (57) Nebr. 571.
 - Babcock test, studies, (56) Okla. 171; (57) Calif. 276; (59) 574.
 - butyric and caproic acids in, (59) 711.
 - composition, effect of silage, (51) 279.
 - constancy of melting and solidifying points, (53) 276.
 - cost of production, (51) 689.
 - determination, (53) 315, Conn. Storrs 808; (55) 13.
 - droplets and electrical charge, agglutination, (52) 278.
 - effect of high protein feeds, (51) S.Dak. 474.
 - effect of oil meal feeding, (58) 568.
 - effect on quality of cheese, (51) 277.

Milk—Continued.

- fat—continued.
 - globules, decrease as lactation period progresses, (60) Ill. 262.
 - globules, effect of pasteurization and separation, (59) 168.
 - globules, substances adsorbed on surface, (52) 109.
 - in colostrum, (59) 168.
 - in, division, (54) 868.
 - in, effect of ration, (54) 472.
 - in, effect of soy bean cake feeding, (54) 274.
 - in, effect of speed of centrifuging, (51) 714.
 - in margarine, determination, (56) 615; (59) 808.
 - in milk chocolate, determination, (58) 12.
 - irradiated protein-free, antirachitic value, (57) 791.
 - keeping quality, (52) U.S.D.A. 504.
 - loss from incomplete churning, (56) Ill. 273.
- fat percentage—
 - effect of fat in ration, (56) 872.
 - effect of temperature, (56) 170.
 - factors affecting, (52) Mo. 478; (59) Iowa 270.
 - in Jersey cows, inheritance, (58) 127.
 - methods of determining, (56) N.Y. State 773.
 - of Holstein cows, inheritance, (54) 69.
 - transmission by Holstein-Friesian sires, (55) Del. 872.
- fat, prices, index numbers, (59) N.Dak. 885.
- fat production—
 - inheritance of, (56) 272.
 - of Jersey and Guernsey cows, effect of age and development, (54) U.S.D.A. 68.
 - of Jersey cows, effect of season, (54) 69.
 - of offspring, effect of ages of parents, (59) 268.
 - progress in, (55) 68.
 - relation to age, (51) 475.
 - relation to age and weight, (52) Mo. 478.
 - relation to heredity, (55) 772.
- fat—
 - quality, effect of oils in diet, (53) 880.
 - rate of secretion, (56) 473.
 - Reichert-Meißl number, determination, (57) 611.
 - saponification method, (57) 611.
 - secretion, effect of age, (57) 371.
 - secretion, mode of inheritance, (59) Mo. 822.
 - secretion, physiology of, (56) 772.
 - test, effect of temperature, (59) Iowa 72.

Milk—Continued.

- fat—continued.
- tests, factors affecting, (51) 579.
 - tests, methods, (60) 663.
 - tests of first and later lactations, (57) Ohio 275.
 - vitamin A in, (53) 864.
 - vitamin A oxidation in, (53) 765.
 - vitamin E in, (57) 897.
 - yield, two-day tests, (52) S.C. 577.
- feeding to lambs, (58) 577.
- feeding to laying hens, (52) Ky. 475.
- feeding value, (59) Nev. 867.
- fermented, as colostrum substitute, (57) Mo. 465.
- fever—
- blood and urine in, (55) 371, 574.
 - etiology, (55) 73; (60) 75.
 - glucose therapy in, (59) 275.
 - hypoglycemia theory of, (58) 878.
 - in cows, (59) 876.
 - in cows, blood sugar in, (58) 577; (60) 71.
 - modern theories of, (55) 72.
 - physiology, (57) 874; (59) 474; (60) 71.
 - summary, (53) Ill. 78.
- filtration and clarification, (52) N.Y. State 579.
- flaky, studies, (58) 871.
- flavor—
- and metal corrosion, (60) 865.
 - and odor, abnormal, (54) Mich. 673.
 - and odor, effect of cabbage and potato feeding, (52) U.S.D.A. 578.
 - and odor, effect of feeds, (55) N.Dak. 570; (58) U.S.D.A. 69.
 - and odor, effect of garlic, (53) U.S.D.A. 75.
 - and odor, effect of green rye and cowpeas, (53) U.S.D.A. 879.
 - and odor, prevention, (60) U.S. D.A. 366.
 - effect of soy bean feed, (60) Ill. 262.
- food value, (52) 864; (53) 580; (55) 471; (60) 570.
- and care, (51) 577.
 - effect of cow's ration, (60) Ohio 472.
 - effect of heat, (53) 67.
 - effect of protein rations, (59) Ohio 166, 267.
 - papers on, (52) U.S.D.A. 562; (60) 661.
- for cheese making, differences in quality, (53) 276.
- for cheese making, effect of adding calcium chloride, (58) 170.
- for health campaigns, community, (52) U.S.D.A. 562
- for health programs, posters by school children, (52) U.S.D.A. 97.

Milk—Continued.

- forms, for growing chickens, comparison, (56) 470.
 - formula for infants, cod-liver oil in, (60) 688.
 - formulas for infants in Tropics, (51) 556.
 - freezing, effects, (59) Conn.Storrs 468.
 - freezing point, (55) 612.
 - fresh and frozen, vitamin C in, (60) 691.
 - fresh and preserved, calcium and phosphorus utilization, (56) Kans. 896; (60) 593.
 - freshly drawn, bacteria in, (60) 366.
 - freshness, determination, (55) 715; (59) 874.
 - from cows showing no agglutinins for *Brucella abortus*, (60) 72.
 - from irradiated cows, antirachitic properties, (55) 90.
 - from stover-fed and silage-fed cows, nutritive value, (53) Okla. 66.
 - from Vermont plants, elasticity of supply, (58) Vt. 784.
 - frozen, effect on marketability, (57) Mo. 466.
 - garlic flavor removal, (57) 178, Tenn. 178.
 - germicide action, (53) 676.
- goat's—
- chlorine in during lactation period, (54) 867.
 - detection in cow's milk, (51) 506.
 - Jack cheese from, (52) Calif. 80.
 - metabolism studies, (54) 694.
 - Roquefort cheese from, (51) 97; (54) Calif. 475.
- grade A, economics of production, (57) 178.
- grade A, production, (52) N.Y.Cornell 590.
- grade B, returns with cash crops, (54) N.Y.Cornell 584.
- grades, (60) 570.
- grading methods, (55) 69; (58) Ill. 364.
- grading, methylene blue test v. direct microscopic count, (54) 169.
- growth-promoting and antirachitic properties—
- effect of cow's diet and sunlight, (52) 277.
 - effect of sunlight, (53) 177.
- handbook, (57) 871.
- handlers, medical examination of, (57) 667.
- handling, (52) 377.
- handling and distribution, (51) 577.
- handling and manufacture of dairy products, treatise, (56) 73.
- handling in dairy, textbook, (54) 169.
- heat coagulation, Wis., (51) 477; (53) 411.
- heat coagulation theory, (52) U.S.D.A. 503.

Milk—Continued.

- heat sterility, relation to bacteria, (56) Wis. 773.
- heat treatment, effects, (53) Iowa 776.
- heated at different temperatures, pH of, (53) 312.
- high cellular count, relation to udder infection, (51) Mich. 81.
- H-ion concentration, effect of temperature, (52) 313.
- H-ion concentration, factors affecting, (52) 376.
- homogenizing process, (60) Pa. 368.
- houses for California dairies, (53) Calif. 590.
- houses, plans and specifications, (55) Calif. 78.
- human—
 - analyses, (53) Conn.State 657.
 - and animal, phosphatide and total phosphorus in, (54) 87.
 - and cow's, antirachitic factor in, (58) 495.
 - and cow's, calcium metabolism, (51) 664.
 - and cow's, comparative effects, (54) 695.
 - and modified cow's, effect on infants, (59) 489.
 - antirachitic properties, (56) 91.
 - antirachitic properties, effect of irradiation of mother, (56) 295, 593.
 - calcium in, (51) 867.
 - cholesterol in, (51) 556.
 - composition, (59) 390.
 - dried, as food for infants, (55) 88.
 - mineral content, (52) 463.
 - of Australian women, (57) 193.
 - production and handling, (56) 292.
 - production, collection, and distribution, (57) 893.
 - salt content as affected by diet, (51) 166.
 - studies, (57) 390; (59) 690; (60) 289.
 - tryptophane in, (55) 208.
 - variations in composition of first 14 days, (57) 391.
 - vitamin content, (55) 193.
- in Berlin, vitamin C in, (53) 265.
- in bread, use, (52) U.S.D.A. 562.
- in hot condition, transporting, tests, (51) 380.
- in the diet, (51) 266; (52) U.S.D.A. 562.
- incomplete removal from udder, effect, (52) 175.
- industry, price conciliation in, (52) U.S.D.A. 591.
- infected with abortion, effect of pasteurization, (60) Ill. 263.
- inspection, methylene blue test as factor, (55) 471.
- inspection, papers on, (60) 569, 570.
- inspection, value for small city, (51) 380.

Milk—Continued.

- iodine content, effect of heat, (59) 291.
 - iodized, production, (59) 575, Ohio 774.
 - iron in, effect of diet, (57) 92.
 - irradiated—
 - dry, antirachitic properties, (57) 692.
 - effect, (53) 568.
 - effect on blood, (56) 593.
 - for treatment of rickets, (53) 661; (54) 492.
 - vitamin A potency in, (58) 295.
 - keeping quality and bacteria in, effect of temperature, (59) 314.
 - keeping quality, determination, (52) N.H. 377; (53) 881; (59) Mich. 575.
 - keeping quality, effect of method of cleaning utensils, (55) 573.
 - keeping quality, factors affecting, (53) 276.
 - lactic acid, for infant feeding, (51) 167; (57) 687.
 - lactose in, determination, (53) 110.
 - laws, Pennsylvania's, enforcing, (57) 667.
 - malted, fat determination in, (51) 208; (56) 412.
 - market, bacteria in, relation to utensils, (51) N.Y.State 78.
 - market for in Richmond, (60) Va. 87.
 - market, improvement, (56) Mich. 376.
 - market of Detroit, (59) Mich. 683.
 - market of New York, demand side, (58) N.Y.Cornell 786; (59) U.S.D.A. 683.
 - market, studies, (60) N.Y.State 474.
 - marketing, (57) Pa. 385; (58) Ill. 378, Pa. 381; (60) Wis. 365.
 - cooperative, (52) U.S.D.A. 593.
 - for Chicago, (53) Ill. 690.
 - in New England, (58) U.S.D.A. 286.
 - in New York City, (54) N.Y.Cornell 784.
 - organizations, cooperative, in United States, (52) 192.
 - shipping station operations, (59) Pa. 89.
 - survey, (60) 888.
- markets, costs and margins in, (60) Ill. 679.
 - metabolism studies, (54) 694.
 - methylene blue reductase test for, (54) 169, 411, 868.
 - microorganisms in, thermophilic and thermoduric, (60) N.Y.State 771.
 - microscopic appearance, (55) N.Y.State 268.
 - mineral deficiencies, (53) 564.
 - mixtures for infant feeding, comparison, (54) 694.
 - modified cow's, for orphan pigs, (53) Iowa 776.
 - morning and evening, variation in quantity and fat, (54) 474.

Milk—Continued.

- of four dairy breeds, vitamin A in, (55) Nebr. 675.
- of stall-fed cows, vitamin C in, (57) 869.
- official test, and preliminary milking, (52) 878.
- official testing, (60) Oreg. 769.
- oiliness in, (57) 668.
- ordinances, (60) 570.
- pails, covered, different types, (51) 580.
- pasteurization—
 - and sterilization in Germany, (58) 671.
 - bacteria resistant to, (54) Ill. 375; (60) N.Y.State 473.
 - Bacterium coli test for, (60) 264.
 - by flash method, effect on cheese quality, (60) 265.
 - effect on nutritive value, (59) 291.
 - effect on tubercle bacilli in, (51) 78.
 - effect on Vitamin C in milk, (52) 877.
 - efficiency, (58) Ill. 364.
 - in Minnesota, (55) 572.
 - inefficient, causes, (56) Ill. 272.
 - methods, (55) 472.
 - methods, effect on digestibility, (53) 881.
 - new method, (58) 671.
 - papers on, (51) 577; (52) U.S.D.A. 575, U.S.D.A. 576; (53) 580; (55) 471; (57) 372, 667; (58) 672; (60) 661.
 - plants, improvement, (51) Mich. 599; (60) 570.
 - process, bacterial count during, (51) 779.
 - relation to bacteria, (60) N.Y. State 771.
 - relation to thermal death point of tubercle bacilli, (51) 582.
 - studies, (52) 277, Mich. 774; (53) 178; (54) 475; (56) 473; (58) U.S.D.A. 271.
 - temperature, (52) 177; (54) 868.
 - temperature, effect on types of bacteria, (57) 768.
 - temperatures, cocci resisting, (59) N.Y.State 269.
 - with agitator flash pasteurizers, (56) 474.
- pasteurized, food value, (58) Ill. 386.
- pasteurized, pin-point colonies in, (51) 780; (52) 278.
- pasteurizer, four compartment, tests, (51) 678.
- pasteurizing equipment, bacteria associated with, (55) N.Y.State 268.
- pasteurizing for Cheddar cheese, methods, (59) 367.
- peptic digestion, (56) 292.
- peroxidase in, effect of heat, (52) 202.
- pH values, measurement, (53) 12.

Milk—Continued.

- phosphorus compounds, (55) 203.
- physical properties, effect of pasteurization temperatures, (58) 871.
- plant equipment, (58) 672.
- plant practice, (60) 570.
- plants, papers on, (53) 580.
- plants, scientific control, (53) 581.
- powder—
 - antiscorbutic potency, (53) 165.
 - as affected by oxidation, reproductive potency, (53) 565.
 - as food, (57) 898.
 - as supplements to white bread, nutritional value, (60) 191.
 - bacteria in, (58) 594.
 - citric acid in, (53) 505.
 - for culture making, (51) 278.
 - humidity equilibria, (55) 504.
 - in baking, use, (52) U.S.D.A. 562.
 - iodine in, (59) 791.
 - keeping quality, (51) 202; (52) U.S.D.A. 505; (54) 711; (56) 474.
 - keeping quality, effect of clarification, (56) 611.
 - nutritive value, (53) 866.
 - papers on, (60) 570.
 - peroxidase activity, effect of storage, (51) 608.
 - sanitary quality, (59) 591.
 - solubility, (52) 504.
 - tallowiness in, (52) U.S.D.A. 504.
 - treatise, (56) 75.
 - use in infant clinics, (54) 190.
 - v. skim milk for pigs, (53) Can. 872.
 - water in, determination, (52) U.S.D.A. 505.
- prepasteurized, relation to gastro-enteritis in infants, (53) 581.
- price differential for, (57) Ill. 588.
- prices, Cleveland and Pittsburgh, seasonal changes, (60) Ohio 482.
- problem of Boston, (53) 580.
- processing, clarifier and filter in, (58) Mich. 470.
- Producers' Association of America, certified, proceedings, (57) 372.
- production—*see also* Milk secretion.
 - and body form, (55) 571.
 - and butter fat percentage from related animals, (56) 170.
 - and fat content, effect of brewery waste, (51) 675.
 - and marketing, (57) 386.
 - annual, errors of estimates, (55) 267.
 - corn silage v. Napier grass silage for, (60) Fla. 174.
 - economics of, (53) 793.
- production, effect of—
 - age of cow, (53) 176.
 - care and feeding, (58) 570.
 - endocrine gland injections, (55) N.J. 66.
 - feed, (51) S.Dak. 474.

Milk—Continued.

- production, effect of—continued.
 flies and fly sprays, (54) 659;
 (59) 760, N.C. 773.
 gluten feed, (56) 472.
 heat period, (55) 872.
 legumes, (57) Ohio 175.
 mixed feeds, (59) 166.
 orange pulp, (57) Calif. 570.
 silage quality, (57) Pa. 176.
 soy bean hay, (51) Wis. 474.
 stage of lactation, (51) 877.
 sunlight and artificial light, (59)
 Wis. 73.
 surplus feed, (56) 770.
 temperature, (55) Ga. 171.
 temperature and humidity, (57)
 N.J. 73.
 tethering, (56) 471.
 winter exercise of cows, (59) 268.
- production—
 energy basis of measuring, (59)
 Ill. 467.
 feed cost, relation to fat content,
 (52) 878.
 feeding for, (51) Ind. 177,
 U.S.D.A. 177; (55) Wyo. 468,
 N.Dak. 570; (59) Wyo. 267.
 from different quarters of udder,
 (59) Wash.Col. 73.
 hay v. alfalfa for, Wyo., (53) 673;
 (54) 768.
 high-grade, essentials, (56) Vt.
 570.
 hygienic, (55) 68.
 improved sanitation in, (57)
 U.S.D.A. 768.
 improvement, (54) Nebr. 68.
 in Denmark, (59) 875.
 in Spain, (55) 676.
 increasing by heavier feeding,
 (51) Ohio 475.
 indexes for persistency, (56) 170.
 inheritance, (54) Me. 322; (55)
 525, 772; (56) 272; (57) 423,
 823.
 kafir v. cane silage for, (59) Okla.
 666.
 Kellner's requirements, criticism,
 (53) 673.
 legume hays for, (60) U.S.D.A.
 473.
 methods and costs, (51) 279.
 1914 to 1920, (51) 279.
 nutrients required in India, (56)
 672.
 of Jersey cows, effect of season,
 (54) 69.
 papers on, (60) 660, 662.
 protein requirement, (52) 676.
 protein sources for, (53) Va. 578.
 protein utilization in, (53) 274.
 records, supervising, (54) 168.
 relation to basic-surplus market-
 ing plan, (60) Pa. 784.
 relation to dairy type, (60) Pa.
 365.

Milk—Continued.

- production—continued.
 relation to physical characteristics
 of mammary system, (60)
 Wash.Col. 862.
 relation to twinning, (52) 174.
 requirements and costs on Wis-
 consin dairy farms, (58) Wis.
 384.
 soy bean v. alfalfa hay for, (55)
 Pa. 571.
 statistics of Switzerland, (52)
 897.
 sunflower silage v. corn silage for,
 (59) W.Va. 166.
 supplementing pasture for, (55)
 Ind. 66.
 swedes v. silage for, (56) 671.
 sweet sorghum v. corn silage for,
 (59) Ariz. 570.
 use of hay for, (53) 377.
 utilization of energy in, (52) U.S.
 D.A. 577.
 utilization of food in, (52) Pa.
 274.
 with antirachitic properties, (52)
 774.
 with low bacterial count, (52)
 277.
- products, effect on pH of cecal con-
 tents of chicks, (54) Calif. 277,
 278.
 products in mixed feeds, estimation,
 (59) 504.
 products, solids in, determination, (53)
 505.
 products v. meat scrap for poultry,
 (54) Ky. 370.
 properties, production, and handling,
 (52) 478.
 protein-free, supplementary value, (51)
 62.
 proteins, *see* Proteins in milk.
 proteolytic bacteria in, studies, (60)
 N.Y.State 771.
- quality—
 and pH score, (54) Mich. 673.
 and quantity, effect of flax feed-
 ing, (58) 68.
 and quantity, effect of milking
 methods, Wash.Col., (59) 73;
 (60) 862.
 control, (52) U.S.D.A. 576.
 determination, methylene blue and
 agar plate methods, (57) Vt.
 275.
 effect of green pressed feed, (54)
 168.
 reductase test, value, (54) 169,
 411, 868.
 tests for condenseries, (57) 178.
 raw and heated, detection, (53) 206.
 raw, safety, (53) 178.
 receiving stations, sanitary efficiency
 in, (55) 471.
 recording in Scotland, (52) U.S.D.A.
 574.

Milk—Continued.

- records, interpretation, (54) 265.
- regulations for Buenos Aires, (53) 474.
- relation of solids to fat and specific gravity, (53) Ill. 176.
- relation to child life and health, (52) U.S.D.A. 562.
- relation to public health, (52) U.S.D.A. 562; (53) 178; (55) 72, 471, 590; (60) 570, 661.
- remade and natural, viscosity, (51) 613.
- remade, paper on, (55) 471.
- remade, properties, (51) 506.
- ropy, cause, (52) West.Wash. 377; (56) 73; (57) 76.
- ropy, distribution of organisms in milk plants, (51) 380.
- sale and advertising, (51) 179.
- sale in Scotland, regulations, (51) 279.
- salt content as affected by diet, (51) 166.
- samples, composite, testing, (55) N.J. 68.
- sampling and testing, (55) N.J. 172.
- sampling methods, (60) 264.
- sanitary, relation to utensils, (53) 178.
- sanitation, function of state, (53) 580.
- scoring, (58) 169.
- secretion—*see also* Milk production.
 - age changes in, (58) Mo. 768.
 - and feed consumption, relation, (52) 878.
 - and nutrition of cows, papers on, (52) U.S.D.A. 575.
 - effect of edestin, (56) Ill. 376.
 - effect of inheritance, (58) 528.
 - effect of period of lactation, (51) 379.
 - experimental disturbances in, (56) 272.
 - following parturition, (51) 777.
 - mode of inheritance, (59) Mo. 822.
 - of Guernsey cattle, evolution in, (55) 267.
 - physiological factors, (56) 473.
 - rate, effect of accumulation in mammary gland, (52) 175.
 - rate, factors affecting, (54) 867, Ill. 867.
 - relation to composition of blood, (52) 878.
 - relation to udder size, (57) 767.
 - studies, (54) Me. 673, Mo. 768; (55) Me. 171, Me. 470; (57) Mo. 464; (58) Mo. 469; (59) 268.
 - treatise, (53) 72.
- separated, cell contents of different portions, (56) N.Y.State 274.
- separated, use for pig feeding, (52) 674.
- serum, specific gravity, (52) 774.
- serving in schools, (53) 580.
- sickness and acidosis, (56) 572.

Milk—Continued.

- sickness, discussion, (55) 874.
- sickness due to richweed poisoning, (59) 879; (60) 176.
- sickness, studies, (55) U.S.D.A. 372.
- skimmed, *see* Skim milk.
- solids, effect in ice cream, (53) N.Y.State 476.
- solids in food products, determination, (57) 112.
- solids in mixed feeds, determination, (60) 15.
- solids-not-fat content, variation in, (58) 870.
- sour, chemistry of, (60) N.Y.State 474.
- sour, feeding value, Mo., (51) 776; (53) 471; (54) 762; (58) 467.
- sterilization by steam impact, (58) 169.
- substitutes for calves, (53) Mass. 473.
- substitutes for chicks, (59) Wis. 71.
- substitutes for pigs, Can., (51) 275; (54) 862.
- sugar, colorimetric determination, (57) 611.
- sugar from whey, method of obtaining, (59) 576.
- sugar, manufacture, analysis, and applications, (59) 203.
- supply—
 - control, papers on, (60) 786.
 - for cities, (54) 572.
 - improving and protecting, papers on, U.S.D.A., (52) 575, 576.
 - of Baltimore, pin-point colonies in, (55) 775.
 - of Lansing, (51) Mich. 178.
 - of Lyon, France, restoration, (55) 471.
 - of Massachusetts, (57) Mass. 588.
 - of Pusa, bacterial content, (54) 169.
 - of Ypsilanti, (51) Mich. 179.
 - relation to vocational schools, (57) 667.
 - under tropical conditions, (52) U.S.D.A. 562.
- survey of North Dakota cities, (51) 580.
- sweetened condensed—*see also* condensed.
 - antiscorbutic property, (51) 368.
 - bacterial thickening, (51) 380.
 - crystals in, (52) U.S.D.A. 503.
 - determining total solids, (52) 314.
 - form of lactose in, (55) 504.
 - keeping quality, (52) U.S.D.A. 504.
 - rancidity in, (56) 611.
 - sucrose determination in, (57) 12.
 - tallowiness in, (56) 612.
 - testing for butter fat, (60) Pa. 368.
 - total solids in, (55) 613.
- synthetic, studies, (57) 801.
- testing—
 - and handling, (57) Colo. 571.
 - Babcock method, (51) 677; (52) Colo. 879.

Milk—Continued.

- testing—continued.
 Babcock method as affected by adulterated acid, (53) 109.
 Babcock method, differences in reading, (55) 675.
 directions, (51) Mo. 579; (60) 206.
 tests, Roese-Gottlieb v. Babcock, (51) 207.
 thermophile coagulating, (60) 664.
 thermophilic bacteria from, (51) 779.
 titratable acidity and pH of, effect of heating, (56) 611.
 titratable acidity, relation to pH, (58) 571.
 total solids in, effect of temperature, (56) Ill. 375.
 trade, value of research for, (54) 475.
 transportation and distribution, papers on, (52) U.S.D.A. 575.
 transportation by motor truck, U.S.D.A., (51) 892; (53) 683.
 treated with calcium chloride, curdling tests, (57) 179.
 treatise, (57) 869.
 treatment by electrical method, (57) 75.
 tuberculin-tested, economics of production, (57) 178.
 tuberculous, concentration of bacilli in, (54) 577.
 tuberculous, effect of pasteurization, (59) 668.
 turnip flavor in, (53) 880.
 ultrafiltration, technique, (51) 316.
 use in cities, (53) 580.
 use in diet and pellagra, (52) 463.
 utensils, washing and sterilizing, (55) U.S.D.A. 69.
 v. beef scrap for laying hens, Can., (52) 571; (54) 764.
 value, educating public to, (52) U.S.D.A. 562.
 value for chicks, (56) Iowa 869.
 value in poultry rations, (54) Ill. 368.
 value, papers on, (58) 672.
 variations from different quarters of udder, (51) 476.
 viscolizing or homogenizing process, (58) Pa. 365.
 viscosity and surface tension, (54) N.Y.State 376.
 viscosity, studies, (59) 574.
 vitamin A and B in, (57) 391.
 vitamin A destruction in by ultra-violet light, (56) 88.
 vitamin B potency, effect of vitamin in ration, (56) Pa. 169; (58) 269.
 vitamin C in, effect of copper, (51) 568.
 vitamin C in, relation to vitamin C in ration, (57) 94.
 vitamin F and G potency, (60) 694.
 vitamins in, factors affecting, (57) 687; (59) 573; (60) Ohio 472.

Milk—Continued.

- water buffalo, cost of production, (52) 894.
 watered, detection, (51) 713; (52) U.S.D.A. 505; (53) 505.
 water-soluble solids as source of vitamin B, (60) 94.
 whey formation, effect of viscolization, (59) N.J. 368.
 whole v. condensed, for malnourished children, (51) 67.
 yeasts in, (60) 570.
 yield—
 and butter fat percentage, correlation coefficients, (58) 220.
 and composition, effect of change in diet, (53) 571.
 and composition, effect of inanition, (58) 470.
 and composition, effect of mineral deficiency, (57) 372.
 and quality, effect of age of cow, (58) 571.
 and quality, effect of stage of lactation and breed, (56) 872.
 and quality, factors affecting, (54) 474.
 effect of watering cows from water bowls, (59) 873.
 energy basis of measuring, (57) 761.
 relation to recurrence of conception, (57) 371.
 variations in, cause, (59) 572; (60) 863.
 zinc and copper dissolved by, (53) 277.
 Milking machines—
 bacteria in, (52) N.Y.State 579.
 care, (56) Conn.Storrs 870; (60) 570.
 cleaning methods, (54) Ill. 374, 376.
 economy and efficiency, Iowa (55) 570; (59) 774.
 electric, cost, (57) Mo. 473.
 electric, in New Zealand, (51) 88.
 simplified type, tests, N.Y.State, (52) 879; (55) 172.
 sterilization, (57) 74, Conn.Storrs 465.
 studies, (59) Iowa 72.
 use, in England, (59) 167.
 Milking utensils, sterilizer for, (56) 873.
 Milkweed—
 economic possibilities, Iowa, (56) 832; (59) 38.
 flagellate infection of, (56) 54, 250.
 flagellates, geographical distribution, (57) 246; (58) 55.
 flagellates, nonpathogenicity in Maryland, (58) 56.
 herpeticomonad flagellates in latex, (51) 260.
 poisonous to sheep, (60) 478.
 seed hairs, composition, (54) 110.
 woolly-pod, poisonous to livestock, (51) U.S.D.A. 381.
 Mill, laboratory, for dried fruits, (51) 113.
 Mill starches, identification, (59) 795.

- Miller's almanac and yearbook, (54) 136;
(59) 228.
- Millet—
as emergency hay crop, (51) Wis. 35.
culture, (53) Nebr. 433.
culture experiments, (60) Oreg. 731.
development, effect of smut, (57) 644.
downy mildew, (58) 549.
effect on following crop, (55) N.Dak.
528.
Everglade, downy mildew affecting,
(60) 51.
fall seeding experiments, (52) 633.
hairless plants, value, (54) 232.
hay production, (52) Mont. 435.
hydrocyanic acid in, (53) 571.
insects and mites affecting, (54) 257.
Italian, proteins in, (60) 291.
Japanese barnyard, for soiling crop,
(57) Oreg. 430.
leaf spot, notes, (58) 647.
pearl, hybrid condition, (52) 830.
pearl, plant organs and characters,
(59) 629.
seed disinfection for smut, (57) 544.
seeding experiments, (52) 830; (54)
Mich. 634.
smut control, (59) 345.
smuts, history and control, (55) 546.
varieties, (57) Tenn. 126.
varieties and requirements, (58) 632.
varieties for peat lands, (55) Minn.
527.
varieties, forage value, (53) U.S.D.A.
132.
variety tests, (51) N.Dak. 833; (52)
Ga.Coastal Plain 224, N.J. 732, Wash.
Col. 829; (53) Wyo. 133, N.Dak.
334, Can. 530, Ariz. 733; (54) Ga.
Coastal Plain 130; (56) Ga.Coastal
Plain 523; (58) Ga.Coastal Plain
732; (60) N.Dak. 34, Ga.Coastal
Plain 132.
wild, downy mildew, (54) Fla. 342.
yields, (51) Nebr. 831; (60) Mont. 730.
- Milling and baking laboratory of Bureau
of Agricultural Economics, work, (51)
U.S.D.A. 413.
- Millipedes—
control, (60) Guam 845.
in cold frames, control, Pa., (52) 252;
(56) 154; (58) 345.
- Milo—
culture, (52) U.S.D.A. 828.
dwarf, culture experiments. (52) Calif.
32.
dwarf, irrigation experiments, (52)
Calif. 33.
Helleman dwarf, notes, (55) Calif. 331.
kernel smut, control, (56) Kans. 842.
rotation experiments, (54) Calif. 230.
smut, new strain, (57) 545.
smut, resistance in, (56) 246.
spacing experiments, (59) Tex. 730.
yields, effect of outside rows, (55)
132.
- Miltogrammini, synopsis, (55) 763.
- Mimorista flavidissimalis, studies, (56) 58.
- Mimosa—
conduction of excitation in, (59) 819.
pudica as weed in Cuba, (54) 239.
pudica movement, effect of anesthetics,
(58) 726.
- Mineola—
indigenella, *see* Leaf crumpler.
scitulella, studies, Idaho, (57) 755;
(59) 757.
vaccinii, *see* Cranberry fruit worm.
- Mineral—
constituents of apples, (60) 723.
constituents of milk, (52) U.S.D.A.
576.
deficiencies in livestock, (53) 573.
deficiencies in milk, (53) 564.
deficiency, effect on yield and compo-
sition of milk, (57) 372.
deficiency in cattle, (56) Minn. 366.
elements in maintenance of health,
(52) 461.
elements in nutrition of children, (52)
160.
feeds, discussion, (54) Ind. 357.
feeds for farm animals, (51) Wash.
Col. 670.
- metabolism—
of babies, (51) 63.
of breeding ewes, (54) 466.
of chicks, (57) 664.
of dairy cattle, (51) Wis. 475;
(54) 166; (55) 469; (56) 73,
Kans. 870; (57) 377.
of farm animals, (53) 369.
of horses fed bran exclusively,
(56) 72.
of lactating animals, effect of
ultra-violet light, (56) 73.
of swine, (57) 377.
on high mineral diet, (59) 488.
with clover and timothy rations,
(59) N.Y.Cornell 365.
mixture for chickens, (52) Ohio 476.
mixtures for pigs, (52) Ala. 473; (53)
Iowa 775, Can. 870; (54) Iowa
860; (56) Ky. 164; (60) Guam 858.
mixtures, iodine determination in,
(59) 709.
nutrients in foods and feeds, (57)
292.
nutrients in plant solutions as ferti-
lizer requirement index, (57) 812.
nutrients in trees, intake and translo-
cation, (54) 741.
nutrition of dairy cows, (54) 472.
nutrition of farm animals, (55) 57.
nutrition of pigs, effect of sunlight,
(54) 469.
oils, *see* Oils.
raw materials for fertilizers, world
conditions, treatise, (56) 720.
- requirements—
for egg production, (53) Ind. 172,
273, Ohio 577.
of animals, (59) Iowa 65.

Mineral—Continued.

- requirements—continued.
 of baby beeves, (53) Ohio 574.
 of calves, (54) Can. 473.
 of dairy cattle, (53) Mich. 379,
 Ohio 580; (55) Mich. 571;
 (58) 563.
 of livestock, (51) Ill. 771; (52)
 Mich. 71; (57) Wis. 64.
 of pigs, (54) Ohio 163.
 of poultry, (57) 72, N.C. 271;
 (59) 362.
 of range cattle, (56) 263.
 resources, nonmetal, of United States,
 (55) 422.
 resources of United States, (52) 215;
 (54) 518.
 salts, *see* Salts.
 soils, drainage theory of, (60) 513.
 soils, hay from, nutritive value, (59)
 462.
 soils, humic matter in, estimation,
 (53) 503.
 substances, cellular exchange, relation
 to dispersion of electrolytic colloids,
 (57) 319.
 supplements, effect on growth and re-
 production, (53) 167.
 supplements, effect on rats, (56) Iowa
 863.
 supplements, effect on reproduction in
 rats, (54) 858.
 waters, Swiss, iodine determination in,
 (53) 201.

Mineralogy, soil, treatise, (57) 314.

Minerals—

- agricultural, inspection and analyses
 in California, (54) 423; (55) 725.
 and metabolism, (60) 786.
 and vitamins in stock feeding, (54)
 561.
 effect on brood sows, (57) 70.
 effect on growth and reproduction,
 Ala., (58) 460; (59) 65; (60) 168.
 feeding value, (59) Mich. 466.
 for animals, value, (55) Iowa 561.
 for baby beeves, (51) Ohio 468.
 for dairy cattle, (55) Mass. 561, Iowa
 569; (56) Wis. 771, 872; (57)
 Mich. 666, 762; (59) Iowa 72, Ohio
 267, Ala. 667; (60) Ala. 173, Pa.
 365.
 for ewes, Ohio, (59) 260; (60) 462.
 for livestock, sources, (55) 260.
 for pigs, (51) Ohio 469, Iowa 470,
 Ill. 574, 774; (52) Kans. 469; (54)
 Nebr. 365; (56) Iowa 266, Iowa
 267, 866; (57) Ohio 171, Tex. 172,
 Ohio 462, 762; (58) Pa. 359; (59)
 Wis. 68, Ohio 261, Ind. 765.
 for poultry, (58) S.Dak. 766.
 for steers, (55) Iowa 160.
 free-choice feeding experiments with
 cattle, (60) Ill. 568.
 in animal body, distribution, (58) Mo.
 460.

Minerals—Continued.

- in bones of calves, depositions, (59)
 366; (60) Pa. 365.
 in culture media, absorption by plants,
 relation to concentration, (59) 423.
 in diet, effect of variations in, (59)
 862.
 in diet, effect on fat of body, (55) 91.
 in feed crops, relation to soil, (58)
 S.C. 618.
 in leaves, during autumnal yellowing,
 (59) 821.
 in pastures, relation to animal nutri-
 tion, (60) 853.
 in swine rations, effect, (55) Tex. 362.
 in wheat rations, (51) Wash.Col. 169.
 iodine content, (53) 202.
 production statistics, (57) 808.
 rôle in nutrition, (55) 791.
 significance in plants, (60) 511.
 utilization by pregnant ewes, (53) Ohio
 574.
 Miners and their families, nutrition of, (54)
 88.
 Minks, raising, (54) 274; (58) U.S.D.A.
 343.
 Minks, raising, treatise, (57) 175.
 Minnesota—
 Crookston Substation, report, (51)
 197; (53) 194; (55) 394; (56) 598;
 (58) 899.
 Duluth Substation, report, (51) 694;
 (55) 796; (60) 199.
 Morris Substation, report, (51) 197;
 (53) 195; (55) 796; (56) 598; (57)
 299.
 Northeast Demonstration Farm, re-
 port, (51) 694.
 Station, notes, (51) 696, 798; (52)
 698; (54) 398, 495; (55) 98; (57)
 99, 496, 900; (58) 698; (59) 100,
 299, 398, 798.
 Station, report, (51) 797; (52) 598;
 (53) 497; (54) 96; (55) 298, 299;
 (57) 697; (59) 196.
 Station, work of, (53) 299.
 University, notes, (51) 696, 798; (52)
 99; (54) 398, 699; (55) 98, 397;
 (56) 196, 798; (57) 99, 496, 900;
 (58) 698; (59) 100, 299, 398, 798.
 Waseca Substation, report, (55) 196,
 299.
 Mint—
 effect of radium treatment, (60) 338.
 flea beetle, studies, (52) 499, Mich,
 758; (55) Mich. 357.
 flea beetle, systematic status, (60) 655
 Miresa nitens, parasite of, (52) 554.
 Mirostroma juglandis, notes, (56) 647.
 Misocyclops marchali, parasite of Perrisia
 pyri, (60) 657.
 Mississippi—
 College, notes, (51) 198, 696; (52)
 300; (53) 197; (57) 699; (58) 600.
 River, new island in, (51) 719.
 Station, Delta Branch, report, (51)
 197.

Mississippi—Continued.

- Station, Holly Springs Branch, report, (53) 195; (55) 299; (60) 98.
 Station, notes, (51) 198, 696; (53) 197; (54) 97; (56) 900; (57) 395, 699; (58) 300, 600; (59) 100, 499, 599; (60) 698.
 Station, Raymond Branch, report, (55) 299; (56) 797; (59) 898.
 Station, report, (52) 299; (53) 398; (55) 599, 697; (58) 96.
 Station, South Branch, report, (53) 299; (55) 299; (56) 797; (59) 396.

Missouri—

- Fruit Station, notes, (51) 798.
 Fruit Station, report, (51) 96; (55) 599; (57) 598.
 Poultry Station, notes, (53) 300; (54) 399.
 State Poultry Association, yearbook, (53) 668, 669, 680, 681; (55) 265; (60) 860.
 State Poultry Board, report, (53) 669.
 Station, notes, (51) 98, 696; (52) 199, 499; (53) 197, 499; (55) 98; (57) 300; (58) 300; (59) 697, 899; (60) 900.
 Station, report, (51) 797; (53) 497; (54) 796; (57) 494; (58) 498.
 University notes, (51) 98, 696; (52) 199, 499; (53) 197, 499; (54) 700; (55) 98, 397, 797, 900; (56) 96, 196, 600; (57) 300; (58) 300; (59) 697, 899; (60) 600, 900.

Mistletoe—

- in lower bole of incense cedar, (58) 154.
 monograph, (53) 728.
 notes, (54) 252.

Mistletoes—

- on cultivated trees in Malaya, (53) 148.
 on rubber, (53) 153.

Mite, black sand, notes, (59) 456.

Mites—

- affecting mushrooms, Pa., (56) 154; (58) 345; (60) 356.
 affecting tea plants, (57) 761.
 and bark beetles, (55) 854.
 attacking parasites of white pine weevil, (58) 266.
 control in parasite breeding laboratories, (60) 556.
 in tracheal system of Orthoptera, (55) 660.
 infestation of flax seed by, (56) 662.
 infestation of mosquitoes by, (51) 256.
 lice, and fleas, (51) West.Wash. 397.
 of Ohio, (54) Ohio 159.
 on fruit trees, control, (58) U.S.D.A. 864.
 South African, notes, (59) 456.

Mitochondria—

- enzymatic function in cereal germination, (60) 423.
 instability of forms and permanence, (58) 522.

Mitogenetic rays, (56) 517.

- Mitosis in chick tissue cultures and in sectioned embryos, (55) 631.
 Mizococcus, new genus, erection, (60) 250.
 Mociis repanda, notes, (52) 61; (53) 156; (56) 552.
 Modecca digitata, toxicity, (52) 82.
 Mohair fleeces, kemp fibers in, (58) U.S.D.A. 299.
 Mohair production and trade, (54) 466.
 Mohler, J. R., papers on, (57) 763.
 Mohua cake, fertilizing value, (55) 625.
 Moist closet, constant temperature, design, (56) U.S.D.A. 882.

Moisture—

- absorption in cotton, (53) 634.
 belts of North America, (54) 209.
 determination apparatus, (53) 805; (59) 203.
 determination by distillation method, (59) 14.
 determination by volatile solvent method, (57) 408.
 determination in dried milk, (51) 316.
 determination in wheat and flour, (52) 205.
 effect on concrete, (53) U.S.D.A. 84.
 effect on electrical properties of insulating waxes, resins, and bitumens, (57) 777.
 equivalent of soils, studies, (52) Calif. 810; (53) 318, 722; (56) 208, 510.
 evaporation in air currents, (54) 680.
 in meat, determination, (55) 804.
 in walls of buildings, movement, (51) 889.
 in wheat and flour, determination, (55) 805.
 movement in timber, relation to seasoning, (57) 677.
 movement in wood, (58) 819.
 tester, Brown-Duvel, operation, (54) U.S.D.A. 708.

Molasses—

- alcohol from, acid requirements, (51) 809.
 as source of vitamin B, (53) 660.
 availability of iron in, (56) 494.
 blackstrap, feeding value, (58) Pa. 569.
 blackstrap, weight per gallon, (59) 713.
 composition, production, and consumption, (54) 11.
 dry substance in, (51) 113.
 effect on digestibility of total ration for cows, (54) 67.
 feeding, effect on dairy cows, (52) Pa. 275.
 feeding value, (52) U.S.D.A. 78, Mo. 466; (54) Wyo. 759; (55) Miss. 668, 768, 861.
 fermentation, low yield of alcohol from, (58) 811.
 grass, behavior, (52) Fla. 224.
 grass, toxicity to cattle tick, (53) 156.
 history and use, (51) 614.

- Molasses—Continued.
 motor fuel from, (53) 790; (55) 278.
 pectin and pentosan content, (53) 207.
 solids and moisture in, (55) 112.
 use as fertilizer, (52) 324.
- Mold—
 action on abaca, (57) 297.
 associated with abortion in cattle,
 (53) 678.
 of cheese, characteristics, (52) 279.
 sooty, control, (51) N.H. 149.
 sudden development after Tokyo
 earthquake, (54) 843.
- Molds—
 biochemical differences between sexes,
 (57) 124.
 development, effect of vitamins, (55)
 24.
 in butter, determination, (60) 865.
 in creamery butter, (60) 572.
 in silage, effect on livestock, (51)
 382.
 on frozen meats, (51) 365; (53) 657.
 water, causing tomato rootlet injury,
 (57) 153.
 water, from soil, (58) 208.
- Mole cricket, Porto Rican—
 control on golf courses, (56) 359.
 summary, (59) U.S.D.A. 457.
- Mole drainage—
 by direct haulage in England, (54) 75.
 cost of, in Great Britain, (59) 382.
- Molecular movement, Brownian, in plants,
 (52) 425.
- Moles—
 common garden, in Iowa, (51) Iowa
 54.
 European, economic importance, (58)
 855.
 Townsend's, food habits, (58) 660.
 trapping, (53) Iowa 755.
- Mollisia earliana, notes, (52) 352; (57)
 55.
- Mollusks—
 arthropod enemies of, (54) 460.
 as intermediary hosts of parasitic dis-
 eases, (59) 877.
 sex ratio in, (57) 223.
- Monanthia globulifera, life history, (52)
 155.
- Monocophora saccharina—
 bionomics, (58) 455.
 studies, (60) 650.
- Monilema crassa, studies, (56) 58.
- Moniezia expansa—
 control in sheep, (60) 373.
 notes, Wyo., (59) 272; (60) 776.
- Monilia—
 cinerea, control, (60) 345.
 fimicola, notes, (57) 540.
 foliicola, studies, (55) 543.
 fructigena—see also Cherry and
 Peach brown rot.
 action of salts on, (57) 649.
 notes, (53) 43.
 koningii, notes, (60) 29.
 laxa on apricots, (52) 150.
- Monilia—Continued.
 oregonensis and Sclerotinia cinerea,
 relation, (58) 53.
 oregonensis n.sp., notes, (57) 752,
 847.
 rots, time-temperature relations, (60)
 552.
 sitophila, bakery infection with, (56)
 391.
 sitophila group, life histories and
 heterothallism, (57) 620.
 sitophila, notes, (54) 843.
 spp., notes, (52) Calif. 49; (57) 649;
 (58) 647.
- Moniliopsis—
 aderholdi, infection tests, (57) 447.
 foliicola, proposed name, (55) 543.
- Monilochaetes infuscans, studies, N.J., (52)
 744; (55) 43; (57) 48.
- Monkeys—
 menstrual cycle in, (56) 819; (57)
 824; (60) 129.
 menstruation without ovulation in,
 (57) 723.
 sex chromosomes, (51) 334.
- Monocalcium phosphate—
 effect on flour-in-water suspensions,
 (55) 612.
 neutralizing value, (55) 505.
- Monochaetia—
 berberidis n.sp., description, (59) 537.
 cryptomeriae n.sp., description, (56)
 748.
- Monococcum, definition, (54) 802.
- Monocotyledons—
 leaf-tip tendrils in, (54) 523.
 morphological study, (56) 812.
- Monocrepidius—
 bifoveatus, notes, (53) 156.
 lividus, notes, (60) Pa. 356.
- Monodontus trigonocephalus, development,
 (58) 775.
- Monohystera sp., notes, (57) 749.
- Monomolybdophosphotungstic acid, rapid
 preparation, (56) 12.
- Monomorium minutum, notes, (55) 858.
- Mononchus spp.—
 in sugar beet fields, (57) 151.
 relation to sugar cane root rot, (57)
 152.
- Monophlebinae, classification, (56) 858.
- Monophlebus—
 in India, notes, (52) 155.
 stebbingii octocaudatus in Pusa, con-
 trol, (58) 859.
- Monotropia hypopitys, new glucoside in,
 (53) 826.
- Monotropitin, proposed name, (53) 827.
- Monsoon conditions, vegetation phases
 under, (55) 124.
- Mont Alto Forest, silvicultural studies in,
 (51) 750.
- Montana—
 Colleges, notes, (51) 497; (53) 499;
 (54) 900; (55) 99, 797; (56) 196,
 700, 900; (57) 396; (58) 698; (59)
 899.

Montana—Continued.

- Grain Inspection Laboratory, activities, (52) Mont. 638.
- Station, notes, (51) 497; (53) 499; (54) 900; (55) 797; (56) 700, 900; (57) 396; (58) 698; (59) 899.
- Station, report, (52) 497; (54) 396; (56) 195; (57) 899 (60) 794.
- Moon, effect on weather, (52) 114.
- Moonlight, effect on leaf movements of legumes, (51) 823.
- Moor—
- Culture Association, Swedish, work of, (56) 824.
- meadows, time of mowing experiments, (55) 333.
- soils—*see also* Peat soils.
- ammonification, nitrification, and denitrification studies, (54) 120.
- effect of phosphates, (58) 817.
- establishing meadows on, (57) 427.
- fertilizer experiments, (51) 623; (52) 120.
- microbiological analysis, (58) 208.
- nitrogen transformation, factors affecting, (53) 118.
- reaction, determination, (60) 505.
- waters, potash fertilization, (51) 625.
- Moors of—
- Finland, botanical development, (55) 217.
- northwestern Bohemia, (53) 114.
- Mormidea poecila, notes, (60) 846.
- Mormon agricultural village, history and layout, (54) 288.
- Mormon farm village, social survey, (53) 797.
- Mormoniella spp., notes, (53) 160.
- Morning-glory, Japanese—
- deformed leaves in, inheritance, (56) 521.
- linkage in, (58) 825.
- Morning-glory, wild, *see* Bindweed.
- Morphogenesis—
- in animals, (56) 331.
- materials for physiology of, (56) 662.
- Morphology of animals, synopsis, (58) 556.
- Morrill Land-Grant College Act, history, (55) 384.
- Morrow plats, data from, (58) Ill. 619.
- Mortality, prenatal, sexual difference in, (58) 629.
- Mortar—
- beams, cantilever testing apparatus for, (59) U.S.D.A. 478.
- compressive strength, effect of salts in mixing water, (58) 779.
- effect of beet pulp, (54) Colo. 780.
- strength, effect of alkali, (51) 788.
- strength, effect of grading sand, (56) U.S.D.A. 177.
- strength, effect of mineral composition of sand, (60) U.S.D.A. 779.
- strength, test methods for, (55) 682.

Mortars—

- cement-lime, tests, (55) 880.
- Portland cement, effect of steam treatment on resistance to sulfate action, (59) 377.
- Mosaic—*see also specific host plants.*
- and related diseases, (56) 648.
- cross-inoculation studies, (56) 48.
- disease, host range, (52) 647.
- disease, infection of tomatoes and tobacco from commercial tobacco, (60) 53.
- disease, intracellular bodies in, (51) 449.
- disease, studies, (51) Iowa 449, 543.
- disease viruses, studies, (56) Iowa 840.
- diseased plants, bodies in phloem, (52) Mich. 346.
- diseases—
- cytological and physiological studies, (59) 445.
- effect on cell content, (59) 340.
- history, characteristics, and control, (58) 647.
- in India, (55) 445.
- in Indiana, (55) 242.
- infective agent, (54) 745.
- of cucumber, tomato, and *Physalis*, comparison, (58) 647.
- of plants, interspecific transmission, (54) N.Y.Cornell, 842.
- on differential hosts, (58) 647.
- popular discussion, (54) 543.
- protozoa associated with, (53) 646.
- studies, (56) 349; (59) Conn. State 46, 637.
- temperature studies, (53) 646.
- transmissibility and pathological effects, (53) Iowa 747.
- types, (53) 199.
- inheritance, studies, (53) 729.
- virus, inhibition, (58) 552.
- virus, method of obtaining, (52) 545.
- virus properties, factors affecting, (57) 744.
- Moskonfyt, studies, (51) 716.
- Mosla, species hybrids in, (54) 424.
- Mosquito—
- Control Institute, British, Hayling Island Branch, report, (59) 357.
- Extirpation Association, New Jersey, meeting, (59) 859.
- fish, relation to malaria and mosquito control, (58) 262.
- larvae, effects of changes of pH value, (56) 461.
- larvae, toxic action of oil films on, (53) 859.
- larvae, toxic action of pine oil on, (54) 57.
- repellents, (54) 260.
- survey in South Africa, (59) 356.
- Mosquitoes—*see also* Malaria and *Aedes*, *Anopheles*, *Culex*, *etc.*

Mosquitoes—Continued.

- activity, relation to temperature and humidity, (54) 260.
- anopheline, identification of larvae, (53) 559.
- anopheline, of Japan, revision, (55) 459; (56) 557.
- artificial feeding, technique, (57) 560.
- at Quantico, Virginia, control, (57) 166, (60) 652.
- breeding places, relation to algae, (60) 248.
- British, control, (60) 850.
- British, handbook, (60) 63.
- control, (51) N.J. 662, Conn.State 852; (52) N.J. 752; (53) Conn. State 450; (55) N.J. 54, Conn. State 252; (56) N.J. 62; (57) N.J. 60, Conn.State 161, N.J. 758; (58) 158; (59) N.J. 351, Conn.State 455, 559; (60) Conn.State 751, Mont. 752.
- advancement in, (60) 561.
- at Ottawa, (58) 158.
- by airplane dusting, (55) U.S.D.A. 156; (58) 349.
- by *Chara fragilis*, (59) 356.
- by newts, (60) 653.
- by tadpoles of spadefoot toad, (58) 861.
- by top minnows, (54) 459.
- comparison of Paris green and paraffin liquid, (58) 262.
- difficulties in, (58) 349.
- effect of chemicals on spreading power of oils, (59) 158.
- papers on, (59) 158, 859.
- State laws concerning, (58) N.J. 759.
- work of world, (58) 261.
- development, physical factors in, (58) 861.
- eradication by bats, (54) 459.
- fate of *Leptospira* spp. in, (58) 262.
- household, control at Montreal, (59) 552.
- infectivity of plasmodia of birds for, (59) 356.
- Japanese, as intermediate hosts for *Filaria bancrofti*, (60) 249.
- life history, habits, and rôle in malaria, (58) 163.
- malarial, in Java, (55) 762.
- malarial, notes, Mo., (51) 759; (54) 753.
- new larvicide for, (59) 355.
- night activity, causes, (60) 247.
- notes, (57) Mont. 258.
- of Argentina, synopsis, (60) 849.
- of Australia, larval stages and biology, 557.
- of British Columbia, control, (56) 557.
- of California, (55) 662.
- of Canada, control, (59) 657.
- of Egypt, (54) 459.
- of Panama, (54) 459.
- of Sardinia, control by fish, (58) 861.

Mosquitoes—Continued.

- of South Africa, (60) 574.
- of the Americas, (59) 859.
- of Western Canada, control, (60) 843.
- ovipositing, odors attractive to, (51) 763.
- parasites of, catalogue, (57) 560.
- parasitic mites on, (51) 256.
- powdered larvicides for, (56) 258.
- prevalence, factors affecting, (55) N.J. 54.
- remedies and preventives, (60) U.S.D.A. 166.
- yellow fever, *see* Yellow fever.
- Moss, sphagnum and tree, water holding capacity, (52) 842.
- Mosses—
- destruction by lichens, (51) 127.
- destruction on lawns, (53) Can. 340.
- dry, imbibition and respiratory quotient, (59) 427.
- genetic studies, (56) 127.
- water exchange with atmosphere, (54) 220.
- Moth borers—
- biological notes, (54) 755.
- injury from, (52) 853.
- Moth killers, tests, (60) 162.
- Moth-repelling chemicals, studies, (59) 253.
- Mothers, labor on truck farms, (51) 690.
- Moths—*see also* Lepidoptera.
- American, new genera and species, (58) 160.
- fruit piercing, in South Africa, (54) 157.
- fruit sucking, in South India, (52) 154.
- in Sakhalin (53) 858.
- injurious to fruit, (56) 859.
- North American, revision, (54) 756.
- red tail, bacterial disease of, (59) 654.
- Motion pictures—
- and dairy education, (52) U.S.D.A. 597.
- of United States Department of Agriculture, list, U.S.D.A., (52) 97; (56) 791.
- Motor—
- bus as a common carrier, (54) U.S.D.A. 580.
- freight transportation, economics of, (58) 686.
- fuel from molasses, (53) 790; (55) 278.
- fuel quality, present tendencies, (59) 479.
- fuel volatility, measurement, (55) 782.
- fuels, antiknock quality, measuring, (60) 378.
- fuels, detonation specifications for, (56) 781.
- fuels, flames of, ultra-violet spectroscopy, (56) 681.
- fuels, petroleum, detonation characteristics, (56) 780.

Motor—Continued.

- fuels, starting properties, determination, (58) 375.
- oil characteristics and performance at low temperatures, (58) 882.
- truck—
- fees and taxes, (54) U.S.D.A. 680.
 - impact, factors affecting, (55) U.S.D.A. 479.
 - impact tests, U.S.D.A., (52) 486; (56) 681.
 - lines, rural, in Twin Cities, (58) 589.
 - tire tests, (53) U.S.D.A. 790.
 - transportation, (53) U.S.D.A. 790.
 - wheels, strength tests, (52) 585.
- trucks—
- air cleaners on, (53) 485.
 - and large tractor-drawn wagons, hauling with, (59) U.S.D.A. 281.
 - factor in fruit transport, (59) U.S.D.A. 882.
 - farm, operation, (52) U.S.D.A. 288.
 - handbook, (53) 187.
 - in New York, (51) N.Y.Cornell 793.
 - six-wheel, and pavements, U.S.D.A., (54) 179, 180.
 - transportation of milk in, (53) U.S.D.A. 683.
- vehicle—
- accidents in Northwest, (52) U.S.D.A. 783.
 - fees and gasoline taxes, (52) U.S.D.A. 184.
 - fees, receipts from, (55) U.S.D.A. 781.
 - license fees and gasoline tax, constitutionality, (52) U.S.D.A. 486.
 - registrations, U.S.D.A., (51) 483; (55) 781.
 - registrations and revenue, U.S.D.A., (54) 76; (57) 186.
 - registrations, mid-year, (52) U.S.D.A. 184.
 - registrations, revenue, and gasoline taxes, (55) U.S.D.A. 278.
 - revenues, collection and disposition, (56) U.S.D.A. 681.
 - traffic, transverse distribution on paved roads, (53) U.S.D.A. 83.
- vehicles—
- as common carriers, regulation, (52) U.S.D.A. 184.
 - horses, and mules, (52) U.S.D.A. 695.
 - wind resistance, (54) U.S.D.A. 384.
- Motors, farm, treatise, (53) 590.
- Mount Desert Island, biological survey, (60) 161.
- Mount Rainier National Park, handbook, (53) 744.
- Mountain lions in Arizona, habits, (56) 656.
- Mountain parrot, notes, (52) 552.
- Mountain sickness, form of, (51) 100.
- Mountain valley, transect of, (51) 821.
- Mouse—*see also* Mice.
- gynandromorph, description, (57) 725.
 - Japanese waltzing, origin and genetics, (55) 427.
 - typhoid epidemics, rôle of Twort-d'Herelle phenomenon in, (55) 473.
 - typhoid infection, virulence and host susceptibility, (52) 731.
- Mowrah seed oil, composition, (54) 109.
- Mucilage, carrageen, determination, (57) 409.
- Muck—
- and peat lands of Pacific Northwest, (60) 513.
 - crops, fertilization and quality, (55) Mich. 97.
 - humus, nodule organisms in, (52) 122.
 - land, fertilization, (51) Mich. 22.
 - land, varieties of general crops for, (56) Mich. 823.
 - land, wind injury to crops on, prevention, (54) 511; (57) Mich. 16.
 - nitrogen in fertilizer mixture for, (52) Mich. 722.
 - roller, construction, (51) Mich. 589.
 - soil reaction, relation to leaf vegetables, (60) 338.
 - soils, effects of lime and potash, (55) 516.
 - soils, fertility requirements, (51) Mich. 119.
 - soils, management for onions, (58) Mich. 838.
 - soils of Michigan, (55) Mich. 116.
 - soils of Michigan, management, (60) 511.
 - soils, phosphorus fixation in, (60) 23.
 - soils, studies, (53) N.C. 723.
 - soils, unproductive, (58) N.Y.State 816.
 - soils, unproductive, effect of copper, (59) 339.
- Mucor—
- growth-promoting substance in, (53) 766.
 - racemosus, notes, (54) 549.
 - racemosus, studies, (53) 753.
 - ramosissimus, notes, (60) 29.
- Mucorales, distribution, habitats, and physiological reactions, (60) 29.
- Mucorineae, sexuality and parasitism in, (57) 48.
- Mucors—
- homothallic, sexuality, (57) 121.
 - sexes in, biochemical differences, (55) 520; (57) 621.
- Mucosus organism from suppurative lesions of rat on vitamin A deficient diet, (60) 689.
- Mugwort as host of corn borer, (60) Mich. 456.
- Mulberries, fertilization in China, (53) 619.
- Mulberry bacterial blight in Britain, (56) 654.

- Mule, fertile, in Tripoli, (54) 129.
 Mule, fertile mare, (51) 231.
- Mules—
 corn v. oats for, (52) Mo. 272.
 feeding experiments, (59) Miss. 164.
 heredity in, (55) 770.
 outlook, (57) Mo. 585.
 production, treatise, (56) 767.
 work, ration for, Miss., (55) 669;
 (58) 67.
- Mullen rosettes as winter shelters for insects, (51) 759.
- Mullen tester, use in determining bursting strength of fabrics, (54) 296.
- Multiceps serialis theropithecii, proposed name, (58) 253.
- Mung bean—
 disease in Philippines, studies, (56) 351.
 hay v. alfalfa hay, feeding value, (58) Ark. 362.
 sprouts, vitamins in, (59) 192.
- Mung beans—
 as cover crops, (59) Guam 523.
 behavior, (51) N.C. 832.
 chemical and nutritive properties, (57) Okla. 563.
 crystals of vitamin B from, (53) 503.
 culture experiments, (54) V.I. 231.
 nutritive value, (57) 192; (58) 387.
 phosphorus in, (60) 204.
 production, (55) 229.
 seeding experiments, (52) Calif. 33.
 varieties as cover crop, (56) Guam 228.
 variety tests, Okla., (57) 226; (58) 734, 828.
- Murgantia histrionica, *see* Harlequin bug.
- Muriate of potash, *see* Potassium chloride.
- Musca domestica, *see* House flies.
- Muscidae causing myiasis in man and animals, (57) 873.
- Muscina—
 pabulorum, parasite of Dendrolimus pini, (60) 656.
 pascuorum distribution in America, (52) 157; (55) 857.
 pascuorum, notes, (58) 263.
- Muscle—
 effect on blood regeneration, (53) 867.
 fatigue and vitamin deficiency, (53) 767.
 respiratory activity and vitamin B content, (52) 65.
 striated and smooth, effect on hemoglobin production, (56) 494.
- Muscoid flies, tentative arrangement, (54) 460.
- Muscular—
 action, mechanism, (51) 100.
 activity and carbohydrate metabolism, (54) 292.
 activity, dynamics of, (58) 492.
 contraction, relation to protein metabolism, (58) 789.
 exercise, type of fuel used in, (58) 190; (59) 391, 391.
- Muscular—Continued.
 response of rats to galvanic stimuli, (60) 493.
 work, source of energy in, (60) 193.
- Museum beetle, biology, (59) 853.
- Mushroom—
 beds, fertilizer experiments, (58) N.Y. State 835.
 disease, notes, (57) 540.
 diseases and carriers, (59) U.S.D.A. 52.
 diseases, control, (58) Pa. 339.
 mite, control, (58) 158.
 pests, notes, (59) 652.
 species, mica ink-cap, notes, (56) N.Y. State 140.
- Mushrooms—
 antiscorbutic properties, (53) 62.
 cultivated, control of pests, (56) Pa. 154.
 culture, control of flies and mites, (58) Pa. 345.
 culture, cottonseed meal for, (58) N.Y. State 138.
 edible and poisonous, differentiation, (54) 391.
 edible and poisonous, of Canada, (58) 641.
 edible and poisonous, of Colorado, (59) Colo. 42.
 fungus parasite of, (56) Pa. 144.
 in England, diseases of, (56) 847.
 industry in Pennsylvania, (52) 342; (60) Pa. 343.
 Japanese edible, ergosterol in, (59) 595.
 popular descriptions, (54) N.Y. State 524.
 value as auxiliary crop, (51) N.Dak. 837.
- Muskmelon—
 anthracnose, control, (51) 156.
 bacterial wilt, notes, (55) 242.
 Burrell Gem, blooming habit, (55) N.Mex. 439.
 diseases, experiments with sulfur for, (55) Tex. 345.
 diseases, notes, (56) Del. 348.
 downy mildew, studies, (51) Del. 147, 156; (52) Del. 843.
 mildew, control, (56) Guam 245; (57) Tex. 150.
 mildew, treatment, effect, (59) Tex. 751.
 powdery mildew, in Imperial Valley, (59) 148.
 powdery mildew, notes, (57) Calif. 244; (59) 45, Calif. 747.
 rust resistant strains, (53) 543.
 seed, germination studies, (53) Colo. 146.
 seeds, differences in vitality, (58) 629.
 wilt in Japan, (52) 348.
- Muskmelons—
 composition and maturity, (51) U.S.D.A. 746.

- Muskmelons—Continued.
 culture, (52) N.J. 738; (55) U.S.D.A. 340; (56) Calif. 236; (57) Mo. 435; (58) Mo. 436.
 culture at Newlands, (53) U.S.D.A. 840.
 culture, treatise, (59) 138.
 disease resistant varieties, (56) 549.
 duty of water for, (55) N.Mex. 478.
 early, culture, (55) Va.Truck 237.
 economic aspects of industry, (57) Calif. 85.
 effects of pollen on fruit and seeds, (58) 230.
 fertilizer experiments, (53) Mo. 437; (54) Ill. 335, Mo. 738; (56) Ill. 343; (57) N.J. 40, Tex. 136; (59) N.J. 337, Tex. 740.
 fruiting habit and pollination, (54) 443.
 harvesting and marketing, (56) Colo. 583.
 inbreeding experiments, (59) Calif. 737.
 marketing, (52) Calif. 92.
 nematodes affecting, (52) Calif. 50.
 planting, effect of soil temperature, (60) Can. 540.
 shipments and unloads, (53) U.S.D.A. 293.
 spraying and dusting, (51) Md. 849; (52) Va.Truck 43.
 started in veneer bands, effect, (57) N.J. 736.
 starting under glass, (55) N.J. 37.
 variety tests, (57) R.I. 435.
 vitamins in, (57) Ga. 293.
- Muskrats—
 fur farming and marketing, (60) 838.
 in New York, natural history and economics, (54) 256.
 raising, (53) 376; (54) 274.
 raising, treatise, (52) 676.
- Mustard—
 adulteration, detection, (51) 206.
 and related weeds, control, (59) 332.
 as crop and weed, (54) 532.
 beetle, notes, (52) 252.
 black, effect of calcium chloride, (53) 121.
 brans, analyses, (51) 207.
 effect of acid soil, (54) 213.
 effect of pH of soil, (60) 338.
 fall seeding experiments, (52) 633.
 greens, composition and losses of iron in cooking, (60) 190.
 oil, industrial application and properties, (54) 532.
 physiology and biology, (57) 116.
 roots, gall formation on, (60) 152.
 seed in rape, detection, (53) Iowa 734.
 seeds, commercial, composition, (51) 206.
 smut, notes, (58) 143.
- Mutant characters in *Drosophila willistoni*, (51) 227.
- Mutants—
 secondary trisomic, of *Datura*, interpretation, (54) 628.
 sex-linked, in pomace fly, (55) 523.
- Mutation—
 and evolution, relation to Mendelism, (51) 128.
 and selection, (57) 820.
 in cotton, (57) 323.
 in peas, (55) 731.
 in tobacco, (53) 831.
 induction of, (54) 25.
 new, in *Drosophila*, (54) 321.
 of genes, (57) 622.
- Mutations—
 artificial, in X chromosomes of pomace fly, (58) 25.
 electrical, in botanical species, (52) 29.
 in apricots, (58) 824.
 in coat pattern of guinea pigs, (57) 623.
 in *Datura*, (53) 226; (57) 422, 519.
 in *Drosophila melanogaster*, (51) 333, 428.
 in *Drosophila virilis*, (55) 632, 820.
 in fungi, (58) 525, 729.
 in *Habrobracon*, origin, (56) 223.
 in mice, symbols for, (56) 728.
 in *Oenothera*, (52) 329; (58) 525.
 in potatoes, studies, (54) 223.
 in rice, (57) 322.
 in sweet potatoes, (56) 328.
 nature and evolutionary significance, (58) 527.
 polyploid, in *Crepis*, (55) 819.
 provoking systematically, (57) 519.
 relation to current plant breeding methods, (60) 323.
 return gene, effect of X-rays, (60) 31.
 trisomic, of *Oenothera*, (53) 127.
 under domestication of animals, (54) 126.
- Mutilla quadriguttata*, notes, (53) 57.
- Mutillidae—
 bionomics and taxonomy, (52) 155.
 hyperparasitic on white grubs, (53) 57.
- Mutton—
 cold storage, effect, (55) 261, 692.
 cost of production, (54) Oreg. 880.
 dressed, market classes and grades, (57) U.S.D.A. 170.
 fat deterioration, (51) 201.
 press juices, freezing, (56) 892.
 trade in Great Britain, (55) 186.
- Myasis, studies, (53) 454; (57) 77.
- Mycetozoon in tobacco plants with mosaic-like symptoms, structure and cultural history, (57) 846.
- Mycobacterium—
 paratuberculosis, isolation and cultivation, (60) Ky. 266.
 tuberculosis and *Bacterium abortum*, mixed infection with, (53) 885.

- Mycobacterium*—Continued.
tuberculosis and *Brucella abortus* in cows' milk, (55) 175.
- Mycoderma*—
thöni and *Bacterium casei* ϵ , biology, (56) 473.
vini, notes, (56) 206.
- Mycogone perniciosa*—
notes, Pa., (56) 144; (58) 339.
on mushrooms, (56) 847; (60) Pa. 343.
- Mycoida parasitica*, notes, (57) 344.
- Mycoplasma theory, cytological bases, (59) 214.
- Mycorrhiza*—
in Iowa forest plants, (57) 819.
in roots of legumes, (52) 746.
of *Taxus baccata*, (57) 620.
on roots of *Lolium* spp., (58) 821.
plants, nutrition, (56) 726.
treatise, (59) 519.
- Mycorrhizas*—
and plant pathology, (55) 347.
development in pine seedlings, (60) 215.
of conifers, studies, (55) 350, 351.
of forest trees, (60) 628.
rôle in plant nutrition, (60) 511.
tree, from central Rocky Mountains, (60) 525.
tree, significance, (57) 219.
tree, studies, (56) 753.
- Mycoses of fowls, (55) 177.
- Mycosis, pulmonary, in ruffed grouse, (54) 74.
- Mycosphaerella*—
alchemillicola n.sp., description, (57) 640.
blight, notes, (59) N.Y.State 52.
brassicicola, studies, (54) 843; (58) 442.
citrullina on muskmelons, (52) 348.
fragariae, notes, (55) 346; (57) 640; (58) 152.
gossypina, notes, (53) 351; (57) 640.
pinodes, notes, (58) N.Y.State 844; (60) 241, 242.
pinodes relation to *Ascochyta* blight of peas, (59) 344.
rubina, notes, (55) Oreg. 650; (58) 152.
rubina, Phoma stage, importance, (53) 650.
tabifica, studies, (59) Wash.Col. 47; (60) 150.
tulasnei, notes, (55) 346.
Mylasis, studies, (54) 454; (57) 77.
77.
- Mylabris obtectus*, see *Bean weevil*.
- Myohematin*, notes, (60) 26.
- Myosotis arvensis*, control, (54) 240.
- Myotis* forms in America, (59) 852.
- Myriangium*, notes, (60) 162.
- Myriogenospora aciculisporeae* n.sp., description, (58) 655.
- Myriopoda* of South Africa, monograph, (60) 657.
- Myrmecophiles*, hymenopterous, paper on, (57) 553.
- Myrmelachista ambigua ramulorum*—
notes, (52) 257; (53) 156.
poisoning experiments, (51) 855.
- Myrmicaria brunnea*, worker, occurrence of ovaries in, (58) 451.
- Myrtle, culture in Arizona, (55) U.S.D.A. 438.
- Mysia oblongoguttata*, parasitism of pupa, (55) 857.
- Mytilaspis pomorum*, see *Oyster-shell scale*.
- Myxomycetes* in cotton mill structures, (54) 255.
- Myxosporium*—
abietinum, notes, (60) 647.
corticolum, notes, (51) 51; (56) 353; (57) 53, 649.
scutellatum, notes, (57) 158.
sp., notes, (51) 156.
- Myzaphis abietina*, notes, (56) 659.
- Myzocallis*—
fumipennellus, notes, (60) 164.
kahawaluakolani, notes, (56) 256.
taiwanus n.sp., description, (56) 555.
- Myzus*—
cerasi, see *Cherry aphid*.
chelidonii, notes, (56) 58.
circumflexus, feeding methods, (58) 455.
fragaefolii, notes, (58) 152, 657; (59) 53, 852.
fragariella, notes, (52) 748.
mahaleb, parasite of, (52) N.Y.Cornell 360.
persicae, see *Peach aphid*; green.
persicae-niger, see *Peach aphid*, black.
pseudosolani, studies, (60) Me. 757.
ribis, see *Currant aphid*.
spp., notes, (57) 645.
spp., transmission of virus diseases by, (60) 243.
- Nabis*—
kaimii, notes, (52) Calif. 58.
rosipennis, habits and injury from, (58) 855.
- Nagana*—
in Zululand, (60) 574.
transmission, (57) 77.
- Naganol* and germanin, comparison, (60) 73.
- Nail and tool box*, construction, (54) 482.
- Nanophyes salmincola*—
in intestines of wild carnivores, (55) 373.
n.g. and n.sp., description, (55) 176.
notes, (60) Oreg. 774.
- Naphthalene*—
decomposition in soil, (59) 159.
derivatives, tanning effects, (57) 708.
fumigation for red spider control, (59) 160.
fumigation of greenhouses, (56) 256.
- Naphthol AS* series, developments, (54) 596.
- β -Naphthol on paper for codling moth control, value, (60) S.C. 755.

- 1-Naphthol-2-sodium sulfonate indophenol, dissociation constant, (54) 205.
- Napier grass—
 as pasture crop, (54) Fla. 325.
 breeding experiments, Fla., (52) 224; (54) 325; (55) 824.
 feeding value, (55) Fla. 870.
 fertilizer experiments, (54) Fla. 325; (55) Guam 131, Fla. 824; (59) Guam 523; (60) Guam 814.
 irrigation experiments, Fla., (55) 824; (60) 130.
 notes, (54) 230.
 tolerance to brackish water, (51) Hawaii 788.
 yields, (52) Fla. 224.
- Naranga diffusa as rice pest, (53) 857.
- Narcissus—
 basal rot, control, (60) West.Wash. 746.
 bulb fly developmental history, (59) 460.
 bulb fly, lesser, appearance in Michigan, (58) Mich. 458.
 bulb fly, life history, habits, and control, (57) 456; (58) 350; (60) 850.
 bulb fly, notes, (56) Mich. 361; (59) Mich. 455, Mich. 456; (60) Oreg. 753.
 bulb fly, studies, (55) 558; (59) Va.Truck 254.
 bulb fly treatment, apparatus for, (58) U.S.D.A. 255.
 bulb injuries and diseases, (58) 442.
 bulb pests, effect of hot water immersion, (55) 355.
- bulbs—
 culture and varieties, (54) 446.
 dates for treatment, (60) West. Wash. 740.
 disease of, (56) 852.
 effect of ethylene stimulation, (58) 645.
 hot water sterilizers for, (57) 456.
 hot-water treated, forcing, (59) 456.
 machine for treatment, (58) 238.
 production in United States, (52) U.S.D.A. 239.
 Tylenchus dipsaci on, (56) 456.
- eelworm, control, (58) 659.
 experimental variation in, (57) 326.
 fly, notes, (57) 655; (58) 263.
 for garden and home, (60) N.J. 235.
 leaf spots, notes, (58) 443.
 mosaic disease, notes, (60) Oreg. 745.
 nematode, control, (60) Oreg. 745.
 nematode injury, notes, (60) West. Wash. 746.
 nitrogen metabolism in, (60) N.J. 319.
 notes, (60) Can. 639.
 propagation and culture experiments, (58) Alaska 435.
 root diseases, control, (60) 837.
 root rot, control, (60) Miss. 247.
 rot, notes, (57) 540.
- Nardus stricta, studies, (54) 321.
 Nasal granuloma in cattle, (54) 578.
 Nasonia spp., notes, (53) 160.
 Nasturtium, fasciation and prolepsis in, (51) 549.
 Nasutitermes morio, notes, (52) 657.
 Natada urichia n.sp., description, (51) 661.
 Natal grass as weed in Cuba, (54) 239.
- National—
 Agricultural College Student Council, organization, (56) 198.
 Association of Cotton Manufacturers, yearbook, (55) 696; (57) 899.
 Association of Marketing Officials, proceedings, (59) 588.
 Canners Association research laboratory, report, (53) 208.
 Cleaner and Dyer book, (53) 507.
 Congress of Commercial Apiculture, report, (54) 462.
 Country Life Conference, proceedings, (54) 84, 289; (59) 388.
 Dairy Council, work of, (53) 580.
 Dyeing and Cleaning Research Institute, notes, (55) 399.
 Education Association, rural education section, notes, (51) 200.
 Farm Associations, international organization, (59) 482.
 forest and park roads, instructions for construction, (58) U.S.D.A. 680.
 forest ranges, cost and methods of carrying cattle, (53) 168.
 Forest Reservation Commission, report, (52) 842; (53) 145.
 forest roads and trails, construction, (54) 876.
 forest roads and trails, legislation for, (57) 776.
 forest timber scaling and measurement, instructions for, (59) U.S.D.A. 534.
 forests, see Forests, national.
 formulary of United States, (52) 177; (55) 371; (56) 275.
 4-H Club Camp, editorial, (59) 106.
 income, share of agriculture in, (57) 679.
 Institute for Research in Dairying, report, (54) 475; (55) 869; (58) 69; (60) 263.
 Institute of Poultry Husbandry of Great Britain, work, (55) 198.
 Livestock and Meat Board, report, (54) 264; (56) 466; (57) 660; (59) 662.
 Livestock Producers Association, report, (54) 285.
 Milk Conference in London, proceedings, (51) 577.
 monuments, information on, (55) 241.
 Poultry Institute, (57) 485.
 Research Council, division of biology and agriculture, activities, (57) 763.
 Veterinary Medical Association of Great Britain and Ireland, report, (52) 280.
- Natural history, treatise, (57) 255.

- Natural resources, conservation, (53) 598.
- Nature study projects for elementary schools, (54) 589.
- Naval Stores Act, enforcement, (51) U.S.D.A. 93.
- Naval stores industry, report, (51) 245.
- Navel ill, *see* Joint ill.
- Near East agricultural survey, (54) 799.
- Nebraska—
- Potato Improvement Association, reports, (52) 833.
 - Station, notes, (51) 198; (52) 900; (54) 599, 900; (58) 97, 698; (59) 798.
 - Station, publications available, (54) 96.
 - Station, report, (51) 898; (54) 396; (55) 697; (57) 599; (59) 898.
 - University, history of College of Agriculture, (54) 96.
 - University, notes, (51) 198, 798; (53) 900; (54) 599; (55) 300, 496, 797; (56) 197; (57) 798; (58) 97, 499, 698; (59) 798.
- Necator—
- americanus, longevity and infectivity, (51) 550.
 - americanus, notes, (54) 72.
 - americanus, regularity of egg production, (59) 171.
 - suillus, notes, (60) P.R. 775.
- Necrobacillosis—
- in equines, (57) 77, 876.
 - in sheep, (52) Mont. 483; (55) Mont. 578; (59) Colo. 271.
 - or diphtheria of calves, (60) Wyo. 775.
- Necrology, notes, (51) 699; (52) 600, 800; (53) 800; (55) 700; (57) 499; (58) 799.
- Nectar—
- chemical composition, (59) Calif. 756.
 - evaporation, (60) 563.
 - glands of honey plants, structure, (53) 324.
 - relation to honey production, (60) 460.
- Nectarines—
- as future commercial fruit in New York State, (52) 840.
 - new variety, (59) N.Y.State 233.
 - tests, (57) Tex. 136.
 - variety tests, (53) Ariz. 741.
- Nectria—
- cinnabarina, notes, (57) 354; (58) 154.
 - coccinea, studies, (52) 645.
 - ditissima, control, (52) 848.
 - galligena and *N. coccinea*, differences in, (52) 448.
 - galligena, life history, (55) Oreg. 452.
 - galligena, notes, (51) 51; (52) 645; (56) 747; (57) 649; (58) 52; (60) 352.
 - galligena perithecia, notes, (57) 847.
 - portoricensis, notes, (54) 51.
 - rubi, notes, (56) 354; (60) 352.
 - sp., notes, (55) 249; (57) 540; (59) 54, 348.
- Nectria—Continued.
- spp., studies, (55) 245; (58) 851.
 - viticola, notes, (53) 250.
- Negri bodies, structure and significance in rabies, (54) 575.
- Negro—
- children, health studies, (60) 787.
 - children, nutrition problem, (53) Mo. 496.
 - children, vital capacity of, (57) 893.
 - farmers as owners, tenants, and croppers, (53) 290.
 - farmers, tenancy and ownership in Virginia, (55) U.S.D.A. 286.
 - tenants, food habits, (60) Miss. 788.
- Negroes—
- extension work among, U.S.D.A., (54) 189; (56) 85.
 - low sex ratio in births, explanation, (57) 824.
- Neides muticus, notes, (52) Calif. 58.
- Nelumbo—
- fruits, longevity, (55) 836.
 - nucifera seeds, longevity, (51) 39.
- Nematoda families and genera, synopsis, (56) 754.
- Nematode—
- disease of cereals, (51) 848.
 - disease of wheat, (55) 545.
 - genera, review, (53) 553.
 - larvae behavior in host, (56) Kans. 875.
 - larvae, method of obtaining from cultures, (58) 253.
 - larvae wandering in body of host, (52) 777.
 - new, of rabbits, (58) 581.
 - resistant plants, breeding, (54) 649.
 - root gall, notes, (60) 354.
 - root knot, notes, (51) 549; (57) P.R. 442.
 - root knot of peach trees, control, (55) Miss. 541.
 - stem and bulb, present status in America, (56) 54.
- Nematodes—*see also* Heterodera.
- affecting chrysanthemums in Moravia, (58) 853.
 - affecting sugar cane, (58) 749.
 - and *Hylobius abietis*, (52) 554.
 - control, (54) Ohio 344, 449; (55) Fla. 851; (56) Fla. 152; (57) Calif. 256; (60) 834.
 - control in pineapple fields, (60) P.R. 740.
 - control on peach trees, (59) Miss. 347.
 - dissemination by way of seed, (57) 356.
 - garden, control, (59) Calif. 747.
 - host selection and specialization, (58) 55.
 - in birds, (56) 56.
 - in birds, keys, (58) 157.
 - in birds of North America, (59) U.S.D.A. 54.
 - in digestive tract of fowls in Natal, (57) 879.

Nematodes—Continued.

- in domestic animals, (60) P.R. 774.
- in Equidae, (52) 385.
- in eyes of horses, (56) 678.
- in eyes of man and dog, (57) 181.
- in lambs, (55) Ohio 176.
- in soil, control, Fla., (52) 249; (54) 345.
- in vertebrates, (55) 271.
- injury from, (57) 146.
- migratory habits, (53) 885.
- morphological and biological distinctions, (58) 241.
- new, from North American mammals, (53) 553.
- on oats, notes, (58) 442.
- on peanuts in South Africa, (57) 749.
- on tomato, test of paradichlorobenzene for, (58) 855.
- on tulips, (58) 752.
- on wheat roots, (59) 640.
- parasitic, effect of low temperatures, (53) 482.
- parasitic, from China, (54) 875.
- parasitic, from Indo-China, (53) 760.
- parasitic, host distribution, (54) 381.
- parasitic, in South Africa, (52) 85, 86.
- predacious, in sugar beet fields, (57) 151.
- relation to sugar cane root rot, (57) 152.
- studies, (52) Calif. 50.
- Nematodirus leporis* n.sp., description, (52) 859.
- Nematospora—
 - coryli, studies, (58) 851.
 - disease of Lima beans, (55) 846.
 - gossypii, inoculation experiments, (58) 848.
 - gossypii n.sp., studies, (58) 851.
 - gossypii, notes, (60) 241.
 - phaseoli n.sp., description, (52) 448.
 - phaseoli, pathogenicity and morphology, (55) 652.
- Nematus ribesii*—
 - gynandromorph of, (56) 662.
 - notes, (56) 659.
- Nemeritis canescens*—
 - biology, (59) 861.
 - parasite of wax moth, (54) 159.
- Nemicromelus fulvipes*, synonymy, (53) 160.
- Nemorilla pyste*, notes, (53) U.S.D.A. 54.
- Neosarsphenamine—
 - tests, (53) 681.
 - use against blackhead in turkeys, (53) 786.
- Neocleptria punctifera* affecting cotton seedlings, (51) 357.
- Neococcidencyrthus alula* n.g. and n.sp., description, (59) 358.
- Neocopidosoma*, new genus, erection, (53) 160.
- Neocosmospora vasinfecta*, notes, (53) 351; (57) 348.

Neodiprion—

- banksianae* on jack pine, (53) 861.
- n.sp., studies, (53) 453.
- Neoleucopsis luteicornis* n.sp., description, (53) 55.
- Neophasia menapia*, studies, (55) 760.
- Neoplasms in domesticated animals, (53) 279.
- Neosalvarsan, protective and curative action, (51) 786.
- Neoscleroderma tarsalis, notes, (55) 765.
- Neotoma* spp., breeding, (55) 757.
- Neottia nidus avis* root fungi, physiology, (57) 620.
- Nephantis serinopa—
 - control, (51) 662; (58) 451, 455.
 - outbreak at Mangalore, (52) 154.
 - parasite of, life history and habits, (58) 758.
- Nephelodes emmedonia*, notes, (56) 758.
- Nephelometer, errors in use, (56) 504.
- Nephrectomy, unilateral, and high protein intake, response of, (59) 892.
- Nephritis—
 - acute interstitial, in colts, (51) Mich. 180.
 - dietary control, (53) 570.
 - in rabbits, studies, (53) 889.
 - protein metabolism in, (53) 391.
- Nephrotoma ferruginea* on tobacco, (55) Conn.State 253.
- Neps, dyeing, (58) 695.
- Nepticula pomivorella*, notes, (54) 153.
- Nerve tissues, structural changes in starvation and in beriberi, (58) 297.
- Nervous—
 - mechanism of plants, (57) 118.
 - system, blastomycotic infection, (51) 680.
 - system development in chick embryo, (55) 165.
 - system of insects, morphology, (55) 253.
- Nesslerization—
 - of Kjeldahl digestions, direct, (58) 804.
 - turbidity in, (51) 11, 712.
- Nestor notabilis*, notes, (52) 552.
- Net energy determinations, new status, (55) 260.
- Nettle aphid, parasite of, (53) 260.
- Nettles—
 - in chick feeding, notes, (55) 166.
 - stinging, analysis of seeds, (53) Okla. 195.
- Neurla procincta*, notes, (60) Oreg. 753.
- Neuritis in chickens, (55) 177, 778; (60) 580.
- Neurolymphomatosis gallinarum—
 - studies, (60) 875.
 - suggested term, (58) Conn.Storrs 77.
- Neurospora—
 - new genus, erection, (57) 621.
 - production of fertile hybrids in, (59) 29.
 - spp., nuclear behavior, (58) 217.

- Neurotoma nemoralis*—
 bacterial parasites of, (51) 363.
 biology and control, (54) 757.
 parasite of, variability of life cycle,
 (52) 561.
- Neutralizers and starters, Ark., (56) 376;
 (58) 365.
- Nevada—
 Station, notes, (52) 199; (53) 600;
 (55) 798; (56) 900; (57) 496;
 (58) 499.
 Station, report, (51) 898; (53) 497;
 (56) 299; (58) 96; (59) 898.
 University, notes, (58) 97.
- New Hampshire—
 College, notes, (55) 397; (59) 499.
 Station, notes, (51) 696; (52) 100,
 500; (53) 197; (55) 699; (56)
 498; (59) 499, 798.
 Station, report, (51) 197; (53) 497;
 (55) 899; (57) 394; (59) 298.
 University, notes, (52) 100; 500; (55)
 699; (58) 500.
- New Jersey—
 Mosquito Extermination Association,
 meeting, (59) 158, 859.
 Stations, notes, (51) 398; (52) 199,
 699; (53) 98, 900; (54) 97, 399,
 599; (55) 397, 699; (57) 396;
 (58) 300, 698, 900.
 Stations, report, (51) 694; (52) 795;
 (55) 96; (57) 97, 796; (59) 396,
 900.
- New Mexico—
 College, notes, (51) 697; (54) 599;
 (56) 197, 498; (58) 900; (59) 198,
 499, 798.
 Station, notes, (51) 697; (53) 98;
 (54) 400, 599, 700; (56) 197, 498;
 (57) 99; (58) 900; (59) 499, 798.
 Station, report, (51) 495; (53) 195;
 (55) 495; (57) 299; (59) 298.
 University, notes, (57) 99.
- New York—
 Cornell Station, notes, (51) 697; (53)
 197, 697; (54) 496; (57) 396, 496,
 900; (59) 499, 799; (60) 699.
 Cornell Station, research activities,
 (56) 698.
 State College of Agriculture, research
 activities, (56) 698.
 State College of Home Economics, re-
 port, (56) 588.
 State Department of Health, laboratory
 procedures, (57) 503.
- State Station—
 function, (54) 598.
 guide to buildings and fields, (51)
 299.
 notes, (51) 98, 497; (52) 398,
 599, 699, 900; (53) 197, 300,
 698; (54) 497, 797; (55) 99,
 398, 699, 798; (56) 97, 197,
 498; (57) 396, 600, 699; (58)
 199; (59) 198, 399, 599, 799;
 (60) 499, 900.
 publications available, (60) 398.
- New York—Continued.
 State Station—Continued.
 report, (52) 598; (54) 598; (56)
 299; (58) 899; (60) 498.
 State Veterinary College, report, (60)
 71.
 Newcastle disease of fowls, (58) 77.
 News-Record kink book, (54) 75.
 Newts, vermilion spotted, as agents in
 mosquito control, (60) 653.
- Nezara—
 hiliaris, *see* Green soldier bug.
 viridula—*see also* Green stink bug,
 southern.
 egg parasite of, (60) 564.
 notes, Fla., (54) 257, 352; (60)
 153.
- Nickel—
 carbonate for wheat smut control, (51)
 Wash.Col. 149.
 carbonate, fungicidal value, (55) Oreg.
 651.
 colloids, antiknock properties, (60) 780.
 crucibles for alkali determinations,
 (53) 714.
 general presence in soils of Europe,
 (54) 210.
 in Kentucky bluegrass, (56) 804.
 occurrence and function, (53) 310.
- Nicotiana—
 chromosome number, variations in,
 (55) Calif. 327.
 cross-sterility in, genetic basis, (58)
 28.
 cytological studies, (60) 126.
 deformis and enzyme theory of inherit-
 ance, (54) 322.
 deformis n.sp., notes, (56) 429.
 effect of X-ray treatment of sex cells,
 (58) 729, 730.
 genus, genetics, (60) 324.
 glutinosa mosaic disease, studies, (58)
 42.
 interspecific hybridization in, (56) 632;
 (58) 125, 729.
 pseudo-fertility in, (56) 31.
 rustica as source of nicotine, (52) 535;
 (54) Pa. 353, 535, 656.
 rustica, inheritance of characters in,
 (52) 522.
 rustica, nicotine content, (52) Pa. 252,
 N.Y.State 534; (54) Pa. 328; (56)
 Pa. 134.
 self-fertilization in, (51) 527.
 self-sterility in, (55) 27; (57) 824.
 species crosses in, (55) 226.
 tabacum, inheritance in, (51) 826, 827;
 (55) 328; (56) 631; (60) 126.
 tabacum, number of leaves and height,
 correlation, (53) 331.
 viscosum, notes, (58) 42.
- Nicotianas in Argentina, (56) 37.
- Nicotine—
 content of *Nicotiana rustica*, (52) Pa.
 252, N.Y.State 534; (54) Pa. 328;
 (56) Pa. 134.
 dust, carriers for, (51) N.J. 658.

- Nicotine—Continued.
- dust, commercial v. homemade, (51) Md. 453.
 - dust hydrated mixtures, use against aphids, (53) 359.
 - dust, loss of nicotine during storage, (52) U.S.D.A. 656.
 - dust, making and use, (52) N.J. 849.
 - dust, observations on, (60) 843.
 - dust preparation, improved method, (52) Calif. 48.
 - dust, present status, (53) 856.
 - dust, tests, (52) N.J. 752.
 - dust, use against apple aphid, (53) 358.
 - dust, use against garden insects, (51) 55.
 - dust v. sprays, (52) Pa. 252.
 - dusts as insecticides, (53) 753.
 - extracts, preparation from tobacco dust, (60) N.Y.State 453.
 - for insect control, source, (52) 535.
 - function in tobacco plant, (54) 135.
 - in tobacco and tobacco extracts, determination, (57) 410.
 - loss from nicotine-soap preparations, cause, (52) 309.
 - microtitrimetric determination in tobacco, (60) 416.
 - petroleum oil as carrier, (59) 759.
 - soaps, studies, (53) 254.
 - sources for insecticide use, (54) Pa. 353; (57) 853.
 - sprays, spreader materials, (54) Pa. 352.
 - sulfate for aphid control, (51) Pa. 254; (54) 155.
 - sulfate for roundworms in poultry, (57) La. 578.
 - sulfate spray, persistence of poisonous residue from, (59) 551.
 - sulfate sprays, reducing the cost, (58) 254.
 - sulfate treatment for stomach worms, Ohio, (52) 483; (59) 276.
 - toxicity and volatility, correlation, (52) Calif. 59.
 - volatility, factors affecting, (54) 454, N.Y.State 538.
- Nicotinic acid in yeast, (56) 9.
- Night blindness, inheritance of, (52) 430.
- Night soil purification, solar light and heat for, (55) 684.
- Nightshade—
- family as host for *Synchytrium endobioticum*, (56) 651.
 - poisoning in chickens and ducks, (54) 479.
- Nigrospora—
- panici, notes, (58) 850.
 - species on monocotyledons, (60) 345.
- Nile—
- flood and following winter in central Europe, (58) 14.
 - flood and world weather, (56) 807.
 - water salinity, seasonal variation, (55) 879.
- Nim mealy scale, studies, (54) 156.
- Nippon River fever, *see* *Tsutsugamushi*.
- Nitella—
- accumulation of dye in, (59) 619.
 - clavata, absorption of various ions, (52) Calif. 25.
 - toxic action of copper on, (59) 25.
- Niter spots, studies, (53) Colo. 117.
- Nitrate—
- Chilean, as top-dressing for grassland on peat soil, (52) 513.
 - Chilean, production, (56) 626.
 - high-potash, availability of nitrogen and potash, (51) 217.
 - industry, Chilean, (51) 22; (56) 120.
 - industry, statistical review, treatise, (52) 622.
- nitrogen—
- determination, (52) 11.
 - determination in presence of cyanamide, (51) 11.
 - determination, modified method, (56) 805.
 - effect on wheat protein and yield, (54) 737.
 - in Hood River soils, variation, (60) Oreg. 739.
 - in plants, determination, (54) 410.
 - leaching from soil, (53) 117.
 - of ammonia, *see* Ammonium nitrate.
 - of lime, *see* Calcium nitrate.
 - of potash, *see* Potassium nitrate.
 - of soda, *see* Sodium nitrate.
 - Plant No. 2 at Muscle Shoals, possible use, (51) 217.
 - reducing properties of plants, (56) 220.
- Nitrates—
- absorption by oats and cotton, (56) 213.
- accumulation—
- and movement, (58) 718.
 - effect of alfalfa v. sweet clover, (54) 216.
 - effect of liming, (53) 220.
 - effect of soil tillage, (55) 18.
 - effect of straw, (54) 420; (55) 121.
 - factors affecting, (51) Nebr. 814.
 - in soil, (55) Iowa 514; (57) Mo. 412.
 - in soil, effect of plants, (51) 19.
 - in soil following legumes, (51) 724.
 - in soil, relation to ammonia, (54) 514.
 - in soil, relation to moisture, (52) Utah 719.
 - under mulch, (58) 314.
 - and nitrification in soils, (51) 516.
 - and nitrites in cultivated soil, (54) 215.
 - assimilation by soil microorganisms, (58) 120.
 - assimilation during dormant period, (59) N.J. 333.

Nitrates—Continued.

- assimilation in absence of light, (60) N.J. 741.
- assimilation in plants, (57) 417.
- control, studies, (51) Colo. 621.
- depression by timothy and clover residues, (55) N.Y. Cornell 120.
- detection when added to nitrogenous material, (57) 9.
- determination, (59) 414.
 - in fresh plant materials, (54) 111.
 - in soil, (51) 111, 505.
 - methods, (52) 204.
 - modification of Scales' method, (53) 715.
 - with crop rotation experiments, (58) 418.
- distribution in layers of fallow soil, (60) 421.
- distribution in Swedish soils, (56) 120.
- effect on composition of potatoes, Colo., (51) 533; (59) 133.
- effect on wheat, (54) Nebr. 314.
- estimation by electrometric titration, (51) 611.
- excessive production, control, (56) Colo. 810.
- fall applications, effect on apples, (51) Mo. 745.
- formation in volcanic soils, (56) 120.
- in fallow soils, (54) 211.
- in forest soils, (54) 120.
- in living tissues, (59) 322.
- in organic materials, detection, (51) 11.
- in rain from protected and exposed gage, (56) 212.
- in soil—
 - control, (55) Colo. 219.
 - effect of cultivation, (55) Ark. 121.
 - effect of cyanamide, (57) 414.
 - effect of dry organic matter, (59) 211.
 - of South Africa, seasonal variation, (52) 512.
 - of Willamette Valley, seasonal variation, (60) 620.
 - relation to sweet clover, (56) 210.
 - studies, (51) N.Mex. 418, 813.
 - under corn culture, distribution, (51) 418.
 - variations in, (58) 419.
- loss from cropped soils, (53) 723.
- loss from limed soils, (56) 721.
- loss from soil in sand hill section, (59) N.C. 738.
- loss from soil, studies, (53) 321; (56) 214.
- movement in soil, (51) 324.
- movement in soil and subsoil, (52) 120; (53) 721.
- problem of, (54) Colo. 622.
- production, (51) 722; (56) 319, 621.
 - effect of cultivation, (60) Ark. 803.

Nitrates—Continued.

- production—continued.
 - effect of organic matter, (59) Colo. 212.
 - effect of sweet clover handling, (56) Ill. 622.
 - in pastures, effect of sweet clover and grasses, (59) N.Dak. 815.
 - in soil, (51) Mo. 719.
 - in soil, factors affecting, (53) Mo. 414, 511; (54) Mo. 716.
 - world's, (51) 819.
 - reduction by plant roots, (60) 715.
 - reduction during growth of soy beans, (60) 333.
 - reduction in protein synthesis, (56) 25.
 - reversion, (57) 18.
 - toxicity, movement and accumulation in arid soils, (52) N.Mex. 317.
 - transformation, effect of temperature, (60) N.J. 741.
 - utilization by asparagus in darkness, (57) 514.
 - utilization by plants, (58) 623, 624.
- Nitric acid—
- concentrated, by pressure synthesis, (59) 802.
 - from ammonia, (59) 424.
 - new color reaction, (51) 611.
- Nitrification—
- agricultural significance, (51) 399.
 - and nitrifying organisms, (52) 118.
 - chemical, and sunlight, (52) 420.
 - effect of—
 - dicyandiamide and guanlylurea sulfate, (52) 122.
 - fertilizers, (51) 419; (59) 425.
 - moisture and temperature, (54) Nebr. 314.
 - rotations, (52) 816.
 - sunlight, (56) 21.
 - temperature, (53) 817.
 - temperature and moisture, (56) 720.
 - experiments, (52) 121.
 - in acid solutions, (54) 216.
 - in muck soils, relation to acidity, (57) N.C. 213.
 - in peat soils, (53) 118.
 - in soils, (51) 516; (55) 120; (57) Nebr. 510; (58) 314.
 - in soils, aeration and reaction for, (51) 215.
 - in soils of Nebraska, (59) Nebr. 815.
 - in soils of Nosovka Experiment Station, (59) 117.
 - in soils of red prairies, (51) 516.
 - in soils of South Africa, (52) 211.
 - in soils of the Crimea, (58) 815.
 - of manure, (52) 622; (59) 317.
 - of phosphorus nitride, (52) 514.
 - papers on, (60) 510.
 - relation to crop production, (59) Iowa 211.
 - relation to phosphoric acid solubility, (54) 514.

Nitrification—Continued.

- studies, (53) 513; (54) Ky. 316; (59) Iowa 18; (60) 421.
- tests, value in contrasting soils, (59) 815.

Nitrifying—

- bacteria, effect on manure, (53) 321.
- bed for prevention of nitrogen loss from liquid manure, (53) 514.
- organisms, isolation methods, (52) 118.

Nitrites—

- and nitrates in cultivated soil, (54) 215.
- in soil, quantitative determination, (59) 502.
- oxidation, conditions favoring, (51) 215.
- production, bacterial, (60) 510.

Nitrobacter—

- flavus, notes, (55) 418.
- soil vaccine, tests, (51) Mich. 118.

Nitroculture distribution, notes, (52) Can. 846.

Nitrogen—

- absorption and leaching after urea and ammonium chloride fertilization, (54) 19.
- absorption from culture solutions by plants, (57) N.J. 717.
- absorption, studies, N.J., (55) 22; (59) 321.
- accumulation in soil, effect of green manure, (59) N.Y.Cornell 614.
- accumulation rate and cost, (54) Mo. 716.
- active, nature of, (58) 802.
- activities in cultivated soils, (53) 511.
- amide and amino acid, from alfalfa plant, (52) 610.
- amide, determination, (59) Ala. 15.
- amino, determination in milk, (51) 207.
- amino, in immature wheat kernel, (53) 802.
- ammoniacal, determination in soils, (53) 10.
- and carbon determination, (52) 202.
- and cultivated plants, (56) 119.
- and organic matter in soils, maintenance in dry-land cultivation, (52) 815.
- and phosphoric acid, ratio for corn, (51) 326.
- and sulfur metabolism in dogs, (55) 491.
- assimilation by microsiphones, (52) 512.
- atmospheric—
 - assimilation by forest soils, (52) 512.
 - fertilizers, greenhouse experiments, (52) 422.
 - fixation by plants in India, (51) 225.

Nitrogen—Continued.

- atmospheric—continued.
 - utilization by green plants, (58) 623.
 - utilization by yeast, (51) 63.
- availability—
 - effect of phosphoric acid-potash ratio, (52) N.J. 722.
 - from fertilizers, (57) N.J. 715.
 - in fungus and bacterial cells, (60) 510.
 - in garbage tankage and urea, (55) 516.
 - in nitrogenous materials under varying conditions, (53) 619.
 - studies, (54) N.J. 720.
- available, determination, (51) 700.
- available in soil, sorghum as indicator, (51) 419, 624.
- balance experiments, basal diet for, (59) 188.
- balance in pigs, effect of potassium iodide, (54) 567.
- balance of pullets, laying and non-laying, (54) 568.
- basic, from alfalfa plant, (52) 610.
- carriers, tests, (55) Miss. 237.
- changes in black cotton soils, (53) 618.
- changes in soil, temperature factor in, (53) 817.
- compounds—
 - action in manure, (60) 718.
 - effect on detonation in internal-combustion engines, (52) 888.
 - in rain and snow, (56) 120, U.S.D.A. 321.
 - of rice kernel, (57) 308.
 - organic, availability in pot experiments, (54) 619.
- cycle in plants, (54) 427.
- deficiency disease in tobacco, (60) Ky. 53.
- deficiency, effect on tomatoes, (51) N.H. 124.
- determination—
 - application of formol titration method, (53) 610.
 - in blood, microcolorimetric, (56) 504.
 - in cotton, (51) 716.
 - in fertilizers, methods, (53) 804.
 - in heavy clay soils, (54) 709.
 - in meat and meat products, (60) 14.
 - in nonhomogeneous products, (51) 804.
 - in organic matter, (59) 414.
 - in soil, common error in, (60) 510.
 - in soil, inhibition of bumping in, (53) 409.
 - method, (55) 205.
 - micro method, (54) 310.
 - modified method, (56) 805; (58) 309.
 - wet combustion method, (52) 612.
- dialyzable, production by legume bacteria, (51) Tenn. 323.

Nitrogen—Continued.

- distribution—
 in apples, seasonal changes, (58) Mo. 436.
 in bean leaves, (52) 325.
 in cauliflower, (56) 9.
 in flax, (56) 697.
 in immature wheat kernel, (53) 802.
 in pear trees, (58) 236.
 in podsol profile, (54) 416.
 in proteins, (55) 714.
 economy of soil, effect of fertilizers, (52) 421.
 effect on sweet potatoes, (51) 342; (55) 436.
 endogenous, of molting hens, (56) 165.
 excessive, effect on potatoes, (59) Colo. 133.
 experiments on crops, (58) Ark. 315.
 fertilization—
 action and profit, (54) 815.
 effectiveness and profit, (52) 723.
 of meadows, (52) 723.
 fixation—
 and American agriculture, (51) 518.
 and Casuarina root nodules, (54) 628.
 and distribution in soils, (56) Wash.Col. 508.
 and soil reaction, correlation, (60) 421.
 as aluminum nitride, (56) 623.
 as cyanide, (51) 726.
 as sodium cyanide, (55) 722.
 by Azotobacter, (53) 215; (54) 120; (55) 217; (58) 719.
 by bacteria, effect of sugar concentration, (53) 117.
 by Bacterium aerogenes, (58) 814.
 by corn, (54) 718; (59) 516.
 by green algae, (54) 718.
 by high tension arc, laboratory study, (58) 111.
 by legumes, Wash.Col., (54) 809, 813.
 by nodule bacteria, tests, (56) 635.
 by nonleguminous plants, (53) Mich. 726.
 by nonsymbiotic organisms, (51) 417; (54) 810.
 by peas, (60) 723.
 by soil organisms, (60) 715.
 by Spirillum lipoferum, (55) 326.
 commercial status, (55) 122.
 different air processes, (51) 726.
 discussion, (55) U.S.D.A. 722.
 effect of phosphates, (55) 422.
 effect of protozoa, (54) 718.
 effect of radioactive compounds, (52) 22; (55) 721.
 effect of sugar on bacteria, (53) 826.
 electric arc process, phenomena in, (56) 623.

Nitrogen—Continued.

- fixation—continued.
 experiments with soy beans, (54) 534.
 history of experiments, (58) 21.
 in forest soils, (52) 512.
 in Punjab, (54) 718.
 in Saratov soils, (59) 614.
 in soils of Bombay Deccan, (55) 218.
 industry, growth, (60) 720.
 industry in South Africa, prospects, (51) 327.
 mechanism, (55) 122.
 newer developments, (56) 623.
 papers on, (60) 510, 511.
 reactions, new high temperature, (60) 10.
 soil conditions for, (52) 815.
 studies, (53) 721; (55) N.J. 812.
 studies, aerated and nonaerated cultures for, (59) 316.
 studies at Pusa, (56) 509.
 studies, soil microbiology in, (60) 510.
 summary, (51) 422.
 symposium, (51) 799.
 treatise, (60) 10.
 under anaerobic and aerobic conditions, (55) 320.
 fixing—
 bacteria in Vesuvian soils, (52) 22.
 bacteria, nitrogen metabolism, (60) 215.
 bacteria, physiological studies, (59) Iowa 722.
 microorganisms of arid soils, (59) 815.
 organisms, modifying, (54) 419.
 power of soil, (54) 810.
 power of soil, index of fertility, (51) 620.
 forms, assimilation by Havana tobacco, (58) 135.
 forms, effect of, (51) 217.
 forms in different soils, (55) 513.
 fractions, determination, (57) N.J. 611.
 furnished by rain and snow, (54) Can. 422.
 growth response to, (56) 25.
 handbook, (51) 422.
 high concentration, toxicity to cotton seedlings, (59) N.C. 828.
 in alfalfa, (55) Mich. 32.
 in beef, (51) Mo. 171.
 in bodies of plants, (59) 516.
 in calcium cyanamide, (53) 611.
 in celery tissue, diseased and healthy, (54) 345.
 in developing flower and fruit of apple, (56) N.Y.Cornell 344.
 in fertilizers, determination, (51) 805.
 in grain, factors affecting, (56) Wash. Col. 509.
 in industry, (57) 610.

Nitrogen—Continued.

- in leaves, diurnal variations in, (52) 326.
- in leaves, effect of desiccation, (53) 107.
- in leaves of crops, daily variation, (56) Kans. 813.
- in leaves of well nourished vines, (58) 523.
- in legumes, effect of sulfur, (54) 829.
- in mangels, inheritance, (60) 224.
- in manure, conservation and transformation, (54) 421.
- in mixtures of white flour and animal foods, biological value, (56) 188.
- in shrimp muscle, (54) 408.
- in soil—
 - effect of cropping and treatment, (51) 723.
 - effect of legumes, (54) Tenn. 217.
 - effect of lime and green manure, (55) Tenn. 723.
 - effect of variations in tillage and cropping, (51) Wash.Col. 119.
 - effect of water logging, (59) 812.
 - effect on wheat, (56) Idaho 339.
 - rate of accumulation and cost, Mo., (53) 414; (58) 419.
 - relation to climatic factors, (60) 118.
 - relation to series and type in virgin grassland, (58) 617.
 - variability, (51) 419.
- in sugar cane juice, determination, (58) P.R. 508.
- in sweet clover tops and roots, (55) 531.
- in tree nutrition, function, (52) 236.
- in twigs and leaves, relation to soil nitrogen, (55) Iowa 536.
- in weeds, (52) 536.
- in wheat hybrids, (58) 229.
- in wheat, relation to gluten, (55) 337.
- industrial, treatise, (52) 817.
- industry, treatise, (51) 327.
- lime, *see* Calcium cyanamide.
- loss from—
 - composts, (51) 422.
 - composts, effect of sulfur, (51) Ga. 123.
 - cows' urine, (54) 720.
 - liquid manure, prevention, (53) 514.
 - manure, effect of sulfur, (56) 509.
 - pear leaves and defoliation, (60) 44.
 - soils, (51) Tenn. 320.
- loss through denitrification, (58) 518.
- metabolism—
 - and sulfur, relation, (53) 762.
 - effect of fresh and heated milk, (56) 292.
 - effect of vitamin A deficiency, (55) 489.
 - in avitaminosis, (52) 66, 67.

Nitrogen—Continued.

- metabolism—continued.
 - in etiolated corn seedlings, (54) 724.
 - in experimental scurvy, (53) 164.
 - in fungi, (53) 122.
 - in polyanthus narcissus, (60) N.J. 319.
 - minimum endogenous, (55) 790.
 - of apple leaves and shoots, (57) 802.
 - of micrococci, (52) N.Y.State 520.
 - of plants, (52) Calif. 25.
 - of rabbits, effect of sex glands, (54) 562.
 - of ruminants, effect of asparagin and ammonium nitrate, (51) 771.
 - of steers on alfalfa ration, (57) 66.
 - studies, (55) 789.
 - study, cage device for, (54) 890.
- mineral, in fertilizers, determination, (53) 715.
- mineralization, (60) 620.
- minimum on protein-free diet, (58) 891.
- mobilization in raw humus, (60) 215.
- molecular, assimilation by microorganisms, (60) 525.
- movement in yeast mash, (59) 11.
- nitric, and ammoniacal tests, (54) 19.
- nonprotein, in blood, (51) 265; (55) 192; (56) 193.
- nonprotein, of velvet beans, (59) Ala. 11.
- of acid amines, ammonification, (52) 512.
- of peat, absorption by crops, (53) 322.
- optimum form for crops, (53) 20.
- organic, in fertilizers, (60) Ark. 803.
- organic, in koufri, value, (51) 726.
- organization in plants, (59) 516.
- peat as source of, value, (52) 622.
- peroxide recovery by adsorption on silica gel, (54) 318.
- problem, trend of developments, (53) 322.
- product of seedling metabolism, (53) 124.
- protein, small amounts, determination, (54) 9.
- recovery from soil, (57) Tenn. 414.
- recovery in crops, (51) 326.
- relation to ammonia in soil, (54) 514.
- requirements—
 - of cereals, (53) R.I. 325.
 - of orchard trees, (56) Ohio 195.
 - of soils, determination, (55) 814.
 - of sugar cane, (59) 227.
- residual, determination, (51) 314.
- salts, acid and alkaline, action, (51) 121.
- salts, air-derived, fertilizing value, (55) S.C. 420.
- significance in soil organic matter relations, (55) Wash.Col. 512.

Nitrogen—Continued.

- situation in United States, (51) 518.
 - source, effect on potato scab, (51) N.J. 652.
 - source for Kentville, N. S., soils, (53) 218.
 - sources for cotton, (55) Miss. 624; (60) S.C. 733.
 - sources for tobacco, (59) Conn.State 734, N.C. 735.
 - storage in bark parenchyma, (52) 426.
 - supply of cultivated soil, (51) 813.
 - survey, (51) 22, 518, 726; (52) 323.
 - time of application, effect on baking quality of wheat, (57) 434.
 - total, in plants, determination, (55) 610.
 - transformation—
 - in cellulose decomposition, (56) 421.
 - in decomposition of organic matter, (60) 510.
 - in rice soil, (60) 517.
 - in soil, rôle of pH in, (60) 715.
 - relation to acidity in typical soils, (58) 822.
 - upward transfer, effect of ringing, (52) 125.
 - urinary, as indication of protein intake, (56) 692.
 - use in apple orchard, (51) 240.
 - use in muck fertilization, (52) Mich. 722.
 - use on meadows, (52) 513.
 - utilization in asparagus, (60) N.J. 741.
 - utilization in soils, effect of lime, (51) 726.
 - utilization rate by corn, (57) 128.
- Nitrogenous—
- compounds, organic, activity, (51) 204.
 - constituents, extraction from plant cells, (51) 309.
 - fertilizer, new, tests, (55) Oreg. 625.
 - fertilizer, Rehmsdorf, (55) 421.
 - fertilizers—
 - availability, (53) 219; (59) 720.
 - comparison, (51) Tenn. 744; (52) 422; (53) 119; (59) N.C. 718.
 - effect on availability of phosphate, (59) 121.
 - effect on phosphate and potassium availability, (60) Ala. 120.
 - effect on soil reaction, (59) 120, Ala. 615.
 - effect on wheat germination, (54) 516.
 - for tea growing, (55) 516.
 - from cyanide, comparison, (55) 723.
 - in German agriculture, (55) 420.
 - new, of Great Britain, (52) 122.
 - new, use, (54) 218.
 - new, value, (53) 322.
 - on Silesian soils, (52) 323.
 - preparation, (57) 317.
 - studies, (57) Tenn. 115; (60) Fla. 120.

Nitrogenous—Continued.

- fertilizers—continued.
 - synthetic, value, (53) 724.
 - time for application, (55) 19; (59) N.H. 229.
 - toxicity to wheat sprouts, (53) 20.
 - materials, detection of nitrogen-bearing chemicals added, (57) 9.
 - materials, determination of nitrate and ammonia in, (52) 204.
 - substances migration in yellowing leaves, (53) 325; (58) 523; (59) 25.
- Nitrophoska, fertilizing value, (60) N.C. 719.
- Nitrosomonas groningensis, studies, (55) 418.
- Nitrous acid—
- action on hexone bases, (51) 504.
 - new color reaction, (51) 611.
- Nitzschia closterium, vitamin D in, (57) 492.
- Noctuid larvae, external morphology and postembryology, (53) 55.
- Nodular—
- disease of sheep, control, (51) Ohio 481.
 - typhlitis in pheasants, (52) 86.
 - worms in lambs, Ohio, (57) 182, 183.
- Nodule bacteria—*see also* *Bacillus radicola*.
- and *Bacillus radiobacter*, differentiation, (54) 725.
 - differences in inoculating and nitrogen-fixing power, (59) Wash.Col. 32.
 - disappearance from legume roots, (53) 123.
 - effect of moisture and temperature, (57) 812.
 - in cowpea group, (55) 828.
 - in legumes, (57) 120, 318.
 - in muck humus, (52) 122.
 - in nonleguminous plants, (51) 225.
 - in soil, effect of supplementing with artificial cultures, (56) 21.
 - inoculating legumes with, (53) 123.
 - inoculating nonlegumes with, (55) 418.
 - isolation of bacteriolytic agent, (60) 524.
 - life cycle, (55) 326; (59) 218.
 - life durations and activity, (55) 522.
 - longevity, (57) Mo. 412.
 - motility in soil, (53) 232.
 - naming, (59) 26.
 - nitrogen fixation by, tests, (56) 635.
 - nitrogen metabolism, (60) 215.
 - of alfalfa-sweet clover group, studies, (54) 419.
 - of cowpea and soy bean, cross inoculation with, (58) 530.
 - of legumes, fermentation characters, (58) 314.
 - of Leguminosae, (56) Wis. 526.
 - of lupine roots, (58) 822.

- Nodule bacteria—Continued.
of pea group, strain variations and host specificity, (58) 727.
on inoculated alfalfa seed, longevity, (57) 127.
papers on, (60) 510.
pyruvic acid production by, (58) 616.
studies, (53) Mo. 415.
viability outside of the plant, (56) 123.
- Nodule development—
in soy beans, (52) 338, 339; (54) 36, Ill. 332, 533; (59) 329; (60) 333.
increasing activity, (54) 725.
lack of in subfamily of Leguminosae, (56) 124.
on nonleguminous plants, (53) Mich. 726.
relation to soil nitrogen, (55) N.J. 812.
- Nodules—
in lupines, (60) 123.
on *Vicia faba*, growth and functioning, relation to boron, (60) 28.
- Nomophila noctuella, notes, (53) 559.
- Nondisjunction—
in mice, (55) 821.
secondary, in *Drosophila*, effect of maternal age and temperature, (60) 129.
- Nonpartisan League, effect, (52) 791.
- Noodles—
analyses, (52) 713.
lipids in, determination, (51) 205.
phosphorus in, (53) 807.
unsaponifiable matter in, determination, (55) 310.
with whole egg and yolk, differentiation, (51) 205.
- Norit, identification, (54) 806.
- Norit v. bone black for ash adsorption, (51) 110.
- North African Conference, notes, (54) 500.
- North America, geographical treatise, (53) 397.
- North Carolina—
College, notes, (51) 300, 497, 798; (52) 300, 699; (54) 497; (55) 496; (59) 199, 599.
Station, notes, (51) 497; (52) 699; (53) 198; (55) 496; (59) 199.
Station, report, (51) 898; (53) 798; (55) 299; (57) 299; (59) 796.
Station semicentennial celebration, editorial, (59) 1.
Station, work and program, (53) 899.
- North Dakota—
biological survey, (56) U.S.D.A. 656.
College, notes, (52) 300; (53) 98, 600; (54) 400; (55) 398; (57) 497; (58) 600; (59) 199, 399.
Dickinson Substation, report, (53) 398.
Station, notes, (52) 300; (53) 98, 600; (54) 400; (55) 398; (56) 498; (57) 300, 396, 497; (58) 600, 900; (59) 199, 399; (60) 499, 699.
Station, report, (51) 898; (55) 599; (59) 898.
Williston Substation, report, (53) 599; (60) 98.
- Northern Great Plains Station—
report, (53) U.S.D.A. 195.
work of, (53) U.S.D.A. 599.
- Nosema—
adiei, notes, (53) 552.
bombycis, life cycle, (59) 654.
bombycis, life cycle, modifications in, (57) 366.
bombycis, notes, (53) 558.
disease of bees, Swiss Commission on, proceedings, (60) 564.
- Nosperal, tests, (57) 147.
- Notolipernes sp., notes, (55) Calif. 352
- Notolophus posticus, life history notes, (56) 61.
- Nova Scotia Agricultural College, notes, (57) 800.
- Novarsenobenzol, anthelmintic value, (52) 777.
- Novius cardinalis, notes, (59) Guam 554.
- Nubbin, chromosomal constitution, (56) 727.
- Nuclei, generative, duplication, (55) 424.
- Nucleic acids, effect on basal metabolism, (51) 265.
- Nucleins, chemistry and physiology, treatise, (51) 407.
- "Nucleus disease," proposed name, (53) 255.
- Nummularia discreta, control, (54) Ill. 349.
- Nun moth—
behavior of birds to, (55) 854.
parasites of, (60) 656.
polyhedral disease, cause, (52) 554.
- Nurse crops, tests, (59) Conn.Storrs 431.
- Nurse, rural school, helps for, (53) 95.
- Nursery—
diseases and pests, (60) 345.
inspection, (53) Conn.State 450; (55) Conn.State 251, 252; (57) Conn.State 160; (58) 256, 557; (59) Conn.State. 455; (60) Conn.State 751.
inspection to eliminate variety mixtures, (56) 344.
practice in England, (59) 838.
school in home economics, course, (54) 188.
- stock—
balled, fumigation, (53) 453.
certification, value, (55) Mass. 238.
disinfection, (55) 849; (59) 544.
dormant, fumigation, (55) 355.
identification, (56) 837.
injury from hydrocyanic acid gas, (52) 554.
insects injurious to, (58) 557; (59) Conn.State 56.
malformations in, (59) Wis. 47.
ordering, (60) Okla.Panhandle 795.
transportation in United States and Canada, regulations, Conn.State, (59) 98, 99.
variety roguing work, (59) 833.
weed control, (58) 842.

- Nut—
 insects, summary, (57) 451.
 margarins, manufacture, (51) 14.
 meats, fumigated, hydrocyanic acid
 absorbed by, (52) U.S.D.A. 561.
 stocks, growth measurements, (60)
 Fla. 140.
 trees in Illinois, insects affecting, (56)
 555.
 trees, propagation, (55) U.S.D.A. 647.
 trees, top-working, (52) 640.
- Nutmeg, California, artificial reproduction,
 (53) 42.
- Nutrient elements, temporary depletion, ef-
 fect on plant growth, (51) 513.
- Nutrient extracts, physiological importance,
 (55) 814.
- Nutrient solutions—*see also* Culture media.
 continuous renewal, effect on soy bean
 growth, (52) 125.
 effect of aeration and continuous re-
 newal, (51) N.J. 630.
 effect on tobacco, (57) Md. 416.
 pH of, relation to chlorosis, (55) 426.
 reaction and volume, effect on plant
 growth, (51) N.J. 629.
 reaction changes due to plant growth,
 (51) N.J. 629.
- Nutrient supply, high, effect on apparatus
 of assimilation, (52) 123.
- Nutrients—
 absorption at various depths, (53)
 825.
 absorption from subsoil, (55) 118.
 effect on plant development, (52) 123.
 extraction from subsoil by alfalfa,
 (57) 712.
 in subsoils, availability, (53) 319.
 of grasses, loss through ensiling, (52)
 268.
- Nutrition—
 activities in public schools, (52)
 U.S.D.A. 562.
 and an adequate diet, (55) 589.
 and diet in health and disease,
 treatise, (59) 187.
 and food, textbook, (58) 589; (59)
 487.
 and foods, Government publications
 on, list, U.S.D.A., (51) 196; (53)
 260; (55) 188; (58) 590.
 and foods, papers on, (60) 786.
 and health, (56) 588.
 and longevity, (60) 787.
 and multiple births, (57) 224.
 animal, *see* Animal nutrition.
 balance in, (51) 396.
 chemistry of, quantitative research in,
 (57) 486.
 classes for school children, (57) 689.
 clinic as project for part-time school
 girls, (52) 96.
 copper in, (59) 893.
 effect on incidence of disease, (52)
 480.
 effect on mental growth, (56) 897.
- Nutrition—Continued.
 essentials of, treatise, (51) 860; (57)
 192.
 experiments, (58) 88, 390.
 experiments, synthetic diets for, (56)
 693.
 foundations of, treatise, (59) 188.
 human, extension work in Western
 States, (54) U.S.D.A. 689.
 human, manual, (51) 764.
 in green semiparasites, (52) 425.
 in health and disease, treatise, (60)
 891.
 in infancy and childhood, treatise,
 (55) 487.
 index, weight-height-age tables, (51)
 663.
 iron in, (59) 892.
 Japanese Imperial Government Insti-
 tute for, (60) 786.
 laboratory, report, (52) 62; (53) 364;
 (55) 188; (56) 791; (60) 189.
 mineral elements in, (53) 161.
 net energy conception, (53) 571.
 newer knowledge, treatise, (54) 889.
 of children, (57) 292; (60) 190.
 of children, mineral elements in, im-
 portance, (52) 160.
 of children, textbook, (58) 86.
 of crops, treatise, (60) 119.
 of miners and families, (54) 88.
 Pirquet method of determining, criti-
 cism, (52) 461.
 plane of, effect on brood sows, (53)
 Mo. 468.
 plant, *see* Plant nutrition.
 relation to disease, (52) 280.
 relation to hereditary changes in
 plants, (51) 738.
 relation to vitamins, (51) 825.
 research in Japan, progress, (60) 290.
 review of recent literature on, (59) 92.
 rôle of zinc in, (58) 389.
 science of, treatise, (60) 686.
 studies, (57) Mo. 457.
 studies, composition and preparation
 of diets, (57) 690.
 studies in Berlin orphan asylum, (52)
 160.
 studies of Medical Research Council
 of Great Britain, (59) 288.
 survey among Sioux Indians, (59) 290.
 textbook, (59) 792.
 work for a community, (53) 298.
 work in Labrador, (52) U.S.D.A. 562.
- Nutritional deficiencies of cattle, relation
 to abortion and sterility, (57) 772.
- Nutritive needs of a family, scales and
 standards, (58) U.S.D.A. 84.
- Nuts—
 culture experiments, (60) Can. 539.
 culture in Australia, (60) 826.
 culture in northern United States, (52)
 143.
 nutritive value, (55) U.S.D.A. 788.
 oil extraction from, (51) 509.
 pollination studies, (52) 342.

Nuts—Continued.

- roasted, vitamins in, (51) 367.
- tryptophan and cystine in, (52) 802.
- Nuttallia equi*, notes, (52) 885.
- Nyctalopia* inheritance with myopia, (52) 430.
- Nyctinasta* of plants in India, (54) 519.
- Nymphula depunctalis*, notes, (52) 154.
- Nysius* sp.—
 - injurious in Queensland, (56) 757.
 - life history notes, (57) 759.
- Nysson hoplisivora*, notes, (53) 656.

Oak—

- annular rot, (52) 646.
- anthracnose, notes, (60) Mich. 58.
- carpenter worm, lesser, life history and control, (53) 358.
- cork, of Morocco, insects affecting, (59) 154.
- forests, dying out, causes, (57) 157.
- fungus in orchard trees, (53) Calif. 754.
- golden, origin, (52) 152.
- heart rot, cause, (54) 150.
- leaves, composition and rate of decomposition, (59) 719.
- leaves, *Microsphaera quercina* on, (57) 551.
- mildew in Russia, (56) 551.
- mildew, notes, (57) 157, 450.
- Oidium* in Bulgaria, (54) 255.
- root fungus, notes, Calif., (52) 49; (57) 243.
- scale, biological control, (57) 160.
- scale insect, anatomy, (60) 650.
- secondary disease, notes, (54) 150.
- shade trees, obscure scale affecting, (54) 259.
- soils, composition, (52) 511.
- tortrix, green, control, (57) 361.
- tree, story of, treatise, (51) 299.
- white, lumber, source and fire protection, (54) U.S.D.A. 743.

Oaks—

- American, monograph, (53) 745.
- germination and survival, (57) 739; (59) U.S.D.A. 533.
- growth, relation to acorn weight, (56) 444.
- growth relation to source of seed, (52) 842.
- hollowness and stag-headedness in, (56) 753.
- in Yugoslavia, *Armillaria mellea* affecting, (59) 548.
- insects affecting, (56) 555.
- mortality among, (60) 157.
- nitrogenous substances in, migration, (59) 217.
- pin, chlorosis of, Ky., (58) 54; (60) 239.

Oat—

- and barley chop v. oat and rye chop for pigs, (54) Can. 62.
- and pea hay, value for milk production, (53) Can. 674.

Oat—Continued.

- and pea mixtures, tests, (56) Ill. 334.
- and vetch hay, ground and unground, digestibility, (60) S.C. 770.
- and vetch mixtures, tests, (56) Ill. 334.
- bacterial blotch, notes, (55) Ark. 42.
- bacterial disease, studies, (58) 545.
- black peat disease, control, (59) 536.
- blast, studies, (58) 43.
- bran, feeding value, (53) 666.
- by-products, digestion experiments, (51) Tex. 467.
- coleoptiles, autotropism in phototropism, (57) 517.
- coleoptiles, light sensitivity of tip and stump, (57) 517.
- crown rust—
 - control, (51) 156.
 - in eastern Canada, (59) 539.
 - inheritance of resistance and susceptibility in crosses, (55) 525.
 - resistance, inheritance of, (58) 126.
 - studies, (53) Iowa 746.
- disease, occasional, notes, (59) 49.
- embryo and endosperm, vitamin B in, (60) Ill. 294.
- feed, feeding value, (55) 163; (56) Iowa 266.
- flour, fat content, (56) 312.
- flour, feeding value, (58) 867.
- flour, sifted, starch equivalent, determination, (58) 865.
- grass, tall, seed production, (52) 334.
- hay, artificially cured, (58) 682.
- hay, cost of production and profit, (58) Ill. 379.
- hay, feeding value, (54) Calif. 373.
- hay v. silage, (57) 67.
- hay yield, (60) Ga. 815.
- hulls, adhesives and furfural from, (51) 114.
- hulls, composition, (51) 570.
- hulls, digestibility as affected by sodium hydroxide, (51) 372.
- hulls, feeding value, (55) 163.
- hulls, furfural manufacture from, (51) 114; (56) 313.
- hybrids, resistance to loose smut, inheritance, (55) 429.
- hybrids, rust resistance of, (56) Iowa 841.
- kernel, amino acids and polypeptides in, (53) 501.
- loose smut, infection and susceptibility, (56) 448.
- nematodes, notes, (56) 541.
- rust—
 - control with sulfur, (58) 544.
 - in Australia, (55) 348.
 - inheritance of reaction to in hybrids, (59) 446.
 - notes, (55) 346.
 - resistance, breeding for, (57) 147.
 - resistance, inheritance, (57) 746; (60) 149.

Oat—Continued.

- rust—continued.
 - susceptibility of varieties, (50) Mich. 432.
- seed, effect of reduction of food reserve in, (57) N.J. 23.
- seed, germination rate, effect on later growth, (55) 826.
- seed stimulation tests, (58) 625.
- smut—*see also* Smut, Cereal smut, and Grain smuts.
 - control, (51) Wash.Col. 149, Minn. 150, 651; (52) Kans. 445, Idaho 844; (53) Wis. 443, 543; (54) 146, Ohio 544, Ohio 746; (55) N.J. 43, 348, Alaska 446, 544, 845; (56) 147, 350, Kans. 842; (57) N.J. 47; (58) Tenn. 43, 649, Ohio 650; (59) Ohio 238, U.S.D.A. 240; (60) Va. 149, 240, Ohio 746, Wyo. 746.
 - control, reducing the cost, (57) Ohio 144.
 - control, test of disinfectants, (59) 540.
 - covered and loose, studies, (53) Ohio 541.
 - covered, inheritance, (59) Wash. Col. 32.
 - covered, resistant varieties and hybrids, (57) 147.
 - in Idaho, dust treatments, (60) 50.
 - infection, factors affecting, (56) 651; (59) 240.
 - infection, relation to size of grain, (58) 44.
 - loose, life history and control, (56) 543.
 - loose, studies, (58) 442, 746, 747.
 - notes, (55) 346; (57) 540; (58) S.C. 646.
 - prevention, (54) 46, 47.
 - resistance, inheritance, (51) 229.
 - resistance of hybrids to, (55) 429.
 - resistant strains, (56) Kans. 822.
 - spores, action of hot water, (57) 840.
 - stinking, control, (51) Mich. 148; (59) Idaho 748.
 - stinking, control in Uruguay, (56) 543.
 - studies, (55) 44.
 - susceptibility of Fulghum-Swedish Select cross to, (53) 349.
 - treatment, (53) Minn. 149.
- smuts—
 - infection experiments, (57) 840.
 - inheritance of reaction to in hybrids, (59) 446.
 - life history studies, (58) N.Y. Cornell 746.
 - new dust treatment, (58) 445.
 - physiologic races, (56) 650.
 - studies, (57) 743.

Oat—Continued.

- smuts—continued.
 - varietal susceptibility, (53) U.S. D.A. 148.
 - speckled blotch, notes, (52) 448.
 - stem rust, physiological specialization, (56) Minn. 447.
 - stem rust resistant varieties, (52) 347.
 - straw, composition, (51) 570.
 - straw, digestibility, (54) Ill. 362.
 - straw, effect on soil fertility, (56) 119.
 - straw, energy value for sheep, (56) Ill. 367.
 - straw, feeding to horses, effect, (54) S.Dak. 64.
 - thrips, biology and economic importance, (58) 755.
 - yellow leaf tip, prevention, (55) 347.
- Oatmeal proteins, dietetic value, (56) 391.
- Oats—
- and flax mixtures, tests, (55) Minn. 332, Mich. 825; (56) Minn. 524; (57) 528; (58) Minn. 828; (59) Mich. 432, Ohio 824.
 - and peas as hay crop, (51) Wis. 35, Mich. 133.
 - and peas, green, effect on flavor and odor of milk, (58) U.S.D.A. 69.
 - and rye mixture as hog pasture, (58) 868.
 - and wheat mixtures, tests, (59) Ohio 824.
 - as orchard intercrop, (58) Can. 837.
 - as sole ration, effect on calcium and phosphorus balance of horses, (51) 775.
 - breeding and selection, (51) Ga. 132.
 - breeding experiments, (51) Miss. 134, Wis. 434; (52) Mich. 334, Kans. 433; (53) 230; (54) 231, 630; (55) 223, Tex. 332, N.Dak. 527, Miss. 636; (56) Ark. 332, Ill. 333, Wash. Col. 525; (57) Tex. 126, Mo. 424; (58) Ark. 321, Ill. 322, Mo. 428, 530; (59) 430, Mich. 432, Tex. 729, N.Dak. 825; (60) Ill. 222, Oreg. 731, Ark. 812, Wash.Col. 814.
 - breeding for rust resistance, (57) 147.
 - breeding work and genetic studies, (58) 218.
 - Burt, variability in, (53) 338.
 - carbon dioxide output, effect of anesthetics, (56) 125.
 - chromosomes in, (53) 829.
 - composition, effect of geographical factor, (58) 631.
 - correlated inheritance of characters, (56) W.Va. 519.
 - cost of production, (52) W.Va. 589; (53) U.S.D.A. 489; (54) Mo. 782; (56) Ill. 385; (59) Wis. 483; (60) Ala. 183.
 - cost of production and profit, (58) Ill. 379.

Oats—Continued.

- crosses—
 between strains resistant and susceptible to crown rust, (55) 525.
 inheritance of earliness in, (54) Pa. 26.
 inheritance of smut resistance in, (51) 229.
 inheritance, studies, (60) W.Va. 216.
 susceptibility to smut, (53) 349.
 crushed, v. mill feeds for breeding hens, (54) Can. 272.
 cultural and planting tests, (56) Kans. 822.
 culture—
 experiments, (51) 36; (52) Alaska 528, Nebr. 529; (53) U.S.D.A. 132, U.S.D.A. 333, Mo. 431; (54) U.S.D.A. 132, 531; (55) Alaska 433, Miss. 527, Miss. 636, Minn. 734; (56) 35; (57) Alaska 522, 524; (58) 828; (59) Ohio 824; (60) Ga. Coastal Plain 132, Minn. 132, Ohio 636.
 in Rumania, (54) 441.
 in Scotland, relation to crane fly, (58) 349.
 in Sweden, importance, (53) 235.
 in Värmland, Sweden, (53) 633.
 cutting tests, (53) Can. 530.
 damping-off, notes, (58) 443.
 disease resistance in, inheritance, (58) 43.
 drill calibration, relation to stand and yield, (52) 828.
 duty of water for, (54) N.Mex. 680.
 dwarfing in, (56) Minn. 222.
 effect of—
 acid soil, (54) 213.
 fallow, (56) Wyo. 825.
 preceding crop, (52) R.I. 23.
 sodium nitrate, (59) Ala. 31.
 sulfur, (59) Tex. 730.
 weed growth in, (55) Iowa 726.
 effect on soft pork production, (55) 865.
 electrocultural experiments, (54) 434.
 Engelbrekt, description, (51) 532.
 English, digestibility, (60) 659.
 factorial analysis, (58) 527.
 fall seeding experiments, (52) 633.
 fall-sown, experiments in the South, (57) U.S.D.A. 430.
 false wild, absence of yellow color in, (57) 123.
 false wild, elimination, (57) 326.
 false wild forms in, (56) 429.
 false wild, genetics and cytology, (57) 821.
 false wild, notes, (58) 525.
 false wild, origin, (54) 442; (56) 27.
 fatuoid and fatuo-steriloid, (58) 824.
 fatuoid, origin, (57) 32; (58) 525.

Oats—Continued.

- feeding value, (55) 163, 264; (56) Iowa 266, Ill. 370; (57) 69; (58) Ill. 358; (59) Ohio 262; (60) Ohio 171, Ill. 258, Ohio 461.
 fertilizer experiments, (51) Minn. 119, Wis. 421; (52) S.C. 528, 723; (53) Mo. 431, La. 514, Can. 530; (54) Ga.Coastal Plain 130; (55) Nebr. 636, Fla. 824; (56) Ga.Coastal Plain 523, S.C. 525, Tenn. 531, Miss. 731, Iowa 811; (57) Mich. 614; (58) S.C. 325; (59) 20, 21, 213, 319, Miss. 325; (60) 25, Ga.Coastal Plain 132, S.C. 732, Ark. 812.
 fertilizer nutrients required by, (53) 216.
 field experiments, (52) 533.
 following soy beans, yields, (51) Miss. 134.
 for laying hens, (58) Ohio 669.
 forage and seed yields after other crops, (59) Wash.Col. 32.
 forage yields, (52) Mont. 435.
 Fowlds hull-less, notes, (52) S.Dak. 137.
 from Ethiopia, morphological and cytological studies, (58) 26.
 Fulghum, in California, (60) 329.
 Fulghum, value, (56) Tenn. 436.
 germination tests, (52) Mont. 435; (60) 27.
 glutelin of, (58) 410.
 green manure experiments, (60) Ga. Coastal Plain 132.
 ground, as substitute for shelled corn, (60) Ohio 169.
 ground v. shelled corn, (60) Ohio 462.
 growth in artificial light, (51) 25.
 Guldregu II, history and characteristics, (59) 328.
 hull-less, feeding value, (54) Can. 473.
 hull-less v. ground, feeding value, (52) Can. 673.
 hybrids, natural, occurrence, (55) 28.
 immature, germination tests, (55) Alaska 433.
 immunity to wheat take-all, (53) N.C. 747.
 improvement, (53) N.C. 835; (54) 532; (56) Kans. 822.
 inheritance in, (52) Wash.Col. 825.
 inheritance of disease resistance in, (57) 246.
 inheritance of reaction to stem rust and smuts, (59) 446.
 inheritance studies, (51) Wash.Col. 128; (59) 223.
 Iogold, characteristics, (59) Iowa 36.
 Iogren, behavior and characteristics, (51) Iowa 432.
 Japan, yields, (54) Pa. 328.
 Kanota, genetic studies, (52) Kans. 433.
 Kanota, notes, (55) Calif. 331.
 Kherson, variation in, (53) 830.
 liming, (60) Ga.Coastal Plain 132.

Oats—Continued.

- lodging in, (59) 326.
 Markton, smut immune variety, (52) U.S.D.A. 35.
 minimum fertilizer requirement, (54) R.I. 30.
 moisture in, under varying humidity, (54) 636.
 natural crossing in, (52) 727; (54) 430.
 net energy value, (57) 562.
 nutrient requirements, (53) R.I. 325.
 on fallow, yield, (60) Wyo. 733.
 optimum soil reaction for, (53) 320.
 Orion c, description, (55) 737.
 Orion, tests, (58) 736.
 Patterson and Keystone, characteristics, (60) Pa. 327.
 percentage returns, (51) Ind. 830.
 phosphorus in, (60) 204.
 planting and spacing experiments, (57) Okla. 125.
 planting tests, (57) Idaho 726; (59) Idaho 728; (60) Mont. 730.
 plowing and seeding tests, (51) Ohio 433.
 prices, (54) U.S.D.A. 82; (58) Ill. 380.
 prices and index, (54) Ohio 184; (56) Ohio 285; (59) N.Dak. 885.
 prices, relation to transportation costs, (53) 593.
 production and shipments, (59) Iowa 885.
 production on irrigation projects, (54) Wash.Col. 434.
 production, power and labor requirements, (60) 79.
 pure lines, effect of climatic conditions, (56) 730.
 rate of absorption of sodium nitrate, (56) 213.
 rate of manuring experiments, (51) Minn. 119.
 recovery power after injury, (56) 63.
 response to manganese, (60) N.C. 319.
 rolled, irradiated, effect, (53) 568.
 rotation and tillage experiments, (53) U.S.D.A. 528.
 rotation experiments, (52) Mont. 435; N.Y.Cornell 526, U.S.D.A. 827; (53) Wyo. 133; (54) 31, Calif. 230, 530; (58) U.S.D.A. 30, Ala. 427, U.S.D.A. 531; (59) N.C. 728.
 seed, impurities and determination of origin, (60) 539.
 seed, injury from smut disinfection, (56) 147.
 seeding experiments, (51) Minn. 133, Oreg. 529, Minn. 636, Nebr. 831, N.Dak. 833; (52) Ga.Coastal Plain 225, Nebr. 529, Idaho 828; (53) Minn. 130, Wis. 432, Can. 530, N.C. 735, N.C. 835; (54) U.S.D.A. 31, Ga.Coastal Plain 130, Mich. 634; (55) Ark. 30, Nebr. 229, Minn. 527, Ohio 528, W.Va. 529; (56) Tenn.

Oats—Continued.

- seeding experiments—continued.
 531, Wis. 732, 825; (57) 227; (58) S.Dak. 325.
 seeds, frosted, germination, (56) Colo. 820.
 size of seed experiments, (57) 826.
 solar energy used by, (53) 508.
 South Australian, analyses, (53) 666.
 spray irrigation for, (52) 287.
 sprouted, feeding value, (54) Can. 764.
 sprouted, for laying hens, (51) Can. 276; (53) 670.
 sprouted, v. clover for hens, (54) Can. 273.
 stacked, storage studies, (59) 626.
 standing power, (57) 37.
 Stjärn, tests, (58) 735.
 straw and grain yield, correlation, (54) 831.
 strength of culms, factors affecting, (57) 327.
 test for hay, (60) Minn. 132.
 time of cutting tests, Minn., (51) 133; (53) 131.
 time of plowing, (52) Kans. 434.
 tolerance for alkali, (55) 510.
 treatise, (57) 631.
 under dry land culture, (55) U.S.D.A. 132.
 utilization for pigs, (55) Iowa 466.
 v. barley for pigs, (52) Can. 873.
 v. corn for work horses, (52) N.Y. Cornell 771.
 v. corn for work mules, (52) Mo. 272.
 v. rape pasture for pigs, (52) Can. 873.
 varieties, (51) Ga. 132, Mich. 133, Wash.Col. 136, Oreg. 739, Mo. 741, Idaho 830; (52) Calif. 33, N.Y.Cornell 635, U.S.D.A. 827; (53) U.S.D.A. 132, Okla. 133, Calif. 430; (55) Ark. 30, N.C. 228, N.Mex. 433; (56) Ind. 132; (57) Tenn. 126; (58) 830; (59) Mont. 129; (60) Pa. 327, Mont. 729, West.Wash. 732.
 and areas, (51) Wash.Col. 37.
 and characteristics, treatise, (52) 832.
 and cultural methods for South Dakota, (59) S.Dak. 526.
 and requirements, (58) 632.
 and strains, registration, (56) 433; (58) 532.
 characteristics, (55) Alaska 230; (57) 826.
 composition, (55) Can. 260.
 for Kansas, (53) 528.
 for Maryland, (57) 32.
 for Minnesota, (55) Minn. 132.
 improved, (54) Minn. 30.
 improved, for Corn Belt, (54) U.S.D.A. 35.
 improved, for New York State, (54) U.S.D.A. 34.
 lodging and shattering in, (59) 435.
 merits, (55) Mich. 825.

Oats—Continued.

- varieties—continued.
 morphology relation to water utilization, (59) 323.
 natural crossing in, (57) 29.
 of Sweden, (53) 835.
 pedigreed, (53) Iowa 435.
 percentage of hull in, (60) 225.
 variations within, (54) N.Y.Cornell 32.
 yields, (51) Va. 35; (55) Mo. 132; (56) Ill. 230.
 variety as agronomic unit, (51) 529.
 variety for peat land, (55) Minn. 527.
 variety tests, (51) Minn. 133, Minn. 134, Miss. 134, N.Mex. 433, Ohio 433, Minn. 636, N.J. 636, La. 830, N.Dak. 833; (52) Fla. 224, Ga.Coastal Plain 224, Ind. 226, Miss. 226, 337, Kans. 433, S.C. 528, Nebr. 529, N.J. 732, Mich. 796, Idaho 828, Wash.Col. 829; (53) W.Va. 31, Ind. 130, Minn. 130, Minn. 131, N.Mex. 131, Wyo. 133, U.S.D.A. 134, Ga. 230, Mo. 235, N.Dak. 334, Ind. 431, Mo. 431, Wis 432, La. 528, N.Dak. 529, Can. 530, Ariz. 733, N.C. 734; (54) Ga.Coastal Plain 130, Fla. 325, Ill. 327, Mont. 328, 530, Mich. 634, Mo. 732, Wash.Col. 827, 828; (55) N.J. 31, Ga. 131, Minn. 228, Minn. 332, Tex. 332, Alaska 433, La. 433, Miss. 527, N.Dak. 527, Miss. 636, Nebr. 636, Nebr. 637, Ore. 637, Miss. 649, Minn. 734, Minn. 735, Fla. 824, Idaho 825; (56) 35, Mont. 133, Ark. 332, Ill. 333, Ga.Coastal Plain 523, Minn. 524, Wash.Col. 525, Wyo. 526, Tenn. 530, Ariz. 731, Fla. 821, Iowa 821, Kans. 822, 825; (57) Can. 33, Okla. 125, Tex. 126, N.Mex. 224, Ga. 225, Minn. 226, Okla. 226, 227, Mo. 424, Alaska 522, Okla. 523, U.S.D.A. 524, Ind. 628, Idaho 726, N.J. 727; (58) Ark. 321, Ill. 322, S.C. 325, Alaska 427, Mo. 428, U.S.D.A. 532, S.C. 632, Ga.Coastal Plain 732, Okla. 734, 828, Minn. 828, Okla. 828; (59) Wash.Col. 31, Ga. 221, N.Mex. 222, Wyo. 223, Mich. 432, Idaho 728, N.C. 728, Tex. 729, Nebr. 824, N.Dak. 825; (60) N.Dak. 34, Ga.Coastal Plain 132, Minn. 132, Ore. 132, Ariz. 133, Ill. 222, N.J. 431, Ohio 636, Alaska 728, Ore. 731, S.C. 732, Wyo. 733, Ark. 812, Wash.Col. 814, Ga. 815.
 water requirements, (58) Can. 223.
 whole, deficiencies, (51) Ohio 466.
 wild, control, (55) Calif. 332; (56) Mont. 133.
 wild, feeding value, (55) N.Dak. 565.
 wild, germination and development, (54) 239.
 wild, hay production, (54) Calif. 329.
 wild, varieties in California, (52) Calif. 33.

Oats—Continued.

- winter, breeding for the South, (56) 636.
 yields, (51) U.S.D.A. 135, Ohio 488, Nebr. 831; (52) U.S.D.A. 527; (55) Ohio 528, Nebr. 636; (57) 430; (60) Mont. 730.
 after fallow, (52) Ore. 435.
 and agronomic data, (52) Can. 733.
 and composition, effect of time of cutting, (57) 525.
 and rainfall in Bavaria, (51) 509.
 correlation with meteorological observations, (60) 616.
 effect of weather, (56) 207, 413.
 factors affecting, (60) 329.
 increasing, (56) Mich. 899.
 on muck lands, (56) Mich. 823.
 relation to coleoptile length, (54) 437.
 trend in, (56) U.S.D.A. 685.
 under dry farming, (54) U.S.D.A. 30.
 Obeliscus cuniculi, notes, (52) 859.
 Oberea in New Jersey, (60) 556.
 Oberlin Agricultural Station in China, notes, (59) 299.
 Obesity—
 metabolism of, (53) 60.
 paper on, (58) 596.
 treatment, (59) 189.
 Obscure scale—
 attacking pecans, (54) 259.
 notes, (58) Miss. 57.
 Ocean temperatures—
 and seasonal rainfall in California, (54) U.S.D.A. 714.
 forecasting rainfall from, (52) 207.
 Ochotona, synopsis of genus, (52) 153.
 Ochroma ormioides—
 notes, (56) U.S.D.A. 860.
 parasite of Japanese beetle, (60) 563.
 Ochrosidia immaculata—
 notes, (54) Kans. 461.
 parasite of, (52) 62.
 Ocnorostoma piniariella, notes, (53) 257.
 Ocotea bullata—
 dendrographic experiments with, (58) 842.
 propagation vegetatively, (57) 440.
 Odoiporus longicollis on plantains, (59) 659.
 Odonata of Egypt, synopsis, (60) 846.
 Odonate fauna of Palni and Nilgiri Hills, (52) 155.
 Odontia saccharicola in Porto Rico, (55) 248.
 Odontionopa sericea, trapping, (53) 257.
 Odontopsyllus spp., notes, (54) 659.
 Odontotermes spp., notes, (59) 353.
 Odontria zealandica on turnips, (51) 764.
 Oecanthus angustipennis, *see* Cricket, tree.
 Oeceticus kirbyi, biology and control, (55) 662.
 Oeciacus vicarius, studies, (60) 61.

- Oecophylla*—
smaragdina of south China, (53) 656.
virescens of Australia, (60) 250.
- Oedemagena tarandi*, life history, (56) 759.
- Oedematocera dampfi*, notes, (58) 262.
- Oedipodinae*, taxonomic and ecological study, (52) Utah 454.
- Onophthira pilleriana*, parasites of, (51) 255; (54) 458; (57) 168.
- Oenothera*—
 androlethal factors in, (59) 621.
 brevistylis, style length and fertility, variations in, (52) 330.
 cytology, (60) 323.
 hybrids, studies, (56) 31.
lamarckiana, brittle races of, (56) 521.
lamarckiana, chromosome behavior in, (56) 727.
lamarckiana, chromosomes, mutant characters in, (52) 329.
lamarckiana, mutations in, (57) 122.
 linkage with crossing-over in, (52) 431; (59) 126.
 meiotic stages in, cytological studies, (58) 320.
muricata, meiosis in anthers, (56) 428.
 mutants at Lunteren, (59) 622.
 mutations, studies, (53) 127.
nanella-brevistylis, segregation, (56) 330.
 new morphological type of flower, (59) 126.
 old-gold flower color in, inheritance, (56) 521.
 pollen mother cells, meiosis in, (56) 521.
 Renner's studies on genetics of, (56) 31.
 segregation in, (53) 330.
suaveolens, homozygotic *lutescens*-form, (57) 120.
 third linkage group in, (56) 130.
 triploid hybrid, chromosomes of, (53) 126.
- Oesophagostomiasis* in sheep, (60) 574.
- Oesophagostomum*—
columbianum, life history notes, (52) 82, 181.
columbianum, notes, (59) 881.
dentatum, anatomy and biology, (58) 775.
dentatum, notes, (57) P.R. 468.
longicaudum, geographical distribution, (55) 657.
radiatum in cattle, (57) P.R. 468.
- Oestridae causing myiasis in man and animals, (57) 873.
- Oestrous cycle—
 and hysterectomy of opossum, (53) 732.
 and menstrual cycle, differences, (55) 822; (56) 226.
 effect of mammary gland substance, (53) 525, 526.
 effect of thyroid feeding, (56) 465.
 in cows, effect of ovarian extracts, (55) 29.
- Oestrous cycle—Continued.
 in cows, studies, (52) 631; (53) 631.
 in dogs, (57) 723.
 in mares, (54) 633.
 in mice, (56) 663.
 in mice, effect of alcohol, (52) 632.
 in rabbits, (55) 29.
 in rats, (51) 131; (53) 832; (55) 860.
 in rats, effect of low temperatures, (57) 223.
 in rats, effect of thyroidectomy, (55) 331.
 in sows, Mo., (54) 761; (55) 865.
 in sows, changes in vaginal mucosa during, (52) 631; (57) 172.
 occurrence after X-ray sterilization, (57) 324; (58) 529.
- Oestrus—
 in cows, effect on milk production, (55) 872.
 in sows, nature of secretion during, (52) 631.
- Oestrus nasalis*, synonymy, (55) 258.
- Oestrus ovis*, summary, (54) 157.
- Office of Experiment Stations, notes, (54) 499; (56) 198, 799; (60) 699.
- Ogilvie, R. B., paper on, (53) 571.
- Ohio—
 College of Agriculture Extension Service, handbook, (51) 493.
 post road, condition, (53) U.S.D.A. 483.
 Poultry Producers' Cooperative Association, (60) Ohio 683.
 State University, notes, (51) 98, 300, 697; (52) 600, 700, 797; (53) 99, 698; (54) 400, 497; (55) 600, 700; (56) 600; (58) 98, 798; (59) 100, 900; (60) 900.
 Station, bimonthly bulletin, (53) 899; (54) 197, 396, 598; (55) 97, 495, 697; (56) 195, 299; (57) 299, 494, 697; (59) 196, 498; (60) 199.
 Station field days, (59) Ohio 498.
 Station, monthly bulletin, (51) 299, 797, 899; (52) 497, 796; (53) 96, 599, 798.
 Station, notes, (51) 98, 697; (52) 700; (53) 198, 698, 900; (54) 497; (55) 99, 600; (59) 100.
 Station, report, (51) 495; (53) 599; (55) 196; (57) 199; (59) 298.
- Ohio-Mississippi Valley Forest Experiment Station, notes, (57) 397.
- Oidiopsis taurica*, notes, (55) 346.
- Oidium—
 lactis growth, effects of salt and pH, (56) 350.
 lactis, notes, (54) N.Y.State 543.
 lactis, studies, (51) N.J. 654.
 lactis, vitamin B synthesis by, (60) 294.
mangiferae, notes, (55) 346.
 on grapes, control, (59) 547.

Oidium—Continued.

- on pumpkin, (57) 147.
- oospores lactis, notes, (55) N.J. 43.
- spp., notes, (51) 46, 248.

Oiketicus spp., notes, (60) Tex. 164.

Oil—

- and color chemistry, monograph, (56) 507.
- beetles of New Jersey, (60) 556.
- behavior after reaching a bearing, (55) 882.
- burners, domestic, design and performance, (60) 380.
- burners, domestic, installing and operating, (54) 96.
- burners for domestic use, (59) U.S.D.A. 598.
- burners for small heating plants, (52) 489.
- cake, fertilizing value, (55) 516.
- cakes, characteristics and value, (54) 263.
- crankcase—
 - deterioration and reclamation, (55) 379.
 - dilution, determination, (53) 286.
 - dilution, effect on engine, (54) 877.
 - dilution problem, (52) 187.
 - dilution, remedy for, (55) 379.
 - reclamation, (53) 590; (55) 480.
 - water in, (52) 186.
- Diesel, emulsification for puncture vine control, (60) 336.
- emulsions—
 - cold mix lubricating, stability, (60) 453.
 - cold mixed, preparation, (55) 553.
 - cold process formulas, (53) 653; (54) 154.
 - effect on insects and plants, (57) 855.
 - for San Jose scale control, (51) 552; (53) 454; (55) Oreg. 662.
 - new formula for, (53) 452.
 - paper on, (57) 853.
 - percentage of oil in, determination, (55) 554.
 - properties, (59) 649.
 - spray tests with, (53) Mo. 437; (54) 154; (58) 344.
 - sprays, place, manufacture, and use, (59) 551.
- flow in complete journal bearings, (54) 77.
- from seeds and nuts, extraction, (51) 509.
- heating, domestic, handbook, (60) 883.
- in flaxseed, determination, (53) U.S.D.A. 611.
- in oleaginous seeds, state of, (53) 725.
- of Brassica campestris production in Argentina, (52) 228.
- palm—
 - chemistry, (57) 203.
 - crown disease, studies, (59) 637; (60) 353.

Oil—Continued.

- palm—continued.
 - diseases in Malaya, (60) 836.
 - diseases, notes, (54) 144; (56) 541.
 - fruits, ripening, changes in, (57) 141.
 - industry in French East Africa, (51) 43.
 - insects in Africa, (54) 258.
 - seeds, germination, (57) 537.
 - wilt, notes, (55) 244.
- palms—
 - African, germination of seeds, (56) 45.
 - African, insects affecting, (54) 258.
 - beetle leaf miner enemy of, (54) 461.
 - effect of artificial pollination, (59) 443.
 - growth and correlation in, (56) 45.
 - in Brazil, beetle affecting, (52) 359.
 - in Malaya, (58) 646.
 - pneumathodes on roots, (55) 630.
 - pollination, (55) 647; (57) 341.
 - propagation, (53) 344.
- petroleum, as insecticide, (57) Calif. 258; (60) 162, 453, 839.
- petroleum, for spraying, specifications, (60) 453.
- seed crops in Argentina, (52) 228.
- seed plants, treatise, (57) 631.
- seeds, culture in India, (57) 629.
- seeds, germination, effect of saponin, (54) 427.
- seeds, high tryptophan content, (52) 802.
- seeds, Indian, studies, (51) 532.
- seeds, state of oil in, (53) 725.
- spraying status in Northwest, (55) 52.
- sprays—
 - and oil injury, (59) 457.
 - clay emulsion for, (54) 341.
 - effect on apple aphids, (52) 658.
 - effect on apple foliage, (60) Wash. Col. 821.
 - effect on fruit trees, (51) 442.
 - effect on transpiration of fruit trees, (58) 232.
 - for pear psylla control, (60) 842.
 - fungicidal value, (59) 842.
 - highly refined, efficiency, (59) Calif. 755.
 - inhibiting factor in, (54) 153.
 - notes, (52) Wash.Col. 851; (54) 551, Wash.Col. 854; (56) 458; (57) Idaho 755; (59) Idaho 757.
 - penetration into insect breathing system, (58) 253.
 - preparation and use, (52) Wash. Col. 656.

Oil—Continued.

sprays—continued.

- studies, (51) Wash.Col. 157; (55) Wash.Col. 52; (56) 254.
- use and effectiveness, (57) 855.
- use on citrus trees, (56) 254; (60) 164.

Oiled—

- materials for apple scald control, tests, (52) 653.
- paper, shredded, for apple scald control, (55) U.S.D.A. 755.
- paper wrappers for apple scald control, (54) Iowa 39, Ill. 350, 750; (55) Ind. 48, 549.
- slicker clothing, manufacture, (54) 796.

Oils—see also Fats, Corn oil, Cottonseed oil, etc.

- and fats, studies, (59) 108.
- and fats, treatise, (55) 805; (57) 309.
- and oil constituents, absorption spectra, (58) 895.
- animal and vegetable, statistics, (53) 203; (54) 307; (55) 710.
- animal and vegetable, vitamin D in, (57) 295.
- antirachitic effect, (51) 568.
- at high pressures, lubricating properties, machine for comparing, (55) 378.
- automobile, carbon deposits from, (56) 579.
- bromine-iodine numbers, (58) 509.
- chemistry of, new aspects, (56) 801.
- distilling, condenser for, (52) 11.
- drying, as adhesives in sprays, (53) 453.
- drying, chemistry of, (54) 708.
- effect on fertilizing value of calcium cyanamide, (51) 817.
- emulsified, mixing with hard water and lime-sulfur, (52) U.S.D.A. 441; (53) 254.
- emulsified, use as ovicides, (51) 253; (58) 757.
- essential, analytical notes, (59) 312.
- essential, athermancy and transpiration, (54) 125.
- essential, treatise, (56) 201.
- fats, and waxes, studies, (57) 203.
- fish, characteristics, (55) 10.
- flow through crank shaft and connecting rod bearings, (58) 376.
- hydrogenated vegetable, vitamin E in, (55) 594.
- identification, (52) 411.
- improving spreading power in mosquito-breeding places, (59) 158.
- in diet, effect on composition of milk fat, (53) 880.
- in rations of cows, effect on butterfat, (53) 377.
- in textiles, estimation, (59) 96.

Oils—Continued.

- iodine number determination, (53) 315.
- lightwood, oxidation and hydrolysis, (56) 801.
- lubricating—
 - effect of engine operation, (55) 378.
 - emulsions, insecticidal value, (51) 361; (56) 60; (58) 346.
 - engine service tests, (57) 678.
 - for sprays in Ontario, (58) 757.
 - specific heats, (52) 586.
 - tests, (53) 187; (58) 681; (60) 879.
 - value, (56) 577.
- marine animal and cod-liver, antirachitic value, (60) 198.
- mineral, effect on assimilation of vitamins, (58) 88.
- mineral, effect on foliage, (57) N.J. 743.
- mineral, in copper fungicides, (57) 847.
- miscible, and oil emulsions, (53) 452.
- motor, characteristics and performance at low temperatures, (58) 882.
- of sweet clover seed, (56) 502.
- of wheat embryo and flour, studies, (55) 407.
- on foliage, effect, (59) N.J. 351.
- production and utilization, (57) U.S.D.A. 8.
- purification, (51) 313.
- rancidity determinations, (54) 111; (59) 204.
- separation of unsaponifiable matter from, (52) 712.
- South African, vitamin A in, (51) 565.
- spontaneous heating, (57) 313.
- spray, unsulfonated residue in, determination, (57) 206.
- standardization for mayonnaise, (58) 891.
- statistics, (60) U.S.D.A. 785.
- tariff problem, (60) 384.
- tests for citrus spraying, (59) Calif. 756.
- textile, for dyeing and finishing of cotton, (56) 93.
- unsaponifiable matter, separating, (54) 614.
- v. lime-sulfur for scale control, (59) N.C. 758.
- vegetable, analysis, fluorescence in, (58) 114.
- vegetable, protective action against oxidative destruction of vitamins, (58) 493.
- vegetable, rôle in fertility and lactation, (57) 896.
- vegetable, treatise, (54) 7.
- vegetable, vitamin E and dietary complex in, (55) Ark. 89.
- viscosity at high temperatures, (52) 687.

Oils—Continued.

volatile, from plant material, production, (58) U.S.D.A. 801.

Oklahoma—

College, notes, (51) 98, 398; (55) 600; (58) 397; (59) 399, 697; (60) 400.

Panhandle Station, bulletin, (60) 795.
Station, notes, (58) 397; (59) 697; (60) 400.

Station, report, (53) 195; (57) 599.

Okra—

feeding value, (57) Ga. 73.
fertilizer experiments, (58) Ill. 333.
powdery mildew, notes, (55) 346.
seed composition, (56) 502.
summary, (57) Ga. 40.

Olax imbricata, parasitism of, (51) 734.

Oleaginous raw materials, statistics, (60) U.S.D.A. 785.

Oleander, culture in Arizona, (55) U.S.D.A. 438.

Oleo oil and stearin, vitamin A in, (55) 192.

Oleomargarine—*see also* Margarine.

moisture content, (60) 15.
v. butter for rickets prevention, (59) 163.

Oleoresin—*see also* Resins.

of Douglas fir, composition, (53) 811.
production, effect of height of chipping, (53) 346.

Olethreutes—

abietana on ornamental trees, (60) Mich. 63.
chionosema spp., notes, (52) U.S.D.A. 255.
spp., notes, (53) 652.
variegana, biology and injury to apples, (58) 559.

Olethreutinae, revision, (54) 756.

Oleum chenopodii, notes, (59) 577.

Olfactometer, insect, description, (55) 552.

Oligosita xiphidii n.sp., description, (56) 760.

Olinia cymosa, biology and young regeneration, (58) 21.

Olive—

disease, notes, (53) 246.
floral anomalies in, (56) 629.
fly, control, (53) 156; (54) 460; (55) 856; (57) 63.
fly, control, international conference on, (52) 856.
fly in Corfu, campaign against, (52) 660.
fly in Palestine, (53) 654.
fruit fly control, international instructions, (58) 665.
fumagine, protective preparations against, (60) 835.
industry in Morocco, (52) 142.
industry, standardization in, (60) 682.
knot organism on related hosts, pathogenicity, (51) 549.
knot, studies, (55) 49; (57) 155, 156.

Olive—Continued.

oil—

adulteration with rapeseed oil, detection, (55) 805.

California, composition, (54) 110.
changes in after long standing, (57) 204.

effect on calcium and phosphorus assimilation, (51) 374.

Italian, Bitonto type, composition, (54) 610.

Palestine, composition, (52) 412.
preparation and refining in southern Europe, (52) Calif. 413.
production in Argentina, (52) 228.

silver benzoate test for, (60) 14.
sulfuric index, (52) 411.

Tunisian, composition, (56) 710.

oils, extracted, detection, (58) 715.
pulp, dried, digestibility, (58) Calif. 761.

trees, flowering, fruiting, and vegetative development, (52) 740.

trees, pruning experiments, (53) Ariz. 741.

Olives—

canned ripe, survey, (53) 59.

Corsican, composition, (53) 562.

culture, (55) Calif. 339.

culture and manufacture into oil, (52) 343.

culture in Arizona, (55) U.S.D.A. 438.
culture in Italy, effect of climate, (55) 508.

culture in Seville, (60) 234.

culture, revival on Majorca, (54) 41.

curing, cause of floaters in, (56) 206.

diseases and pests, (58) 756.

effect of pruning, (56) Ariz. 739.

fertilizer experiments, (52) 642.

for oil, preservation, (53) 507.

fruiting, effect of climate, (55) 646.

fumigation with calcium cyanide, (56) 659.

insects affecting, (53) 157; (59) 553.

Palestine, composition, (52) 412.

pickling by modern Greek process, (59) 390.

pickling in Mediterranean countries, (52) Calif. 207.

production in Spain, France, and Italy, (52) Calif. 237.

pruning, (53) 844; (59) Calif. 737.

ripe, preparation and use in Greece, (54) 487.

scale insect affecting, (56) 555.

Olla abdominalis sobrina—

life history, (60) 653.

notes, (56) 257.

Olpidium—

brassicaceae on roots of greenhouse plants, (54) 649.

disease of cauliflower seedlings, (58) 340.

Omobaris, new genus, erection, (60) 655.

Omphalia flavida, bioluminescence of, (58) 543.

- Onchocerca*—
 caecutiens of Guatemala, (52) 760.
 gibsoni in cattle, (57) 875; (59) 172.
 in South Africa, (60) 574.
 volvulus development in *Simulium*
damnosum, (54) 773; (56) 62.
- Oncoba echinata*, age of fruiting, (60) P.R.
 740.
- Oncodes costatus*, egg-laying experience
 with, (53) 154.
- Oncopeltus fasciatus*, notes, (51) 260; (56)
 250.
- Oncoscelis sulciventris*, life history, habits,
 and control, (59) 458.
- Onesia agilis*, notes, (58) 459.
- Onion—
 anthracnose, notes, (58) 446, 652.
 blight, description and control, (55)
 Mass. 246.
 Botrytis neck rots, notes, (56) 450.
 bulb disease, studies, (52) 348.
 bulb rot, notes, (55) 848; (56) 450;
 (58) 549.
 diseases and pests, (59) 641.
 diseases, notes, (51) 152; (56) 747;
 (59) Colo. 236, 847.
 diseases, resistance to, (56) 450, Wis.
 745.
 downy mildew on seed crops, control,
 (59) 46.
 drill, improved formaldehyde tank for,
 (54) 49.
 false mildew fungus, hibernation, (57)
 644.
 fly, black, notes, (57) 362.
 Fusarium rot, notes, (51) Wash.Col.
 150; (52) Wash.Col. 845; (54) 847.
 industry, Connecticut Valley, status,
 (55) Mass. 284.
 industry in Utah, (57) Utah 40.
 industry, research service to, (55)
 Mass. 299.
 leaf spot and blight, notes, (55) 445.
 leaf spot, new, (54) 651.
 maggot, chemicals attractive to, (51)
 162; (55) N.J. 51.
 maggot, control, (53) 362; (56) 63;
 (59) Wis. 56; (60) Oreg. 753.
 maggot flies, habits, (60) 843.
 maggot in Canada, (52) 355.
 maggot, notes, (53) Iowa 755.
 maggot, studies, (55) Oreg. 659.
 mildew mycelium hibernation, (57)
 443.
 mildew, notes, (55) 747.
 milk, studies, (52) 670.
 mold, notes, (51) 847.
 mycelial neck rot, (53) 351.
 neck rot, studies, (54) 745; (58) 49;
 (59) Wis. 48.
 pink root, causal organism, (56) 246.
 pink root, in Ontario, (51) 542; (54)
 144.
 pink root, notes, (54) 144; (57) 749;
 (59) Calif. 746.
 scale pigmentation, relation to disease
 resistance, (52) 846.
- Onion—Continued.
 scales, juice extracted from, toxicity,
 (53) 348.
 seedlings, winter injury, (59) Ga. 229.
 seeds, domestic and foreign production,
 statistics, (53) 240.
 smut—
 control, (53) 44; (55) Oreg. 650;
 (56) 451, 847; (59) 148.
 control, financial gain from, (54)
 499.
 control, formaldehyde injury, (54)
 545.
 description and control, (57) 749.
 disease, history, and control, (53)
 Mass. 444.
 fungus, development, (58) 549.
 in Indiana, (52) 650.
 resistance, tests, (54) 347.
 susceptibility of *Allium* spp. to,
 (55) 848.
- thrips—
 control, (55) N.Mex. 456; (59)
 Calif. 755, Nebr. 854.
 control, improved methods, (51)
 Mich. 56.
 control in greenhouses, (56) 256.
 dusting experiments, (53) Conn.
 State 450.
 life history and control, (55)
 Mass. 254.
 notes, (57) Idaho 755; (60) 444.
 on cotton, studies, (58) 453.
 toxicity of hydrocyanic acid for,
 (60) 454.
 transmission of tomato disease by,
 (60) 835.
- white rot disease, immunity trials, (57)
 644; (59) 242.
 white rot, factors affecting, (59) 148.
 white rot in Europe and America,
 (56) 351.
- Onions—
 action of chloroform on, (60) 215.
 behavior during and after storage,
 (52) 235.
 Bermuda, American-grown, marketing,
 (52) U.S.D.A. 593.
 Bermuda, culture, (55) Mo. 38; (60)
 822.
 Bermuda, culture and marketing, (57)
 V.I. 335.
 breeding experiments, (53) Ind. 139;
 (60) Can. 639.
 bulb formation, effect of length of day,
 (60) P.R. 739.
 cost of production, (59) N.J. 382.
 culture, (51) N.Dak. 239.
 culture at Newlands, (53) U.S.D.A.
 840.
 culture experiments, (55) V.I. 339.
 development and yield, effect of size
 of sets, (59) 529.
 duty of water for, (54) N.Mex. 680.
 effect of cultivation, (54) 137.
 effect of ethylene stimulation, (58)
 645.

Onions—Continued.

- effect of overhead irrigation, (58) Ill. 334.
 effect of preceding crop, R.I., (51) 746; (52) 23.
 effect of self-fertilization in, (58) 640.
 fertilizer requirements, (55) Wis. 122.
 fertilizers for, (55) Mass. 237.
 freezing effects, (57) U.S.D.A. 619.
 injury from exposure to ammonia, (60) 345.
 liming, (58) Mass. 538.
 marketing, (53) U.S.D.A. 690.
 photoperiodism of, (60) 625.
 pollination and self-fertility, (51) 144.
 production and marketing, (57) Ind. 586.
 production, economic study, (52) Iowa 788.
 production in Michigan, (58) Mich. 838.
 raw, test for worms in dogs, (53) 385.
 response to length of day modifications, (58) P.R. 536.
 rest period, studies, (52) 235.
 root development, (53) 342.
 Sacaton Bermuda, improving, (55) U.S.D.A. 438.
 seed and set production tests, (60) Mont. 738.
 seed production, effect of storage, (59) Calif. 737.
 seed, tests, (55) R.I. 236.
 shipments and unloads, (53) U.S.D.A. 293.
 spacing experiments, (51) Can. 239.
 Spanish types, (56) Utah 533.
 storage, (53) Ariz. 741.
 varieties, (60) Tenn. 141.
 variety tests, (52) Utah 738; (57) R.I. 435.
 wild, control, (54) Ky. 327.
 wild, disease, studies, S.C., (52) 544; (54) 648.
 wild, eradication, Tenn., (54) 231; (56) 439.
 yield increasing experiments, (60) Mont. 737.
 yields, (55) Oreg. 643; (56) Colo. 831.
- Ontario—
 Agricultural College, notes, (59) 900.
 Veterinary College, report, (53) 278.
- Ontogeny, physiological, (54) 766; (55) 860; (56) 462.
- Oogenesis—
 in fowls, (55) 367.
 in white mice, (56) 127.
 in white rats, (55) 130.
- Oospora—
 lactis, *see* *Oidium lactis*.
 mali n.sp., description, (56) 849.
 scabies, *see* *Potato scab*.
 sp. on cheese, (52) 280.
 verticillioides, notes, (54) 453.
- Operating statement for business, making, analysis, and use, (56) 790.

- Ophideris fullonica*, notes, (52) 361; (56) 756.
- Ophiobolus—
 caricite—
 heterothallism in, (53) 627.
 in western Canada, (56) 350.
 notes, (53) N.Y.Cornell 348; (57) 748; (58) 442; (60) 149.
 spread in tillage plats in Kansas, (55) 846.
- graminis—
 growth, effect of carbon dioxide and oxygen, (58) 543; (60) 346.
 growth, effect of soil reaction, (56) 243.
 in California, (54) 745.
 in France, (57) 541.
 infection of young wheat, factors affecting, (54) 649.
 notes, (54) 247, U.S.D.A. 452; (56) 448, Kans. 841.
 original name of take-all fungus, (57) 842.
 perithecium development, (58) 847.
 pycnidial forms, (58) 443.
 studies, (54) 649; (58) 46.
 tissues of wheat plant invaded by, (60) 747.
 herpotrichus, notes, (54) U.S.D.A. 452.
 herpotrichus, pycnidial forms, (58) 443.
 heterostrophus, emended description, (59) 842.
 heterostrophus n.sp., description, (54) 544.
 heterostrophus, notes, (59) 539.
 sp., notes, (58) 340; (60) 150.
 spp. on cereals, (55) 445.
- Ophionectria coccorum*, notes, (60) 162.
- Ophioninae of Japan, (60) 847.
- Ophrydeae tubers, fungicidal action, (55) 351.
- Ophthalmia—
 as symptom of dietary deficiency, (53) 63.
 in cattle, transmission and treatment, (52) 180.
 in rats on vitamin A free diet, (51) 564.
 in rats on vitamin diets, (53) 767.
 in rats, studies, (52) 462.
 in turkeys, (53) 578.
 periodic, in horses, (55) 70; (58) 75, 879.
 periodic, papers on, (59) 470.
 periodic, treatment with mercuric iodide, (59) 476.
 salt, cause, (58) 295.
- Ophthalmic anomaly in mice, (55) 821.
- Ophthalmoplegia, congenital, recessive form, (53) 629.
- Opius—
 agreutretae n.sp., description, (58) 666.
 cosyrae n.sp., description, (58) 666.
 humilis, breeding methods, (60) 847.

Opium—Continued.

- humilis, notes, (55) 558.
- hyoscyamiellus n.sp., description, (54) 462.
- n.sp., notes, (60) 562.
- phaeostigma n.sp., description, (58) 666.

Opossum—

- genital tract, motility, (52) 524.
- growth stimuli of mammary glands, (57) 723.
- ovariotomy in, effect, (53) 429.
- ovary, compensatory hypertrophy of, (53) 732.
- polynuclear ova and polyovular follicles in, (52) 630; (55) 634.
- sex-intergrade, analysis of gonads, (53) 631.

Opossums, raising, (54) 274.

Opuntia—see also Cactus.

- insects of United States, (54) 755; (56) 58.
- spp., paper on, (57) 633.

Orange—

- anthracnose, cause, (57) 851.
- anthracnose or black spot, (58) 555.
- beverages, notes, (52) Calif. 14.
- black rot, notes, (52) Fla. 242.
- blue mold rot, control, (52) 451.
- brown rot, notes, (57) 56.
- by-products as cattle food, (52) Calif. 70.
- center rot, notes, (56) 748.
- cooperative organizations of California, (60) 681.
- die-back disease, control, (60) 155.
- gum, chemical composition, (55) 503.
- juice—
 - analyses, (59) 93.
 - and outer peel, constituents, (59) 93.
 - antiscorbutic value after cold storage, (53) 567.
 - commercially concentrated, antiscorbutic value, (53) Calif. 458.
 - concentrated, vitamin C in, (56) 296.
 - concentrated, vitamins in, (60) 93.
 - in diet of children, effect, (55) 793.
 - irradiated, antirachitic value, (56) 91.
 - Valencia, volatile constituents, (54) 203.
 - vitamin B in, (51) 564.
 - vitamin C in, effect of fermentation, (55) 503.
- leaf rust on Malakoff wheat, form II, (57) 542.
- leaves, internerval maculate chlorosis in, (58) 449.
- melanose, control, Fla., (52) 241; (55) 841.
- pectin, analyses, (53) U.S.D.A. 13.
- peel confections, vitamins in, (51) 666.
- peel, dried, black spot on, (56) 851.

Orange—Continued.

- protein, studies, (53) 711.
- pulp, dried, digestibility by ruminants, (56) Calif. 261.
- pulp, dried, feeding value, (55) Calif. 357.
- pulp, effect on milk production, (57) Calif. 570.
- pulp, feeding value, Calif., (52) 79; (57) 273.
- rind, pectins in, (51) 709.
- rusts, distribution, (53) 854.
- seedlings in Hoagland's nutrient solution, growth, (55) Calif. 339.
- sherbet, bacterial content, (60) 573.
- stem-end rot, control, (51) P.R. 838.
- Tortrix, life history, (52) 756; (59) Calif. 757.
- Tortrix, notes, Calif., (55) 352; (57) 257.
- tree bug, life history, habits, and control, (59) 458.
- tree scaly bark, control, (57) Calif. 243.
- trees, cincturing and root pruning tests, (56) 645.
- trees, effect of concentration of nutrient solution, (52) 27.
- trees, effect of unusual elements in culture solutions, (60) 425.
- trees, growth and composition as affected by salts, (52) Calif. 26.
- trees, mandarin, fertilizer experiments, (58) 537.
- trees, overhead sprinkling as frost protection, (54) 540.
- trees, shy-bearing, treatment, (53) 841.
- worms on Valencia oranges, (59) 655.

Oranges—

- aphid affecting, (51) 660.
- bud mutation in, (56) 45.
- bud selection as related to quality, (52) 238.
- coloring, (55) U.S.D.A. 142; (58) 840.
- culture, (57) 341.
- culture in Bombay, (59) 141.
- effect of arsenical sprays, (56) 751.
- effect of potash, (60) Fla. 139.
- freezing on trees, (52) U.S.D.A. 317.
- fruit size and abscission, relation, (57) 438.
- green spotting of, (52) Fla. 242.
- introduced, culture experiments, (52) Guam 232.
- Japanese summer, vitamin A in, (52) 594.
- keeping quality, (52) 539.
- mandarin, culture and preservation, (54) 140.
- maturity test, (59) 531.
- native forms, storage studies, (60) Guam 820.
- native, survey, (51) Hawaii 744.
- of the Far East, (60) 542.

Oranges—Continued.

- prices and shipments from Florida, (59) 886.
- production, shipments, and prices, (60) Calif. 186.
- propagation studies, (59) Calif. 737.
- rate of water loss, (59) Calif. 722.
- Satsuma—
- chlorophyll decomposition in rinds, (60) Ala. 123.
 - coloring, (58) Ala. 434.
 - culture in Florida, (54) 540.
 - disinfection and cleaning, (58) Ala. 451.
 - insect pests and diseases, (52) 853.
 - notes, (57) Tex. 136.
 - propagation, (56) Fla. 832.
 - vitamin C in, (57) 197.
- splitting of, (60) Fla. 156.
- sprayed, acidity and quality of fruit, (55) 744.
- storage, (53) 844.
- therapeutic uses, (57) 141.
- Thomson Navel, stock experiment, (55) 240.
- toxic and insulin-like substances in, (51) 768.
- transportation from Porto Rico, (52) U.S.D.A. 539.
- use in ice cream and ices, (58) Calif. 289.
- Valencia—
- bud selection in, (58) U.S.D.A. 238.
 - growth, factors affecting, (59) 442.
 - growth rates, (57) 241.
 - spotting, (59) Calif. 747.
 - storage, (57) 537.
- variety and rootstock experiments, (56) 45.
- Washington Navel—
- bud selection in, (54) 228, 445, 540; (55) 240; (57) 438.
 - cool storage, (56) 851.
 - decay, cause, (59) Calif. 747.
 - fertilizer experiments, (60) 441.
 - prestorage treatment, (57) 341.
 - pruned v. unpruned, (54) 141.
 - strains, (56) Ariz. 739.
- water-conducting system, (59) Calif. 722.
- witches' broom affecting, (51) 549.
- Orchamus samoanus, description, (60) 61.
- Orchard—
- birds, food of, (59) N.Y.State 353.
 - brush burner, construction, (51) Calif. 86.
 - cover crops, hardy, (56) 344.
 - cover crops, tests, (52) Mont. 441.
 - diseases and pests, (58) Mich. 335.
 - diseases, control by dusting, (57) 153.
 - grass—
 - breeding experiments, (58) 530; (59) 430.
 - chromosome number in, (57) 31.
 - correlations in, (56) 816.

Orchard—Continued.

- grass—continued.
- culture experiments, (52) Mo. 533.
 - flowers, blooming, (54) 532.
 - pollination studies, (54) 638; (57) 131.
 - response to fertilizers, (55) 335.
 - seed production, (52) 334.
 - yield as pasturage and as hay, (55) 827.
- heaters, tests, Calif., (58) 485; (59) 781.
- heaters, value to peaches, (53) N.Mex. 140.
- heating experiments, (51) N.Mex. 440; (55) Oreg. 645.
- heating, manual of instruction, (54) Calif. 538.
- horse disease, studies, (51) Wash.Col. 180.
- improvement instruction in Herefordshire, (52) 696.
- labor requirements, (59) N.H. 283.
- lands injury from waterlogged soils, (52) Mont. 450.
- leaf roller, control, (52) Wash.Col. 851.
- practices, (55) Oreg. 645.
- soils, bacterial activities in, (56) 512.
- soils, organic matter in, maintaining, (60) Pa. 338.
- temperature studies, (52) Calif. 41.
- trees dying, cause, (52) Colo. 822.
- trees, one- or two-year-olds, (57) Okla. 533.
- Orchards—*see also* Fruit, Apples, Peaches, *etc.*
- commercial, developing, (53) Ohio 39.
 - fertilizer experiments, (51) N.H. 141, Wash.Col. 143; (55) Oreg. 643; (56) Wash.Col. 533.
 - general discussion, (51) Wis. 535.
 - insects affecting, (52) 853; (55) Mass. 253.
 - irrigated, fertilizers and cover crops for, (58) Wash.Col. 232.
 - irrigation, (56) U.S.D.A. 834.
 - irrigation studies, (57) Calif. 184.
 - judging, score cards for, (56) 790.
 - maintaining fertility in, (60) 640.
 - management, studies, (52) 640; (55) Iowa 535; (56) Iowa 833; (57) Ind. 634.
 - planting, (51) Ohio 747.
 - planting and thinning distances, (56) Calif. 534.
 - protection from frost, (54) 13.
 - rabbit and mouse control in, (56) Mo. 355.
 - renovation, relation to spraying, (52) 852.
 - soil management, (51) Mich. 141; (52) 537; (53) Iowa 741; (56) Mont. 138, Pa. 139; (58) Ind. 437.
 - spray machine, use in alfalfa fields, (52) 888.

- Orchards—Continued.
 spray program for Oregon, (51) 55.
 spray schedules for, (55) Ohio 38.
 spraying, (51) W.Va. 240; (55) 452;
 (57) Ohio 153.
- Orchelinum—
 material for chromosome study, (53)
 226.
 spp. on cranberry bogs, (51) N.J. 659.
- Orchestes—
 canus, control, (54) Mich. 656.
 fagi, larval mines of, (53) 860.
 pallicornis, studies, (51) 256, Ohio.
 257, 258.
 testaceus, notes, (51) 55.
- Orchestini, larval mines of, (53) 860.
- Orchid—
 anthracnose organisms, pathogenic ca-
 pacities, (53) 853.
 chalcid, life history and control, (53)
 362.
 fly, life history and control, (53) 362.
 leaf brown spot, studies, (60) 837.
 seed germination, (54) Ill. 336.
 seedlings, culture, (56) Ill. 344.
 seedlings from crosses, (56) Ill. 235.
 seeds, nonsymbiotic germination, (56)
 24; (57) 219.
 seeds, symbiotic germination, (56) 24.
- Orchidaceae, symbiosis in, (53) 726.
- Orchids—
 and fungi, association between, (57)
 219.
 animal enemies, (59) 555.
 culture in United States, (58) 239.
 culture methods, (57) 720.
 epiphytic, pest on citrus trees, (57)
 851.
 fungicidal action of tubers, (55) 351.
 germination, rôle of endophytic fungi,
 (57) 720.
 indigenous, glucosides of, (58) 524.
 treatise, (58) 439.
- Orchitis in a 15-months-old bull, (59)
 Calif. 775.
- Orcus zonatus, notes, (58) 159.
- Oregma lanigera, parasitism of, (58) 265.
- Oregon—
 Agricultural Economic Conference, re-
 port, (52) 490.
 College, notes, (51) 300; (55) 798;
 (56) 97; (57) 99, 900; (58) 500;
 (60) 600, 900.
 Station, notes, (51) 300; (56) 97;
 (57) 900.
 Station, report, (55) 697; (60) 795.
- Organ weights, seasonal changes in, rela-
 tion to meteorological conditions, (52)
 669.
- Organic—
 acids—
 effect on cotton, (57) 899.
 effect on decomposition of straw,
 (51) Tenn. 323.
 in green plants, physiology, (58)
 212; (59) 426.
- Organic—Continued.
 acids—continued.
 toxicity, (55) 445.
 urinary excretion of, (51) 164.
 chemistry, synthetic, use of solvents
 in, (54) 612.
 compounds—
 carbon determination in, (53)
 805; (55) 804.
 constitution, relation to toxicity
 to insects, (57) 556.
 for fumigation of grain weevils,
 (52) U.S.D.A. 661.
 in plants, relation to growth of
 other plants, (55) 426.
 irradiated, impartation of anti-
 rachitic properties, (53) 568.
 preparation and analysis, treat-
 ise, (57) 201.
 synthetic, (53) 204.
 wet ashing apparatus, (55) 803.
 evolution and heredity, treatise, (53)
 627.
 fertilization, effect on biochemical
 conditions of soil, (51) 816.
 matter—
 action of lime compounds on,
 (52) 319.
 and growth-promoting substances
 in soils, (51) 609, 723.
 and nitrogen in soils, mainte-
 nance in dry-land cultivation,
 (52) 815.
 changes in character and condi-
 tion in soil, (55) 812.
 changes in soil, relationships,
 (55) Wash.Col. 512.
 changes in two soil zones, (56)
 721.
 composition and decomposition in
 soil, (58) 508, 516, 616; (59)
 719.
 decomposition and maintenance
 in soils, (51) Wash.Col. 118.
 decomposition by sludge bacteria,
 (54) 216.
 decomposition in soil, (51) 415;
 (55) 511.
 decomposition in soil, effect of
 fineness of limestone, (53) 323.
 dry, heavy applications, effect on
 crops, (59) 211.
 effect on soil flora, (51) 620.
 for soils, (59) R.I. 615.
 in crop residues, (58) 616.
 in heavy alkaline soils, (56) 718.
 in plants, transportation, (52) 27.
 in prairie soils, effect of grain
 culture, (54) 623.
 matter in soil—
 and manurial treatments, (58)
 617.
 and sulfur, studies, (52) Wash.
 Col. 814.
 determination, (58) 113.
 effect of partial sterilization, (51)
 17.

- Organic—Continued.
- matter in soil—continued.
 - function, (56) 621.
 - maintenance, (52) 815; (56) Wash.Col. 508; (59) Wash. Col. 18; (60) Wash.Col. 803.
 - origin and nature, (56) 620.
 - papers on, (60) 511.
 - physical and physicochemical effects, (58) 616.
 - relation to series and type in virgin grassland, (58) 617.
 - restoration, (59) Nebr. 816.
 - solubility, effect of drying, (53) 19.
 - studies, (54) Wash.Col. 808, Wash.Col. 809; (57) 310.
 - matter—
 - in sweet clover tops and roots, (55) 531.
 - in tobacco soils, (59) Conn.State 734.
 - iodine determination in, (52) 712.
 - iron in, (55) 614.
 - loss from soil, (54) Nebr. 315.
 - nitrate in, detection, (51) 11.
 - requirements of soils, (58) 617.
 - toxic, in soils, (51) 19.
 - transformation in forest soils, (59) 814.
 - microanalysis, treatise, (53) 714.
 - nitrogen in fertilizers, determination, (51) 204.
 - radicals, (51) 100.
 - substances, synthesis of, treatise, (52) 108.
 - supplements for pigs, (51) Can. 376.
 - synthesis in plants, (57) 215.
 - synthesis, treatise, (54) 7, 707; (55) 709.
 - waste disposal, Beccari system, (51) 423.
 - Organism resembling *Bacterium abortus*, (54) Mich. 676.
 - Organisms—*see also* Bacteria and Microorganisms.
 - cellulose-decomposing, cultural characteristics, (60) 316.
 - filtering out, apparatus and technic, (53) 25.
 - in feces and water, (54) 383.
 - in soil, effect of sodium arsenite, (55) 119.
 - living, treatise, (53) 627.
 - Organization in industry, commerce, and the professions, (53) 398.
 - Organotherapy and vaccine and serum therapy, treatise, (52) 178.
 - Orgilus obscuratus*, notes, (56) 361.
 - Orgyia antiqua*, notes, (56) 659.
 - Orgyia turbata*, life history and control, (58) 257.
 - Oriental—
 - moth, papers on, (56) 253.
 - peach moth, *see* Peach moth, oriental.
 - sore, parasite of, (58) 262.
 - Oriental, basal metabolism of, (54) 487.
 - Orifices, adjustable submerged, discharge through, (51) 788.
 - Ormenis pruinosa*, notes, (57) Conn.State 161.
 - Ornithodoros—
 - coriaceus, oviposition, (52) Calif. 60.
 - megnini, *see* Ear tick.
 - papillipes, notes, (60) 657.
 - spp., transmission of *Treponema crocidurae* by, (57) 160.
 - venezuelensis, studies, (58) 562.
 - Ornithoica confluenta, notes, (58) 263.
 - Ornithology, advancement in, (56) 56.
 - Ornithomyia avicularia as carrier of mallophaga, (58) 350.
 - Ornithopomus americanus, notes, (58) 263.
 - Ornithostrongylus quadriradiatus in birds, (59) U.S.D.A. 54.
 - Orobanche—
 - cumana, physiology, (57) 620.
 - hederae, anatomy and attachment to host, (56) 427.
 - muteli, notes, (58) 647.
 - Orobanches, blackening during desiccation, (58) 524.
 - Oroya fever, etiology, (56) 662.
 - Orphans, physical fitness for, (53) 563.
 - Orterde, formation, (53) 115.
 - Orthezia urticae, external morphology and life history, (60) 650.
 - Orthezia yasushii n.sp., notes, (53) 158.
 - Ortheziinae, classification, (53) 359.
 - Orthoclase, base exchange in, (60) Ariz. 517.
 - Orthophosphoric acid, specific gravity, (55) 10.
 - Orthoptera—
 - Indian, collection and study, (52) 155.
 - inheritance and evolution in, (55) Kans. 26.
 - injurious to economic plants, (54) 154.
 - Manitoban, immature stages, (57) 656.
 - of British Columbia, notes, (55) 659.
 - of France, (58) 257.
 - of Italy, list, (52) 753.
 - of Utah, list, (52) Utah 454.
 - Ortho-toluidine as contact insecticide, (55) 553.
 - Oryctes rhinoceros, *see* Rhinoceros beetle.
 - Oryctes spp., injurious to palms, (59) 860.
 - Oryssidae, systematic position, (57) 553.
 - Oryza—
 - sativa germination, effect of X-rays, (53) 519.
 - sylvestris as weed in Belgian Kongo, (53) 839.
 - Osborne, T. B., editorial note, (60) 701.
 - Oscinella frit—
 - injury to oats, studies, (52) 856; (56) 63.
 - prevalence and habits, (51) 553.
 - studies, (58) 459; (60) 850.
 - Oscinis frit—
 - in Posen, (58) 350.
 - infestation and quality of grain, (58) 755.

- Oscinis frit—Continued.
 notes, (53) N.Dak. 652, N.Dak. 857;
 (59) 657; (60) 161.
 on oats, factors affecting, (52) 554.
- Osier growing and basketry, (57) 484.
- Osiraspis, new genus, erection, (53) 53.
- Osmosis, anomalous, in living cells, (57) 817.
- Osmotic—
 concentration in plants, effect of variations in, (57) 515.
 pressure—*see also* Sap concentration.
 in germinating seeds, (54) 627.
 in plants, correlation with habitat and growth form, (54) 723.
 in roots and cell activity, (57) 118.
 in trees, (57) 516.
 methods for determining, (51) 426.
 of concentrated solutions, (58) 607.
 of serum proteins, (59) 801.
 of soil solution in fallow soils, (54) 211.
 relation to winter killing and leaf fall, (57) 619.
- Ostelin treatment of primary marasmus, (59) 494.
- Osteo-arthopathy in swine, (54) Minn. 777.
- Osteomalacia—
 in horses, (51) 786; (57) 378.
 in Norway, (52) U.S.D.A. 583.
 paper on, (60) 197.
 relation to diet, (53) 460.
- Osteophagia and botulism, (59) 171.
- Osteoporosis—
 in horses, (51) 786.
 in horses, inheritance, (59) 276; (60) 32.
- Ostertagia—
 bionis from stomach and duodenum of buffalo, (53) 553.
 ostertagi in calves, (59) Calif. 775.
 ostertagi in cattle, (58) 174.
- Ostrich farming in South Africa, (51) 777.
- Otiorynchus—
 ovatus, morphology and biology, (51) 59.
 raucus affecting rhubarb in France, (51) 662.
 scaber as pest of silver firs, (60) 844.
 spp., bait for, (54) Wash.Col. 853.
 spp. on cranberry, (51) Wash.Col. 158.
 sulcatus, control, (54) Wash.Col. 855.
- Otitis, suppurative, in swine, (54) 71.
- Otodectes cynotis, parasite of foxes, (52) 285.
- Otters, raising, (54) 274.
- Ova—
 definitive, in white rats, origin, (60) 531.
 migration from one horn of uterus to other in rats, (56) 68.
 parthenogenetic development in ovaries of guinea pigs, (51) 231.
- Ova—Continued.
 polynuclear, in opossum, (55) 634.
 unfertilized, degenerative changes in, (53) 732.
 unfertilized, in oviducts of rats, cytological changes, (52) 131.
- Ovarian—
 and placental hormone injections, effect on immature rats, (60) 811.
 dynamics, fundamental laws, (57) 424.
 emulsions, effect on metabolism of dogs and rabbits, (55) 765.
 extracts, reactions produced by, (54) 229.
 follicular hormone—
 effect of injections in rats, (55) 29.
 injection, effect on sexual maturity in immature females, (52) 130.
 localization and action, (53) 526.
 secretion by corpus luteum, (53) 834.
 hormone—
 administration, subcutaneous v. intraperitoneal, (56) 729.
 effect in producing pro-oestrous development, (57) 223.
 extraction and properties, (54) 29.
 extraction from urine, (59) 726.
 in liquor folliculi and residual tissue, (60) 811.
 method of assay, (60) 811.
 preparation and standardization, (55) 734.
 hypertrophy, dynamics of, (54) 431; (55) 431.
 injury in hens, effect on egg laying, (55) 868.
 regeneration after complete ovariectomy, (57) 223.
 regeneration in mice, (57) 625; (60) 32.
 regeneration in rats, (59) 220.
 secretion and tumor incidence, (59) 325; (60) 430.
- Ovaries—
 and uterus, reciprocal effect, (52) 730.
 changes in, following exposure to X-rays, (57) 30, 325.
 in rats, weight, (51) 131.
 of cows, physiological and pathological changes in, (59) 878.
 of fowls, histological studies, (53) 329.
 of opossum, compensatory hypertrophy of, (53) 732.
 of opossum, polynuclear ova and polyovular follicles in, (52) 630.
 of opossum, studies, (60) 220.
 of sow, selective elimination of ova, (52) 630; (53) 732.
 removal and transplantation, duration of pregnancy after, (60) 633.
 transplanted, functional ability, (52) 827.

Ovariectomy—

- bilateral, effect on duration of pregnancy in mice, (60) 531.
- complete, ovarian regeneration after, (57) 223.
- effect on spontaneous activity and ability to learn, (59) 726.
- in dogs, (57) 378.
- in fowls, sex reversal, following, (53) 832; (57) 625.
- in opossum, effect, (53) 429.
- unilateral, in rabbits, effects, (52) 130.
- unilateral, in rats, effects, (57) 222.

Overall shrinkage, (56) 595.

Ovicide as auxiliary in codling moth control, (54) 555.

Oviduct of hens, chemical studies, (53) 376.

Ovoferrin, availability of iron in, (56) 494.

Ovogenesis—

- during sexual maturity, (52) 432.
- postpubertal, effect of pregnancy, (52) 630.

Ovularia on *Alchemilla*, morphology and biology, (57) 640.

Ovulation—

- and corpus luteum extracts in rabbits, (53) 833.
- in monkeys, diagnosis, (60) 811.
- in pigeons, (57) 220.
- in rabbits, (56) 331.
- inhibition in fowls, (52) 631; (55) 824.
- time of in menstrual cycle of monkey, (56) 227.

Ovum, unfertilized tubal, from *Macacus rhesus*, (60) 531.

Owl, great horned, infestation by *Ornithopomus* and *Ornithoica*, (58) 263.

Ox blood, protein in, nutritive value, (56) 290.

Ox bots, molts, (52) 83.

Ox brain, copper determination in, (53) 206.

Ox labor in South Africa farming, (52) 787.

Ox palates, protein in, nutritive value, (56) 290.

Ox stomach, processes occurring in, (55) N.Dak. 768.

Ox viscera, composition, (52) 159.

Ox warble flies—*see also* Cattle grubs, *Hypoderma*, and Warble flies.
paper on, (57) 554.

Ox warble, summary, (51) West.Wash. 661.

Oxalis—

- acetosella, death from heat and metabolic poisons, (55) 425.
- incarnata, contractile roots, (58) 819.
- rust, life cycle, (53) 245.

Oxen, yoking, new system, (56) 480.

Oxidase—

- activity in plants, factors affecting, (57) Mich. 417.
- in tomato, relation to soil reaction, (60) 823.
- new, in certain fungi, (59) 217.

Oxidation—

- in animal organism, effect of thyroid gland, (54) 110.
- mechanism, relation to chloroform anesthesia, (52) 517.
- of carbohydrate and fat mixtures, analysis, (51) 558.

Oxides, insoluble, action on potato late blight, (53) 545.

Oxy-calorimeter, principle and application, (54) 204.

Oxycarenus hyalinipennis, notes, (51) 762; (52) 356.

Oxycellulose, detection, new reagent for, (60) 611.

Oxydo-reductions, review, (60) 123.

Oxygen—

- absorption by fats, (52) 10.
- consumption, apparatus for recording, (53) 206; (55) 207.
- consumption of tissues, effect of pH, (54) 88.
- in bodies of plants, (59) 516.
- inactivating effect on plant virus, (57) 744.
- poisoning in mammals, (57) 181.
- pressures, decreased, effect on plant growth, (52) 424.
- requirement of plant roots, (54) 514; (55) 426.
- separation by succulents in absence of carbon dioxide, (57) 514.
- subcutaneous injection, (57) 468.
- upper critical concentration in root growth, (53) 421.
- uptake in plants, grand period of, (58) 818.

Oxyhemoglobin, heat denaturation, papers on, (58) 501.

Oxypleurites neglectus n.sp., notes, (59) 563.

Oxyspirura spp., notes, (59) 81.

Oxyuridae behavior in host, (56) Kans. 876.

Oxyuris—

- evoluta, parasite of rabbits, (58) 581.
- spp. parasitizing equines, (52) 85.
- vermicularis, migration of, (52) 777.

Oyster—

- larvae, abundance, distribution, and setting, (55) N.J. 49.
- shell v. clam shell for poultry, (54) Can. 764.
- shell v. limestone grit for poultry, (52) Calif. 75.
- shells as source of calcium carbonate for hens, (59) Iowa 71.

Oysters—

- as cause of typhoid epidemic, (53) 267.
- Bacillus typhosus in, (54) 92, 93.
- canned, antirachitic value, (56) Wis. 794.
- decomposing, microorganisms in, (53) 761.
- dredging, (57) N.J. 256.
- experimental feeding, (59) 153.
- in the Limfjord, biology, (54) 752.
- nutritional value, (56) 793.

- Oysters—Continued.
 production, handling, and shipment,
 (59) U.S.D.A. 153.
 purified, (51) 164.
 shucking, rules and regulations, (54)
 N.J. 151.
 spawning relation to temperature, (59)
 550.
 spoilage, bacteriology, (57) 888.
 studies, N.J., (51) 657; (52) 750;
 (57) 57.
 utilization of food, (57) N.J. 256.
 vitamin A in, (59) 594.
 vitamins in, (59) 95.
 water conditions and spawning, N.J.,
 (57) 754; (59) 348.
- Oyster-shell scale—
 control, (52) Mont. 453; (57) 855;
 (59) Wash.Col. 40; (60) Md. 841.
 forms, biology and morphology, (54)
 55.
 notes, (51) Ind. 853; (55) N.J. 152;
 (58) Del. 454.
 on shade trees, (53) Colo. 154.
 paper on, (55) 455, 659.
 parasite, biology, (54) 55.
 parasites of, (52) 557.
 relation to predatory mite, (53) 260.
 spraying for, (51) Mont. 552.
- Ozone—
 as insecticide, tests, (59) 853.
 determination, (55) 206.
 prolonged treatment of mineral oils
 with, effect, (60) 879.
- Ozonium omnivorum—
 control, (54) 846.
 life history, (51) 544; (53) 544.
 notes, (51) 248; (53) Ariz. 745.
- Ozonium root rot, studies, (56) U.S.D.A.
 145.
- Pachnaeus sp., notes, (51) 252.
- Pachydiplosis oryzae on rice, (59) 559.
- Pachyneuron—
 apidivorum, notes, (57) 60.
 sp., manner of feeding, (51) 762.
- Pachyophthalmus signatus, notes, (58) 61.
- Pachyrrhynchides, monograph, (53) 759.
- Pachyzancla bipunctalis, notes, (59) 558.
- Pacific flathead borer, studies, (60)
 U.S.D.A. 850.
- Pacific Science Congress, announcement,
 (59) 500.
- Paco, vitamin B in, (57) 94.
- Paddy, *see* Rice.
- Padi fly in Kuala Pilah district, (54) 754.
- Pageant of agriculture and rural life, (54)
 588.
- Paint—
 and varnish industries, volatile sol-
 vents used in, (56) 507.
 and varnish technology, treatise, (59)
 479.
 effect on wood, (51) 388.
 hiding power, measuring, (55) 96.
 law and regulations of North Dakota,
 (53) 389.
 tests, (53) 389.
- Painting—
 on the farm, (53) U.S.D.A. 287.
 paper hanging, etc., treatise, (52)
 689.
- Paints—
 and varnishes, analysis, (56) 313.
 chemistry and technology, treatise,
 (55) 312.
 durability tests, (60) 377.
 emissive tests for heat radiation, (52)
 888.
 pigments, and varnishes, chemistry
 of, treatise, (51) 210.
 pigments, varnishes, and resins, (57)
 203.
- Palaquim gutta, studies, (52) 145.
- Palay, feeding value, (54) 864.
- Palladium electrodes, preparation and
 mechanism, (51) 504.
- Palm—
 African oil, bent-leaf disease, (53)
 148.
 beetles in Burma, (51) 662.
 bud rot diseases, (60) 554.
 bud rot in south India, operations
 against, (56) 751.
 bud rot, notes, (53) 43.
 diseases, notes, (58) 156.
 kernel cake meal, feeding value, (52)
 769.
 kernel oil and coconut oil mixtures, ex-
 amination, (56) 615.
 oil, chemistry, (57) 203.
 oil production in French West Africa,
 (51) 242.
 oil, vitamin A in, (52) 65.
- Palmipeds, domestic, copulative organ, (55)
 165.
- Palmo Midds, feeding value for pigs, (60)
 Ohio 461.
- Palmodes laeiventris, enemy of Mormon
 cricket, (60) Mont. 752.
- Palms—
 date, *see* Date palms.
 destructive fungus on, (55) 350.
 hat, as host of coconut bud rot fungus,
 (58) P.R. 542.
 of British India and Ceylon, treatise,
 (56) 838.
 of Florida, descriptions, (56) Fla. 538.
 oil, *see* Oil palms.
 Oryctes spp. affecting, (59) 860.
 sugar producing, history and habits,
 (51) 242.
- Palmyra palm bud rot, control, (51) 156.
- Pamphigus betae, notes, (53) Utah 254.
- Pan African Veterinary Conference, re-
 port, (52) 177.
- Pan American Union, Division of Agricul-
 tural Cooperation in, (59) 200.
- Pan foot-rot disease in India, (60) 156.
- Panama disease in Jamaica, (57) 156.
- Pancreas—
 aqueous extracts of, (51) 65.
 of livestock, insulin in, (51) 502.
- Pancreatic—
 amylase activation, (60) 11, 12.

Pancreatic—Continued.

- gland, chemical studies, (51) 410.
- lipase, hydrolytic activity, effect of phosphate ion, (59) 14.
- response to carbohydrate ingestion, (54) 192.

Pandemis—

- life history studies, (56) 858.
- limatata, notes, (56) Pa. 154.
- pyrusana, notes, (57) 854; (59) Calif. 754.

Pandora moth, notes, (53) 857.

Panicum—

- fasciculatum, striped grass looper affecting, (52) 61.
- frumentaceum helminthosporiose, notes, (58) 143.
- miliaceum, classification, (55) 134.
- repens as weed in Belgian Kongo, (53) 839.

Paniscini, review of genera, (51) 555.

Paniscus spp., biology, (58) 351.

Panolis—

- flammea and parasites in Poland, (53) 53.
- flammea, control by *Empusa aulicae*, (59) 557.
- flammea life history and parasites, (60) 456.
- piniperda, parasites of, (55) 854.

Pansies from seed, (55) N.J. 142.

Papago Country, Arizona, reconnaissance, (53) 890.

Papain—

- application for preparation of culture media, (58) 474.
- preparation, (57) 141; (58) 141.

Papaipema nitela, see Stalk borer.

Papaveraceae, evolution in, (52) 330.

Papaya—

- flowers and fertilization, (54) 645.
- leaves, Pucciniopsis caricae on, (58) 153.
- ovules, pistillody of, (53) 424.
- seed, germination, (55) 644.
- strains, Hawaiian and Guam, (59) V.I. 439.
- trees, sex of, factors affecting, (55) 644.

Papayas—

- and romonoecious types, changes of sex in, (55) 818.
- cultivation, (57) 141.
- culture, (58) 141.
- culture experiments, (59) Guam 529, Hawaii 632.
- effect of altitude, (54) Hawaii 136.
- insects affecting, (52) 356.
- notes, (57) Hawaii 335.
- peach scale affecting, (51) V.I. 856.
- propagation, (51) Hawaii 744; (54) 141.
- sex change in, studies, (54) 838; (59) 821.
- vitamin A in, (52) 65.
- vitamin B in, (51) 666.
- vitamins in, (56) 87.

Paper—

- frost protectors, types, effect on plant growth, (59) Mich. 439.
- hanging, painting, etc., treatise, (52) 689.

Industry of Canada, (51) 649.

- making, bibliography of, (55) 14.
- making materials, technical research in. (56) 193; (57) 95.

manufacture from Australian woods, (51) 245.

manufacture from British Guiana woods, (51) 843.

mulch, effect on pineapple culture, (56) 537.

mulch, effects on Hawaiian soils, (56) 209.

mulch experiments, (57) 40, Calif. 211; (59) U.S.D.A. 528, Calif. 717, Ohio 740.

mulch for soil covering, effect, (55) Calif. 316.

mulch trials at Arlington Farm, (58) 829.

mulch, use in cotton culture, (53) Ga. 230.

parchment, as source of mold in butter, (59) Minn. 775.

pulp—see also Pulp wood and Wood pulp.

- digestibility, (56) N.Mex. 159, 261.
- distinguishing fibers in, (55) 14.
- from waste Kauri wood, (56) 647.
- suitability of woods for, (57) U.S.D.A. 637.

wrappers, effect on fruits and vegetables, (59) Mich. 41.

Papulospora sp., notes, (57) 443.

Para B-suipestifer group, variation in, (56) 475.

Para grass as weed in Cuba, (54) 239.

Para rubber, see Rubber.

Parabotulism—

- of cattle in South Africa, (57) 875.
- of equines, (57) 877; (58) 474.

Paraclemencia acerifoliella, notes, (55) 253.

Paradevescovina, new genus, erection, (56) 462.

Paradichlorobenzene—

- and carbon disulfide, comparison, (54) 257.

as anthelmintic, (58) 476.

as soil fumigant, (52) 459; (56) Calif. 255; (59) Calif. 755.

danger in use of, (53) 158.

effect on cane attacked by gray-back cockchafer beetle, (52) 853.

effect on germinating corn, (51) N.J. 631.

experiments in peach orchards, (59) U.S.D.A. 155.

experiments in the South, (51) 362.

for aphid control, (52) Calif. 57.

for cane grubs, (59) 658.

for corn rootworm, (51) La. 853.

Paradichlorobenzene—Continued.

- for peach borer control, (51) 55, 362, N.J. 457, 550, Conn.State 852, Ind. 853; (52) Calif. 57, Calif. 60, Mich. 355, 657, Utah, 752.
- for root borer control, late summer application, (52) 659.
- in liquid form for peach borer control, (58) 348.
- in soluble pine-tar creosote, tests, (57) N.J. 757.
- insecticidal value, (51) 855.
- new uses, (51) 55.
- use against black peach aphid, (57) 856.

Paraffin—

- coating on plant roots, effect of soil microorganisms, (57) 358.
- derivatives, effectiveness in attracting flies, (54) 855.

Paragus tibialis, notes, (53) 557.

Paraheliotropism, physiology, (56) 326.

Paraleptomastix abnormis, notes, Fla., (52) 251; (54) 352.

Paraleyrodes naranjæ n.sp., description, (57) 558.

Paralitomastix variicornis, notes, (54) 254

Paralysis—

- and leg weakness of fowls, (55) Conn. Storrs 73.
- in pigs, (55) Ind. 69; (56) 678.
- in pigs as affected by nutrition, (52) Ohio 473.
- in suckling young of mothers lacking vitamin E, (58) 791.
- lumbar, in goats, (51) 682.
- of fowls, studies, (56) Conn.Storrs 874; (57) 184, N.H. 379, 473; (58) Conn.Storrs 76; (59) 370, R.I. 677, Ind. 775; (60) 580, 875.
- of hindquarters in pigs, (58) 677.
- posterior, pathology, (51) 582, 786.
- range, of poultry, (56) Mich. 878.
- tick, in Australia, (56) 476.
- tick, in sheep, (59) 276.

Parameris canadensis, parasite of Aedes vexans, (52) 358.

Paranasal sinuses of bovines, (53) 182.

Paranthrene robiniaæ, notes, (60) 651.

Paraphelenchus pseudoparietinus, notes, (57) 749.

Paraplegia of lamb, enzootic, (58) 878.

Parasa hilarata larva, irritating properties, (53) 859.

Parasa sp., notes, (52) 361.

Parasite of sheep muscle, studies, (56) Wyo. 574.

Parasitella, sexual races of, (57) 622.

Parasites—see also Plant parasites and specific forms.

- abundance, relation to weather, (55) 354.
- and hosts, cellular interaction, (56) 452.
- and hosts, relation, (57) 146, 357.
- and parasitic diseases of goats, (56) 678.

Parasites—Continued.

- and predators of sugar cane borers, (56) 858.

animal—

- and human disease, treatise, (54) 855.
- and parasitic diseases, treatise, (52) 881.
- carbon tetrachloride in, (58) 274.
- identification, (56) 675.
- of man, clinic and therapy, (56) 775.
- of man, natural history, (56) 775.
- of man, X-ray diagnosis, (56) 173.
- of Rumania, (54) 72.
- precipitin reactions of extracts, (56) 173.

chalcid, feeding habits, (56) 862.

cryptogamic, estimation of injury due to, (52) 646.

dipterous, biology, (51) 763.

ecology, (56) 57.

external, of animals in South Africa, (57) 77.

flagellated intestinal, in fowls, (55) 177.

fungus, of animals, (51) 680.

fungus, of plants, (56) 843.

gastrointestinal, of equines, control, (60) 373.

in association with malignant growths, (60) 868.

intestinal, control, (56) 879.

intestinal, of poultry, removal, (56) 575.

intestinal, tenacity of eggs, (58) Ill. 367.

metazoan, of poultry in Australia, (56) 778.

nematode, of vertebrates, (55) 271.

new coccid-inhabiting chalcidoid, descriptions, (56) 362.

new coccid-inhabiting, from Japan and California, (57) 168.

new, from Syrphidae, (56) 760.

of birds, (54) 151.

of British sheep, (54) 578.

of cane shippers, (54) 257.

of economic importance in Punjab, (52) 154.

of horses, control, (58) 879.

of insects in Italy, (55) 759; (58) 857.

of insects, introduced, calculation of progress, (60) 648.

of Japanese beetle, summary, (56) U.S.D.A. 860.

of livestock, (60) P.R. 774.

of livestock, calendar, (59) U.S.D.A. 777.

of livestock in America, (57) 771.

of livestock in Great Britain, treatise, (58) 661.

of livestock in North Wales, (55) 271.

of livestock in Philippines, (53) 855; (54) 274.

of Philippine chickens, (57) 579.

of plants, classification, (60) 322.

Parasites—Continued.

- of plants, physiology of nutrition in, (54) 123.
 - of poultry, (56) 175; (57) 184, 674.
 - of Russian insects, host list, (59) 855.
 - of sugar cane insects, (60) 60.
 - of *Tortrix viridana*, (54) 659.
 - reared from host insects in Texas, (54) 257.
 - rearing, type of cage for, (56) 854.
 - seed-borne, (52) 447.
 - sensitizing powers, (56) 776.
 - technique of handling, (55) 354.
 - ultramicroscopic, studies, (56) 554.
 - worm, of domestic animals, (54) 578.
- Parasitic—
- diseases, report, (57) 377.
 - worms, embryology, (52) Kans. 485.
- Parasitism—
- double, case of, (57) 246.
 - general discussion, (55) 354.
 - physiology of, (54) 448; (56) 843; (60) 544.
 - studies, (51) 226.
- Parasitological—
- investigations, laboratory methods, (53) 584.
 - research, effect on livestock industry, (59) 777.
- Parasitology—
- and agricultural entomology, treatise, (52) 552.
 - avian, (59) Mich. 477.
 - guide, (58) 474.
 - veterinary, treatise, (57) 179.
- Parasitus sp., notes, (57) 64.
- Paratelephusa hydrodromus, notes, (52) 154.
- Paratenodera sinensis, notes, (57) N.J. 57.
- Paratetranychus—
- citri—*see also* Red spider.
 - and *P. pilosus*, differentiation, (59) 64.
 - spp., notes, (59) Mich. 455.
 - yothersii, notes, (55) N.J. 152.
- Paratettix texanus, parthenogenesis in, (56) 31.
- Parathyroid—
- extract injections, effect, (55) 386.
 - hormone, effect on normal dogs, (53) 564.
 - hormone extraction, (54) 392.
 - hormone, preparation and properties, (55) 490.
 - tetany, control, (53) 563.
- Parathyroidectomy, effect on rats, (52) 867; (55) 860.
- Parathyroids—
- changes in, due to ultra-violet light, (51) 767.
 - enlarged, in rachitic chickens, (54) 91.
- Paratiroza cockerelli, control, (59) Calif. 756.
- Paratuberculosis, johnin as diagnostic agent in, (59) 474.
- Paratylenchus nanus on *Zinnia* roots, notes, (52) 551.

Paratyphoid—

- and Hymenoptera, (56) 362.
 - avian, strains, studies, (59) N.J. 373.
 - bacilli in cattle, notes, (57) 278.
 - bacilli in digestive tract, relation to disease, (57) 671.
 - bacilli, relation to food poisoning, (58) 674.
 - bacteria, poison produced by, (60) 575.
 - dysentery among sheep, (54) Colo. 73.
 - dysentery in lambs, (53) Colo. 179.
 - fever outbreak, (53) 166.
 - group, isolation, medium for, (60) 374.
 - infection in calves, (58) 278, 474.
 - infection in ducklings and chicks, (55) 177; (56) Kans. 875.
 - infection in guinea pigs, (58) 171, 277, 674.
 - infection of poultry, serological tests, (57) Can. 574.
 - infection of swine and man, (57) 672.
 - infection, outbreak in fowls, (59) N.J. 373.
 - of bees, (51) 364.
 - organism, avian, birds infected with, (57) N.J. 773.
 - organisms, classification, (59) 471.
- Paratyphoid-enteritidis group—
- relation to food poisoning, (52) 266.
 - studies, (51) 272.
- Parazitin, value against liver fluke, (58) 577.
- Parcel post, marketing farm products by, (58) U.S.D.A. 786.
- Pardalapsis cosyra, parasite of, (58) 666.
- Parent-teacher associations, rural, source material for, (58) 891.
- Parents, age of, relation to longevity of offspring, (54) 28.
- Pareusemion, new genus, erection, (60) 559.
- Paria canella, *see* Strawberry rootworm.
- Paris green—
- and paraffin liquid for mosquito control, (58) 262.
 - as mosquito larvicide, (57) 166, 560, 853; (58) 349.
 - effect on culicine larvae, (59) 559.
 - new diluent for, (58) 757.
- Parks—
- and playgrounds of America, (54) 540.
 - city, birds in, treatise, (57) 356.
- Parrakeets, descriptions, (57) 357.
- Parrot, sheep-killing, notes, (52) 552.
- Parrots, *Bacillus aertrycke* infection in, (55) 476.
- Parsley—
- effect of pH of soil, (60) 338.
 - seed meal, feeding value, (59) N.J. 365.
 - stalk weevil, studies, (58) 561.
 - weevil, notes, (52) 758.
- Parsnip—
- seed, germination and keeping quality, (60) 822.
 - seed production, (55) Idaho 536.
 - webworm, notes, (53) 559.

- Parnsips—
 in storage, changes in, (51) Md. 343.
 proteins of, (56) 709.
 spacing experiments, (51) Can. 239.
- Parthenium hysterophorus as weed in
 Cuba, (54) 239.
- Parthenocarp in date palm, (55) 734.
- Parthenogenesis—
 and hermaphroditism in Cucurbita,
 (54) 431.
 cytology, (58) 159.
 in mammals, possibility, (53) 732.
 in Thysanoptera, (60) 61.
- Parthenothrips dracaenae, notes, (51) 762.
- Partridges, treatise, (57) 653.
- Paspalum—
 dilatatum, spacing experiments, (56)
 Guam 228.
 renovation experiments, (59) 226.
 scrobiculatum smut, notes, (60) 546.
- Passifloraceae-Scrophulariaceae of Mexico,
 (52) 444.
- Passion fruit cultivation in Victoria, (51)
 242.
- Pasteurella—
 avicida, bacterins from, (56) Kans.
 875.
 avicida, differential medium for, (60)
 669.
 avicida, studies, (52) Kans. 485; (54)
 N.C. 176; (59) Mich. 470.
 avicida vaccination, methods, (58)
 678; (59) 580.
 avium, notes, (52) 685.
 bovisseptica, studies, (53) 887.
 cultures, comparative study, (55) 174.
 group organisms, specific complement
 fixation, (59) 172.
 muricida n.sp., notes, (56) 656.
- Pasteurellosis, transmission, (58) 172.
- Pasture—
 and dry lot feeding for pigs, Can., (53)
 871, 873.
 crops and breed comparison, (52) Can.
 874.
 crops, emergency, (55) Mich. 132.
 crops for pigs, (54) Can. 861; (58)
 S.Dak. 765.
 crops for pork production, (57) Nebr.
 566.
 crops, tests, (59) Wis. 33.
 experiments, (54) Tenn. 231.
 experiments with heifers, (58) U.S.D.A.
 870.
 grasses, culture experiments, (59)
 Guam 523.
 grasses, in humid north, (51) 34.
 grasses, mineral content, (55) 461.
 grasses of East Africa, (58) 632.
 grasses, studies, (52) Kans. 434, S.C.
 528; (55) Ark. 31, Fla. 824; (56)
 Kans. 865.
 improvement tests, (57) Ind. 628.
 lands, increasing productivity, (60)
 358.
 mixtures, (58) Del. 428.
- Pasture—Continued.
 mixtures, effect of fertilizers, (58) Pa.
 324.
 mixtures, tests, (55) Oreg. 637.
 plants, characteristics of roots, (56)
 824.
 plants, mineral analysis, (55) 259.
 plants of East Africa, (56) 334.
 plants, transpiration ratio, (60) 430.
 plants, yield as pasturage and as hay,
 (55) 827.
 soils, indicators for, (57) 627.
 survey in southern New Jersey, (59)
 N.J. 325.
 v. soiling for cows, (52) Mont. 477.
 yields for farm sheep, (60) Oreg. 762.
- Pastures—see also Grasses, Grassland, and
 Meadows.
 alfalfa v. sweet clover, for dairy cat-
 tle, (58) S.Dak. 769.
 and heavy and light feeding for pigs,
 (52) Can. 874.
 and meadows, management in New
 South Wales, (52) 830.
 basic slag and mineral phosphates
 for, (53) 515.
 Bermuda, improvement, (51) Ga. 133.
 better feed from, (55) Mass. 561.
 Caenurgia erechtea affecting, (51)
 362.
 carrying capacity, (52) Kans. 477;
 (53) U.S.D.A. 168; (59) Tex. 763.
 development, (54) S.C. 635.
 dry matter content, relation to nutri-
 tive value, (60) 853.
 establishment and management, (51)
 337.
 fertilizer experiments, (51) 232; (53)
 Ind. 431, N.H. 432; (54) 516; (56)
 Ind. 132, Conn.Storrs 821, Fla. 821;
 (59) Conn.Storrs 431, Ind. 626;
 (60) 533, Conn.Storrs 533, West.
 Wash. 732.
 fertilizer experiments, treatise, (51)
 215.
 for cattle, tests, Minn., (55) 359; (56)
 559.
 for dairy cows, value, (58) Miss. 68.
 for heifers, (59) Wis. 74.
 for pigs, (55) Mich. 62, N.C. 263, Va.
 466; (57) N.C. 269, Mo. 270; (60)
 Mont. 764.
 for pigs, comparison, (52) Mont. 471.
 for sheep, (59) Nev. 865.
 forest v. clover for pigs, (58) 867.
 formation in North Wales, (55) 334.
 grazing studies, (56) Colo. 820.
 growth and nutritive value relation to
 meteorological conditions, (59) 314.
 improvement, (51) N.H. 135; (55)
 Conn.Storrs 18, Ohio 132; (58)
 W.Va. 30; (59) N.H. 222.
 in British Isles, chemical analyses,
 (55) 462.
 in Finland, studies, (57) 428.
 in semi-waste lands, (51) 34.
 irrigated, (52) Mont. 633.

- Pastures—Continued.
- irrigated, carrying capacity, (52) Mont. 478, Mont. 678; (54) U.S.D.A. 167.
 - irrigated, for dairy cattle, (55) U.S.D.A. 169.
 - irrigated, studies, (56) Kans. 865.
 - maintaining productivity, (51) Iowa 637.
 - management, (52) 670; (55) Ind. 334; (57) 863.
 - management in Ozark region, (54) Mo. 30.
 - native, value, (57) N.C. 265.
 - of coastal plain, (57) 762.
 - on farms in Finland, studies, (59) 524.
 - open and woodland, yield and quality, (55) 528.
 - permanent dairy, in New Jersey, (60) 34.
 - permanent, in North Wales, (57) 327.
 - permanent, in Ohio, (58) 30.
 - permanent, studies, (56) Wash.Col. 824.
 - phosphates for, (51) 327.
 - productivity tests, (58) 667.
 - resources of Finland, (51) 35.
 - seasonal productivity, (52) 133.
 - seed mixtures for, (51) Oreg. 529.
 - studies, (52) Kans. 466; (53) Ind. 130, Can. 530; (56) N.Y.Cornell 334, S.C. 525; (57) Okla. 523; (58) Miss. 64, S.C. 632, Ga.Coastal Plain 732, Ga.Coastal Plain 733, 828; (59) Ohio 222, Calif. 762, Idaho 772; (60) Ga.Coastal Plain 132.
 - stump land, grazing heifers on, Minn., (51) 677; (55) 768.
 - temporary, in rotations, plants for, (60) 533.
 - tests, (60) Wash.Col. 814.
 - woodland, composition of grass in, (60) Ohio 733.
 - woodland, studies, (57) Ohio 125.
- Pasturing experiments with an untillable field, (57) Calif. 265.
- Path coefficients, theory, (51) 127, 128.
- Pathology—
- chemical, treatise, (56) 275.
 - comparative, in Japan, (58) 473.
 - textbook, (56) 275, 675.
 - treatise, (57) 376.
- Pavement—
- slabs, static load tests on, (52) U.S.D.A. 486.
 - type, effect on impact reaction, (59) U.S.D.A. 882.
- Pavements—*see also* Concrete and Roads.
- and subgrade studies, (60) Colo. 278.
 - asphaltic, stability, temperature as factor, (55) U.S.D.A. 278.
 - heaving, cause, (60) 378.
 - loads on, studies, (51) 288.
- Pavetta indica*, bacterial nodules of, (51) 225.
- Paving mixtures, bituminous, researches on, (56) U.S.D.A. 480.
- Pawpaw diseases, notes, (57) 640.
- Pea—*see also* Peas.
- and grain mixtures, tests, (60) Mont. 730.
 - and oat mixtures, tests, (56) Ill. 334.
 - aphid as alfalfa pest, (52) 254; (55) Conn.State. 251, 556.
 - aphid, control, (51) 55, Md. 453, Wis. 453; (52) Calif. 58; (53) Wis. 451; (56) Wis. 756.
 - aphid, dusting experiments, (53) Conn. State 450.
 - aphid in California, (55) 153; (56) 257.
 - aphid, natural enemies, (54) 457.
 - aphid, studies, (52) Mich. 354, Kans. 452; (57) Me. 163.
 - bean mosaic disease, relation to temperature, (52) 350.
 - black leaf, description, (58) 652.
 - blight, notes, (53) 43; (55) 546; (56) Wis. 747.
 - collar rot, incidence, (58) 49.
 - disease in eastern Washington, (60) Wash.Col. 830.
 - disease, studies, (57) 544.
 - disease survey, (54) Wis. 248.
 - diseases caused by *Ascochyta* spp., (59) N.Y.State 52.
 - diseases, control, (59) N.Y.State 50.
 - diseases in Wisconsin, (60) 241, 242.
 - diseases, notes, (54) Del. 647.
 - downy mildew, notes, (55) 346.
 - foot rot resistance, nature of, (58) 652.
 - Fusarium wilt, cause, (60) Wis. 348.
 - meal, feeding value, (51) Idaho 873.
 - midge, new damage to peas by, (53) 162.
 - mosaic, notes, (56) 349; (58) 148.
 - moth, notes, (56) 659.
 - pod spot, notes, (52) S.C. 544; (58) 652.
 - pollen, preservation, (56) 230.
 - powdery mildew, control, (51) 156; (58) N.Mex. 243; (59) N.Mex. 238.
 - root and stem rot, studies, (51) N.J. 652.
 - root rot and blight, (54) 148; (56) 351.
 - root rot fungus, additional hosts, (59) 848.
 - root rot in United States, (52) 645.
 - root rot, notes, (52) N.J. 744; (53) 351; (54) Wis. 248; (55) N.J. 43, 546; (56) Wis. 747; (57) N.J. 47, N.J. 741, 843; (59) N.J. 338.
 - root rot resistant varieties, (58) 652.
 - root rot, survey, (53) Wis. 443.
 - rust, notes, (57) 639.
 - seeds, ashing methods, (56) 13.
 - seeds, changes during growth and ripening, (53) 240.
 - seeds, germination in absence of calcium, (59) 215, 427.

- Pea—Continued.
 seeds, soaking, effect on germination, (55) 826.
 wilt disease in Wisconsin, (58) 550.
 wilt disease, notes, (59) Wis. 48.
- Peach—
 acids, nonvolatile, (53) 105.
 aerial galls, (53) 649.
 aphid, aphidious parasite of, (54) 261.
 aphid, black, control, (57) 856.
 aphid, black, notes, Ohio, (53) 555; (54) 155.
 aphid, green—
 apterous forms, metamorphosis and reproduction, (57) 452.
 carrier of leaf roll, (51) 352.
 control, (51) Pa. 254; (52) 557; (57) N.J. 59.
 dissemination of potato leaf roll by, (57) Ind. 654.
 feeding methods, (58) 455.
 life history studies, (51) Pa. 253.
 notes, (52) N.Y.State 553; (56) N.Y.State 253; (58) 663; (59) 543.
 summary, (54) Me. 658; (59) 653.
 transmission of diseases by, (57) 359; (60) 62.
 bacterial shot hole, notes, (53) 549.
 bacterial spot, fungicide tests for, (60) Del. 744.
 bacterial spot, notes, (51) 548; (55) 242, 243, Ga. 755; (56) Ill. 241, Del. 348, 453, 647; (57) 343, 752; (58) Ill. 338, 554, 851.
 black spot, notes, (55) Ohio 145; (57) 449.
 blight, control, (59) 245.
 blossom blight, notes, (58) 657.
 blossoms, failure, (59) N.J. 333.
 borer, control, (51) 55, 362, N.J. 457, 550, Conn.State 852, Ind. 853; (52) Calif. 57, Calif. 60, Mich. 355, 657, N.J. 752; (55) Fla. 853; (56) 360, 460; (58) 61; (59) Mich. 43, U.S.D.A. 155.
 borer, lesser, studies, S.Dak., (56) 659; (58) 755.
 borer, life history in southern Illinois, (59) 652.
 borer, notes, (55) 759.
 borer, Pacific, control, (59) Calif. 755.
 borer, western, control, (56) Calif. 255.
 brown pocket heart rot, studies, (56) 152.
 brown rot—
 canker and twig blight, studies, (51) N.J. 654.
 control, (51) Ohio 445, 548; (55) N.J. 48; (57) U.S.D.A. 353, U.S.D.A. 363; (60) Ill. 238.
 mummies, longevity, (56) Md. 748.
 notes, (53) 43; (54) S.C. 648; (56) 453.
 spread by Japanese beetle, (60) 352.
- Peach—Continued.
 buds, moisture content, relation to temperature, (51) 24.
 canker, cause and prevention, (57) 253.
 chlorosis in Rhône Valley, (59) 545.
 cottony scale—
 life history studies, N.Y.State, (57) 760; (58) 857.
 midsummer sprays for, (59) N.Y. State 250.
 notes, (57) 853; (60) N.Y.State 452.
 summary, (56) N.Y.State 257; (57) 453.
 crown gall, studies, (51) N.Y.Cornell 354; (58) 553.
 curculio, bionomics and control, (60) Del. 750.
 curculio, control, (51) 548.
 diseases—
 abuses in treatment for, (55) Ohio 452.
 and pests, (58) Mich. 336.
 in Illinois, (53) 547.
 in Ohio, control, (52) Ohio 451.
 little known, (57) 253.
 notes, (55) Mass. 249.
 studies, (55) Ohio 145.
 drop in 1924, cause, (57) 650.
 flower bud, hardiness in, (51) Ga. 140; (59) Ind. 633.
 fruit bud differentiation, effect of fertilizers, (60) Del. 737.
 fruit buds, autumn development, (54) 444.
 Fusarium rot in California, (57) 849.
 industry, economic aspects, (54) U.S.D.A. 386.
 industry in New Jersey, (58) N.J. 384.
 industry in Virginia, (54) 838.
 kernels, germination, (52) N.Y.State 46.
 leaf curl, control, (51) 249; (52) Kans. 450; (56) Ill. 349; (58) Mo. 436; (59) 53, Ind. 758.
 leaf curl, effect of weather, (57) 849.
 leaf curl, notes, (55) 346; (56) Utah 540; (59) 245.
 little disease, notes, (54) 851.
 little disease, studies, Del., (51) 147; (52) 843; (60) 744.
 market, New York, analysis, (59) N.J. 382.
 moth, oriental—
 as orchard pest, status, (60) 59.
 as quince pest, (53) 360.
 baits for, (53) 360; (57) 357; (59) 459; (60) 165.
 biology and control, (58) Del. 456; (59) Conn.State 61.
 control, (51) 760; (53) 859; (55) 557; (57) Conn.State 161, 455, 855; (58) Pa. 344; (60) Pa. 356.
 digestive enzymes, (60) 849.

Peach—Continued.

- moth, oriental—continued.
 habits and control, (53) Conn. State 450.
 hibernation quarters, (57) 455; (60) 849.
 in Canada, (56) 458.
 in Connecticut, (59) Conn.State 455.
 in New Jersey, (53) N.J. 53, 360.
 in 1925, (55) Conn.State. 251.
 in Ohio, (56) 859.
 in Ontario, life-history and control, (58) 860.
 in Pennsylvania, (51) 363; (58) 345.
 in South, status, (58) 348.
 in Virginia, (51) 159, Va. 457.
 larval parasites, (60) N.J. 62.
 life history and control, (51) Conn.State 852; (54) Pa. 352; (56) Pa. 153; (60) Del. 751.
 life history, habits, and control, (53) 755.
 notes, (51) 157; (53) Ind. 454, Ohio 798; (55) N.J. 51, 555; (56) Del. 356; (57) 160, 455; (59) 555, 652; (60) Ala. 159, N.Y.State 452, S.C. 754, Md. 841.
 number of larval instars, (60) 560.
 paper on, (56) 253; (58) 661.
 regulatory action preventing spread, (55) 558.
 response to colored lights, (60) 848.
 schedule of treatments, (51) N.J. 161.
 spring brood emergence, determination, (60) 456.
 studies, (51) 762; (53) 653; (56) 359; (57) 57, N.J. 58, N.J. 756; (58) 60; (59) Ohio 249; (60) Conn.State 751.
 summary, (53) 51, 360; (56) U.S.D.A. 258; (58) N.J. 758; (59) Ohio 157, 355.
 varieties of fruit unaffected by, (51) 255.
 nursery stock, (55) Miss. 536.
 orchards, airplane dusting, (55) 554.
 orchards, establishing, (56) Miss. 44.
 orchards, nitrogen forms for, (55) Oreg. 645.
 orchards, rejuvenation, (55) 743.
 pest investigations, developments, (51) 253.
 Rhizopus rot, (57) 849.
 root borer, notes, (60) 651.
 root knot, control, Miss., (52) 242; (55) 649.
 root knot nematodes, control, (60) Fla. 155.
 rootstocks for plums and prunes, (60) 541.

Peach—Continued.

- rosette, notes, Ga., (55) 145; (59) 236.
 rot infection, time-temperature relations, (60) 552.
 rust, control, (59) Calif. 746.
 rust, notes, (53) 43; (59) 45.
 sawfly, biology and control, (54) 757.
 scab, control, (51) Ohio 445, 548; (55) N.J. 48; (57) U.S.D.A. 353, U.S.D.A. 363.
 scab, notes, (54) S.C. 648; (57) Ohio 144.
 seed development, relation to thinning, (58) 236.
 seed from rosetted tree, seedlings from, (57) Ga. 244.
 seedling resistant to root knot, (51) 549.
 seedlings, propagation, (51) Ga. 141; (58) Ill. 332.
 seedlings, propagation and distribution, N.J., (51) 644; (57) 735; (59) 334.
 shot hole, control, (56) 453.
 sour sap, cause, (51) 250.
 stem, effect of ringing, (52) 125.
 stocks, notes, (51) 240.
 storage rot, studies, (58) 151.
 sun scald, notes, (55) 243.
 thrips, notes, (52) Mich. 355.
 trees—
 arsenical injury, (55) Mich. 350, N.J. 655; (57) 752.
 blooming time, effect of fertilizers, (57) Okla. 533.
 defoliation, cause, (57) 449.
 fumigation, (51) 252; (55) 455.
 grafted on plum roots, effect, (58) Ga.Coastal Plain 738.
 growth studies, (54) 40.
 June bud, merits, (58) Miss. 36.
 leaf-scar lesions on, (57) 449.
 nematodes on, control, (55) Fla. 851.
 nursery, growth rate, (52) N.J. 738; (55) Miss. 642.
 one-year-old, twig growth, estimating, (60) N.J. 741.
 pruning, (54) 539; (59) Ohio 141.
 response to fertilizers, correlation studies, (54) 242.
 response to summer pruning, (54) 242.
 size for planting, (58) Ky. 36.
 summer pruning, (56) Ill. 234.
 water requirements, (53) Ariz. 741.
 winter injury, (53) Ga. 239.
 worked on Marianna plum, results, (56) 141.
 young, factors affecting growth, (54) 740.
 twig borer, control, (52) Calif. 60.
 twig borer in British Columbia, (53) 256.
 twig borer in France, (54) 259.

Peach—Continued.

- twigs, effect of etherization, (52) 45.
 wilt, studies, N.J., (51) 655; (52) 743.
 wood, effect of yellows, (51) Del. 147
 yellows—
 dissemination experiments, (58)
 Del. 441.
 in Pennsylvania, status, (57) 650.
 insect carriers, possibility, (56)
 Del. 348.
 studies, (51) Del. 147; (52) Del.
 843; (54) 851.
 transmission experiments, (60)
 Del. 744.

Peaches—

- arsenical injury, (57) N.J. 742.
 as affected by sodium nitrate, (51)
 N.H. 142.
 blooming records, N.J., (52) 738; (57)
 40; (59) 334.
 breeding experiments, (51) N.J. 644;
 (52) N. J. 738; (53) U.S.D.A. 141;
 (54) Ill. 335; (55) N.J. 37; (56)
 Ill. 233, Ill. 343; (57) N.J. 39, N.J.
 734; (59) N.J. 333; (60) Ill. 229.
 Caldwell system of training, (52)
 Calif. 42.
 cat-faced, cause, Ind., (53) 154; (59)
 758.
 cat-faced, notes, (55) 759.
 changing permeability, studies, (51)
 Del. 123.
 chemical composition, (51) Del. 140.
 Coryneum beijerinckii affecting, (56)
 551.
 cross and self-pollination studies, (60)
 233.
 culture experiments, (55) Miss. 235;
 (58) Alaska 435, Mo. 438; (60)
 Alaska 736.
 culture in English greenhouses, (52)
 341.
 cycles of development, (59) N.J. 332.
 disease resistant varieties, (56) 549.
 dried, standards for, (60) 682.
 drying, (52) Calif. 14; (59) Ga. 290.
 dry-mix spray for, (53) Va. 40.
 dusting experiments, (59) Ohio 232.
 dusting v. spraying, (56) Miss. 739.
 dusting v. spraying, cost, (55) N.J.
 37.
 duty of water for, (54) N.Mex. 680.
 economics of the California crop, (55)
 688.
 effect of crowding, (52) Calif. 41.
 effect of excessive rainfall, (59) N.J.
 314.
 Elberta, growth of fruit, (56) 237.
 fertilizer experiments, (51) W.Va. 537,
 W.Va. 538; (52) Ill. 440, Kans.
 440, S.C. 537, Del. 836; (53) 398;
 (54) S.C. 642; (55) Ark. 36, Ga.
 137, Ohio 138, Ark. 341, N.H. 833;
 (56) Ark. 341, S.C. 532; (57) Tex.
 136; (58) Ark. 332; (59) Ga. 229,
 N.H. 230, Ohio 231, Miss. 332; (60)
 S.C. 740, Ark. 819.

Peaches—Continued.

- fertilizing, unusual results, (54) 740.
 forcing, (58) 437.
 germination, (57) 835.
 grades and shipments, (57) Ind. 586.
 grading and packing, (55) Ill. 341.
 growth rate, (57) N.J. 734.
 hardiness in, N.C., (57) 236; (59) 739.
 hardy varieties, (57) Ind. 635.
 harvested immaturely, effect, (56)
 Wash.Col. 533.
 harvesting, grading, and marketing in
 South Carolina, (51) 193.
 harvesting, grading, and packing, (54)
 39.
 identification of nursery stock, (56)
 837.
 immature, dropping, (51) Del. 140.
 insects affecting in the South and
 control, (59) U.S.D.A. 759.
 J. H. Hale, fruit setting in, (51) N.J.
 645; (52) Mich. 443.
 J. H. Hale, pollination studies, (55)
 Mich. 39; (59) 139; (60) 234.
 keeping quality, (52) 539.
 lack of dormant period, (59) Tex. 740.
 marketing, (55) Ill. 185; (59) Ga.
 185.
 maturity, studies, (60) Wash.Col. 821.
 mutations in, (60) 127.
 new or noteworthy, (59) N.Y.State
 233.
 new seedling, description, (59) N.J.
 333.
 nitrogen fertilizers for, (60) Del. 736.
 of Pennsylvania, marketing, (58) 889.
 pectic constituents, relation to soften-
 ing of fruit, (56) Md. 644.
 physiological dropping, cause, (55)
 Del. 451.
 picking maturity, determination, (59)
 Wash.Col. 40; (60) N.J. 824.
 pollen abortion in, (53) 39.
 pollen, longevity, (55) 325.
 pollen sterility in, (58) 39.
 pollination studies, (55) 742; (57)
 535, 833; (58) Del. 436; (59)
 Wash.Col. 42, 440.
 preservation by freezing, (52) Calif.
 15.
 preservation for use in ice cream, (60)
 U.S.D.A. 90.
 prices and prospects for production,
 (52) N.J. 787.
 production and marketing, (57) S.C.
 682; (60) N.J. 143.
 production and shipments in South-
 ern States, (57) U.S.D.A. 584.
 production costs and market distribu-
 tion, (55) Ark. 585.
 pruning, (51) Kans. 40; (53) Ind.
 139, Miss. 239; (59) Ind. 738; (60)
 Md. 824.
 rest period in, (53) 124.
 Rhizopus affecting, (51) 354.
 shipments and unloads, (53) U.S.D.A.
 293.

Peaches—Continued.

- split pit in, cause, (57) N.J. 734.
 spray injury to, (56) 47.
 spray schedules for, (51) 55, N.J. 144,
 W.Va. 240; (53) Mich. 37, N.J. 37;
 (55) N.J. 38, Ohio 38, Kans. 238;
 (57) N.J. 42; (60) N.J. 823.
 spraying and dusting, (53) Conn.State
 442; (57) U.S.D.A. 363.
 spraying directions for Japanese beetle,
 (51) N.J. 162.
 spraying experiments, (52) 646; (53)
 Okla. 141; (55) N.J. 48; (57) N.J.
 52, N.J. 735; (59) N.J. 334.
 spraying, spreader tests in, (51) 359.
 sprays for, (60) Tenn. 140.
 sterility in, (57) 737.
 stock and scion compatibility, (60)
 142.
 summer pruning, (51) N.J. 644.
 thinning experiments, (51) 144, 241,
 Ind. 836; (53) Okla. 141, Colo. 143;
 (55) N.J. 37, Colo. 235; (57) Mo.
 535, 834; (58) 236; (60) 44.
 use in ice cream and ices, (58) Calif.
 289.
 varieties, (55) N.C. 236; (58) Ohio
 138.
 classification by leaf characters,
 (59) Ohio 232.
 distinguishing floral characters,
 (54) 242.
 for Arizona, (55) U.S.D.A. 438.
 for Michigan, (51) Mich. 42.
 in nursery, identification, (57)
 Ohio 135.
 instability in, (51) 227; (55) 837.
 new, (59) 833.
 productivity and bud hardiness,
 (56) Ind. 141.
 variety tests, (53) Ariz. 741; (56)
 Ga.Coastal Plain 531, Miss. 739;
 (58) Ga.Coastal Plain 738; (59)
 Ala. 38; (60) S.C. 740.
 vitamins in, (55) 794; (57) Ga. 293.
 winter hardiness, (52) Ky. 442.
 winter injury, (55) Mich. 140; (56)
 Utah 533; (57) Utah 548.
 winter killing, nature and causes, (59)
 N.C. 739.
 yield after a freeze, (57) Okla. 533.

Peanut—

- Botrytis disease, (54) 847.
 cake, decomposition, (56) 420.
 cake, feeding value, (51) 676; (52)
 171.
 cake, fertilizing value, (56) 509.
 clump disease, notes, (59) 541.
 feed, analyses, (52) U.S.D.A. 78.
 flowers, fertilization and hybridiza-
 tion, (52) 529.
 forage, feeding value, (54) S.C. 665.
 leaf disease, notes, (57) 639.
 leaf spot, notes, (55) 346; (57) 443.
 meal, composition and use as diabetic
 food, (56) 92.

Peanut—Continued.

- meal, feeding value, (52) Ala. 472;
 (53) Va. 578; (54) 666; (58) Ala.
 463; (59) N.C. 773.
 meal v. soy bean meal, (57) Del. 272.
 oil feed, feeding value, (56) S.C. 268.
 oil production in Argentina, (52) 228.
 oil, sulfuric index, (52) 411.
 pale dwarf disease, (59) 848.
 press cake, vitamin A in, (52) 65.
 rosette, notes, (51) 45, 246; (55) 245,
 348; (56) 748, 751; (57) 443;
 (58) 241; (59) 542.
 rosette, transmission, (57) 349.
 sclerotial disease, notes, (59) 447.
 wilt in Argentina, (54) 450.

Peanuts—

- acreage, (60) N.C. 783.
 anatomy, embryology, and ecology,
 (52) 832.
 biological notes, (53) 236.
 breeding experiments, (52) Fla. 224,
 S.C. 528; (54) Fla. 325; (55) Fla.
 824; (56) Fla. 821; (57) Tex. 126.
 correlations in, (52) 825.
 culture and use, (54) 638.
 culture experiments, (58) S.C. 632;
 (60) Ga.Coastal Plain 132.
 distribution of vitamin B in, (59) N.C.
 761.
 effect of lime, Fla., (52) 224; (54)
 326.
 effect on soft pork, (53) N.C. 77b.
 experiments in Philippines, (55) 43a.
 feeding value, (52) Ala. 471; (59)
 N.C. 761.
 fertilizer experiments, (52) 132, Fla.
 224, Ga.Coastal Plain 225, S.C. 528;
 (54) Ga.Coastal Plain 130, Fla. 230,
 Fla. 326; (55) Fla. 824; (56) Ga.
 Coastal Plain 523, Fla. 821; (58)
 Ga.Coastal Plain 733; (59) Ga. 222;
 (60) Fla. 130, Ga.Coastal Plain 132.
 hogging down, S.C., (52) 569; (54)
 666; (56) 565.
 in India, treatise, (60) 225.
 in Texas, (59) Tex. 435.
 marketing, (55) U.S.D.A. 185.
 nematodes affecting, (57) 749.
 production in Gambia, (56) 736; (58)
 226.
 shelled White Spanish, grades, (51)
 U.S.D.A. 794.
 treatise, (53) 236.
 varieties, (55) Hawaii 526; (57)
 Tenn. 126.
 variety tests, (52) Fla. 224, Ga.Coastal
 Plain 224, S.C. 528; (54) Ga.Coastal
 Plain 130, Hawaii 131, Fla. 325,
 S.C. 635; (55) 229, Fla. 824; (56)
 Ark. 332, S.C. 525, Fla. 821; (57)
 749; (58) Ga.Coastal Plain 732;
 (60) Ga.Coastal Plain 132.
 yields, effect of spacing and time of
 shelling, (57) U.S.D.A. 37.

Pear—

- black end, cause, (59) 151, Calif. 746.
black end of Bartlett's, studies, (57) 751.
black end, relation to rootstocks, (60) 143.
black scab, notes, (56) 747.
blight—
 canker, control, (52) Calif. 53; (56) 453; (59) Calif. 746.
 organism, studies, (51) Tenn. 349.
 resistance, studies, Oreg., (54) 252; (60) 749.
 resistant varieties, (56) Tenn. 145.
 studies, (53) 43; (55) N.Mex. 444, Oreg. 656; (57) Calif. 243; (58) Ill. 338; (59) 645.
 treatment, (53) Calif. 448.
blossom and spur blight, description, (55) 755.
branches, seasonal changes in starch content, (58) 37.
buds, development, effect of environment, (52) Calif. 41.
canker, description, (55) Oreg. 452.
canker, notes, (55) Oreg. 452; (56) 747; (57) 352, 848.
canker, unusual form, (56) 654.
chlorosis, studies, (52) Calif. 52.
core breakdown, control, (58) 151.
diseases and pests, (58) Mich. 336.
diseases, control, (54) 252.
diseases in Illinois, (53) 547.
diseases, notes, (52) Calif. 49; (55) Mass. 249.
fire blight—
 description and control, (54) Mo. 149.
 history and control, (57) 846.
 resistance, (54) Ill. 350.
 studies, (52) Tenn. 549; (56) Ill. 241.
flowers, studies, (60) 823.
fruit rot, notes, (54) 745; (56) 747.
hybrid, merit, (58) Can. 836.
industry, economic aspects, (59) Calif. 485.
leaf blister, control, (52) 748.
leaf blister mite—
 as apple pest, (55) Utah 461.
 control, (52) Oreg. 759; (59) Calif. 755.
 studies, (51) 764.
 varieties, (60) 851.
leaf curling midge—
 biological control, (57) 160.
 natural enemies, (59) 255.
 parasites of, (60) 657.
leaf spot, notes, (58) S.C. 646.
leaves, nitrogen loss and defoliation, (60) 44.
midge, control, (54) 57; (56) 661.
midge, notes, (51) 763.
midge, parasites of, establishment in New Zealand, (56) 661.
orchards, nitrogen forms for, (55) Oreg. 645.

Pear—Continued

- orchards, spraying experiments, (55) 452.
Phytophthora rot, (53) 549.
pollen, longevity, (55) 325.
psylla, control, (51) N.Y.State 56, N.J. 658; (52) N.Y.State 552, N.J. 751, N.Y.State 854; (54) N.Y.State 455, N.Y.State 456, N.Y.State 552; (55) N.Y.State 153, Mass. 254, 661; (56) 458; (58) N.Y.State 856; (59) N.Y.State 59, N.Y.State 759; (60) 557, 842.
psylla, destruction by orchard birds, (59) N.Y.State 853.
psylla, studies, (54) 153; (55) Conn. State 251; (58) Del. 454.
roña, treatment, (57) 353.
root aphid, control, Calif., (52) 57; (56) 255; (59) 755.
root aphid, life history, (55) 458.
root rot, notes, (56) 748.
rootstocks, hardy, (60) Oreg. 739.
rot, notes, (56) 541.
rust, control, (60) 56.
scab, control, (53) 548; (58) 151; (59) 245.
scab in Spain, notes, (57) 353.
scab, notes, (56) 747, 849.
scab, winter stages, (60) 345.
scald in cold storage, (52) Calif. 52.
scurf, notes, (60) 154.
seedlings, Kieffer, and fire blight resistance, (60) 155.
seeds, germination, (52) N.Y.State 46; (57) 835.
shoots, phloridzin in, (54) Oreg. 319.
slug, biological control, (57) 160.
stem girdler, studies, (54) 59.
stocks, crown gall affecting, (56) 653.
stocks, notes, (51) 240.
thrips, control, (60) Oreg. 753.
thrips, control, spraying v. dusting in, (58) 347.
tissue, catalase activity, (60) 440.
tree, Endicott, account, (55) 837.
trees, chlorotic, iron distribution in, (54) 539.
trees, chlorotic, treatment, (54) 241; (59) Calif. 746.
trees, dwarf, growth and fruitfulness in, (58) 839.
trees, phloridzin in, (58) 236.
trees, pruning experiments, (55) Oreg. 644.
trees, rejuvenation, (60) N.Y.State 448.
trees, total nitrogen in, (58) 236.
trees, young, effect of tying down limbs, (56) 141.
wood, water absorption, (54) 539.
- Pears—
acetaldehyde in, relation to scald and breakdown, (58) 751.
arsenical spray residue removal from, Wash.Col., (59) 39, 836, 837; (60) 820.
Bartlett, changes in, (51) 839.

Pears—Continued.

- Bartlett, conductive tissues in shoots, (53) Calif. 324.
 Bartlett, respiration, (55) 141.
 behavior on quince rootstocks, (60) 541.
 blooming data, (52) N.J. 738.
 Bosc, harvesting and handling, (58) Oreg. 140.
 box scald injury, (60) 154.
 breeding experiments, (55) 836; (56) S.Dak. 641; (57) Can. 236; (58) S.Dak. 738; (60) 41, Oreg. 738.
 bud development, periodicity, (58) 140.
 carbohydrate concentration in shoots, (52) Calif. 42.
 chromosomal composition and behavior, (60) 528.
 cold storage studies, (52) Calif. 342, 539; (54) 643; (58) 535; (60) 541.
 Conference, tests, (55) Mich. 646.
 core breakdown in, (54) Oreg. 350.
 culture experiments, (60) Alaska 736.
 culture, handbook, (59) 140.
 double-worked, effect of intermediate stock, (59) 836.
 double-worked, on quince stocks, (58) 438.
 drying, (52) Calif. 14.
 effect of fertilizers on form and size, (53) 536; (54) 644.
 effect of pruning, (60) Oreg. 739.
 effect of time of harvesting on quality, (52) 142.
 fertilizer experiments, (53) Can. 840; (56) 43; (60) Can. 539, Oreg. 739.
 fresh and canned, vitamin C in, (57) 392.
 fruit bud formation, date, (51) 240.
 fruit bud formation, factors affecting, (54) 644.
 fruit setting, effect of pruning, (58) 539.
 Gorham, description, (52) N.Y.State 46.
 grafting experiments, (58) 232.
 harvesting and storage, Oreg., (51) 839; (55) 643.
 harvesting, grading, and packing, (54) 39.
 hybridization studies, (57) 833.
 identification of nursery stock, (56) 837.
 in cold storage as affected by ammonia, (52) Calif. 53.
 insect attack, relation to winter injury, (60) N.Y.State 449.
 Japanese sand, effect of locality, (57) 437.
 Japanese sand, vitamin C in, (57) 197.
 Japanese, self- and cross-sterility in, (58) 643.
 Kieffer, importance of stocks in, (59) 141.

Pears—Continued.

- maturity tests, (58) Can. 837.
 nonvolatile acids of, (58) 711.
 notes, (52) Alaska 536.
 Patten, behavior, (59) Iowa 39.
 pectic changes in, (58) 540.
 pollen sterility in, (56) 643.
 pollen studies, (52) 739.
 pollination, studies, (51) Calif. 241; (53) 641; (54) 158; (55) Oreg. 643; (56) Wash.Col. 533; (59) Wash.Col. 42; (60) 233, Wash.Col. 821, 824.
 propagation studies, (53) U.S.D.A. 141.
 pruning, (51) Kans. 40, Mo. 536; (52) Calif. 42; (59) 836; (60) 823.
 ripening, effect of ethylene, (60) 822.
 Russian, culture experiments in Switzerland, (60) 341.
 Saponsky, origin and characteristics, (54) S.Dak. 140.
 species and stocks, characteristics, (54) Oreg. 252.
 spray injury to, (56) 47.
 spray residue removal from, (56) 442; (57) Oreg. 43; (59) 552, Oreg. 743, 837; (60) 560.
 spray schedule, place of oil in, (59) N.Y.State 759.
 spray schedules for, (51) N.J. 144; (53) Mich. 37; (55) Ohio 38; (60) N.J. 823.
 spraying and dusting, (51) N.Y.State 56.
 spraying experiments, (51) N.J. 654.
 spraying v. dusting tests, (55) Oreg. 651.
 sterility studies, (58) 642, 739.
 storage studies, (51) 345; (52) Calif. 41.
 time of picking tests, (55) Oreg. 644.
 time of pruning, (53) Can. 840.
 use in ice cream and ices, (58) Calif. 289.
 varieties, (57) N.H. 335; (60) 824.
 varieties for Iowa, (52) Iowa 442.
 varieties in Wyoming, (53) 536.
 varieties, new, (54) 497, N.Y.State 643.
 variety tests, (53) Ariz. 741; (54) Fla. 334; (59) Ala. 38, N.Mex. 140, N.H. 230.
 vintage, beauty and use, (52) 236.
 vitamin C in, (56) Kans. 894.
 winter injury, (55) Mich. 140.
 winter protection, (53) U.S.D.A. 141.
 wrapping in oiled paper, value, (58) 536.
- Peas—
 and corn, hogging down, (60) N.Dak. 69.
 and oats mixtures, tests, (54) Mich. 634.
 and oats, seeding experiments, (53) Wyo. 133.

Peas—Continued.

- and potatoes, seeding experiments, (53) Wyo. 133.
 artificially greened, copper absorption from, (52) 259.
 as winter cover and green manure crop, (55) U.S.D.A. 231.
 Austrian winter field, as cover crop, S.C., (60) 718, 732.
 Austrian winter field, culture, (60) 135.
 bacterial disease, (54) S.C. 648.
 breeding experiments, Can., (57) 236; (60) 639.
 Canadian, effect on growth and reproduction in pigs, (58) Idaho 66.
 canned, bulletin on, (59) 389.
 canned, sulfide spoilage in, (59) 91.
 canning—
 Ascochyta blight of, (56) N.Y. State 241.
 breeding experiments, Wis., (51) 434; (56) 739.
 cost of production, (59) Wis. 483.
 diseases, (51) Del. 147; (52) Utah 745, Del. 844; (58) N.Y. State 844.
 improvement, (56) Wis. 236.
 industry in Maine, (58) 231.
 inoculation, (52) Wis. 734.
 losses in Ontario, cause, (56) 351.
 methods of planting, (52) Utah 739.
 production in Wisconsin, (51) 199.
 rogues in, (58) 641.
 root rot and blight affecting, (58) 49.
 thermophilic contamination in, (60) 490.
 value of scalding, (52) U.S.D.A. 460.
 variations in varieties, N.Y.State, (52) 832; (54) 638.
 varieties, (55) Wis. 139.
 variety tests, (56) S. Dak. 641.
 cold storage studies, (60) 541.
 crosses with rogues, gamete production in, (52) 524.
 cultivated and wild species, comparison, (57) 423.
 culture experiments, (51) 35; (52) Alaska 528; (55) Alaska 433, Can. 835.
 culture under high altitude conditions, (55) Colo. 536.
 double and single podding in, (57) 534.
 drill calibration, relation to stand and yield, (52) 828.
 drying, air velocity and temperature in, (58) 486.
 dusting by airplane, (56) 57.
 edible pod, tests, (59) Hawaii 626.
 effect of acid soil, (54) 213.

Peas—Continued.

- effect of calcium deficiency in nutrient solution, (60) 447.
 effect on following crop, (54) 829; (55) Wash.Col. 33.
 effect on skeleton of hogs, (57) Idaho 765.
 fall crop test, (59) N.Mex. 231.
 fall seeding experiments, (52) 633.
 feeding value, (52) Idaho 872; (54) 760; (60) Mont. 763, Mont. 764.
 fertilizer experiments, (53) Miss. 341, La. 514; (55) Miss. 237, Miss. 536; (59) 834; (60) Oreg. 133.
 fertilizer requirements, (55) Wis. 122.
 field, cooking tests, (53) Can. 530.
 forage and seed yields after other crops, (59) Wash.Col. 32.
 garbanza, nutritive value, (59) 792.
 genetics of, new observations on, (53) 331.
 genetics of rogues in, (58) 525.
 germination and yield, effect of mercury seed treatments, (59) N.J. 339.
 germination, physiology and chemistry of changes during, (58) 523.
 growth and yield, effect of temperature, (58) 231.
 growth in artificial light, (51) 25.
 hogging down, (54) U.S.D.A. 162; (55) Wash.Col. 33, U.S.D.A. 161, N.Dak. 567; (59) N.Dak. 868.
 hybridization, (55) 742.
 inheritance in, (57) 123; (58) 824; (59) 223.
 inoculation results, (54) 234.
 irrigation experiments, (52) Utah 739; (56) Utah 525; (60) Oreg. 132.
 linkage work in, (60) 527.
 manganese in, (59) 708.
 mutations in, (55) 731.
 mycorrhizal fungus in roots, (52) 746.
 nitrogen fertilization experiments, (52) 123.
 nitrogen fixation by, (60) 723.
 paper v. dust mulch, (60) Can. 540.
 pigeon, *see* Pigeon peas.
 planting tests, (57) Idaho 726; (59) N.Dak. 825.
 plat tests, (51) Hawaii 740.
 prices and shipments from Florida, (59) 886.
 rogues among, genetics, (60) 527.
 root inheritance in, (60) 429.
 seed, production in Montana, (53) Mont. 236.
 seeding experiments, (51) Oreg. 529, N.Dak. 833; (53) Wyo. 133; (54) Mich. 634; (55) Idaho 825; (56) Wis. 732, 825; (59) N.Y.State 233.
 standard descriptions, (60) 438.
 stimulation of seeds, (55) 125.
 storage studies, (58) 536; (59) Calif. 736.
 Tangier, culture experiments, (55) Oreg. 637.
 Tangier, studies, (53) Calif. 737.

Peas—Continued.

- uses in the diet, (56) 291, 589.
 varieties, (51) Mich. 133, Wash.Col. 136, Oreg. 739, Idaho 830; (55) Mich. 825; (60) Can. 639, Mont. 729.
 varieties for peat lands, (55) Minn. 527.
 varieties, new, (60) Can. 539.
 varieties, winter hardiness, relation to yielding ability, (60) 327.
 variety for Minnesota, (55) Minn. 132.
 variety tests, (51) Oreg. 529, N.Dak. 833; (52) Ga.Coastal Plain 225, Guam 226, Idaho 828, Wash.Col. 829; (53) Wyo. 133, N.Dak. 334, Wis. 432, Can. 530, Ariz. 741; (54) Ga.Coastal Plain 130, Ga.Coastal Plain 136. 530, Mich. 634, Wash.Col. 827; (55) N.Dak. 527, Minn. 734, Idaho 825; (56) Ga.Coastal Plain 523, Ga.Coastal Plain 531; (57) Can. 33, Minn. 226, 227, Idaho 726; (58) Alaska 427, Ga.Coastal Plain 732, Ga. Coastal Plain 738; (59) Wash. Col. 31, Idaho 728, N.Dak. 825; (60) N.Dak. 34, Ga.Coastal Plain 132, Oreg. 132, Alaska 728.
 variety tests, uniform stands essential, (57) 528.
 vitamins in, (55) 793.
 vitamins in, effect of cooking methods, (51) Wis. 462.
 yield, effect of weather, (56) 207.
 yields, (60) Mont. 730.
 yields and agronomic data, (52) Can. 733.

Peasant—

- enterprises, capitalistic or otherwise, (58) 888.
 industry, principles of, treatise, (53) 297.

Peat—

- action of lime compounds on, (52) 319.
 and raw phosphate, decomposition, (54) 517.
 areas, fertilizer experiments, (51) Wis. 421.
 as domestic fuel, (57) 581.
 as fertilizing material, (54) 20, 421.
 bacterial decomposition, (51) Mich. 118.
 bacterized, possibilities and limitations, (52) 122.
 bibliography of, (56) U.S.D.A. 421.
 biological studies, (53) 619.
 bogs of Sweden, (51) 325.
 chemical composition, (59) 717, 811.
 colloid properties, (59) 114.
 commercial utilization, (55) 808.
 composition, effect of botanical origin of moors, (55) 217.
 compost as fertilizer, (55) 724.
 composting, (58) 721.
 decomposition, studies, (55) Mich. 812.
 deposits, profile study, (52) 17; (56) 212.

Peat—Continued.

- deposits, stratigraphic study, (51) 511.
 formation, theory, (60) 511.
 insulating properties and use, (51) 886.
 lands—
 crop tests, (55) Minn. 527.
 experiments with, (54) Minn. 17.
 international problems in study, (60) 513.
 problems in selection, (56) U.S.D.A. 212.
 profiles of, studies, (55) 515.
 reclamation in northern Europe, (60) 877.
 roller for use on, (52) 90.
 marshes, fill settlement in, (56) U.S.D.A. 882.
 materials, chemical examination, (52) 614.
 molds, dry, commercial varieties, (58) 810.
 nitrogen, absorption by crops, (53) 322.
 nitrogen availability in, (52) 622.
 of Florida Everglades, notes, (58) 97.
 of northern France, characteristics, (52) 18.
 pots, value, in plant propagation, (59) 137.
 problems in Sweden, (55) 319.
 production in 1921, (51) 217.
 soil—*see also* Moor soils.
 ammoniacal nitrogen in, (60) 715.
 analysis of crops as index of fertility, (56) 120.
 productivity, effect of water table, (60) 511.
 types, fertilization and yield on, (56) 824.
 soils—
 cropping, (55) Idaho 515.
 differentiation between acidity and lime deficiency in, (60) 508.
 effect of claying and sanding, (55) 347.
 fertilization, (53) Wis. 416; (59) 119.
 fertilizer requirements, (55) Idaho 825.
 hay from, nutritive value, (59) 462.
 papers on, (60) 513.
 raw, stimulation of plant response on, (58) Fla. 209.
 water level, relation to penetration of corn roots, (53) 18.
 types and suitable forest species, (54) 839.
 value and use as fuel, (54) 480.
 Pebrine of silkworms, cause, (57) 366; (59) 654.
 Pecan—
 aphid, notes, (60) 164.
 case bearer, biology, (57) Tex. 361.
 case bearer, control, (55) Tex. 855; (58) 759.

Pecan—Continued.

- case bearer, life history, (53) 361; (55) Tex. 855.
 - case bearer, studies, (53) U.S.D.A. 54.
 - diseases, control, (56) Fla. 852.
 - diseases in Mississippi, (59) 54.
 - grades and standards, (60) 682.
 - little leaf, description, (58) 658.
 - mottle leaf, studies, (57) Calif. 215.
 - nut, development, (57) Ga. 235, 636, 739.
 - oil, chemical constituents, (51) 409.
 - pistillate flowers, formation and development, (57) 439, Okla. 439.
 - pollen, distance carried by wind, (57) 439.
 - recipes, their place in the menu, (54) 290.
 - rosette, control, (54) U.S.D.A. 751.
 - rosette, notes, (53) 43.
 - scab, control, (51) 758; (52) Miss. 152, Miss. 242; (55) U.S.D.A. 551, Fla. 841, Fla. 850; (57) U.S.D.A. 254; (58) 853; (60) Fla. 147, Ala. 156.
 - scab, description, (55) Fla. 756.
 - scab, fungus, identity, (58) 852.
 - scab, morphology and taxonomy, (60) 246.
 - scab, studies, (52) 152; (56) Fla. 839; (59) Ala. 635.
 - soils and fertilization, (57) 738.
 - trees, commercial paper as mulch, (54) Fla. 334.
 - trees, fertilizer experiments, (53) 538.
 - trees, grafting and budding, (51) Fla. 539.
 - trees, winter injury, factors affecting, (57) 241.
 - weevil, studies, (55) Miss. 555; (58) Ala. 450.
- Pecans—
- bud development, (52) Ga. 46.
 - culture, (53) N.Mex. 242; (55) Ariz. 40, Okla. 240, N.Mex. 439; (56) Kans. 833; (59) Ga. 229.
 - culture in Arizona, (55) U.S.D.A. 438.
 - culture in Italy, (58) 141.
 - culture in Texas, (52) 642; (55) 441.
 - development of embryo sac and embryo, (60) 429.
 - dichogamy in, (60) 235.
 - fertilizer experiments, (56) Fla. 832; (57) 241; (59) Miss. 332; (60) Fla. 139, Fla. 140.
 - flowering and pollination, (57) N.Mex. 235.
 - fruit bud differentiation and flower development, (56) 142.
 - fruit bud formation and growth, (58) Ala. 434.
 - fruiting and growth habits, (59) Ala. 38.
 - growth curve, (56) Fla. 832.
 - growth studies, (59) Ala. 531.

Pecans—Continued.

- hardiness, (52) Kans. 441.
 - industry in Florida, (58) Fla. 742.
 - insects affecting, (51) U.S.D.A. 253; (52) Miss. 252; (53) 755; (54) Fla. 352; (55) Miss. 658; (56) Fla. 855; (58) Miss. 57; (60) Fla. 160.
 - nut development, (55) Fla. 833.
 - obscure scale affecting, (54) 259.
 - pollination studies, (59) Ga. 229.
 - premature dropping, cause, (55) Ga. 137.
 - production, (54) 274.
 - production in 1923, (53) N.Mex. 140.
 - production, treatise, (52) 642.
 - propagation, (54) Mo. 739; (57) Okla. 533.
 - Schley, value, (55) Miss. 642.
 - unfruitfulness in, causes, (60) Ga. 542.
 - varieties, (55) N.C. 236, Miss. 536; (56) Ariz. 739; (60) Ala. 138.
 - varieties and breeding, (59) N.C. 739.
 - varieties, food and timber value, (56) Iowa 833.
 - variety tests, (51) N.Mex. 440; (53) Ariz. 741; (56) Miss. 739.
 - vitamins in, (54) 90.
 - yield and quality, studies, (51) 242.
 - yield, variation in, (51) N.C. 837.
 - yields, (59) N.Mex. 231.
- Pectase, preparation, (60) 239.
- Pectates, insoluble, studies, (56) 613.
- Pectic—
- acid, carboxyl groups in, (54) Mo. 207.
 - acid, studies, (55) 802; (56) 613.
 - compounds in apples, changes in, (55) 646.
 - constituents of apples, (58) 213.
 - material in fruits, behavior, (60) 519.
 - material in root hairs, (51) 126.
 - material in watermelon and citron, (58) 839.
- Pectin—
- acetyl groups in, (56) 311.
 - and protopectin, relation, (52) 11; (54) 7.
 - ash-free, methods of obtaining, (56) 10.
 - chemistry and industrial applications, (53) 105.
 - composition, (55) 710.
 - determination, (55) 611, 805.
 - determination in juices and removal, (53) 207.
 - estimation and constitution, (54) Mo. 207.
 - extraction and clarification, (53) Oreg. 810.
 - extraction from lime rind, (51) 709.
 - from citrus peel, preparation, (53) U.S.D.A. 13.
 - from lemon peel, (51) 310.
 - in apple leaves, (57) 514.
 - in fruit, determination, (51) 205.
 - in roots and bitter orange rind, (51) 709.

Pectin—Continued.

- in stored pears and apples, changes in, (58) 540.
 in sugar beets, studies, (55) 407.
 jellies, strength of, apparatus for measuring, (54) 690.
 manufacture, (54) 208.
 microbiology, (59) 202.
 monograph, (55) 502.
 preparation and colloidal properties, (55) 801.
 preparation and uses, monograph, (60) 111.
 requirements for jelly making, (55) 13.
 rôle in jelly making, (56) Del. 392.
 sols, viscosity, (56) 310.
 solutions, jelling, (53) 209; (60) Del. 790.
 solutions, viscosity, (54) Del. 691.
 solutions, viscosity and jelling properties, (57) Del. 592.
 studies, (60) 417.
 substances, (57) 202.
 substances, historical review of studies, (58) 309.

Pectinase—

- in *Rhizopus* spores, (51) 754.
 of *Sclerotinia cinerea*, (56) 516.
 preparation, (60) 239.
 production of *Rhizopus*, effect of temperature, (51) 753.
 Pectinogen extraction from sugar cane, (51) 310.
 Pectinophora gossypiella, *see* Bollworm, pink.
 Pectins, review of recent work, (55) 609.
 Pectin-sugar-acid gels, data on, (51) 209.
 Pediculoides ventricosus—
 ecology, (58) 755.
 notes, (58) 266.
 Pediculopsis graminum, notes, (59) 861.
 Pediculus humanus corporis, *see* Lice.
 Pedigree register, particulars necessary, (53) 269.

Pedology—

- and cognate sciences, development, Dokuchaiev's ideas, (60) 507.
 Russian, in agricultural experimental work, (60) 514.

Pegomyia betae, control, (59) 860.

Pegomyia brassicae, *see* Cabbage maggot.

Pegomyia ceparum, *see* Onion maggot.

Pegomyia fusciceps, *see* Seed-corn maggot.

Pegomyia hyoscyami—

- control, (58) 560.
 life history and control, (60) 653.
 notes, (53) Utah 254; (55) 854; (59) Ohio 249; (60) 161.
 parasite of, (54) 462.

Peleteria, American species, key, (57) 263.

Pelidnota punctata, notes, (54) Kans. 461.

Pellagra—

- and blacktongue of dogs, tissue changes in, (60) 793.
 dietary factors in, (53) 662.
 etiology, (52) 367; (56) 296.

Pellagra—Continued.

- experimental, symptoms and lesions, (60) 596.
 in Mississippi flood area, (59) 295.
 nature and prevention, (58) 92.
 paper on, (60) 197.
 preventive action of foods, (57) 295.
 preventives, (55) 890.
 relation to blacktongue in dogs, (59) 476; (60) 793.
 relation to use of milk, (52) 463.
 treatment and prevention, (51) 270.
 yeast treatment, (53) 662.

Pellioniella macrospora n.sp., notes, (51) 156.

Pelvic relaxation in guinea pigs, cause, (60) 727.

Pemphigus—

- fraxinifolii, parasite of, (52) N.Y. Cornell 360.
 spp., notes, (54) Ohio 155.

Pen manure, Mauritian, studies, (55) 626.

Penetrometer, gravimetric, for measuring stiffness of doughs, (59) 311.

Penicillium—

- expansum, notes, (59) Wash. Col. 46, 152.
 expansum, toxic substances produced by, (56) 243.
 gladioli n.sp., description, (58) 853; (60) 354.
 gladioli, notes, (59) 246.
 glaucum, action of salts on, (57) 649.
 glaucum, carbon nutrition of, (58) 217.
 glaucum, notes, (57) 345.
 luteum, heterothallism in, (56) 727.
 on citrus, control, (53) 354.
 on citrus fruit, relation to temperature, (58) 751.
 roqueforti, notes, (52) 879.
 roqueforti strains, growth, (55) 873; (56) 172.
 roseum coremioides, notes, (55) 350.
 roseum, notes, (53) 43; (55) Calif. 344.
 sp., notes, (53) 850; (57) 640; (58) 442.
 spp., notes, (54) Fla. 245; (55) 346; (56) 249; (58) 393.

Peniophora spp., cultural characters, (54) 255.

Pennsylvania—

- Association of Dairy and Milk Inspectors, report, (57) 666, 667.
 College, notes, (51) 99, 300; (52) 200, 700; (53) 99, 198, 600, 799; (54) 599, 797; (55) 300, 398, 497; (56) 97, 197, 499, 798; (57) 100, 396, 497; (58) 98, 600, 698, 798; (59) 299, 698; (60) 796.
 Station, notes, (51) 99; (52) 200, 700; (53) 99, 198, 600; (54) 599; (55) 300, 497; (56) 97, 197, 499, 798; (57) 100, 396; (58) 98, 698; (59) 299, 698.

- Pennsylvania—Continued.
 Station, report, (52) 299; (54) 396;
 (56) 195; (58) 396; (60) 398.
- Pentalonia nigronervosa*, notes, (56) 354;
 (58) 153; (59) 147; (60) 451.
- Pentathionic acid, fungicidal factor of sul-
 fur, (58) 745.
- Pentatomidae—
 Canadian, keys for identification, (59)
 552.
 feeding process, (59) 552.
- Penthaeus destructor*—
 in South Africa, (53) 657.
 in Western Australia, (54) 758.
 n.sp., notes, (59) 456.
- Pentosan theory of cold resistance in
 conifers, (57) 420.
- Pentosans—
 action of sodium hydroxide and cu-
 prammonium solutions on, (51) 109.
 determination in juices and removal,
 (53) 207.
 determination in wood cellulose, (51)
 715.
 in apples, relation to winter hardiness,
 (59) 139.
 in plants, relation to disease resist-
 ance, (59) Wis. 47.
- Pentose—
 determination, (56) 312.
 metabolism, studies, (52) 804.
- Pentoses—
 and pentosans, estimation, (51) 12,
 315.
 fermentation by *Bacillus granulobacter*
pectinovorum, (52) 611.
 orcinol reaction, extension coefficients
 of, (53) 205.
 spectrophotometric determination, (53)
 205.
 utilization by yeasts, (55) Mo. 502.
- Peonies—
 culture, (55) N.J. 142.
 culture experiments, (58) Alaska 435.
 disease susceptibility, (60) Ill. 239.
 fertilizer experiments, (60) Ill. 231.
 nomenclature, (60) Ill. 231.
 sterility in, (58) 742.
 variety tests, (58) Can. 836.
- Peony—
 blight, notes, (54) 745.
 diseases, (54) 51.
 leaf and stem spot, (54) 144.
- Pepper—
 anthracnose, studies, (55) Ga. 145;
 (58) 653; (60) 55.
 bacterial spot, description, (52) 449.
 blossom end rot, notes, (57) 249, 843.
 by-products, feeding value, (57) Ga.
 269.
 cress grown in salt water, effects, (53)
 626; (54) 125.
 detection of added pepper shells in,
 (56) 506.
 diseases, control, (53) 852.
 diseases, notes, Ga., (51) 148; (53)
 246.
- Pepper—Continued.
 maggot, notes, N.J., (52) 752; (55)
 51.
 Phytophthora rot, notes, (52) 548.
 pollu disease, studies, (55) 750; (57)
 249.
 seed-borne diseases, fungicides for,
 (56) Fla. 840.
 verticilliose in Italy, (57) 645.
 vine disease, notes, (59) 536.
 weevil in California, (52) 662.
 wilt, notes, (51) N.Mex. 445.
- Peppermint—
 production, (55) Mich. 142.
 rust, studies, (56) 547.
- Peppers—*see also* Chili.
 culture and marketing, (57) V.I. 335.
 culture experiments, (55) Ill. 139.
 culture experiments and trial ship-
 ments, (59) V.I. 439.
 effect of sodium nitrate, N.J., (57)
 40, 736.
 effect of various lengths of day, (56)
 640.
 fertilizer experiments, (54) Ill. 335;
 (58) Ill. 333; (59) N.J. 334.
 pimiento, feeding, effect on color of
 egg yolks, Ga., (57) 270; (58) 63.
 pimiento, feeding to cows, effect, (59)
 Ga. 268.
 pimiento, internal rot, notes, (59) Ga.
 236.
 prices and shipments from Florida,
 (59) 886.
 pure line breeding, (59) Conn.State
 28.
 seed, effect of fruit maturity, (55)
 835.
 sweet, culture and varieties, (59)
 Ohio 439.
 varieties, (59) Ohio 231.
 variety tests, (57) Tex. 136; (58)
 Ga.Coastal Plain 738.
 vitamins in, (57) 293.
- Pepsin, studies, (60) 610.
- Perchlorate method for potassium deter-
 mination, (59) 412.
- Peregrinus maidis*—
 notes, (59) 341; (60) Miss. 163.
 transmission of corn stripe by, (60)
 241.
- Perezia pyrausta* n.sp., description, (58)
 260.
- Perfume plants, genetic studies, (55) 224.
- Perfumes—
 cosmetics, and soaps, treatise, (55)
 507.
 industry, treatise, (52) 413.
 synthetic, analytical notes, (59) 312.
 synthetic, preparation, (51) 509.
 variation due to grafting, (53) 627.
- Pericallimya*, new, notes, (59) 456.
- Pericyma cruegeri*, life history and eco-
 nomic importance, (59) 355.
- Peridermium—
 harknessi in western yellow pine tops,
 (58) 155.

- Peridermium—Continued.
indicum n.sp., description, (57) 354.
kurilense, description, (57) 354.
pini, see White pine blister rust.
 sp. new to northeastern United States, (57) 753.
- Perilitus melanopus* parasite of *Ceutorhynchus quadridens*, (55) 854.
- Perillus claudus*, enemy of potato beetle, (51) Mich. 551.
- Periodicities, solar and meteorological, (52) 715.
- Periodicity, physicochemical, treatise, (60) 111.
- Periosteum area, effect on growth of bone tissues, (60) 464.
- Periplaneta, see Cockroaches.
- Peripneumonia of cattle, staining and morphology of virus, (58) 279.
- Perisierola emigrata*, parasite of pink bollworm in Hawaii, (58) U.S.D.A. 457.
- Perissopterus—
mexicanus, notes, (53) 160.
 sp., notes, (52) 557.
- Peritonitis in poultry, (58) 180.
- Periwinkle leaf blight, notes, (54) 745.
- Perkinsiella—
saccharicida, notes, (60) Miss. 163.
vastatrix, studies, (58) 663.
- Permeability—
 and growth of plants, (54) 21.
 and plasmolysis, (53) 422.
 in *Beggiatoa mirabilis*, (56) 324.
 of beet protoplasm, effect of temperature, (57) 217, 419.
 of cells, (54) 21.
 of cells to electrolytes, (51) 26.
 of clay, calculation of coefficient, (52) 619.
 of living cells, studies, (59) 619, 820.
 of membranes for electrolytes, (59) 723.
 of plant cells, (53) 822; (54) 627.
 of plant cells to urea, effect of ether, (57) 515.
 of protoplasm to ions, (59) 723.
 of soils, (54) 513; (57) N.Mex. 210; (59) N.Mex. 208.
 factors affecting, (55) N.Mex. 417.
 in lysimeters, decrease, (52) 120.
 on Gezira Research Farm, (60) 712.
 relation to field spray plant, (60) 675.
 under irrigation, factors affecting, (57) N.Mex. 315.
 of subsoils for water, effect on productivity, (55) 509.
 reactions as test of plant response to fertilizers, (51) Del. 123.
 rôle of lipoids in, (59) 122.
 selective, in seed coats, (54) 818.
 studies, (51) 224, 426.
 term defined, (54) 424.
 variation, relation to plant movements, (51) 521.
- Peromyscus—
eremicus, subspecific hybrids, pigmentation studies, (53) 428.
 specie differences, origin and inheritance of, (52) 128.
- Peronea—
 life history studies, (56) 858.
maximana, notes, (53) 859.
- Peronoplasmopara cubensis*, notes, (53) 43.
- Peronospora—
arborescens, notes, (55) 346.
cubensis, control, (57) 147.
 disease, chemotherapy, (54) 548.
effusa, notes, (55) 346.
ficariae, parasitism, (57) 640.
jaapiana, notes, (57) 51.
lactucae, notes, (57) 150.
manshurica, notes, (55) 752.
mesembryanthemi n.sp., description, (55) 748.
 monographic account, (53) 542.
parasitica, notes, (55) 346; (57) 343, 347; (58) 442, 651; (60) 51.
pulveracea mycelium, studies, (58) 144.
schachtii, notes, (57) 51; (59) 635.
schleideni, description and control, (55) Mass. 246.
schleideni, hibernation, (57) 644.
sojae n.sp., description, (54) 148.
sojae, notes, (54) Del. 647; (55) 848.
trifoliorum, notes, (55) Iowa 541.
trifoliorum on Leguminosae species, (58) 546.
urticae, notes, (55) 750.
viciae, notes, (54) Wis. 248; (55) 346.
viticola, see Grape downy mildew.
- Peronosporales species, spore germination, relation to oxygen, (58) 648.
- Peroxidase—
 determination, effect of hydrogen peroxide, (58) 624.
 effect on keeping quality of butter, (56) 612.
 in dry seeds, (58) 524.
 in leaves and respiration activity, (58) 624.
 in milk, effect of heat on activity, (52) 202.
- Peroxidation and antirachitic vitamin, relation, (56) 109.
- Peroxide formation and tolerance by an anaerobe, (55) 371.
- Perrisia pyri*—
 natural enemies, (59) 255.
 parasites of, (60) 657.
- Persimmon—
 butt rot, notes, (59) 852.
 host and reservoir for destructive insects, (56) S.C. 553.
psylla, studies, (58) 452.
 wood, utilization, (56) U.S.D.A. 46.
- Persimmons—
 in Kwangtung, (55) 838.
 Japanese, yield, (59) Miss. 332.
 oriental, culture, (57) Calif. 45.

- Persimmons—Continued.
 relation to plant communities and to insects, (58) 452.
 use in ice cream and ices, (58) Calif. 289.
 variety tests, (56) Miss. 739.
- Perspiration—
 action on textiles, (57) 899.
 effect on silk taffetas, (60) 598.
 fastness of dyestuffs to, testing, (58) 796; (60) 298.
- Peru as sheep-breeding and wool-growing country, (59) 96.
- Peruvian Agricultural Institute of Parasitology, organization, (55) 498.
- Pestalozzia—
 diseases, (57) 541.
 funerea, notes, (60) 246.
 guepini vaccinii, notes, (56) 249.
 palmarum, notes, (53) 148; (57) 639; (60) 344.
 shiraina, notes, (58) 752.
 sp. on Cinnamomum camphora, (53) 650.
 spp., notes, (54) 254; (58) 555.
 spp. on tea and coconut, comparison, (60) 646.
- Pests—
 control, papers on, (58) 661.
 of Malay Peninsula, (52) 154.
- Petrel stomach oil, vitamin D in, (57) 896.
- Petroleum—
 crude, analyses, (54) 877.
 insecticides, tests, (55) 759.
 oil, arsenated, as wood preservative, (53) 812.
 oil as carrier for active chemicals, (59) 759.
 oil emulsions, toxicity, relation to size of oil drops, (57) 557.
 oil for sprays, (56) 254; (59) 552.
 oil, insecticidal value, (57) Calif. 258; (60) 162, 453, 839.
- Petroleums—
 melting points, determination, (54) 111.
 toxicity, (54) 76.
- Petunia mosaic, notes, (56) 647; (58) 647.
- Petunias, fertility studies, (60) 341.
- Peziotrichum lachnella, notes, (60) 162.
- Pezizella lythri, notes, (52) 352.
- Pfeiffer's bacillus cultivation, growth-promoting factor V for, (52) 681.
- Phaciocephalus cubanus n.sp., description, (56) 858.
- Phaedon cochleariae—
 notes, (52) 252.
 variability, (57) 263.
- Phaeolus sistotremoides, notes, (54) 150.
- Phagocytosis and resistance to court-noué, (59) 546.
- Phalacrotophora fasciata, parasite of pupa of ladybirds, (55) 857.
- Phalaenae, new genera and species, descriptions, (57) 262.
- Phalaris—
 arundinacea, notes, (59) 854.
 grass v. timothy, yields, (59) Iowa 31.
 spp., notes, (59) Calif. 726.
- Phalaropes, food of, (54) U.S.D.A. 52.
- Phanerotoma—
 rhyacioniae n.sp., description, (57) 560.
 tibialis, notes, (52) N.Y.Cornell 256; (56) Del. 357.
- Phanurus—
 emersoni, experimental dissemination, (58) U.S.D.A. 759.
 promachivorus n.sp., description, (53) 561.
- Phaonia trimaculata, notes, (58) 458.
- Pharbitis—
 nil, deformed leaves in, inheritance, (56) 521.
 seeds, ripening processes in, (56) 627.
- Pharmacology—
 applied, treatise, (51) 365.
 handbook, (52) 776.
- Pharmacopoeia—
 German, (56) 775.
 of United States, (52) 177; (55) 371, 473.
- Phasmoidea of South Dakota, (51) 252.
- Pheasants—
 castration, effect on feather characteristics, (58) 427.
 cockfeathered and embryogenesis of sex glands, (59) 522.
 gapeworms in, (55) Oreg. 677.
 male and female, sex differences in eye area, (58) 427.
 natural history and management, (60) 471.
 of Japan, monograph, (56) 552.
 parasite of, (52) 86.
 ringneck, raising, (54) 570.
 treatise, (57) 56, 255.
- Pheidole magacephala, notes, (55) 858.
- Pheletes—
 agonus, notes, (60) Pa. 356.
 occidentalis, destruction, (54) Wash. Col. 853.
 occidentalis in Pacific Northwest, (53) 363.
 occidentalis, rearing, (52) 856.
- Phellinus—
 cryptarum, fungus enemy of dwellings, (52) 645.
 ignlarius, injury to oak, (57) 850.
- Phenacoccus—
 acericola, notes, (55) Miss. 658.
 hirsutus, biological control, (60) 654.
 hirsutus in Egypt, (56) 460.
 iceryoides, notes, (53) 55.
- Phenacomys—
 olympicus, Alpine life of, (53) 50.
 revision of genus, (56) U.S.D.A. 55.
- Phenol—
 action on aerobic and anaerobic organisms, (60) 665.
 bactericidal action, (57) 50.

- Phenol—Continued.
 coefficient of disinfecting powers of sodium hypochlorite, (52) 776.
 disappearance from soils, (55) 119.
- Phenological observations—
 coordination in, (56) 114.
 in British Isles, (51) 718; (60) 418.
 in Italy, (56) 16.
 in Moravia and Silesia, (57) 807.
 in Netherlands, (53) 813; (57) 807; (60) 206.
 in Russia, (54) 807.
 in United States and Canada, (53) 508.
 value in agriculture, (56) 114.
- Phenological—
 research, international cooperation in, (53) 814.
 Service, German, observations, (55) 16, 807.
 Service, German, report, (56) 207.
 study, history and applications, (55) 716.
- Phenology—
 application to agriculture, (51) 717; (52) 16.
 studies, (51) 523.
- Phenolphthalol, preparation and reaction, (54) 504.
- Phenols—
 biochemical relations, (60) 792.
 germicidal activity, relation to chemical constitution, (56) 572; (58) 274.
 high-boiling, determination in coal-tar creosote, (59) 414.
- Phenylalanine, decomposition, (53) 310.
- Phigalia pedaria, notes, (59) 856.
- Philippine College of Agriculture—
 Baker Memorial Professorship in, (60) 797.
 notes, (51) 498, 698; (55) 700.
- Philippines, University of, notes, (51) 498.
- Philophylla heraclei, notes, (55) 854.
- Philornis, bird-infesting genus, (51) 256.
- Phlebotrophia mathesoni, notes, (59) 455.
- Phlebotomus—
 argentipes, identification of blood, (54) 57.
 argentipes, studies, (55) 856.
 panamensis n.sp., description, (55) 558.
 papatasi, natural and experimental infection, (58) 262.
- Phlegthontius carolina, bait for, (59) 59.
- Phloeothrips—
 lucasseni, notes, (58) 454.
 oleae on olives, fumigation, (56) 659.
- Phloeotribus scarabaeoides, parasite of, (58) 863.
- Phloridzin—
 effect on mortality from insulin hypoglycemia, (51) 100.
 hydrolysis and estimation, (54) Oreg. 310.
 in pear trees, (58) 236.
 significance in apple and pear tissue, (54) Oreg. 319.
- Phlox—
 eelworm disease, studies, (53) 49.
 fasciation in, (54) Pa. 337; (58) 143.
 hybrids, variability, (58) Pa. 334.
 perennial, notes, (60) Can. 639.
 plant bug, summary, (58) Md. 858.
- Phlyctaenia—
 ferrugalis, see Celery leaf tyer and Greenhouse leaf tyer.
 linicola, notes, (53) 851; (54) 847; (56) 49.
 rubigalis in California, (59) 354.
 rubigalis, notes, (52) 659; (53) 360, 559.
 vagans caraganae, notes, (59) 537.
- Phlyctochytrium synchytrii n.sp., description, (54) 546.
- Pholiota adiposa—
 growth reaction toward acidity, (53) 224.
 notes, (59) 152.
- Phloeosinus perlatus, trapping, (57) 862.
- Phoma—
 apicola, control, (51) 152.
 apicola, notes, (51) Mich. 148.
 betae, notes, (53) 47, 248; (58) 442; (59) Va.Truck 241, 849; (60) 150.
 bismarckii n.sp., description, (56) 849.
 borealis n.sp., description, (60) 216.
 citricarpa, notes, (56) 851.
 destructiva, notes, (54) 449; (58) 150.
 erigerontis n.sp., description, (60) 29.
 filaginis arvensis n.sp., description, (60) 29.
 flaccida, notes, (58) 554.
 fuliginea n.sp., description, (56) 849.
 gypsophilina n.sp., description, (60) 216.
 lavandulae, notes, (56) 748.
 lingam, control, (55) 846; (59) N.Y. State 50, 343.
 lingam on cabbage seed, control, (54) 47.
 lingam, studies, (51) N.Y.State 152; (57) 248.
 musae, notes, (59) 246, 547.
 napobrassicae, notes, (58) 442.
 pomi, control, (60) Del. 744.
 pomi, notes, (55) 451; (59) 452.
 roumii, notes, (51) 248.
 sp., notes, (51) 353; (53) 43, 152; (54) Wis. 248.
 sp. on onion, (57) 749.
 spp., notes, (54) 448; (56) 748; (57) 639; (59) 536.
 subcircinata, notes, (56) 148.
- Phomopsis—
 bertholletianum n.sp., notes, (51) 156.
 californica action on citrus fruits, (59) Calif. 452.
 californica n.sp., description, (52) 352.
 californica, notes, (53) Calif. 449.
 caribaea n.sp., description, (52) 352.
 cinerescens on figs, (57) 651.
 citri, notes, (51) 156; (52) 352; (55) 346, 551; (57) U.S.D.A. 449.
 citri, studies, (53) 650.

- Phomopsis—Continued.
 citri, winter stage, (57) 156.
 disease of conifers, (57) 551.
 juniperovora, notes, (54) 549.
 juniperovora on conifers, (59) 152.
 juniperovora on pine roots, (51) 356.
 pruni n.comb., notes, (60) 643.
 pseudotsugae in Great Britain, (56) 55.
 pseudotsugae, notes, (57) 450.
 sp., notes, (51) Del. 148, Wash.Col. 155; (56) 249.
 vexans, control, (51) 152, 156; (52) Va.Truck 44.
- Phora flies affecting mushrooms, (58) Pa. 345.
- Phoracantha semipunctata on eucalyptus in South Africa, (60) 654.
- Phoradendron libocedri, notes, (58) 154.
- Phorbia—
 brassicae, *see* Cabbage maggot.
 ceparum, *see* Onion maggot.
 fusciceps, *see* Seed-corn maggot.
- Phoresy in insects, (57) 554.
- Phoresy, new case of, (56) 760.
- Phormium—
 international trade, (53) 296.
 tenax, improvement, (59) 126.
- Phorocera—
 and allied genera, synopsis, (51) 58.
 parva, notes, (52) 659.
- Phorodon humuli, notes, (58) 261.
- Phosphate—
 and bisulfate mixture, fertilizing value, (55) 626.
 calcined, preparation and nature, (51) 727.
 colloidal, properties, (56) 321.
 compound formation during carbohydrate metabolism, (51) 863.
 deposits—
 of Russia, (53) 515.
 of Trichinopoly District, (54) 721.
 of Union of Socialistic Soviet Republics, (58) 723.
 of Victoria, (51) 422.
 origin, (53) 620.
 experiments in 1922, cooperative, (51) Minn. 120.
 ion and hydrolysis by pancreatic lipase, (59) 14.
 losses by leaching from N.Welsh soils, (56) 721.
 method, colorimetric, applications of, (51) 612.
 micro estimation in pus, plasma, etc., (58) 510.
 of lime, *see* Calcium phosphate.
 raw, with peat, decomposition, (54) 517.
 rock—
 analysis, (52) 711; (59) 503.
 and sulfur, effect on plant growth, (55) N.J. 21.
 as supplement to manure, (56) N.Dak. 422.
 availability, (56) 121.
- Phosphate—Continued.
 rock—continued.
 availability, relation to fineness, (56) 624.
 composting experiments, (57) Ga. 212.
 effect of heat upon availability of phosphorus, (51) Md. 422.
 effect on soil reactions, (56) 22.
 fertilizing value, (53) 120; (58) Ill. 316.
 fluorine in, (59) 502.
 in 1922, (51) 518.
 production and sale in 1924, (55) 626.
 raw, southern limit of use in Russia, (58) 723.
 residual effects, (53) 620.
 solubility, studies, (52) 120.
 utilization, relation to calcium in plants, (60) Ark. 804.
 v. acid phosphate, (51) Ohio. 219.
 value for pastures, (53) 515.
- Phosphates—*see also* Superphosphates.
 absorption by Pasteur-Chamberland filter, (54) 308.
 and manure experiment, (55) Minn. 220.
 and related products, treatise, (57) 502.
 availability, effect of nitrogenous fertilizers, (59) 121; (60) 120.
 availability in alkaline soils, (56) Ariz. 213.
 availability in ferruginous soils, (52) 212.
 availability in soil, determination, (52) 311; (55) 19.
 biological reduction in soil, (60) 511.
 comparison, (51) 219, 220, Wis. 421, 623, 625, Ind. 814, 818; (52) 123, 323, 623, 723; (53) 120, Ohio, 217, Ind. 420; (54) 20, Ill. 313, Fla. 334, Ill. 336, 624; (55) Ohio 122; (57) Ga. 212, Ind. 614, R.I. 615; (58) Ala. 427; (59) Ind. 616, N.C. 718.
 comparison, for tea soils, (57) 20.
 concentration essential for plant growth, (60) Ala. 121.
 determination, (55) 205; (57) 312.
 determination in bone, (56) 14.
 disaggregated, experiments in Belgium, (54) 19.
 disintegrated, fertilizing action, (54) 517.
 effect on—
 chernozem, (59) 514.
 crop yield, (56) 623.
 metabolism in rats on rachitic diet, (54) 803.
 nitrogen fixation by Azotobacter, (55) 422.
 nodulation of soy beans, (52) 339.
 respiration, (55) 728.
 soil microorganisms, (58) 720.
 sweet corn, (59) Iowa 39.
 upland peat soils, (58) 817.

Phosphates—Continued.

- efficiency, relation to silica gel, (54) 318.
- fertilizing value, (55) Mo. 219.
- in blood, behavior during carbohydrate metabolism, (51) 366.
- in blood, determination, (53) 12.
- in blood, normal variations in, (55) 894.
- in soil solution, concentration, (52) Calif. 20.
- in soil solution, effect of liming, (59) Ala. 617.
- in soil solution, effect of reaction and cation concentrations, (58) 615.
- in United States, sources, (55) 516.
- increasing solubility, (51) 418.
- indigenous in India, use, (51) 518.
- inorganic blood after insulin injection, (52) 265.
- inorganic blood, as diagnostic symptom of rickets, (57) 792; (58) 493.
- inorganic blood, effect of vitamin D, (60) 596.
- international trade in, (56) 626.
- on pasture soils, (51) 327.
- phosphoric acid availability, (55) 321.
- plant response to, relation to soil requirements, (59) Ala. 22.
- preparation and treatment, (53) 620.
- profits from, (53) Wis. 621.
- Reform, fertilizing value, (53) 120.
- relation to carbohydrate metabolism, (53) 763.
- residual action, (54) 517.
- Rhenania, fertilizing value, (52) 723; (53) 120.
- rôle in bread making, (59) 712.
- rôle in plant respiration, (60) 523.
- Saldanha and Grahamstown, solubility, (54) 816.
- solubility in soil, effect of bacteria, (52) 320.
- solubility studies, (55) 20.
- solubilization—
 - by bacteria, (53) 322.
 - in soil humus acids, (54) 121.
 - studies, (53) 514, 722; (55) 221.
- use, (53) Wis. 416.
- use in Russia, (58) 723.
- value for tea soils, (55) 220.

Phosphatic—

- fertilizer materials, manufacture, (57) 317.
- fertilizers, effect on grain and root crops, (55) 421.
- fertilizers for Iowa soils, (52) 213.
- fertilizers in soil, solubility, (60) 621.
- materials, analysis, sources of error in, (53) 804.
- slag, effect on lime status of soils, (56) 121.
- slag, value for pastures, (53) 515.

Phosphatide—

- distribution in rabbit tissues, (55) 767.
- metabolism in pregnancy, (55) 767.
- of egg yolk, irradiated, effect, (53) 568.

Phosphatides—

- in bread dough, action, (60) 288.
- in milk, human and animal, (54) 87.
- isolation from *Opuntia discata*, (54) 23.

Phospholipin in seeds, (58) 711.

Phospho-manganese, fertilizing value, (53) 819.

Phospho-nitrogen, chemical reactions in manufacture of, (54) 19.

Phosphopeptone, constitution, (59) 801.

Phosphoric acid—

- absorption by plants, effect of light, (59) 215.
- absorption by soils, (58) 722.
- acid-soluble, in eggs, (51) 713.
- and nitrogen, ratio for corn, (51) 326.
- assimilation as affected by acid salts, (51) 121.
- assimilation by plants, effect of silica, (54) 218, 219.
- availability in basic slag phosphates, (52) 817.
- availability in calcareous soils, (51) 324.
- availability in phosphates, (55) 321.
- available in Pusa soils, (52) 120.
- available in soils, determination, (51) 420; (60) 311.
- compounds in soil, (55) 419.
- deficiency, effect of silica, (54) 219.
- determination—
 - colorimetric micromethod, (51) 804.
 - Copaux method, (53) 313.
 - in fertilizers, (53) 109.
 - in plant materials, (53) 314.
 - in small amounts, (55) 111.
 - methods, (57) 311.
 - modification of Ridsdale's method, (59) 804.
 - sources of error in, (53) 611; (57) 11.
- easily soluble, determination, (55) 723.
- effect on nitrogen transformation in moor soils, (53) 118.
- fertilizers, new, tests, (53) 120; (54) 815.
- for citrus fruits, sources, (56) Fla. 832.
- forms, solubility, availability, and value, (55) 723.
- free, determination in fertilizers, (53) 804.
- in calcareous soils, determination, (56) 20.
- in cylinder soils, (52) 119.
- in leaves of well nourished vines, (58) 523.
- in phosphates, physiological value, (56) 121.
- in Silesian soils, (52) 323.
- in soil, determination, Neubauer method, (55) 814.
- in soil, increasing availability, (55) 420.

Phosphoric acid—Continued.

- in soils, (58) 723.
 - in sugar cane juice, determination, (58) P.R. 508.
 - loss from manure, conditions of, (57) 317.
 - losses by leaching in north Wales, (57) 20.
 - manufacture, (51) 220; (56) 624.
 - preparation, (52) 213.
 - purification by crystallization, (54) 201.
 - requirements of German soils, (54) 815; (55) 19.
 - requirements of soils, (51) 20; (54) 816; (55) 19; (56) 710.
 - requirements of tobacco soils, (51) Va. 35.
 - solubility, modifications, (57) 811.
 - solubility, relation to nitrification, (54) 514.
 - soluble, retention in soils, (53) 213.
 - sources, (57) Md. 214.
 - sources for citrus trees, (54) Fla. 243.
 - sources for tomato, (53) 639.
 - use as fertilizer, (56) 422.
- Phosphoric acid-potash ratio, effect on nitrogen availability, (52) N.J. 722.
- Phosphoric oxide in superphosphate, solubility, effect of limestone, (52) 514.

Phosphorite—

- beds in Russia, (53) 515.
 - decomposition, effect of neutral salts, (55) 20.
 - deposits of Moscow Government, (55) 723.
 - ground, activity in fallow and cropped soils, (52) 623.
 - origin and pulverization, studies, (52) 623.
- Phosphorites, effect of fineness, (55) 221.

Phosphorus—

- absorption by electro dialyzed clay, (58) 615.
- absorption by wheat seedlings, effect of pH, (58) 213.
- absorption in intestines, (56) 192.
- and calcium absorption, relation to diet, (52) 763.
- and calcium metabolism, factors affecting, (53) 364.
- assimilation—
 - by plants, effect of soil reaction, (54) 518.
 - effect of lime, (52) Ohio 213.
 - from phytin by oats, (56) 624.
 - from phytin by red clover, (58) 16.
 - in pigs, effect of oil, (51) 374.
- availability, effect of liming, (53) 220.
- availability, estimation, (59) 209.
- balance in dairy cattle, (55) 871.
- balance in horses, (51) 775.
- balance in pigs, effect of potassium iodide, (54) 567.
- balance in pullets, laying and non-laying, (54) 568.

Phosphorus—Continued.

- balance in rats during pregnancy and lactation, (60) 592.
- behavior in milk, (51) 316.
- calcium, and magnesium in diet, effect of variations in, (59) 862.
- colorimetric determination, (55) 310.
- compounds in milk, (55) 203.
- deficiency—
 - cause of cattle disease, (57) Wis. 273.
 - effect of ultra-violet radiations, (53) 763.
 - effect on blood of cattle, (57) 763.
 - effect on tomatoes, (51) N.H. 124.
 - in forage, (60) Mont. 720.
 - relation to utilization of feed, (58) 864.
- depletion, effect on wheat growth, (52) 426.
- determination—
 - effect of ammonium sulfate, (53) 205.
 - effect of sulfates on, (58) 804.
 - improved color method, (59) Wis. 19.
 - in animal substances, (52) 614.
 - in blood, (55) 192.
 - method, (55) 205.
- dietary sources, (52) 260.
- distribution in grains, (60) 204.
- effect on composition of tomato plants, (57) 41.
- effect on sweet potatoes, (55) 436.
- effect on tomatoes, (52) Ill. 440.
- excitant effect on leaf activities, (57) 119.
- excretion, effect of potassium intake, (56) 465.
- fertilizers, qualitative study, (52) Fla. 238.
- fertilizers, response of tobacco to, (57) 530.
- fertilizing value, (55) Oreg. 625; (56) Ill. 234; (60) Ill. 230.
- fixation by soils, (60) 23.
- in animal body, distribution, (58) Mo. 460.
- in beef, (51) Mo. 171.
- in blood, determination, (55) 410, 614.
- in blood, distribution, (55) 492.
- in blood, effect of insulin, (51) 271.
- in blood of dogs, effect of irradiation, (54) 293.
- in body, factors affecting, (55) 893.
- in caseinogen, (59) 801.
- in cattle feeds, nutritive value, (53) 867.
- in cotton, (51) 715.
- in floats, availability as affected by manure, (51) 423.
- in grasses, studies, (60) 574.
- in livestock industry, (52) 670.
- in milk, human and animal, (54) 87.
- in milk, utilization, Kans., (56) 896; (60) 593.
- in proteins, determination, (56) 504.

Phosphorus—Continued.

- in rock phosphate, unavailability to crops, (60) 121.
- in serum of rachitic rats under various treatments, (54) 893.
- in soil, effect of manure and irrigation, (53) 218.
- in soil solutions, effect of lime and phosphates, (56) 213.
- in soil, studies, (58) 117.
- in soils and waters, (60) S.C. 708.
- in soils of high iron content, availability and utilization, (60) Oreg. 716.
- in tomato seed and pulp, (56) 834.
- inorganic—
 - concentrations in blood serum, effect of fasting, (51) 567.
 - determination in serum, (52) 613.
 - in blood after insulin convulsions, (51) 769.
 - in blood, effect of rations, (54) Pa. 392; (55) 387.
 - in blood of newborn infants, (54) 792.
- intake of children, (56) Ohio 493.
- leaching experiments, (51) 212.
- lipoid, in cereal products, (53) 807.
- metabolism—
 - effect of fresh and heated milk, (56) 292.
 - effect of tests, (56) 664.
 - in avitaminosis, (52) 66.
 - in cows, effect of protein in rations, (52) Mo. 478.
 - in dairy cows, (55) 167.
 - in infants and bone development, (59) 791.
 - in lactating animals, effect of cod-liver oil, (59) 571.
 - in osteomalacia, (53) 460.
 - in rats on rachitic diet, (54) 893.
- natural solvents of, (53) 620.
- nitride, nitrification, (52) 514.
- nucleus of casein, (56) 709.
- nutrition of plants, (59) Ala. 616; (60) 509.
- organic, estimation, (51) 806.
- organic, in soils, (51) 20.
- organic, in urine, (52) 807.
- raw rock and acid phosphate, availability, (51) 219.
- recovery, effect of iron and aluminum salts, (52) 817.
- relation to growth and composition with varying vitamin intake, (51) 69.
- requirement of cereals, (53) R.I. 325.
- requirements of—
 - dairy cattle, (59) Mich. 571.
 - human body, (53) 161.
 - old tobacco soils, (57) Conn.State 333.
 - plants and animals, (51) 274.
 - retention in growing rats, (51) 806.
 - rôle in agriculture, (56) 422.
- solubility, factors affecting, (53) 515.

Phosphorus—Continued.

- soluble, in cabbage, (56) 108.
- source for Kentville, N.S., soils, (53) 218.
- source for pigs, (57) Ohio 172.
- utilization by corn in hill fertilization, (57) 728.
- utilization, effect of vitamin D, (58) 91.
- water-soluble, field test for, (56) Mich. 321.
- Photo-electricity, treatise, (54) 407.
- Photographs of plants, comparable, apparatus for, (55) 124.
- Photography, aerial, (52) 345.
- Photometers and photometric methods, (53) 824.
- Photoperiodism—
 - of plants, (54) 519; (60) 625.
 - of *Tephrosia candida*, (52) 126.
 - review, (55) 324.
 - studies, (51) 125.
- Photosynthesis—
 - absorption of carbon dioxide in, (52) 425.
 - and metabolism of plants, (54) 21.
 - and radiation, (59) 322.
 - and use of solar energy, (53) 15.
 - daily course in plants, (56) 325.
 - discussion, (54) 124.
 - effect of infinitesimal traces of chemical substances on, (52) 820.
 - energy yield, (55) 22.
 - first sugar of, (56) 425.
 - in absence of oxygen, (60) 807.
 - in leaves, relation to water content, (58) 23.
 - in water plants, (57) 817.
 - investigations in, (51) 111.
 - physiology, treatise, (52) 819.
 - products of, (58) 523.
 - rays of various colors in, specific action, (53) 727.
 - relation to water content, (58) 318.
 - studies, (53) 821; (54) 321; (59) 24; (60) 518.
 - sugar as product, (56) 627.
 - treatise, (56) 424, 626.
 - water content as a factor, (56) 126.
 - with ammonia, (57) 803.
- Photosynthetic activity—
 - development during germination, (51) 730.
 - subnormal, (51) 730.
- Phototropic—
 - apparatus, new, (57) 859.
 - movements of leaves, (54) 626.
- Phototropism—
 - and growth reaction to light, (57) 517.
 - effect of gravity in, (53) 727.
 - in foliage leaves, (57) 22.
 - studies, (56) 325; (57) 718.
- Phragmatiphila truncata*, injury from, (52) 853.
- Phragmidium—
 - imitans, notes, (55) Oreg. 650.

- Phragmidium—Continued.
 imitans on raspberries, (60) Oreg. 745.
 imitans, studies, (57) 550.
 rubi-idaei, notes, (56) 748.
 subcorticium, notes, (55) 346.
- Phthorimaea—
 glochinella, *see* Eggplant leaf miner.
 operculella, *see* Potato tuber worm.
- Phycomyces nitens—
 Manoilov reaction, application, (59) 722.
 structure and behavior of nucleus, (54) 628.
- Phycopeltis epiphyton, notes, (57) 344.
- Phygadeuon rusticatus, notes, (54) 259.
- Phyllactinia corylea, notes, (57) 639.
- Phyllobius spp., early stages, (56) 64.
- Phyllocnistis citrella, control, (59) 554.
- Phyllocoptes—
 maseei, notes, (59) 563.
 oleivorus, entomogenous fungus attacking, (52) 361.
 quadripes, notes, (54) 454; (59) Mich. 455.
- Phyllopertha horticola—
 morphology and biology, (58) 560.
 notes, (59) 658.
- Phyllophaga—*see also* May beetles, June beetle, and Lachnosterna.
 anxia, insect parasites of, (54) 152.
 of United States and Canada, (60) 459.
 rugosa, notes, (57) 63.
 spp., life cycles, (54) Kans. 460.
 spp. of Haiti, (59) 357.
 spp. of Iowa, survey, (59) 460.
 spp. of Kansas, ecological studies, (59) 460.
 spp. of Mississippi, (60) Miss. 166.
 vhemens, host of thorny headed hog worm, (58) 164.
- Phyllophorinae, monograph, (53) 556.
- Phylloscelis atra, notes, (59) 250; (60) Miss. 163.
- Phyllosticta—
 antirrhini, notes, (53) 550; (56) 648.
 argyreae, notes, (60) 831.
 cryptomeria, notes, (58) 752.
 cucurbitacearum, notes, (59) 534.
 eriobotryae, notes, (54) 453.
 fomini n.sp., description, (59) 537.
 grossulariae, notes, (56) 748.
 malkoffi, notes, (51) 248.
 phaseolina, notes, (52) Pa. 243; (56) 148.
 pollaccii n.sp., notes, (57) 652.
 richardiae, notes, (59) 534.
 solitaria, control, (52) Mo. 247; (58) Ohio 248.
 solitaria infection, histology of tissues, (56) 453.
 solitaria, life history and control, (53) Ill. 353.
 solitaria, time of infection, (53) 649.
 spp., notes, (54) 247, 449; (57) 639.
 tabaci, notes, (58) 647.
 ulmicola, notes, (56) 647.
- Phyllotreta—
 aerea, notes, (55) 857.
 north of Mexico, synopsis, (60) 654.
 spp., notes, (60) 161, 851.
- Phylloxera—*see also* Grape phylloxera.
 attacking pecans, (55) Miss. 555.
 developmental period, effect of food, (59) 853.
 gall-forming, notes, (55) Miss. 658.
 survey in Kuban District, Caucasia, (59) 553.
- Phymatotrimum omnivorum, studies, Tex., (54) 346; (59) 751.
- Physalis and cucurbit mosaic intertransmissible, (56) 49.
- Physalospora—
 and Botryosphaeria, comparison, (52) 248.
 baccae on grape in Japan, (53) 151.
 cydoniae, notes, (53) Mass. 446.
 eucalyptorum, notes, (57) 450.
 gossypina, notes, (58) 543.
 life history and taxonomic problems, (55) 44.
 malorum in eastern United States, (58) 543.
 malorum on currant, (52) 248.
 malorum, studies, (58) 552.
 spp. on citrus, (59) 246.
- Physical chemistry, (59) Mich. 419.
- Physicochemical—
 measurements, manual, (54) 707.
 methods, treatise, (59) 410.
- Physics—
 in agriculture, (55) 580.
 in industry, (57) 184.
 treatise, (53) 386.
- Physiology—
 comparative, textbook, (56) 774.
 nutritional, treatise, (51) 163; (56) 289.
 of taste, (56) 491.
 plant, *see* Plant physiology.
 sexual, treatise, (54) 431.
 treatise, (54) 692.
 tropical, studies, (56) 393.
- Physocephala sagittaria, notes, (57) 64.
- Physocephalus sexalatus, life history notes, (60) 665.
- Physoderma zeae maydis, notes, (55) 245.
- Physopella—
 fici, control, (51) 156; (54) Fla. 342; (55) Fla. 841.
 vitis, notes, (53) 43; (56) 249.
- Physothrips setiventris, control, (54) 455.
- Phytalus smithi, notes, (52) 636.
- Phytin—
 content of foods, (55) 889.
 phosphorus in, assimilation by crops, (56) 624; (58) 16.
- Phytoactinometer, description, (57) 322.
- Phytodecta rufipes, viviparity in, (59) 658.
- Phytol and vitamin A, (53) 10, 408.
- Phytometer method—
 application, (53) 824; (54) 25.
 in ecology, (55) 325.

Phytophthora—

- bowlesii n.sp., notes, (59) 852.
- cerasi wraggi, notes, (55) Colo. 249.
- dissolvens n.comb., description, (58) 650.
- dissolvens n.n., notes, (55) Ark. 847.
- hyacinthi, notes, (56) 541.
- medicaginis phaseolicola n.v., description, (59) 147.
- phaseoli, notes, (55) 846.
- pisi, notes, (58) 652.
- ricini n.sp., description, (59) 646.
- rubrilineans n.sp., description, (54) Hawaii 850.
- spp., studies, (58) 147.

Phytophthora—

- aconiti, natural control, (54) 460.
- delphiniae, injury caused by, (60) 562.

Phytophthora—

- nigrirostris, life history notes, (54) 153.
- posticus, *see* Alfalfa weevil.

Phytonucleic acid, effect on Azotobacter,

(53) 25.

Phytopathological—

- collaboration, European, (52) 645.
- information, (52) 645.
- service of Holland, organization, (52) 645.

Phytopathology—

- Eriksson prizes in, (60) 699.
- in Russia, development, (52) 646.
- international, (52) 645.
- proposed division, (52) 645.
- textbook, (58) 240.

Phytophaga destructor, *see* Hessian fly.

Phytophthora—

- and Pythium merging into one genus, (53) 645.
- blight of citrus, (60) 553.
- cactorum and Pythiacystis citrophthora, relation, (58) 52.
- cactorum, notes, (52) 150; (53) Ill. 355, 549.
- cactorum on lilies, (58) 555.
- capsici n.sp., description, (52) 349.
- colocasiae spores, toxicity of organic compounds to, (55) 445.
- control, new methods, (59) 637.
- cryptogea, notes, (59) 534.
- disease of cucumber seedlings, (57) 540.
- faberi, biological varieties, (54) 454.
- faberi, inoculation experiments, (54) 454.
- faberi, notes, (51) 251; (52) 249; (53) 549; (54) Fla. 342, 550; (55) 249, Fla. 841; (56) 852; (57) 254 P.R. 442, 443; (59) 637; (60) Guam 835.
- genus, parasitic and saprophytic life in, (59) 445.
- hibernalis n.sp., description, (59) 548.
- infestans—*see also* Potato blight, late. mycoplasma stage, (52) 645. on tomato, (57) 648.

Phytophthora—Continued.

infestans—continued.

- oospore-like bodies in cultures, (56) 146.
 - spore germination, (55) 844.
 - leaf blight of peony, (57) 343.
 - melongenae on eggplant, (60) 54.
 - mexicana n.sp., description, (54) 749.
 - mutations, morphology and pathogenicity, (59) 145.
 - nicotianae, notes, (52) Fla. 247; (54) Fla. 348; (55) Fla. 654, Fla. 849; (56) 52; (60) Fla. 153.
 - omnivora arcaeae, notes, (57) 852.
 - omnivora parasitica, effects of ultraviolet rays, (58) 422.
 - palmivora, notes, (53) 49; (54) P.R. 648; (56) 751; (57) P.R. 442, 550; (59) 637.
 - parasitica, notes, (60) 156.
 - phaseoli, notes, (52) Pa. 243; (60) N.Y.State 748.
 - pini n.sp., description, (54) W.Va. 745.
 - rot of tomato, eggplant, etc., (52) 548.
 - sp. affecting tomatoes, (56) Fla. 143.
 - sp., control, (51) 152; (53) 147.
 - sp., notes, (52) 352; (53) 148, 153; (54) 144, 151, 549; (55) 245; (57) 640; (58) 147; (59) 535; (60) 546.
 - sporangia, effect of different hosts, (59) 842.
 - spp., bacterial parasite of, (60) 831.
 - spp., notes, (58) 143, 341; (59) 842; (60) 554.
 - spp., on rhubarb, (52) Pa. 243.
 - spp., oospores of, (60) 643.
 - spp., spore germination, relation to oxygen, (58) 648.
 - spp., studies, (54) W.Va. 745; (57) 443.
 - strains, new host plants, (60) P.R. 746.
 - syringae, description, (56) 456.
 - syringae, epidemic outbreak, (55) 250.
 - syringae, notes, (55) 747.
 - tuber rot of seed potatoes, (56) 547.
- Phytophthora, species concept in, (59) 519.
- Phytophthora—
- oleivorus, notes, (53) 157.
 - vitis, winter treatment, (56) 850.
- Phytosterol dilatatus, outbreak, (55) 854.
- Phytosterol, irradiated, antirachitic value, (53) 568, 767; (55) 594; (57) 292; (58) 195.
- Phytosterols—
- in grains, (54) N.Y.State 502.
 - of corn endosperm, (52) 110.
 - of corn oil, (56) 310.
 - of rice bran fat, (56) 310.
 - of wheat germ oil, (56) 310.
 - studies, N.Y.State, (52) 708; (57) 610.
- Piazurus papayanus, notes, (51) 59.
- Pickle—
- brine, effect of scum, (56) 206.
 - fermentation, research in, (55) 715; (56) 413.
 - worm, control, (51) Mo. 553.
 - worm, notes, (55) Va.Truck 253.

- Pickles—
 fermented, making, (52) U.S.D.A. 114.
 recipes, (57) 890.
- Picrate, crystalline, preparation, (51) 311.
- Picric acid method for sugars, modifications, (52) 111.
- Pieris brassicae*—
 and parasite, (56) 661.
 biological complex, (57) 164.
 control, (59) 563.
 larva, new disease of, (53) 255; (55) 458.
 parasite of, (53) 57; (57) 451; (59) 563.
- Piesma quadrata* in Silesia, (59) 853.
- Pig—
 club members, lessons for, (52) 696.
 embryos, twin heterosexual, within fused membranes, (60) 531.
 farms, home-made labor-saving devices for, (53) Mo. 287.
 foods, (52) 674.
 houses—
 and equipment, (56) 684.
 construction, (55) U.S.D.A. 280, 683.
 for Indiana, construction, (52) 188.
 individual farrowing, for Ohio, construction, (52) 188.
 portable, plans and construction, (58) Ill. 584.
 portable, specifications, (51) 889.
 sunlight movable, for Kentucky, (56) 782.
 liver, pellagra-preventive action, (60) 793.
 nematode as human parasite, (51) 680.
 snouts, protein in, nutritive value, (56) 290.
 stalls, construction and arrangement, (59) 179.
 viscera, composition, (52) 159.
- Pigeon, complete sex reversal in, (52) 129.
- Pigeon disease, notes, (57) 879.
- Pigeon fly, bionomics, (58) 451.
- Pigeon grass seed, feeding value, (53) 68; (55) N.Dak. 564.
- Pigeon pea—
 anthracnose, (57) 349.
 canker, notes, (57) 540.
 leaf spot, cause, (58) P.R. 542.
 seedling parasite, notes, (57) P.R. 442.
 wilt, studies, (54) 246; (57) 540.
- Pigeon peas—
 culture experiments, (55) Hawaii 526.
 improvement, (57) 729.
 insects affecting, (56) Fla. 152.
 varieties as cover crop, (56) Guam 228.
 variety tests, (60) Guam 813.
- Pigeons—
 blood counts in, (57) 382.
 carrier, sex determination, (57) 175.
 chocolate brown plumage color, genetic relations, (59) 725.
 chromosome number, (58) 823.
- Pigeons—Continued.
 color breeding in plumage, (56) 818.
 crosses in, inheritance of plumage, (56) 128.
 diseases and parasites, (60) 579.
 egg, unfertilized, parthenogenetic cleavage, (52) 131.
 Egyptian, nutrition of, (59) 691.
 excretion of vitamin B, (55) 694.
 homing, care and training, (51) U.S.D.A. 177; (52) 250.
 immunity to strychnine, (54) 773.
 inheritance in, (57) 624.
 inheritance of color and marking, (51) 334; (59) 522.
 inheritance of silky or lace character of feathers, (55) 327.
 nutritive requirements, studies, (52) 68.
 parasite of, (52) 361.
 polyneuritic, nitrogen metabolism, (56) 795.
 raising, treatise, (60) 70.
 sensitization to foreign proteins, (56) 475.
 sex in, relation to blood calcium, (53) 672.
 spotted, genetics of, (55) 632.
 types of head feathering, (57) 222.
 vitamin B deficiency in, (58) 193.
- Pigmentation—*see also* Anthocyan, Anthocyanin, and Color.
 animal, morphogenetics, (56) 428; (60) 220.
 cellular, and physicochemical action, (59) 214.
 in cattle, nature of, (55) 368.
 increased, in hens and anemia, (53) 81.
 of feathers in fowls, effect of thyroid and thymus feeding, (60) 532.
 of feathers in hybrid fowls, (60) 429.
 plant, biological significance, (55) 126.
- Pigments—
 bacterial, (57) 318.
 black, carbonaceous, monograph, (55) 114.
 cellular, studies, (58) 522.
 chloroplast, measuring quantities, (58) 726.
 constitution and synthesis, (57) 321.
 eye, in albino mammals, (57) 625.
 in corn, genetic linkage between, (56) 30.
 in fruit, studies, (55) 325.
 in *Microcera coccophila*, studies, (60) 808.
 in skin of animals, rôle, (54) 263.
 in skin of calves, formation, (60) 811.
 in skin of gray mouse, location, (55) 524.
 leaf, preparation and properties, (59) 122.
 monograph, (51) 27.
 of grapes, chemical studies, (60) N.Y.State 709.
 of plastids, transformation in living tissues, (59) 819.

Pigments—Continued.

- paints, and varnishes, analysis, (56) 313.
- production by *Bacillus pyocyaneus* in colored light fields, (54) 725.
- properties and tests, manual, (52) 201.
- respiratory, studies, (60) 26.
- varnishes, resins, and paints, (57) 203.

Pigpens, *see* Pig houses.Pigs—*see also* Pork, Sows, and Swine.

- age and weight, relation to gains in nutrients, (53) 570.
- alfalfa pasture for, U.S.D.A., (51) 175; (58) 569.
- apple curculio controlled by, (59) 256.
- at weaning time, rations for, (51) Mo. 773.
- bacon and lard type, comparison, (55) N.Dak. 566, 865.
- blood, analyses, (51) N.Dak. 882.
- blood cells in, (57) 79.
- bone development, effect of sunlight, (55) 864.
- bone development in, (57) 461.
- breeders' annual, (52) 674; (56) 766.
- breeding—
 - age as factor in, Mo., (51) 772; (53) 468.
 - and feeding for market, (57) 70.
 - calcium requirements, (58) 865.
 - experiments, (54) Can. 62; (57) 761; (59) Iowa 67.
 - feeding, and management, (52) 770; (58) 866; (60) 857.
 - growing, and finishing for bacon, (57) 70.
 - methods, Scandinavian and British, (55) 865.
 - systems, (57) Okla. 521.
- breeds in Rumania, (55) 768.
- care and feeding, (57) 462.
- care and management in North Dakota, (59) 664.
- care and management in Wyoming, (51) 275.
- castration, effect of age on size of organs, (60) 811.
- chromosome number, (58) 823.
- cost of feeding, (51) Can. 175.
- cost of handling, (58) U.S.D.A. 359.
- cost of production, (55) U.S.D.A. 285; (56) Ill. 284.
- cost of production in Philippines, (52) 690.
- crossbred, cost of feeding, (53) Can. 872.
- crossbred, studies, (56) Ill. 370.
- crossbreds v. purebreds, (56) Iowa 265; (60) Ill. 218.
- dairy products for, (54) 467.
- development as animals of economic importance, (56) 668.
- digestion experiments, (53) 667; (54) 467.

Pigs—Continued.

- direct to packer buying in United States, (60) Ohio 482.
- early pregnancy in, determination, (51) 575.
- early spring, feeding and marketing, (57) Ind. 585.
- early spring v. late spring litters, (51) Ind. 878.
- effect of time of mating, (57) Okla. 521.
- effect of ultra-violet irradiation, (58) Iowa 465.
- equipment for raising, (55) U.S.D.A. 567.
- experiments, (56) Ill. 370; (58) Can. 565.
- fall and spring farrowed, (53) 571.
- fall, production in Alberta, (53) 668; (57) 172.
- fall, production in Canada, (55) 865.
- fall, protein requirements, (57) 660.
- fattening, (55) Oreg. 668; (56) Wash. Col. 566; (60) Oreg. 765.
- effect of age, (58) 866.
- effect of oats, (57) 762.
- on forage, systems, (51) Wash. Col. 175.
- on peanuts, Ala., (52) 471, 472.
- on rye, (56) Mont. 269.
- outdoor v. indoor, (52) 770.
- protein supplements for, (56) S.C. 268; (60) Del. 763.
- rations, (58) Pa. 569.
- feed consumption, effect of fattening, (60) 658.
- feeding and breeding experiments, Can., (59) 160; (60) 564.
- feeding and fattening, (56) 71.
- feeding experiments, (51) Tex. 75, 76, Del. 173, Mass. 173, Mich. 174, Minn. 174, Minn. 175, Can. 375, Ohio 469, Wis. 469, Okla. 573, Can. 575, Idaho 870, Ind. 870, Nebr. 870, N.C. 871; (52) Calif. 73, Mich. 74, Fla. 270, Pa. 270, 370, Mich. 371, Kans. 469, Ky. 470, Mont. 471, S.C. 569, 673, Can. 673, 768, Utah 770, Del. 871, Idaho 872, Wash.Col. 872, Can. 873; (53) Mont. 70, Minn. 170, Minn. 171, Okla. 171, Kans. 370, U.S.D.A. 371, 373, Guam 468, Minn. 469, Ohio 470, Wis. 470, Minn. 575, Ohio 575, Wyo. 668, Ariz. 773, Iowa 774, N.C. 775, Can. 870, U.S.D.A. 870, Can. 871, Can. 871, Can. 873; (54) Can. 61, U.S.D.A. 161, Minn. 163, Can. 269, Ill. 363, Ky. 365, Nebr. 365, Pa. 366, Fla. 367, Kans. 469, Mich. 567, Del. 665, S.C. 665, 666, 760, Mo. 760, Wyo. 761, Iowa 860, Can. 861, Iowa 861, Wash.Col. 861; (55) Ark. 61, Mich. 62, U.S.D.A. 161, Ohio 162, N.C. 263, 264, U.S.D.A. 264, Mich. 361, Minn. 361, Can. 362, Tex. 362, Iowa 466, Miss. 565, N.Dak. 566, Miss. 667,

Pigs—Continued.

- feeding experiments—continued.
 Nebr. 668, 769, 861, Fla. 863, 864, Idaho 864; (56) Fla. 164, Mont. 164, Pa. 165, Ill. 264, Guam 265, Iowa 266, Iowa 267, Ark. 369, Del. 369, Nebr. 564, S.C. 565, S.Dak. 565, Ind. 566, Ill. 667, S.Dak. 667, Ariz. 764, Can. 765, Wis. 765, Fla. 864, Iowa 864, Kans. 864; (57) N.Mex. 69, N.J. 69, Ohio 171, Calif. 172, Tex. 172, N.C. 268, 366, Mo. 461, Nebr. 565, U.S.D.A. 566, N.J. 764, Ohio 867; (58) Ark. 357, Ill. 357, Pa. 359, Ala. 463, Del. 464, S.C. 668, S.Dak. 765, Minn. 867; (59) Iowa 67, Wis. 67, 163, Ohio 261, Mich. 463, Mich. 564, 565, Guam 565, Ala. 663, Idaho 765, Ind. 765, Kans. 766, N.C. 767, Nebr. 867, Nev. 867, 868; (60) Ala. 170, Fla. 171, Ohio 171, Ill. 258, Miss. 363, Pa. 363, Ohio 461, Iowa 466, Mich. 467, 565, Mont. 763, S.C. 765, Wyo. 765, Ark. 857, Guam 858.
- feeding experiments, correction, (59) S.Dak. 767.
- feeding, indoor v. outdoor, (54) 666.
- feeding, moist v. dry feeds, (54) 567.
- feeding, science of, (54) 567.
- finish, relation to meat cuts, (59) Ind. 766.
- finishing, (60) Mont. 763.
- fitting, showing, and judging, (53) U.S.D.A. 873.
- foetal, sex intergrades in, (58) 221.
- following cattle, (57) 659.
- for pork and bacon, variations in carcass type, (59) 664.
- forage crops for, (51) 774; (58) Mo. 465; (59) Nebr. 866.
- forecasting prices, (57) 85.
- gains as affected by worm treatment, (56) Ky. 164.
- growing, basal metabolism, (51) 671.
- growing, on alfalfa pasture, (51) Mich. 573.
- growth and composition, effect of gestation and lactation, (60) Mo. 169.
- growth and reproduction, effect of feeding Canadian peas, (58) Idaho 66.
- growth, radiant energy factor, (57) 762.
- hairlessness in, (51) N.Dak. 872.
- handling, sanitary methods, (58) 472.
- hernia in, (56) Wis. 129.
- hernia in, inheritance, (58) 677.
- heterosis in, (55) 329.
- hogging down crops with, N.Dak., (51) 872; (60) 69.
- home slaughtering and marketing, (52) 674.
- implantation of embryo, (60) 128.
- improved Landschwein, litter size, (56) 467.
- in North Wales, parasites of, (55) 271.
- in Philippines, parasites of, (54) 277.

Pigs—Continued.

- inbreeding v. outbreeding, (56) Iowa 864.
- inheritance in, (52) 222.
- inheritance of black in, (56) 729.
- inheritance of blue and white color in, (54) 27.
- inheritance of hair swirl, (57) Okla. 521.
- inter- and intrastate shipment, (53) 179.
- interstate shipment, (53) 78.
- iron deficiency in, (52) 271.
- judging, (52) Wash.Col. 474; (57) 70.
- kidney worms affecting, (58) 75.
- litters, frequencies of sex combinations in, (52) 629.
- mammae number relation to litter size, (54) 126.
- mammae of, variation and inheritance, (54) 126.
- market classes and grades, (55) U.S.D.A. 562.
- marketing, (57) Iowa 586.
- marketing in England and Wales, (56) 387.
- marketing, judging price risks in, (59) Kans. 786.
- marketing problems, (57) 763.
- marking for identification during shipping, (59) Mich. 463.
- marking, tattoo method, (55) U.S.D.A. 63.
- mineral requirements, Ohio, (54) 163; (55) 666.
- minerals for, (51) Ohio 469, Iowa 470, Ill. 574, 774; (52) Ala. 473; (56) Ky. 164, 866; (59) Ind. 765.
- newborn, number, size, and weight, factors affecting, (59) Wis. 28.
- nitrogen and mineral metabolism, effect of sodium-potassium ratio, (52) 370.
- nutrient requirements for fetal growth, (60) Ill. 259.
- nutritive requirements, (56) Kans. 864.
- of different types, weight studies, (55) Iowa 565.
- on rape pasture, (51) Mich. 573.
- orphan, raising, (53) Iowa 776.
- packer buying, (59) Iowa 86.
- paralysis of hindquarters, (58) 677.
- pasture values and methods for, (56) Kans. 865.
- pasturing experiments, (51) N.Dak. 872; (57) Mo. 270, Mo. 867; (58) Pa. 359.
- performance record, (60) Iowa 466.
- Philippine, improving, (51) 77.
- photographing, (52) Ohio 474.
- pineapple bran for, (54) 270.
- poisoning from cottonseed meal, (57) Ohio 867.
- portable cots for, (59) N.Dak. 881.
- post-mortem findings, (59) 577.
- potatoes as feed for, (52) S.Dak. 171.
- prenatal mortality, effect on sex ratio. (55) 733.

Pigs—Continued.

- prices, (58) Ill. 380.
 at public markets, (52) 692.
 differentials in, (55) Iowa 585.
 factors affecting, (53) Nebr. 593;
 (56) U.S.D.A. 184.
 fluctuations in, (56) Kans. 688.
 forecasting, (54) 587.
 in Ohio, (53) 895.
 index numbers, (54) Ohio 184;
 (59) N.Dak. 885.
- production—
 adjusting to market demand, (57)
 Ill. 685.
 and prices, trends, (55) 786.
 circular for club members, (51)
 599.
 protein and fat metabolism, (54) 269.
 protein supplements, (56) Del. 369;
 (59) Del. 464; (59) Mich. 68.
 raising, (51) 396; (58) 268.
 buildings and equipment for, (53)
 Kans. 781.
 economics of, (59) Nev. 885; (60)
 Iowa 484.
 economy of sows and gilts for,
 (60) Mont. 764.
 elementary principles, (53) 374.
 English methods, (56) 766.
 equipment for, (56) 81; (58)
 Kans. 781.
 handbook, (60) 363.
 in central Alberta, (58) 168, 867.
 in Corn Belt farming, (58) Ill.
 684.
 in Mississippi, (57) 462.
 in Queensland, (54) 863.
 in South Africa, (51) 775.
 in South Carolina, (57) 70.
 in Switzerland, (53) 576.
 in Tunis, (53) 272.
 on Bavarian farms, (55) 866.
 papers on, (52) 674.
 range for, (58) Ky. 66.
 relation to corn production and
 prices, (52) U.S.D.A. 595.
 relation to prices, (58) 888.
 textbook, (52) 770.
 treatise, (52) 172.
- ratio of births and slaughter, (53) 167.
 rations for, (53) Okla. 66, 571.
 rations, increasing efficiency, (51) Wis.
 469.
 records of production, use, (52) 674.
 reproduction, effect of exercise, (52)
 Kans. 469.
 roundworms in, (53) Wis. 479.
 seasonal sex ratio in, (56) 71.
 self-feeders for, (51) Mo. 275, Ark.
 774.
 self-feeders for, construction, (52)
 Ohio 770.
 self-feeding v. hand-feeding, (52) Can.
 673.
 sex' ratio and litter size, relation to
 herdbook data, (57) Okla. 521.

Pigs—Continued.

- sex ratio, effect of size of litter, (52)
 629.
 sex ratio, paper on, (57) 762.
 sex ratios of fetuses, (55) 635.
 sex-intergrade, genital organs, (53) 631.
 sex-intergrade, histological studies,
 (55) 331.
 sexual abnormalities, (52) 674.
 shipping, death and crippled losses,
 (59) Ind. 768.
 shipping, feeding and handling, (56)
 761.
 shrinkage in shipping, (51) N.Dak. 872.
 skim milk fed, returns from, (58) Vt.
 784.
 slaughtered at Federal inspected plants,
 variations in yield, (57) Ohio 883.
 soy bean fed, hard pork from, (58)
 Ill. 359.
 spring and fall, feed requirements, (60)
 Del. 362.
 spring and fall, protein supplements
 for, (52) Minn. 470.
 spring, feeding for market, (51) Ind.
 773.
 spring, feeding methods, (56) Kans.
 865.
 statistics, (56) U.S.D.A. 891.
 stiffness in relation to diet, (53) N.Y.
 Cornell 69.
 stunted, fattening, (51) 575.
 suckling, development and mainte-
 nance, (56) 467.
 surface area, relation to body size, (60)
 Mo. 67.
 testes, development, (60) 530.
 transportation by motor truck, (52)
 U.S.D.A. 184.
 type for market production, (52) Ill.
 469.
 type test, (53) Iowa 775; (54) Ill.
 364; (56) Ill. 264.
 unusual coat colors in, (55) 327.
 variation in weekly prices and receipts,
 (54) Ohio 184.
 vitamin A and C requirements, (51)
 671; (59) Kans. 768.
 vitamin A requirements, (53) 571.
 vitamin requirements, (53) Ind. 167;
 (55) Ohio 666.
 watering, (54) Iowa 861.
 weaning, rations for, (58) Mo. 465.
 weight, determination, (59) 161.
 weight, estimation by measurements,
 (51) 672.
 weight, relation to food consumed and
 rate of gain, (52) 770.
 weight variation in, (55) N.J. 62.
 winter housing, (54) Can. 62.
 winter rations, improving, (54) S.Dak.
 366.
 Yorkshires v. Berkshires, (53) Can.
 872.
 young, anemia in, (58) Ind. 280.
- Pigwed poisonous to livestock, (59) Colo.
 272.

- Pikas, American, revision, (52) U.S.D.A. 153.
- Pilacre faginea, life history, (53) 550.
- Pile, foundation, head bond and anchorage tests, (60) U.S.D.A. 481.
- Piling, protection against marine borers, (52) Calif. 60.
- Pilophorus perplexus, notes, (59) 255.
- Pimento cheese, defect of, (56) 674.
- Pimiento peppers, *see* Peppers.
- Pimpla—
 examiner, biology and morphology, (55) 854.
 examiner, notes, (51) 553.
 hawaiiensis, parasite of pink bollworm in Hawaii, (58) U.S.D.A. 457.
 nucun, bionomics, cage for study, (56) 854.
 pomorum, parasite of apple bud weevil, (52) 858.
 pomorum, studies, (59) 861.
 spp., notes, (56) 361.
- Pimplinae of Japan, (60) 847.
- Pin hole borer in Western Australia, (53) 860.
- Pine—*see also* Pinus.
 and hemlock mixed stands, value, (52) 145.
 area, clear-cut, reproduction on, (55) 40.
 Austrian and Corsican, rôle in Netherlands silviculture, (58) 843.
 beetle—
 mountain, control, (54) 153.
 southern, as affected by rainfall, (54) 461.
 southern, notes, (55) 555.
 western, control, (54) 153; (56) 861.
 western, effect of highway slash on infestation, U. S. D. A., (56) 860; (58) 61.
 western, tree selection by, (59) 658.
 beetles, discussion, (53) 655.
 Benguet, management and value in Philippines, (54) 142.
 blister rust, *see* White pine blister rust.
 boards, shrinkage, (60) 278.
 breeding for more rapid growth, (59) 533.
 buds, annual growth, (58) 541.
 butterfly, studies, (55) 760.
 California, insect enemies and control, (59) 856.
 California, timber growing and logging practice, (55) U.S.D.A. 144.
 Canary Island, value, (54) 447.
 chir, and its habitat, (51) 541.
 cone failure, (60) 838.
 cones, extraction of seeds from, (58) 842.
 die-back disease, (58) 449; (59) 453.
 forests, California, rôle of fire in, (52) U.S.D.A. 542.
- Pine—Continued.
 geometrid in Bavaria, (56) 856.
 geometrid, studies, (55) 854.
 germination, (56) 347.
 hardwood forests, effects of fire, (53) Ohio 745.
 height growth, (51) 540.
 in Sweden, spring or autumn sowing, (57) 342.
 in the prairie, (54) 840.
 jack, growth studies, (54) Mich. 541.
 jack, plantation, effect of spacing, (60) Vt. 144.
 lands, western yellow, growth on cut-over and virgin soil, (52) 542.
 leaf miner, European, notes, (53) 257.
 loblolly—
 effect of fire on reproduction, (59) U.S.D.A. 533.
 in Maryland, handbook, (51) 43.
 primer, (56) U.S.D.A. 538.
 thinning experiment, (59) 142.
 volume computations, methods, (55) 241.
 lodgepole, seedlings, heat-resisting capacity, (52) U.S.D.A. 47.
 longleaf—
 distribution limits, (58) 239.
 French turpentine system for, (52) U.S.D.A. 444.
 general information, (55) U.S.D.A. 342.
 reproduction on cut-over lands, (55) 342.
 root system, (60) 343.
 seedling blight, (51) La. 845.
 Monterey, in South Africa, (54) 44.
 Monterey, reversible variations and sap movement, (53) 624.
 Monterey, stem analysis, (53) 823; (54) 22.
 moth in Bavaria, (58) 559.
 moth, life history, (53) 652; (60) 456.
 moth, parasites of, (55) 854; (60) 456.
 mycorrhiza fungi, studies, (55) 351.
 needle mite, notes, (53) 861; (54) 663; (60) 168.
 needles, composition and rate of decomposition, (59) 719.
 needles, fertilizing value, (58) 121; (60) U.S.D.A. 47.
 oil, effect on mosquito larvae, (54) 57.
 oil films, toxic action on mosquito larvae, (53) 859.
 oil preparations, insecticidal value, (60) Md. 842.
 oil, western yellow, toxicity to Lenzites sepiaria, (56) 655.
 pitch, seeds, germination studies, (60) 442.
 plantations, effects of grazing in, (52) 842.
 plantations, losses through root exposure, (60) 48.

Pine—Continued.

- processionary, notes, (59) 553.
- red and white, early development, (51) 347.
- red and white, effect of wind and exposure, (53) 441.
- red, habits and characteristics, (52) 345.
- red, thinning, (57) 740.
- resin ducts in, anatomy, (52) 427.
- rust, organization of telial sorus in, (54) 549.
- sawfly, studies, (53) 453.
- sawyer, small, affecting fire-killed lumber, (51) 554.
- Scotch—
 - and Austrian, root studies, (56) 744.
 - and *Boletus granulatus*, relation, (60) 322.
 - cones, drying in winter of 1923-24, (54) 245.
 - foreign stocks, behavior in Germany, (51) 648.
 - from various sources, behavior, (57) 143.
 - germination of seed, (55) 241.
 - growth studies, (55) 745.
 - in drift sand, effect of soil mulches, (54) 44.
 - in the Crimea, (55) 443.
 - injury from red squirrel, (59) 153.
 - pollen fall in Copenhagen, (56) 347.
 - pollen, studies, (55) 840.
 - pruning in state forest of Sweden, (53) 346.
 - seed beds, effect of rolling, (55) 840.
 - seed germination, (53) 539.
 - seed years, (51) 243.
 - seedlings, effect of age of parent, (51) 843.
 - thinning, (51) 244.
- seedling development, effect of density, (60) 443.
- seedlings, malformation of root systems, (53) 126.
- seedlings, root rot affecting, (51) 356.
- seeds—
 - dissemination, (57) Calif. 242.
 - germination, hastening, (60) 237.
 - red and white, season for sowing, (56) 538.
 - red, gathering and extracting, (53) 41.
 - time for sowing, (57) 537.
- sesiid, notes, (60) 651.
- shoot moth, European—
 - in northeastern States, (54) 755.
 - notes, (51) Conn.State 852.
 - outbreak, (56) 458.
 - parasites of, (56) 361.
- shoots, growth, effect of weather, (56) 207.

Pine—Continued.

- shortleaf, germination, (51) 842.
- shortleaf, value, (58) U.S.D.A. 440.
- slash, western yellow, decay, (52) 452
- soils, composition, (52) 511.
- spacing experiments, (60) Pa. 342.
- species—
 - attacked by *Peridermiums*, (57) 354.
 - dependence on biological soil factor, (57) 836.
 - differentiation, (60) 342.
 - growth studies, (54) 541.
 - hybridization between, (57) 856.
 - properties, (57) 538.
- spinner, control, (58) 755.
- stocks for Rocky Mountain forest plantings, (60) 47.
- stumps, fuel from, (55) Minn. 583.
- sugar, hastening seed germination, (54) 142.
- sugar, polyembryonism in, (51) 843.
- sugar, seed dissemination, (57) Calif. 242.
- thinning studies, (60) U.S.D.A. 47.
- timber, growing for profit, (59) U.S.D.A. 745.
- tip moth—
 - in Nebraska National Forest, (58) 261.
 - parasites of, (57) 365, 457, 560.
 - studies, (57) Nebr. 453.
- transplants, effect of spacing and root pruning, (56) 538.
- tuckahoe on, (57) 748.
- weevil, biology and control, (59) 861.
- weevil, one-banded, notes, (51) 55.
- western white and sugar, protection from blister rust, (59) U.S.D.A. 647.
- western yellow—
 - acceleration of growth after cutting, (52) 144; (58) 440.
 - boards, shrinkage, (60) 278.
 - cut-over stands, increment in, (55) 143.
 - forms and ranges of bark beetles and mistletoe, (53) 145.
 - growing season, (52) 644.
 - nursery practice, (54) 742.
 - of Pacific coast and Rocky Mountains, comparison, (51) 348.
 - Peridermium* affecting tops, (58) 155.
 - seedlings, heat-resisting capacity, (52) U.S.D.A. 47.
 - self pruning, (56) 355.
 - sowing and planting season, (53) 345.
 - total and merchantable height in, correlation, (60) 827.
 - yield tables, (60) 443.
- Weymouth, blister rust of, (58) 155.
- white, see White pine.
- white and red, early development, (51) 347.

- Pine—Continued.
 white and red, effect of wind and exposure, (53) 441.
 wood, lignin from, (55) 202.
 yellow, decay in, (58) 54.
 yellow, yield capacities, (54) 743.
- Pine siskin, food habits, (52) U.S.D.A. 354.
- Pineapple—
 ash, effect on blood regeneration in anemia, (60) 695.
 bran, composition and feeding value, (55) 57.
 bran, feeding value, (52) 376, 673; (54) 270; (55) 673; (56) 69.
 brown spot, notes, (56) 748.
 chlorosis due to manganese, (51) Hawaii 851.
 chlorosis, notes, (56) 354.
 diseases, notes, (55) 244; (57) 640.
 fiber, studies, (54) 831.
 fresh and canned, vitamin C in, (55) 89.
 fruitlet black rot disease, (58) 658.
 industry in Bataan Province, (53) 744.
 juice, effect on pH of the urine, (60) 490.
 mealybug, enemies of, (52) 852; (53) 653.
 plantation, fertilizer experiments, (58) 20.
 pulp, dried, digestibility, (58) Calif. 761.
 pulp, feeding value, (54) Wash.Col. 866.
 wilt, relation to soil acidity, (57) 447.
- Pineapples—
 breeding and selection, (51) 145.
 culture, (55) 240.
 culture, effect of paper mulch, (56) 537.
 culture experiments, (54) P.R. 642; (55) V.I. 339.
 culture in Ceylon, (58) 141.
 effect of length of day, (60) P.R. 740.
 effect of paper mulch, (56) 209.
 fertilizer experiments, (51) Hawaii 744; (52) Guam 232; (53) Guam 436; (55) Guam 142, 644; (57) 336; (58) 537.
 fertilizer requirements, (53) 644.
 forcing, (58) 437.
 growth in different nutrient solutions, (54) 41.
 improvement, (54) 26.
 in Trinidad, butterfly attacking, (59) 253.
 insects and pests affecting, (56) 459.
 nonvolatile acids in, (54) 7.
 photoperiodism of, (60) 625.
 physiology and growth, (60) P.R. 740.
 propagation, (58) 537.
 response to length of day modifications (58) P. R. 536.
 ripening, effect of storage temperature, (51) P.R. 838.
- Pineapples—Continued.
 seediness in, (51) 242.
 Smooth Cayenne, improvement, (54) 430.
 variety tests, (58) 39.
 vitamins A and B in, (51) 167.
- Pink bollworm, *see* Bollworm, pink.
- Pink eye spread among children, cause, (57) Calif. 257.
- Pinks, Chinese, culture experiments, (58) Alaska 435.
- Pinks, *Vermicularia* herbarum affecting, (53) 49.
- Pinus—*see also* Pine.
 densiflora and *P. thunbergii*, differentiation, (60) 342.
 montana and *P. silvestris*, hybridization between, (57) 836.
 patula, introduction into South Africa, (57) 440.
 patula, properties, (57) 538.
 pinaster, varieties and geographical forms, (60) 827.
 silvestris and *P. montana*, hybridization between, (57) 836.
- Pinworms in goats in United States, (58) 176.
- Pionea spp., notes, (52) 558.
- Piophilha casei, *see* Cheese skipper.
- Pipe—
 cast iron, welding, (58) 779.
 circular, pressure distribution when tested in standard sand bearings, (58) 182.
 conduits, concrete cradles for, (57) 676.
 culverts, pressure on, (52) U.S.D.A. 585.
 culverts, water flow through, (51) U.S.D.A. 287.
 joints, threaded, strength tests, (56) 479.
- Piper beetle wilt, notes, (60) 546.
- Piping for power and heating plants, (51) 188.
- Pipits, food habits, (52) U.S.D.A. 354.
- Piptoporus suberosus, notes, (54) 150.
- Pipunculus spp. affecting beet leafhopper, (52) Calif. 58.
- Piricularia—
 grisea, notes, (53) 246; (55) 244.
 oryzae, notes, (51) 46; (57) 639; (59) 540.
- Piroplasma—
 bigeminum, notes, (58) 575; (59) 173.
 caballi, notes, (52) 885.
 canis in Dutch East Indies, (51) 285.
 divergens, notes, (58) 576.
 equi, notes, (54) 478.
 gibsoni in kennel of foxhounds, (58) 575.
 gibsoni, studies, (58) 876.
 ovis n.sp., notes, (53) 481.

- Piroplasmoses—**
 bovine, in Algeria, (59) 172, 173.
 of ruminants, action of trypanblue, (56) 877.
 of sheep in Algeria, (53) 183, 481.
 papers on, (57) 471.
- Piroplasmosis—**
 and piroplasms, (54) 72.
 biological control in North Africa, (60) 575.
 bovine—
 blood changes in, (60) 270.
 experiments, (56) Wash.Col. 573.
 immunization, (58) 174; (59) 878; (60) 176, 869.
 in Argentina, immunization status, (58) 877.
 in Great Britain, (58) 575.
 in India, (55) 776; (58) 472.
 relation to *Haemaphysalis bispinosa*, (56) 877.
 resistance of erythrocytes in, (58) 174.
 studies, (52) West.Wash. 97; (54) Wash.Col. 870; (58) 675, 676, 876; (59) Nev. 869; (60) West.Wash. 775.
 vaccine for, (55) 798.
 equine, in France, (52) 885; (54) 478.
 equine, studies, (51) 586.
 mercury injection treatment, (54) 72.
 of horses and cattle in Japan, (57) 863.
 of sheep in Algeria, (51) 383, 682.
 papers on, (60) 867.
 tick biting experiments in, (52) 778.
 treatment, (58) 175, 773; (59) 673; (60) 266.
- Piroplasmosis-like disease of cattle in Sapporo, (55) 577.**
- Piroplasms—**
 in bovines, (52) 583.
 protecting imported cattle against, (60) 869.
- Pisé-de-terre—**
 construction in Burma, (51) 386.
 use in building construction, (53) 390, 891; (56) 479.
 value as building material, (60) P.R. 779.
- Pissodes—**
 dubius, notes, (56) 427.
 phiniphilus, notes, (51) 55.
 strobi, see White pine weevil.
- Pistache nut trees, culture in Arizona, (55) U.S.D.A. 438.**
- Pistachio in Sicily, sterility in, (58) 142.**
- Pistolody of papaya ovules, (53) 424.**
- Pituitary secretion and body size, (60) 31.**
- Pityophthorus henscheli and its parasite, (55) 854.**
- Pizonyx form in America, (59) 852.**
- Placenta—**
 and chorionic membranes, hormone content, (57) 724.
 of rabbit, giant cells in, (57) 221.
 retained, sequelae in cows, (53) 278.
- Plagiiodera versicolora in Pennsylvania, status, (58) 345.**
- Plagiognathus politus, descriptive notes, (54) 455.**
- Plagirolepis mactavishi, notes, (55) 858.**
- Plagiorhynchus formosus, new hosts, (59) 881.**
- Plague—**
 fleas, studies, (56) 63.
 in Shanghai, relation to rat fleas, (59) 561.
 in South Africa, rôle of fleas in, (57) 760.
 preventive measures, rat-flea surveys in, (58) 56.
 resolving, in rats, (55) 678.
 transmission by fleas, (53) 758; (59) 657.
- Plane tree mildew, notes, (53) 43.**
- Plant—**
 accessions, new, (51) V.I. 838.
 anatomy and physiology, (51) 24, 327.
 anatomy, pathological, treatise, (57) 246.
 anatomy, treatise, (54) 722; (60) 624.
 and animal life, treatise, (58) 659.
 anomalies, biological causes, (58) 21.
 associations of forest soils in Denmark, (51) 844.
 breeding, (51) Conn.State 127; (56) Ariz. 730; (58) S.Dak. 738; (59) Conn.State 28, 221; (60) Can. 539.
 and research in Pusa, (57) 227.
 at Canterbury Agricultural College, (59) 430.
 at Scottish Plant Breeding Station, (54) 125.
 basic principles, (51) 825; (60) 428.
 economic possibilities, symposium, (54) 125.
 for disease resistance, (59) 239, 536.
 founders, (52) 823.
 handbook, (51) 137, 529; (52) 827.
 in Bombay, (56) 135.
 in Germany, (52) 628.
 in Ontario, (52) 341.
 in Porto Rico, (53) 141; (56) 532.
 in Prussia, (58) 130.
 in Scotland, (52) 227; (54) 231; (56) 334.
 in semi-arid regions of Arizona, (52) 823.
 in Soviet Russia, (54) 132.
 in United States, (54) 738.
 isolation from foreign pollen, (57) 121.

Plant—Continued.

- breeding—continued.
 manual for Propics, (57) 27.
 methods, (53) 230.
 methods and principles, (52) 437.
 probable error concept in, (54) Minn. 731.
 Scottish Society for research in, report, (58) 530.
 treatise, (58) 29.
- buds, axillary, correlative inhibition of, (58) 319.
- buds on roots and leaves, development, (58) 215.
- bug, big-legged, notes, (54) Fla. 257.
- bug, tarnished, *see* Tarnished plant bug.
- bugs control, (54) V.I. 258.
- bugs, notes, (54) Fla. 257.
- cancer or crown gall, anatomy, (59) 341.
- cancer or crown gall, notes, (57) 541; (58) 543.
- cancer tumors, bacteriophage from, (57) 744.
- cankers and bacteriophagy, (60) 831.
- cell—
 content, effect of mosaic, (58) 443.
 contents, behavior at low temperature, (54) 520.
 death changes and conservation, (55) 729.
 nuclei, changes in, (55) 324.
 plasma, permeability to sugar, (58) 23.
 sap reaction and disease immunity. relation, (59) 724.
 sap, relation to fertilizers, (56) Mich. 318.
 structures, effect of electrical stimulation, (53) 323.
 wall, properties, (51) 426.
 wall, structure and development, (56) 697.
- cells—
 absorption of salts by, (57) 319.
 accretion and distention in, (54) 425.
 action of radium on, (58) 217.
 action of X-rays on, (52) 216.
 attaining great age, characters, (58) 319, 521.
 carbohydrate alimentation in, (57) 319.
 development, effect of high temperatures, (58) 522.
 effect of light on permeability, (59) 820.
 equilibrium of constituents and intensity of oxidations in, (59) 516.
 extraction of nitrogenous constituents from, (51) 309.
 giant, formation, (59) 724.
 heat killing, rapidity, (57) 26.

Plant—Continued.

- cells—continued.
 life of, treatise, (60) 423.
 long-lived, studies, (59) 122.
 mechanics of water separation from, (58) 23.
 of desert succulents, water intake, (55) 628.
 penetration of dyes into, (59) 619.
 permeability in, (53) 822; (54) 21.
 permeability toward different solutes, (51) 426.
 plasmatic layers and walls, arrangement of material in, (54) 424.
 reactions to colorants, (53) 521.
 response to traumatism, (55) 324.
 starch formation and digestion, (53) 826.
 sugar metabolism in, (53) 826.
 turgor pressure, mechanism, (59) 724.
 water relations, (51) 426.
- chimeras, bibliographic review, (60) 217.
- climate, use of term, (59) 416.
- communities—
 ecological classification, (51) 819.
 halophytic and nonhalophytic, in arid South Australia, (54) 820.
 of North Carolina, (51) N.C. 524.
- cuticle resistance to penetration by fungi, (58) 443.
- cuticle, structure, distribution, and function, (56) 216.
- cuttings—
 chemical aids in rooting, (58) 838.
 effect of carbohydrate-nitrate content on root production, (52) 138.
 node v. internode cuts for, (58) 639.
 rooting and grafting after stimulation, (55) 125.
 rooting, new method, (60) 639.
 rooting response, effect of peat moss and sand, (60) 231.
 rooting response, variation in, (58) 639.
 stimulation, (52) 239.
 water intake by, (60) 639.
- disease—
 legislation in Canada, (52) 645.
 legislation, international, (52) 645.
 new virus, transmission by insects, (54) 246, 250, 251.
 resistance and mineral nutrition, (60) 805.
 resistance, inhibition of enzymatic action as factor, (58) 744.
 resistance, nature of, (55) 242.
 resistance, specificity of constituents as factor, (55) N.Dak. 542.

Plant—Continued.

- disease—continued.
 resistance, studies, (55) 44; (56) 450; (57) 246.
 surveys in British Empire, (55) 245.
- diseases—*see also* Fungi and different host plants.
 and fungi, (51) 246.
 and fungi, treatise, (55) 444.
 and heredity, (60) 831.
 and injuries, treatise, (55) 144.
 and insects, control, (55) 663.
 and meteorological conditions, (53) 813.
 and pests, (52) S.C. 836.
 and pests, combating, international cooperation, (52) 645.
 and pests, control in Russia, (59) 636.
 and pests, control methods, (52) 148; (56) 349.
 and pests in Denmark, (56) 541; (59) 536.
 and pests in Trinidad and Tobago, (57) 145.
 and pests, treatise, (51) 45; (57) 539; (58) 661.
 and plant protection, (56) 46.
 atlas, (54) 447.
 bacterial, historical survey, (58) 443.
 bacteriophage in, (58) 443.
 biochemistry, (57) 155, 348; (59) 144; (60) 239.
 causes, (55) W.Va. 649.
 check list, (55) U.S.D.A. 144.
 classification, (52) 646.
 climographs for predicting, (58) 542.
 control, (55) N.J. 444, Miss. 649, 843; (56) Kans. 349; (59) 239.
- diseases, control—
 by seed treatment, (53) 43.
 in Germany, (59) 635.
 in Pennsylvania, (52) 646; (57) 253.
 in West Virginia, (52) 646.
 recommendation chart, (59) Idaho 740.
 relation to climate, (57) 442.
 treatise, (60) 238.
- diseases—
 due to smut fungi, (56) 843.
 effect of environment, (51) Wis. 445, Wis. 446; (55) 44.
 epidemic, (56) 747.
 epidemic, in Illinois, (59) 538.
 factors in study of, (56) 747.
 foreign, (55) U.S.D.A. 41.
 fungus, treatise, (60) 828, 829.
 immunity in, (57) 540.
 in Africa, (58) 241.
 in Bermuda, (51) 445, 542.

Plant—Continued.

- diseases—continued.
 in British Columbia, (54) 448; (55) 243.
 in British Guiana, (57) 442.
 in California, (57) 837.
 in Canada, (57) 837.
 in Ceylon, new, (54) 245.
 in China, (57) 640.
 in Denmark, (55) 758.
 in Devon and Cornwall, (58) 443.
 in Dutch East Indies, (51) 542; (54) 144.
 in England and Wales, (56) 242.
 in Florida, list, Fla., (52) 242; (54) 343.
 in Gambia, (57) 443.
 in Gold Coast, (57) 145, 443.
 in Great Britain, (60) 830.
 in Illinois, (54) 143; (59) 534.
 in Illinois during 1923, (57) 539.
 in India, (56) 445.
 in Indiana, (56) 647; (57) 343.
 in Ireland, (55) 747; (57) 443.
 in Jamaica, (60) 344.
 in Kamouraska region, Quebec, (59) 534.
 in Kenya Colony, (54) 648; (57) 145, 443; (58) 241.
 in Lesser Antilles, (55) 540.
 in Mississippi, list, (52) Miss. 243.
 in Netherlands, (55) 747; (57) 344.
 in New Jersey, list, (59) N.J. 338.
 in New Mexico, control, (53) N.Mex. 847.
 in New York, (57) 837.
 in North Caucasus, (58) 647.
 in Philippines, (56) 748; (57) 838.
 in Poland, (58) 749.
 in Porto Rico, (57) P.R. 442.
 in Pusa, (54) 246; (58) 143.
 in Queensland, (57) 48.
 in South Australia, (57) 344.
 in Surinam, (54) 245.
 in Uganda, (57) 146; (60) 148.
 in Western Australia, (57) 444.
 in western Quebec, (54) 144.
 insect transmission, (51) 543.
 Institute for in Germany, report, (59) 635.
 instruction in public schools (51) 598.
 lists, (55) N.J. 42.
 new, in Washington, (51) Wash. Col. 150.
 new, introduction, (55) 346.
 new to Ontario, (58) 41.
 notes, (51) N.C. 846; (54) Nebr. 344; (57) N.J. 47, Nebr. 539, 639, N.J. 740; (58) Ark. 337, S.C. 646; (59) 534.
 observed in 1926, list, (59) 636.

Plant—Continued.

diseases—continued.

- on alkaline and sour soils, (52) 645.
 - parasitic, in Valley of Baresges, (52) 745.
 - parasitic, treatise, (51) 45; (57) 637.
 - physiological aspects, (54) 448.
 - principles, treatise, (54) 743.
 - relation to environment, (56) 647.
 - relation to environment, apparatus for study, (51) Nebr. 847.
 - relation to insects, (57) Ind. 653; (58) 451.
 - relation to soil temperature, (56) Wis. 445.
 - relation to soil temperature, equipment for study, (56) 350.
 - seed-borne, (56) 242; (57) 637; (59) 537.
 - soil-borne, in western Canada, (60) 344.
 - studies, (52) Can. 845; (53) Ga. 246; (55) N.Mex. 444, Nebr. 650; (57) Can. 145; (59) Can. 48, 239, Ala. 635.
 - textbook, (58) 240.
 - treatise, (54) 245; (55) 242; (57) 343; (58) 240.
 - tropical, (55) 245.
 - virus, economic significance, (53) 245.
 - virus, studies, (53) 43, 244, 245; (57) 838; (59) 144, 445, 537, 638.
- districts of Germany, relation to climate, (58) 717.
- ecology—
- relation to silvicultural practice, (55) 839.
 - studies, (53) 823; (54) 21; (59) 124.
 - textbook, (57) 514.
 - treatise, (54) 222.
- electricity, (58) 216.
- enzymes, specific action, (54) 627.
- extracts, insecticidal properties, (56) 358.
- families, chromosomal survey, (53) 328.
- families of flowering plants, (57) 620.
- families, syllabus, (57) 116.
- fibers, lattice structure of swollen cell wall, (58) 796.
- fibers, molecular structure, (56) 297.
- food absorption, effect of one element upon another, (60) Ariz. 514.
- food balance, (51) 623.
- food, root-soluble, in fertilized and unfertilized soil, (60) 516.
- forms, evolution, in South Africa, (54) 821.
- galls of Europe, (60) 240.
- genetics, fundamental laws, (54) 25.

Plant—Continued.

- genetics, studies, (57) 120; (58) 524.
 - genetics, textbook, (51) 28.
 - geography, treatise, (57) 116, 513.
- growth—
- and acidity, (53) 125.
 - and auximones, (52) 28.
 - and blooming in continuous artificial illumination, (52) 625.
 - and development, effect of light, temperature, humidity, etc., (59) Mich. 426.
 - and development, effect of X-rays, (58) 626.
 - and differentiation, (54) 125; (58) 819.
 - and heliotropism, (53) 623.
 - and light, studies, (56) 325.
 - and physical principles, (53) 518.
 - and reproduction, effect of length of day, (58) 216.
 - and reproduction, relation to soil nutrients, (55) 727.
 - and soil conditions, treatise, (56) 714.
 - and soil zeolites, (60) Ariz. 515.
 - and solar radiation, (56) 114.
 - and surface energy, (60) 213.
 - and tropism, (51) 825.
 - and yearly course of temperature, (55) 807.
- as problem in permeability, (54) 22.
- concentration of phosphate and potash for, (60) Ala. 121.
- curvatures, phototropic, studies, (59) 618.
- growth, effect of—
- acidity, (51) 15.
 - aeration, (51) 516; (52) 512.
 - aluminum, (54) 620; (56) 323.
 - aluminum and acids, (53) 326.
 - ammonium sulfate, (52) 326.
 - artificial light, (51) 25; (54) 624, 625.
 - bacteria, (56) 220.
 - boron in, (60) 724.
 - carbon dioxide, (52) 424.
 - carbon disulfide, (52) 721.
 - clay, (60) 514.
 - colored light, (54) 625.
 - decreased oxygen pressures, (52) 424.
 - dicyandiamide, (52) 122.
 - dolerite meal, (54) 422.
 - drought, (53) 423.
 - electricity, (51) 424; (52) 808; (53) 222.
 - guanylurea sulfate, (52) 122.
 - H-ion concentration, (57) Mo. 417.
 - hydrocyanic acid, (53) 829.
 - irrigation, (57) 775.
 - light, (56) 217; (59) 611.
 - light and darkness, (59) 820.
 - light and temperature, (53) 222.

Plant—Continued.

- growth, effect of—continued.
 - light of different wave lengths, (58) 124.
 - light periods, (55) 324.
 - nutrients, (52) 123.
 - organic residue, (58) 120.
 - pressure, (52) 518.
 - pyrrole salt, (58) 125.
 - sawdust, (53) 121.
 - seed weight, N.J., (51) 627; (53) 23; (55) 22; (59) 322.
 - silicon, (56) 323.
 - soil moisture, (60) 721.
 - soil reaction, (54) 121, 416; (58) 17, 718.
 - soil treatment preparations, (57) 637.
 - stimulating substances, (55) 518.
 - straw, (54) N.Y.State 622.
 - sulfur, (55) N.J. 21.
 - temperature, (56) 807.
 - temporary depletion of nutritive elements, (51) 513.
 - volume of media and reaction change, (51) N.J. 629.
 - wood, (51) 415.
- growth, effect on—
 - bacterial life of soils, (60) 714.
 - medium, (51) 126.
 - pH of soils, (58) 623.
 - pH value of nutrient solutions, (51) N.J. 629.
- growth—
 - electric stimulation, (54) 626.
 - electrical conditions, (54) 130.
 - elements essential in small amounts, search for, (58) 318.
 - energy of, (57) 216.
 - factor and yield, relation, (58) 21.
 - factors in, control, (52) 424.
 - formula, (55) 518.
 - in nutrient solutions, effect of climatic factors, (51) 523.
 - inhibiting and stimulating substances, (56) 124.
 - interrelation of day length and temperature, (57) 23.
 - intra-seasonal cycles, (59) 442.
 - laws of, (57) 117.
 - of massive organs, (53) 517.
 - on acid soil, (54) 213.
 - physiology of, (56) 423.
 - principles, treatise, (59) 817.
 - rate, effect on structure, (56) 423.
 - rate, nature of, (56) 626.
 - relation to solar radiation study, (56) 807.
 - studies, (58) 725.
 - studies, relative sizes of organs, (60) 808.
 - water as factor, (55) 581.
 - with controlled light and temperature, (54) 130.
- gums, composition, (55) Mo. 502.

Plant—Continued.

- histology methods, treatise, (53) 420.
- hosts and parasites, cellular interaction, (56) 452.
- husbandry, textbook, (54) 589.
- hybrids, sterile and fertile, (58) 730.
- Industry Catalogue, (58) 41.
- introductions, (57) S.Dak. 534.
- intumescences, studies, (60) 216.
- juices, composition, effect of soil type and fertilization, (60) 209.
- juices, H-ion concentration, (54) 220; (55) 729.
- juices, total and actual acidity, (55) 630.
- lice—*see also* Aphids and specific kinds.
 - and ants, (60) 844.
 - control, (55) Mass. 254.
 - effect of length of day, (51) 455.
 - on truck crops, (52) Pa. 252.
 - orchard, control, (51) N.J. 658.
- life activities, effect of chemical treatments, (59) 620.
- life and soil reaction, (58) 613.
- materials—
 - continuous extraction apparatus for, (52) 503.
 - determination of nitrates in, (54) 111.
 - for foundation planting, treatise, (57) 439.
 - for long-distance shipments, handling, (52) U.S.D.A. 232.
 - in adobe bricks of historic buildings, (57) Calif. 225.
 - nitrogen determination in, (56) 805.
 - vitamin A in, stability, (60) 291.
- meristematic tissues, (60) 520.
- movements—
 - developmental, treatise, (53) 324.
 - of sleep and of awakesness, (59) 427.
 - relation to permeability variation, (51) 521.
 - treatise, (51) 222.
- names, standardized, (53) 122.
- nomenclature, (57) 720.
- nomenclature, transfers in, (57) 137.
- nutrients in manure, variations since war, (51) 725.
- nutrients, limited quantities, crop-producing power, (59) 513.
- nutrients, removal from soil by drainage water, (55) 811.
- nutrition—
 - and crop production, Hitchcock lectures, (55) 605, 697.
 - and electromotive series and oxidation potentials, correlation, (59) 410.
 - effect of nutrient salts, (59) 426.
 - effect on susceptibility to toxic substances, (53) 224.

Plant—Continued.

- nutrition—continued.
 exchange of water and mineral substances, (60) 805.
 history of problems, (57) 215.
 relation to soil colloids, (56) 723.
 relation to soil solution, (56) 723.
 rôle of silicic acid in, (51) 523.
 studies, (52) Calif. 24, Calif. 26; (53) Calif. 420; (56) Kans. 811.
 treatise, (54) 427; (58) 9.
 vitamin-like substances in, (58) Ariz. 618.
 vitamins, and disease resistance, (60) 805.
- organs, anaerobic respiration in, mechanics, (58) 820.
- organs, development, energy yield, and function of oxygen in medium, (59) 428.
- organs, negatively geotropic, distribution of geotropic sensitivity, (56) 326.
- parasites—
 diagnosis, serum-agglutination in, (52) 146.
 effect of nutrition of host, (58) 744.
 immunity and predisposition to, (57) 540.
 physiology of nutrition in, (54) 123.
- parts, growth awakening by stimulating agents, (57) 618.
- pathology, (56) 444.
 and mycorrhizas, (55) 347.
 Congress at Strassburg, (52) 745.
 extension work in, (52) U.S.D.A. 495.
 in Canada, (57) 145.
 in France, (57) 245.
 in Holland, (52) 554.
 internal therapy in, (60) 831.
 laboratories, new, at Rothamsted, (53) 200.
 laboratory outlines, (56) 891.
 linking with animal pathology, (52) 746.
 literature, (58) 41.
 nomenclature, standardization, (55) 245.
 publications of experiment stations, index, (59) U.S.D.A. 635.
 publications of the Department, index, (53) U.S.D.A. 846.
 report at Seale-Hayne Agricultural College, (55) 651.
 Station work in France, (54) 46.
 status in Porto Rico, (51) 542.
 treatise, (57) 539.
- pests, developmental period, effect of food, (59) 853.
- photometer, description, (56) 723.
- physiology, (59) 617, Calif. 721.
 and agronomic science, symposium, (51) 799; (54) 633.

Plant—Continued.

- physiology—continued.
 in 1925, review of German literature, (56) 414.
 relation to agronomy, (56) 722.
 research in, (57) 138.
 rôle in agriculture, (51) 519; (55) 817.
 studies in South Africa, (57) 77.
 textbook, (56) 423.
 treatise, (51) 23; (53) 623; (55) 816; (57) 414, 415, 513.
- pigments, *see* Pigmentation and Pigments.
- production as measure of environment, (54) 25; (55) 123.
- production, effect of titanium, (53) 22.
- products, chemistry of, textbook, (60) 201.
- products, chemistry of, treatise, (52) 409.
- products, microsublimation, apparatus for, (52) 310.
- products, treatise, (59) 108.
- protection—
 and instruction, (52) 645.
 bibliography, (54) 447; (56) 647; (59) 635; (60) 238.
 research, operation of poison in, (53) 43.
 Second International Conference, notes, (57) 400.
 station of Black Sea region, work, (59) 553.
 treatise, (51) 245; (57) 637.
- protective media, evaluation, (52) 645.
- protectives, tests, (55) 543.
- protoplasm necrobiosis, studies, (53) 521.
- protoplasm, protein properties, (56) 723.
- protoplasm, structural organization, (59) 722.
- pulp, effect on chemical conditions in media, (53) 223.
- pulps, absorption of acid, alkali, and enzyme by, (53) 223.
- Quarantine Board, Western, conferences, (58) 661.
- quarantines, foreign, biological basis, (54) 143.
- quarantines, legal aspect, (55) 355.
- regeneration, theory, (51) 731; (53) 124; (56) 324, 425, 426.
- residues in tropical soils, (60) 511
- roots—*see also* Roots.
 alkali injury to, (52) Calif. 24.
 fungi parasitic on, (59) 218.
 minimum soil moisture available to, (55) 16.
 oxygen requirement, (55) 426.
 response to aeration, (53) 222.
- sap, absorption and exudation pressures, (54) 426.
- saps, hydrophilic colloid content, estimating, (51) 26.

Plant—Continued.

- saps, moisture content, determination, (51) 26.
 saps, pH determination, (55) 323.
 Sciences, International Congress, (53) 699.
 Sciences, International Congress, editorial, (54) 401.
 solutions, total nitrogen in, determination, (55) 610.
 species, age and area theory of distribution, (60) 809.
 species, origin and geographical distribution, (51) 821; (53) 225.
 species, origin, review of theory, (52) 628.
 species, relation to habitat and climate, (58) 822.
 specimens, directions for preparation, (57) N.Y.State 636.
 stems, amputated, formation of tyloses in, (59) 123.
 sterols, reduction products, (57) N.Y.State 610.
 structure changes due to modified environment, (57) 514.
 succession in New South Wales, (52) 830.
 successions of brush prairie in Minnesota, (55) 124.
 successions, relation to soil reactions, (56) 317.
 symbiosis, studies, (52) 427.
 tissue—
 arsenic determination in, (53) U.S.D.A. 327.
 carbohydrates in, effect of drying, (53) 803.
 catalase activity, (56) 814; (58) 214.
 composition, effect of desiccation, (53) 107.
 extracts, effect on rickets, (51) 567.
 fluids, chlorides in, determination, (52) 111; (59) 24.
 fluids, extraction, (56) 723.
 fluids of phanerogamic epiphytes, electrical conductivity, (57) 25.
 fluids, physicochemical properties, of Tooele Valley, (51) 821.
 study, micro-technique for, (53) 224.
 vitamin A formation in, (57) 294.
 vitamin A in, persistence, (55) 293.
 water loss from mesophyll, effect of light, (58) 725.
 tissues—
 abscission in, (60) 809.
 ashing methods, (56) 13.
 calcium oxalate crystals in, (57) 215.

Plant—Continued.

- tissues—continued.
 cicatrization after freezing, (52) 518.
 concerned in transfer of solutes, (58) 214.
 dehydration, relation to hardness, (51) 126.
 green, acid-hydrolyzable carbohydrates in, determination, (55) 610.
 grinding apparatus, (55) 409.
 H-ion concentration, (59) 818.
 hydration and swelling, (53) 822.
 hydration and swelling, effect of salt solutions, (54) 22.
 isoelectric point for, (53) Mo. 442; (54) 321; (56) 424; (58) 122; (60) 805.
 isoelectric point for, significance, (52) 124.
 moisture determination in, (60) 624.
 nitrates in, (59) 322.
 potassium in, distribution, (54) 521.
 reaction, (58) 318.
 response to electric currents, (58) 422.
 storage, salt absorption by, (56) 219.
 vascular, interference of water flow through, (56) 446.
 tumors and chemical stimulation, (59) 341.
 tumors, control, (59) 637.
 tumors, effects of X-ray treatments, (56) 629.
 virus problems, (59) 144.
 virus, properties, factors affecting, (59) 144.
 viruses, attenuation, (57) 744.
 viruses, classification, (57) Wis. 344.
 weevils, South Australian, (57) 264.
 yield and intensity of external factors, (58) 211.
Plantago lanceolata seeds, nutrient value, (54) 160.
 Plantain—
 bunchy top disease, studies, (54) 548; (58) 153.
 disease, notes, (56) 843.
 flea beetle, notes, (59) 159.
 root beetle borer in Ceylon, (51) 554.
 root beetle borer, summary, (52) 558.
 Plantains—
 recipes, (55) 291.
 red leaf color inheritance, (57) 121.
 two weevil pests of, (59) 659.
 vitamin A in, (60) 291.
 vitamin B in, (59) 793.
 vitamins in, (57) 690.
 Plantation organization, relation to land tenure, (52) U.S.D.A. 293.
 Plantations, permanent, in Tropics, exchange value, (53) 689.

Plants—

- abscission and exfoliation of floral organs, (57) 719.
- absorption of inorganic elements, effect of carbon dioxide, (54) 417.
- acidophilous, effect on aluminum sulfate, (60) 235.
- acquired characters, relation to salt-ness in water supply, (58) 522.
- action of chlorides on, (53) 21.
- adaptation to length of daily light period, (53) 518.
- agricultural, naming, (59) 325.
- albumin formation in, (57) 417.
- alkali tolerance, (56) Ariz. 512.
- alkaloids in, biological significance, (53) 826.
- alkaloids in, treatise, (51) 8; (52) 309.
- Alpine, root study, and mycorrhizas, (59) 218.
- alterations in, following castration, (57) 719.
- alternation of generation in, (57) 323.
- anatomical characters of leaves, (55) 324.
- and man, treatise, (56) 123.
- and soil, moisture relationships, (56) 209.
- and soil, reciprocal action, (55) 324.
- anesthesia in, (51) 733.
- animal pests of, treatise, (59) 549.
- aquatic, sign of death in, (56) 326.
- as affected by length of day, (51) 125.
- as affected by light, (52) 327.
- as affected by sugars, (51) 224.
- as indicators of ground water, (56) 679; (59) 376.
- assimilation, effect of temperature, (54) 726.
- assimilation of ammonia by, (53) 726.
- at different stages, feeding experiments, (51) 767; (53) 766; (57) 789; (59) 594.
- attachments of chromosomes at reduction division, (57) 421.
- behavior, relation to weather, (55) 715.
- biochemistry of, treatise, (57) 116.
- book of, for elementary schools, (53) 694.
- Brownian molecular movement in, (52) 425.
- bulbous, dextrin reserve in, (53) 519.
- bulbous, treatise, (57) 439.
- calcifugous, pH and permeability in, (56) 814.
- calcium compounds in, (59) 427.
- carbohydrates in, determination, (53) 108.
- carbohydrates in, genesis, (58) 421.
- carbon dioxide, assimilation mechanism, (54) 725.
- carbon dioxide nutrition, value of manure and green manure, (55) 815.
- carbon nutrition in, (54) 220.

Plants—Continued.

- catalase growth relations, (60) Pa. 338.
- changes in, measurement, (54) 22.
- chemical researches on, treatise, (54) 220.
- choice of varieties and stocks, (54) 230.
- chondriomes in, (59) 428, 819.
- classification on basis of parasitism, (60) 322.
- climbing, anatomy of irritable organs, (60) 520.
- climbing, treatise, (52) 144.
- colonial, treatise, (57) 631.
- comparative amounts of gases in, (59) 516.
- composition, (56) Wash.Col. 508.
- composition as guide to soil nutrients, (60) 619.
- composition, effect of soil type, Wash. Col., (52) 814; (54) 809.
- composition, relation to photoperiodic changes, (57) Wis. 216.
- creeping, studies, (53) 623.
- critical moisture content, (60) 116.
- cultivated—
- in Poland, diseases and pests, (52) 148.
- light requirement, (60) 522.
- origin, (56) 33.
- treatise, (54) 423.
- under glass, modifications, (53) 520.
- culture in sterile liquid medium, (53) 827.
- culture, textbook, (57) 888.
- cyanophoric, of Makiling region, (51) 825.
- death from heat and metabolic poisons, (55) 425.
- depth of assimilation of nutrients, (54) 215.
- desert, *see* Desert plants.
- development in water, light conditions, (57) 617.
- dioecious, unequal pair of chromosomes in, (59) 724.
- distribution, relation to—
- climatic factors, (55) 415.
- illumination, (57) 417.
- soil reaction, (55) 510; (60) 627.
- domesticated, tracing civilization through, (52) 726.
- drought resistance of, (53) 518; (57) 514; (59) 429.
- during drought, physiological processes, (59) 617.
- economic, of California, (54) 523.
- economic, of New South Wales, keys, (52) 830.
- ecotypes in, differentiation, (58) 822.
- effect of—
- aluminum, (59) 687.
- aqueous solution of tar, (58) 422.

Plants—Continued.

- effect of—continued.
- boric acid, (53) 26.
 - boron, (57) 21, 515.
 - carbon dioxide, (57) 137.
 - cereal straw, (52) N.Y.State 513.
 - chilling temperatures, (60) 321.
 - climate and soil, (55) 811.
 - cyanogen compounds, (56) 125.
 - daily length of light period, (55) 726, 727; (56) 640; (57) 418; (58) 535.
 - deficient water supply, (57) 514.
 - electrical illumination, (57) 117.
 - formaldehyde, (53) 326.
 - hexamethylenetetramine, (53) 326.
 - light, (56) 813; (57) 117; (58) 116.
 - low temperatures, (57) 419.
 - pH of culture medium, (51) 425.
 - selenium compounds, (55) 728.
 - soil moisture, (58) 623.
 - straw, (54) N.Y.State 525.
 - sulfur dioxide, (58) 24, 422.
 - tar vapors, (57) 120.
 - variation in day length, (54) P.R. 625.
 - varying pH value of soil, (55) 623.
 - X-rays, (54) 519.
 - zinc and lead in soils from smoke gases, (58) 521.
- effect on—
- air in houses, (52) 126.
 - each other, (51) R.I. 746.
 - leachings from lysimeters, (51) 321.
 - nitrate accumulation in soil, (51) 19.
 - reaction of culture media, (52) Calif. 25.
 - electrophysiology, treatise, (57) 116.
 - etiolated, anatomy, (59) 617.
 - etiolated, effect of brief light exposure, (56) 424.
 - evaporation rate at different heights, (58) 124.
 - fat determination in, (59) 503.
 - fat metabolism in, (51) 427.
 - fats and related compounds in, (59) 608.
 - feeding, (60) 511.
 - feeding power in different soil horizons, (53) 815.
 - feeding power, relation to carbon dioxide production of roots, (52) 28.
 - feeding through stomata, (58) 317.
 - fertility in, physiology, (54) 222.
 - fertilization in, physiological incompatibilities, (52) 127.
 - fertilizer requirements, effect of light, (51) Wis. 424.
 - fiber, *see* Fiber.
 - flagellates in, (58) 55.
 - flower and fruit production, factors affecting, (60) 806.

Plants—Continued.

- flowering—
- annuals, handbook, (52) 741.
 - biology, treatise, (55) 321.
 - chromosome numbers, (59) 219.
 - culture, varieties, and use, treatise, (59) 443.
 - cytology, treatise, (57) 121.
 - dictionary of, (57) 22.
 - effective use, treatise, (56) 646.
 - of California, manual (57) 116.
 - sex characters of, (51) 527.
 - food, of Porto Rico, (55) 123.
 - for exhibition, treatise, (52) 741.
 - forcing action of prussic acid, (57) 321.
 - forcing with cyanide, (57) 416, 831.
 - forest, Mycorrhiza in, (57) 819.
 - formation of antibodies in, (59) 427.
 - formative stuffs, hypothesis, (51) 225.
 - freezing and death in, (51) 733.
 - frost protectors for, (55) Mich. 837.
 - fungi affecting, in Turin, (52) 148.
 - fungus parasites of, (54) 247, 449; (56) 843.
 - germination and growth, effect of eosin and erythrosin, (57) 416.
 - glucosides in, rôle, (59) 217.
 - graft hybrids in, (57) 222.
 - grafted, ascent of crude sap in, (60) 214.
 - grafted, chemical variations in, (54) 320.
 - grafted, inheritance in, (57) 29.
 - green, sexes in, biochemical difference, (57) 621.
 - greenhouse, culture, (59) 137.
 - greenhouse, diseases, (53) 550.
 - gregarious flowering in, cause, (52) 127; (54) 222.
 - grouping, (57) 116.
 - growing—
 - from seeds, (51) 238.
 - from seeds, treatise, (55) 835.
 - in microbiologically controlled soil, apparatus, (60) 26.
 - in saline media, persistence of characters, (53) 521.
 - point, water relations, (51) 329.
 - under microbiologically controlled conditions, (60) 317.
 - grown in salt water, effects, (54) 125.
 - hardness studies, (51) Mo. 745.
 - hardy mutants, (57) 619.
 - heaving, cause, (60) 378.
 - hereditary changes in, effect of nutrition, (51) 738.
 - H-ion concentration gradient in, (55) 22.
 - honey, in Victoria, (54) 462.
 - hormones in, studies, (54) 629.
 - horticultural, physiology of reproduction, (56) Mo. 440.
 - house, (60) N.Dak. 826.
 - house, requirements for culture, (56) Mich. 743.

Plants—Continued.

- hunting in many lands, (58) 36.
 immune to crown gall, (58) 658.
 immunity and resistance in, studies, (56) 242.
 immunity in, (57) 146, 637.
 imported, U.S.D.A., (51) 733; (52) 520; (53) 728; (54) 821; (55) 818; (56) 326; (57) 220; (58) 25, 627; (60) 125, 322.
 imported, control, (51) 238.
 imported into Hawaii, (55) Hawaii 535.
 improvement methods, (53) 522.
 improvement, textbook, (54) 188.
 in water cultures, continuous solution renewal for, (60) 424.
 in winter, stomatal behavior, (52) 321.
 inhibitory substance in, isolation, (52) 219.
 injection experiments, (58) 24.
 injurious in Hawaii, (56) 357.
 injury from factory fumes, (58) 511.
 injury from smoke and gases, (54) 221.
 injury from toxic concentrations, effect of nutrition, (53) 224.
 injury, recovery, and death, treatise, (51) 223.
 insect attraction to, (56) 558.
 internal condition and insect attack, (57) 357.
 internal therapy, (57) 57, 343.
 iron assimilation by, (54) 427.
 iron in, distribution, (54) 221; (55) N.J. 22.
 law of biochemical evolutionary development, (57) 718.
 leaf injuries, effect on production of dry matter, (53) 727.
 leaf-tip tendrils, (54) 523.
 life of, (56) 626.
 manganese in, (52) Ky. 426; (54) Ky. 308, 427; (58) 411.
 marketable California decorative, (51) Calif. 750.
 medicinal, in Hungary, fungus diseases, (52) 646.
 medicinal, insects affecting, (59) 553.
 Mendelian ratios and gametophyte generation in, (58) 819.
 metabolic assimilation in, (58) 212.
 metabolism in, intermediate products, (56) 515.
 metabolism pathology in, (60) 524.
 mineral absorption relation to concentration of elements, (59) 423.
 mottled, metabolism and physiology, (59) 428.
 mutation in, relation to reduction division, (54) 821.
 native, of German forests, (55) 540.
 nearly related, morphological and physiological characters, (58) 623.

Plants—Continued.

- nematode resistant, breeding, (54) 649.
 nervous mechanism, (57) 118.
 new food, for the South, (52) U.S.D.A. 340.
 new varieties, creation, (55) 742.
 nitrate nitrogen in, determination, (54) 410.
 nitrate reducing properties, (56) 220.
 nitrate utilization by, (58) 623, 624.
 nitrogen—
 absorption from culture solutions, (57) N.J. 717.
 fixation by, (54) 525.
 metabolism, (52) Calif. 25, 325; (58) 317; (60) N.J. 319.
 organization in, (59) 516.
 nonleguminous—
 bacterial symbiosis in, (56) 629.
 inoculation, (55) 418, U.S.D.A. 529.
 nitrogen fixation by, (51) 225; (59) 516.
 nodule formation in, (53) Mich. 726.
 nuclear division, effect of ultra-violet light, (53) 423.
 nutrition of host, effect on parasites, (58) 744.
 nyctinastic movements, (54) 519.
 of arid regions, effect of humidity, (59) 820.
 of arid regions, moisture supply, (57) 419.
 of China, collection, (57) 137.
 of Colorado, water requirement, (57) 616.
 of Glacier National Park, (57) 142.
 of Natal, water relations, (57) 218.
 of Nigeria, (51) 332.
 of salt desert, osmotic value of cell sap, (58) 23.
 of South Africa, transpiring power, (53) 823.
 oleiferous, composition of seeds, relation to geographical factors, (56) 34.
 on desert mountains, vertical distribution, (51) 733.
 organic acids in, physiology, (58) 212; (59) 426.
 ornamental—
 biology, treatise, (60) 213.
 blooming data, (51) N.J. 643.
 culture, (52) 143, Can. 341, Can. 639, 643; (53) Can. 340, Can. 840.
 culture experiments, (53) Minn. 139; (55) Alaska 438; (58) Minn. 835.
 culture in Florida, treatise, (57) 739.
 culture, treatise, (51) 539.
 descriptions, (57) Can. 237.
 diseases and pests, (57) 653.

Plants—Continued.

- ornamental—continued.
 extension work with, (53) U.S.D.A. 695.
 for Minnesota, lists, (51) Minn. 141.
 genetic studies, (55) 224.
 insects affecting, (55) U.S.D.A. 852.
 notes, (52) Alaska 536.
 phenological data, (52) N.J. 738.
 pruning, (52) West.Wash. 598.
 tests, (53) U.S.D.A. 141.
 treatise, (55) 442; (59) 142.
 variety tests, (51) Can. 238, Can. 239; (56) Minn. 531; (57) Alaska 532.
 winter injury in 1925-26, (56) Iowa 833.
 perennial, culture, treatise, (52) 741; (58) 239.
 perennial, herbaceous, (51) U.S.D.A. 749.
 perennial, insects affecting, (59) Conn. State 56.
 permeability in, *see* Permeability.
 pH values, (58) 23.
 phanerogamic, sterility in, (60) 810.
 phosphorus nutrition, (59) Ala. 616.
 photographs of, (54) 433.
 photoperiodic, response to differing temperature and humidity, (58) 726.
 photoperiodism studies, (60) 625.
 photosynthesis in, *see* Photosynthesis.
 physical characters and yield, correlations, (51) S.Dak. 432.
 physiological processes, auto-regulation, (57) 318.
 pits and vessels in, intercommunication, (57) 815.
 plasticity in foliar structure, (55) 729.
 plastid formation in, (54) 221.
 plastids in, evolution, (52) 519.
 plastids in, reversion, (59) 428.
 poisonous—*see also* Livestock and Sheep poisoning and *specific plants*.
 in Colorado, (57) Colo. 468.
 in South Africa, (57) 379, 873; (60) 574.
 notes, (59) 876.
 of Alabama, (51) 679.
 of British Columbia, (55) 241.
 of France, (53) 582.
 of Michigan, (53) 783.
 on ranges, (53) Nev. 478; (56) Utah 571; (59) Nev. 877.
 studies, (56) 572, Wyo. 572.
 to livestock, (52) U.S.D.A. 480; (57) Mont. 278, 525; (59) 171, 671; (60) Wyo. 776.
 to livestock in Argentina, (54) 172.
 to livestock in British Columbia, (59) 471.
 to livestock, treatise, (52) 280.

Plants—Continued.

- pollination, *see* Pollination.
 polyploidy in, (54) 226.
 potassium assimilation by, (58) 523.
 potassium in, distribution, (58) 213.
 potassium requirements, (60) Ark. 804.
 pottage, aphid enemies, (59) 553.
 propagation—
 by cuttings, (57) 137.
 by hardwood cuttings, (56) 834.
 by ringing, (60) 640.
 nurse-grafted Y-cutting method, (60) 639.
 vegetative, (58) 319.
 vegetative, problems, (60) 808.
 protection against animals, balance of life in, (58) 755.
 protein synthesis by, (56) 25.
 pure lines, stability, (57) 120.
 radiotherapy tests, (58) 422.
 rainfall interception by, (56) 414; (59) 417.
 regulation in, (59) 820.
 related, divergent soil reaction preference, (59) 429.
 relation to situation, climate, and soil, (60) 423.
 reproduction in, physiology, (58) Mo. 129.
 response to—
 climatic rhythm, (54) 13.
 length of day, effects, (54) 519.
 length of day, localization, (54) 518.
 light and temperature, (56) Wis. 725.
 reversion and deterioration in, (60) 533.
 reviviscent, imbibition and respiratory quotient, (59) 427.
 rhythmic growth and stimulation movement in, (58) 819.
 rock, handbook, (57) 342.
 rôle of amids in, (56) 325.
 rôle of asparagine in nitrogen transformations, (56) 325.
 rôle of cane sugar in, (56) 425.
 rubber-bearing, culture in Black Sea region, (60) 444.
 salad and flavoring, tests, (54) R.I. 38.
 salt balance, factors affecting, (54) Mich. 627.
 sap ascent in, (57) 118.
 seedling metabolism, nitrogen as product of, (53) 124.
 segregation in, (55) 523.
 selective absorption of potassium by, (57) 215.
 self- and cross-incompatibility, inheritance, (58) 728.
 self-sterility studies, (55) 27; (58) 28.
 senility in, (57) 321.
 sex determination and differentiation, (53) 524.

Plants—Continued.

- sex determination in, (57) 326.
- sex determination in, time of, (54) 128.
- sex in, change of, (56) 815.
- sex in, compared with sex in animals, (55) 822.
- sexes in, biochemical differences, (59) 620.
- sexuality in, papers on, (58) 220.
- small-seeded, growing under sterile conditions, (59) 322.
- sodium chloride tolerance, (56) 724.
- sodium in, (57) 609.
- sodium in, distribution, (58) 213.
- solanaceous, virus diseases of, cytological studies, (58) 444.
- spraying, dusting, and fumigating, treatise, (59) 536.
- starch formation in, (57) 23.
- sterile culture, (56) 816.
- sterility in, (58) 730.
- sterility in and recovery, (59) 28.
- sterility in, types, (58) 639.
- stimulants for, (57) 718.
- stimulation, (58) 624, 625; (60) 520.
- stimulation, amount and results, (57) 416.
- stimulation and inheritance, (58) 625.
- stinging crystals in, (52) 427.
- structure relation to growth rate, (56) 423.
- struggle for existence among, (58) 626, 627.
- submerged, respiration, effect of oxygen in water, (58) 524.
- submerged, respiration in, effect of temperature, (59) 215.
- successional disease in, (57) 158.
- suction force in, (58) 123; (59) 322.
- sun scald injuries in, (56) 648.
- synthetic mechanism, (57) 215.
- temperature variations in, (54) 627.
- teratology, (52) 519.
- tolerance to acid conditions, Del., (51) 116; (52) 811.
- total nitrogen in, determination, (55) 610.
- toxicity of fungi media, (58) 42.
- transfer of solutes in, (57) 815.
- transpiration, *see* Transpiration.
- transplanting, relation to hardening, (52) 234.
- transport of organic substances in, (52) 27.
- traumatic stimulation, (59) 517.
- traumatic stimulation, conduction and reaction in, (58) 625.
- traumatropism in, (57) 119.
- triploid and tetraploid, production, (54) 629.
- tropical, specific conductivity of wood in, (57) 418.
- twining movement in darkness, (56) 518.
- uptake of salts by, (55) 323.
- urea in, (60) 724.

Plants—Continued.

- useful, of China, (52) 795.
- utilization of manure by, (56) 320.
- utilization of summer rain, (55) 616.
- utilization of water by, (56) 317.
- variability and segregation in, (53) 330.
- variegated, changes in plastids in, (58) 818.
- variegation in, review of literature, (57) 818.
- variatal differences in, (59) 827.
- vascular, of Cayuga Lake Basin, (55) N.Y.Cornell 427.
- vascular relation between leaf and root, (59) 517, 518.
- vegetative growth, effect of fruit, (53) 142.
- vitamin E synthesis by, (57) 595.
- water—
 - content and chlorophyll assimilation, (59) 214.
 - cycle in, (53) 824.
 - economy in, (54) 627; (57) 321.
 - loss from, (54) 25.
 - movement in, dynamics, (53) 624.
 - photosynthesis in, (57) 817.
 - requirements, (58) 622.
 - requirements, relation to fertility, (58) 721.
 - requirements, relation to potash supply, (58) 722.
 - utilization by, (55) 719.
- wild, variegated, (60) 809.
- wilting, loss of water during, (57) 617.
- wilting, relation to drought resistance, (55) 124.
- wilting, relation to transpiring power of leaves, (57) 616.
- winter killing and leaf fall, relation to osmotic pressure, (57) 619.
- winter root growth, (60) 232, 521.
- with insecticidal properties, (51) U.S.D.A. 158.
- woody, *see* Woody plants.
- young, period of toxicity of fertilizers for, (53) 21.

Plasma—

- membrane, studies, (51) 426; (56) 324.
- of plant cells, permeability to sugar, (58) 23.
- swelling and growth, (56) 814.
- ultrafilter theory, (56) 324.

Plasmatic streaming movement, (54) 723.

Plasmodia of birds, infectivity for mosquitoes, (59) 356.

Plasmodiophora—

- brassicæ, *see* Cabbage clubroot.
- fici-repentis n.sp., description, (58) 658.
- tabaci n.sp. in tobacco plants, (58) 551.
- tabaci n.sp., structure and cultural history, (57) 846.

- Plasmodiophora—Continued.
 vascularum in Porto Rico, (55) 248.
 vascularum, notes, (51) 850.
- Plasmodium—
 cathemerium n.sp., description, (58) 678.
 inconstans n.sp., description, (58) 678.
 rouxi, new malarial parasite of birds, (60) 580.
 spp., cause of bird malaria, (58) 678.
- Plasmolysis—
 afterinfluence, (57) 515.
 and permeability, (53) 422.
 volume changes during, (54) 723.
- Plasmopara—
 halstedii, notes, (60) 645.
 viticola in Egypt, (54) 453.
 viticola, notes, (51) 156; (52) 746; (55) 346; (57) 850.
 viticola on Ampelopsis veitchii, (58) 53.
 viticola, signal service regarding attacks, (52) 150.
- Plaster, thermal conductivities, (60) 583.
 Plastering, facts relating to, (51) 189.
- Plastids—
 degenerescence in and parasitism, (60) 29.
 development, (55) 817.
 evolution of, (54) 319.
 formation in plants, (54) 221.
 green, assimilation capability, (57) 321.
 in plants, evolution, (52) 519.
 in plants, reversion, (59) 428.
 pigments of, studies, (59) 24.
 pigments, transformation in living tissues, (59) 819.
- Plastophora spp. parasitic on Solenopsis geminata, (59) 859.
- Platinum metals, electrometric titration, (59) 113.
- Platoeceticus spp., notes, (60) Tex. 164.
- Platybothrus brunneus, notes, (53) 756.
- Platyedra—
 erebodoxa, parasites of, (60) 252.
 gossypiella in Australia, summary, (55) 257.
 scutigera, proposed name, (60) 560.
- Platygaster—
 hiemalis, parasite of Hessian fly, (54) 856.
 sp., notes, (56) 661; (59) 62.
 vernalis, polyembryonic development, (52) 360.
- Platygasterinae, revision, (51) 764.
- Platylophus trifolius, ecology, (55) 540.
- Platymetopius frontalis, notes, (59) 250.
- Platynosomum fastosum in United States, (60) P.R. 774.
- Platynota tinctana, notes, (52) 757.
- Platypoecilus maculatus chromosomes, crossing-over, (60) 30.
- Platyptilia—
 carduidactyla, control, (52) Calif. 58.
 pusillidactyla, notes, (52) 356.
- Play production for country theater, (51) 494.
- Plecoptera, monograph, (54) 53.
- Plectodiscella veneta—
 control, (51) Wis. 655; (53) Mich. 354; (55) N.C. 249.
 notes, (55) Oreg. 650; (57) 343.
- Plectospira myriandra n.g. and n.sp., notes, (57) 153.
- Plectridium pectinovorum, notes, (56) 847.
- Plenodomus fuscomaculans, notes, (52) Calif. 49.
- Pleospaeria semeniperda n.sp., notes, (56) 844.
- Pleospaerulina briosiana, studies, (56) 649.
- Pleospora—
 graminea, notes, (55) 146; (56) 541; (59) 539.
 herbarum citrorum, notes, (59) 347.
 mali, notes, (59) Wash.Col. 46.
 spp., notes, (59) 536.
 trichostoma on barley, effect of nutritional condition, (60) 546.
- Plesiocoris—
 rugicollis, biology, (52) 658.
 rugicollis, control, (56) 660.
 rugicollis, mode of perennation, (60) 351.
- Plesispa reichei, studies, (51) 554.
- Pleuropneumonia—
 bovine, diagnosis, (54) 73.
 bovine, immunization, (58) 774.
 bovine, papers on, (57) 181.
 bovine, types of virus, (57) 182.
 contagious bovine, notes, (55) 173; (57) 181; (58) 473, 474.
 contagious, immunity, (54) 171.
 control, (54) 871.
 equine contagious, treatment, (52) 684.
 equine, treatment with puinosol, (59) 676.
 notes, (59) 471; (60) 475.
 of cattle imported into Japan, (56) 174, 175.
 of cattle, pathological anatomy, (60) 72.
 of goats in Greece, (60) 479.
 of horses, immunization, (60) 373.
 relation to strangles in horses, (57) 472.
 summary, (59) 476.
- Pleurotropis—
 bucculatricis n.sp., description, (58) 265.
 epigonus, notes, (59) 62.
 lividiscutum n.sp., description, (52) 361.
 sp., notes, (52) Iowa 358.
- Pleurotus ostreatus—
 growth reaction toward acidity, (53) 224.
 resistance to sodium fluoride and zinc chloride, (56) 853.
- Plow bolts, simplified list, (52) 586.

Plowing—

- deep, experiments, (53) Ill. 17, Ohio 17.
- deep, requirements and machinery, (55) 779.
- depths, comparison, (58) S.Dak. 734.
- draft reduction, electrical method, (51) 589.
- draft tests on fertilizer plats, (60) 481.
- dynamometer tests at Potchefstroom, (53) 790.
- electric, (53) 389; (56) 384.
- electric, and transport, paper on, (59) 585.
- electric, in Italy, (59) 479.
- experiments, (58) Can. 224.
- experiments in India, (55) 178.
- relation to mechanical properties of soils, (54) 178.
- resistance of soils, apparatus for measuring, (59) 378.
- spring v. fall, (54) U.S.D.A. 31.
- studies, (52) Utah 719; (58) U.S.D.A. 324.
- tests with monopolin and benzol, (56) 80.
- traction dynamometer for, (59) 480.
- without turning furrow, (52) 785.

Plowrightia—

- ribesia on currants, (60) 352.
- solanicola n.sp., description, (53) 46.

Plows—

- and plowing, (56) 80, 282; (60) 379.
- and plowing in Philippines, (54) 77.
- design, fundamentals, (53) 685.
- draft, effect of soil moisture and compaction, (54) Nebr. 384.
- draft, effect of soil treatment, (55) 882.
- draft, effect of type of moldboard, (55) 782.
- draft, soil factors affecting, (53) 286.
- draft, studies, (53) Iowa 788; (56) Ill. 280; (57) Nebr. 579.
- draft, tests, (51) Mo. 787; (54) Ill. 381, Mo. 778; (58) Ark. 372; (60) Ark. 876.
- effect of location of knife colter, (53) 85.
- historical development, (59) 480.
- improved, (54) 177.
- motor, gripping action in, (54) 583.
- subsoil, development, (51) 187.
- with vertical rotary tiller, experiments, (59) Ind. 782.
- working surface, (58) 283.
- yoking oxen to, (56) 480.

Plum—

- aphid and brown rot control, (56) 555.
- aphid, control, (55) 662; (57) 54.
- aphid, mealy, dormant spray for, (59) Calif. 755.
- aphid, mealy, studies, Calif., (55) 352; (57) 256.

Plum—Continued.

- aphid, notes, (60) 161.
- aphid, rusty, notes, (54) Ohio 155.
- bacterial spot, control, (51) 549.
- bacterial spot, fungicide tests for, (60) Del. 744.
- black spot, notes, (55) Ohio 145.
- bladder, notes, (54) 144.
- blossom wilt, notes, (60) 345.
- brown rot, control, (57) 54.
- brown rot, factors affecting susceptibility, (57) 155.
- brown rot, notes, (56) 647.
- cureculio—
 - control, burning from, (60) S.C. 755.
 - in apple orchards, (57) 860.
 - insecticide tests for, (59) 62.
 - life history, (59) 561.
 - notes, (59) 652.
 - on peaches, (53) N.C. 755; (57) U.S.D.A. 363.
 - on peaches, life history and control, (51) 554.
 - studies, (60) Conn.State 751, Md. 841.
- die-back, studies, (56) 747; (60) 835.
- disease in eastern Kansas, (57) 848.
- diseases and pests, (58) Mich. 336.
- diseases, control, (54) Can. 149.
- diseases, notes, (56) 747.
- flowers, studies, (60) 823.
- fruit rot, notes, (54) 745.
- industry, economic aspects, (60) Calif. 385.
- Methley, tests, (57) Tex. 136.
- moth in Sweden, control, (51) 553.
- pits, germination, (52) N.Y.State 46; (57) Nebr. 533.
- pollen, longevity, (55) 325.
- powdery mildew, notes, (55) 346.
- roots, Marianna, as peach stock, (56) 141.
- rootstocks and scions, (60) 45.
- rosette, cause, (55) 550.
- rust, notes, (57) 549.
- seeds, germination, (57) 835.
- seeds, late stratification, effect, (53) 641.
- silver-leaf, notes, (56) 747; (59) 450.
- sour sap, cause, (51) 250.
- stocks, notes, (51) 240.
- tree borer, summary, (58) S.Dak. 755.
- tree chlorosis, lime-induced, control, (60) 42.
- trees, blossoming period, factors affecting, (56) 42.
- trees, crown gall affecting, (56) 653.
- trees, effects of sod in relation to moisture and nitrates, (53) N.Y.Cornell 642.
- trees in northern Manchuria, (57) 44.
- withertip, notes, (56) 747.
- Plumage, white, inheritance in pigeons, (56) 128.

Plumb, Professor, as teacher, (53) 571.

Plumbing—

house, hydraulics and pneumatics, (52) 689.

in the farmhouse, (52) U.S.D.A. 389.
repairs in the home, (54) U.S.D.A. 96.
systems for farm homes, (54) Ill. 684.

Plums—

as rootstocks, (59) 835.

blooming data, (52) N.J. 738.

blooming season, (57) Ohio 437.

blossom bud development, (57) 834.

breeding experiments, (53) U.S.D.A.
141; (55) 836; (57) 536, N.Y.State
636; (60) 41, 541.

breeding, value of homozygous species,
(60) 528.

Burbank's results with, (59) 725.

Caldwell system of training, (52)
Calif. 42.

cold storage studies, (54) 644; (58)
535; (60) 541.

cross-pollination, (51) 145.

culture experiments, (60) Alaska 736.

culture in Canada, (54) 539.

culture in Pacific States, (52) U.S.D.A.
237.

culture on grass orchard principle, (60)
439.

Danson, varieties, (60) Ohio 144.

effect of cultural treatments, (53)
U.S.D.A. 141.

effect of time of harvesting on quality,
(52) 142.

European, pollination requirements in
California, (57) 833.

grafting affinities, (58) Calif. 335.

growth and fruiting habits of irrigated
sections of West, (58) U.S.D.A. 438.

Hall, description, (52) N.Y.State 46.

hybridization studies, (57) 833.

identification of nursery stock, (56)
837.

immature, dropping, (51) Del. 140.

inheritance of hardiness in, (55) Minn.
129.

Japanese, culture in Arizona, (55)
U.S.D.A. 438.

Japanese, pollination requirements in
California, (57) 833.

Japanese, thinning tests, (57) 834.

keeping quality, (52) 539.

maturity, relation to shipping and
quality, (57) Calif. 339.

mutations in, (60) 127.

notes, (52) Alaska 536.

on various stocks, (60) 541.

Patten, behavior, (59) Iowa 39.

physiological dropping, cause, (55) Del.
451.

pollination studies, (55) Ohio 138;
(57) 535; (58) 37, 141; (59) 440.

propagation by stem cuttings, (57)
238.

propagation, stocks for, (53) U.S.D.A.
141.

Plums—Continued.

pruning, (51) Kans. 40; (59) 836;
(60) 823.

pruning effects, (53) U.S.D.A. 141.

pruning time, (53) Can. 840.

Rhizopus affecting, (51) 354.

spray schedules for, (51) N.J. 144,
W.Va. 240; (53) Mich. 37; (55)

N.J. 38, Ohio 38, Kans. 238.

sterility in, (58) 739.

stock and scion compatibility, (60) 142.

stocks for, size, (58) Can. 837.

storage studies, (52) Calif. 41.

surplus, utilization, (54) Calif. 789.

thinning experiments, (60) 141.

varieties, (52) Mont. 441; (57) N.H.
335; (58) Ohio 138; (59) N.Y.State

233; (60) Mont. 738.

varieties for Iowa, (52) Iowa 442.

varieties, identification, (56) 443.

varieties in Wyoming, (53) 536.

varieties, new, (54) N.Y.State 643.

variety, notes, (56) S.Dak. 532.

variety tests, (53) Ariz. 741; (56)
Miss. 739; (60) Ill. 229.

wild, plum pocket on, (52) 852.

winter hardiness, (52) Ky. 442.

winter injury, (53) 125.

yields, (59) N.Mex. 231.

Pluripotenz, use of term, (56) 126.

Plusia spp., notes, (56) 639.

Plutella maculipennis, parasite of, (56)
856.

Pneumathodes—

of coconut palm, (57) 321.

on roots of oil palm, (55) 630.

Pneumococci—

infectivity, effect of site of inocula-
tion, (54) 379.

inhalation, production of immunity in
mice by, (52) 682.

preserving, hormone blood agar for,
(53) 582.

Pneumonia—see also Pleuropneumonia.

ascaris, studies, (51) 383.

associated with Bacillus abortus, (53)
785.

in guinea pigs, cod-liver oil for, (58)
481.

of horses, antistreptococcus serum
for, (58) 879.

of sheep, (60) 579.

progressive, and Jagziekte in sheep,
comparison, (57) 673.

Pneumono-mykosis in a bovine, (60) 574.

Phyxia scabiei, notes, (57) Ohio 162; (60)
166.

Poa—

annua, adaptation to altitude, (60)
26.

bulbosa, habits and cultural needs,
(57) 631.

compressa germination, effect of light
and temperature, (51) 822.

fertilis, seed production, (52) 334.

spp., germination, (57) 531.

spp., seed characteristics, (58) 133.

- Pod borer, notes, (57) 655.
- Podisus spinosus*, notes, (56) Va. 556.
- Podocarpus gracilior* leaf disease, notes, (57) 444.
- Podonta daghestanica*, morphology and biology, (59) 860.
- Podontia affinis*, notes, (52) 361.
- Podosphaera leucotricha*—
control, (52) 848; (60) 350.
mode of perennation, (60) 351.
notes, (57) 649.
- Podosphaera oxycanthae*, notes, (54) 448; (55) 346.
- Podosporiella verticillata*, notes, (56) 844.
- Podsol—
formation, process, (54) 214.
profile, distribution of nitrogen in, (54) 416.
soils, acidity and effect of liming, (58) 812.
soils, characteristics and silvicultural importance, (59) 812.
soils, effect of excessive liming, (53) 621.
soils, effect of lime and phosphorite, (60) 509.
soils in Swedish forests, (55) 217.
soils, liming, (54) 518.
- Poecilocoris hardwicki*, notes, (52) 361.
- Poecilopsis hybrids*, inheritance of food habits, (60) 62.
- Poeciloscytus cognatus* on sugar beets, control, (58) 859.
- Pogoniris* varieties, studies, (57) N.Y. Cornell 341.
- Poi, nutritive value, (58) 83.
- Poison baits—
for cane grubs, (54) 257.
for crows, (56) 456.
for cutworms, (57) Mich. 558; (59) N.Dak. 854; (60) 457.
for grasshopper control, (57) Nebr. 452, Mich. 558; (59) 272.
in South Wales, tests, (60) 61.
- Poison ivy extermination and treatments for, (58) N.J. 36.
- Poison production in animals, (55) 852.
- Poisoning, foreign, paper on, (51) 180.
- Poisonous—
animals and their venom, (57) 379.
plants, *see* Plants, poisonous.
- Poisons—
detection and quantitative determination, (59) 12.
economic, analyses, (55) 759.
effects, treatise, (52) 178.
stomach, for caterpillars, action, (53) 52.
- Polarity phenomena in sea kale roots, (58) 217.
- Poles—
for tobacco shade tents, preservatives for, (58) Conn.State 680.
rural electric, damage from termites, (59) 281.
- Poles—Continued.
utilization in farm buildings, (52) 887.
- Poliomyelitis, relation to insect carriers, (60) 453.
- Polistes—
gallicus infested by *Stylops*, (59) 257
mating habits, (53) 856.
- Political radicalism and conservatism, demographic and economic basis, (57) 191.
- Poll evil, notes, (56) Kans. 876.
- Pollards and wheat bran, composition and feeding value, (52) 167.
- Pollen—
abortion in chromosomal types of *Datura*, (56) 127.
abortive, percentage in plants, (56) 815.
carrier, determination, (53) 425.
cells, longevity, (55) 325.
collecting and preserving for hay fever treatment, (60) U.S.D.A. 624.
collection and utilization by bees, (56) N.Y. Cornell 260.
dimorphism in corn, (56) 329.
food stored in, (51) Wis. 435.
grains of cotton, size differences, (55) 27.
grains, vacuome in, (53) 520.
grains with aberrant chromosome numbers, experimental production, (58) 823.
growth, inhibition by living tissue extracts, (60) 725.
longevity, (56) 427.
morphology, index to plant relations, (56) 427.
mother cell and embryo sac in sugar beet, development, (57) 823.
mother cells, meiosis in, (56) 521; (57) 823.
mother cells, uninucleate, division in, (57) 121.
physiology, (55) 521.
production and incompatibilities in apples and pears, (58) 739.
sterility—
and shedding of bud and fruit, (51) 732.
in *Datura*, (57) 823.
in *Epilobium* hybrids, (57) 326.
in peaches, (58) 39.
in potatoes, (58) 320.
in shepherd's purse, inherited, (57) 824.
relation to polyploidy in *Rubus*, (58) 730.
- tetrad wall formation in *Lathraea*, (57) 216.
treatment with ultra-violet rays, effect, (55) 742.
- tube growth—
differential, nucleus and cytoplasm in, (57) 121.

Pollen—Continued.

- tube growth—continued.
 in *Datura*, abnormalities, (57) 121.
 in *Linaria*, (57) 222.
 in vitro, effect of temperature, (56) 815.
 rôle of salts in, (56) 26.
- Pollenia rudis*, studies, (58) 350.
- Pollination—*see also specific plants.*
 and bees, (57) 264.
 experimental, (53) 728, 824; (54) 25.
 field observations in, (58) 233.
 in orchards, (56) 756.
 of fruit, general survey, (57) 42.
 of fruits, rôle of bees in, (54) 158.
 prevention, degenerative changes in ovules from, (60) 524.
- Polychrosis botrana—
 biology and control, (55) 456.
 parasites of, (54) 458.
 studies, (53) 656.
 varying abundance, (58) 755.
- Polychrosis viteana, *see* Grape berry moth.
- Polydactylism in man, inheritance, (51) 526.
- Polydactyly in fowls, (55) 523.
- Polydrusus cervinus*, early stages, (56) 64.
- Polyembryony—
 false, in corn, (56) 30.
 in animals, (58) 528; (59) 648.
 in rice, (60) 31.
- Polygonum—
 convolvulus in grain seed, (53) 36.
 lapathifolium in grain seed, (53) 36.
 savatieri pollen mother cells, meiotic division, (55) 632.
 spp., control, (54) 240.
- Polygyny, effect on sex ratio, (55) 635.
- Polyhedral body diseases of insects, (57) 553.
- Polyhybrids, numerical results of selection, (57) 222.
- Polyomorphy in *Vaccinium uliginosum*, (54) 822.
- Polynema—
 eutettixi affecting beet leafhopper, (52) Calif. 58.
 striaticorne, bionomics, (60) 846.
- Polyneuritis—
 avian, and hydrocyanic acid poisoning, symptoms, (51) 563.
 avian, diets for study, (51) 270.
 avian, effect of turnip juice, (58) 89.
 avian, effect of ultra-violet light, (52) 366; (55) 695.
 avian, nerve paralysis in, (52) 566.
 decrease in digestive efficiency in, (54) 892.
 effect of insulin, (54) 894.
 heat production in, (54) 892.
 in fowls and beriberi in man, relation, (60) 394.
 in young, effect of inadequate maternal diet, (58) 391.
 mechanism of production in pigeons, (52) 68.

Polyneuritis—Continued.

- relation to carbohydrates of a vitamin-free ration, (51) 70.
 test of indolinones for, (56) 92.
- Polyocha* sp., notes, (52) 853.
- Polypeptides—
 in corn kernel, (53) 502.
 in oat kernel, (53) 501.
 in rye kernel, (53) 712.
 sulfonation, (59) 309.
- Polyploids, behavior, (57) 32.
- Polyploidy—
 and origin of species, (54) 727.
 in corn, (55) 129.
 in *Drosophila*, (54) 226.
 in *Rosa*, (58) 525.
 occurrence in plants and animals, (51) 333.
 rarer in animals than in plants, (54) 226.
 recent experiments, (56) 27.
 relation to pollen sterility in *Rubus*, (58) 730.
- Polypodium polypodioides* leaves, studies, (55) 630.
- Polyporaceae in Bulgaria, (56) 630.
- Polyporus—
 adustus as wound parasite of apple trees, (56) 849.
 adustus, growth reaction toward acidity, (53) 224.
 coffeae, notes, (54) 254.
 fissus, notes, (54) 150.
 hispidus, notes, (55) 150, 346; (56) 654.
 rubidus n.sp., notes, (56) 851.
 rubriporus on oak, (54) 150.
 schweinitzii—
 on Douglas fir in North Carolina, (58) 54.
 resistance to sodium fluoride and zinc chloride, (56) 853.
 sporophores on yellow pine, (58) 54.
 spp., notes, (55) 351.
 spraguei, cause of heart rot, (54) 150.
 spraguei, notes, (59) 852.
 triquetter, notes, (60) 58.
 vaporarius, notes, (57) 552.
 versicolor, notes, (59) 537.
 volutus on western yellow pine slash, (52) 452.
- Polysaccharides—
 constitution, (51) 100, 607.
 treatise, (52) 609.
- Polysaccum crassipes, notes, (51) 46.
- Polyscelis modestus parasite of Hessian fly, (52) 663.
- Polyspora lini, notes, (53) 246; (58) 147.
- Polystictus—
 spp. on living trees, (54) 51.
 spp. resistance to sodium fluoride and zinc chloride, (56) 853.
 triquetter, notes, (60) 58.
 versicolor, growth reaction toward acidity, (53) 225.
 versicolor on apple wood, (56) 248.

- Polysulfide—
 dips, diluted, decomposition, (57) 77.
 sprays, fungicidal value, (60) 449.
- Polysulfides in sprays, estimating, (53) 506.
- Polythrincium trifolii, life history, (56) 749.
- Pomace flies—*see also* Drosophila.
 abnormal, sporadic appearance, (59) 724.
 appearance of reddish bodied flies, (55) 632.
 breeding experiments, (55) 523.
 chromosome breakage by X-rays, (54) 432; (55) 327.
 constrictions in chromosomes, (58) 823.
 control, (54) 460.
 crossing-over between black, cinnabar, and purple, (59) 521.
 curly wing in, genetics, (51) 129.
 differences in vitality, (58) 629.
 duration of life and density of population, (58) 29.
 duration of life in, (51) 128, 737.
 elimination of chromosomes, (55) 522.
 exceptional classes, (57) 622.
 facet number as affected by temperature, (51) 57.
 genetics of, (54) 224.
 Habronema larvae in, (57) 659.
 haploid individuals, (55) 523.
 hereditary tumors in, (53) 28.
 inbred, fertility and toleration of temperature, (54) 225.
 inheritance of egg size in, (52) 221.
 linkage in, effect of X-ray and temperature, (54) 324.
 male and female, chromosome behavior in, (60) 725.
 Mendelian inheritance in, (52) 427.
 minute-like III-chromosome recessive in, (53) 729.
 mutable characters, (60) 219.
 mutation of bar locus, (60) 219.
 mutations affecting spermathecae, (60) 219.
 mutations in, (55) 820.
 mutations induced by X-rays, (58) 25.
 mutualism and yeasts of wine, (57) 553.
 new leg mutant in, (54) 821.
 physiology of reproduction in, (59) 221.
 reciprocal crosses in bar series, heterozygotes from, (54) 430.
 resistance to hydrocyanic acid gas, (60) 454.
 unequal crossing-over at the bar locus, (54) 225.
 white-eyed, pigmented facets in, (56) 223.
- Pomace fly—
 crosses, relation of similar genes in, (55) 632.
 egg production from male tissue, (55) 327.
 mosaic, cause, (60) 326.
- Pomace fly—Continued.
 strain, self-fertile but infertile in crosses, (54) 431.
- Pomegranate—
 blotch, description, (58) 250.
 sirup, preparation, (52) Calif. 14.
- Pomegranates—
 culture in Arizona, (55) U.S.D.A. 438.
 nonvolatile acids of, (58) 711.
- Pomological investigations in United States, (51) 100.
- Pomology—
 systematic, textbook, (54) 443.
 treatise, (53) 37; (60) 41.
- Pond—
 farm, dam and spillway for, (53) 83.
 lilies, yellow, insect injury, (59) 559.
 lily leaf beetle, notes, (52) Me. 661.
 silts, analyses, (55) 223.
- Ponera kalakaua, notes, (55) 858.
- Pontia monuste, notes, (51) V.I. 856.
- Pontia rapae, *see* Cabbage butterfly and Cabbage worm, imported.
- Pop corn—
 acclimatization in Philippines, (55) 229.
 breeding experiments, (51) Mich. 133.
 culture, (51) N.Dak. 436.
 popping quality, factors affecting, (58) 430.
 popping quality of varieties, (51) N.Dak. 837.
 popping, relation to moisture content, (51) N.Y.State 260, N.Y.State 261, N.Dak. 437.
 selective fertilization among gametes, (52) 432.
 varieties, (55) Hawaii 526.
- Popillia japonica, *see* Japanese beetle.
- Poplar—
 bracket fungus, notes, (55) 346.
 Canadian, Micrococcus ulmi on, (58) 154.
 canker, description, (56) 250.
 canker in Maine, (58) 555.
 cankers in Ontario, (52) 353.
 Cytospora, notes, (52) Utah 745.
 disease, notes, (52) 152.
 Norway, origin, qualities, and uses, (54) 51.
 sawfly, paper on, (55) 659.
 stumps, annual sprouts from, (52) Pa. 240.
 tree borer, notes, (60) 651.
- Poplars—
 dendrographic records, (59) 122.
 insects affecting, (59) 652.
- Poppies—
 fall seeding experiments, (52) 633.
 fertilizer experiments, (53) 625.
- Poppy—
 bacterial soft rot, (58) 853.
 downy mildew, notes, (55) 346.
 Mexican, feeding tests, (59) 272.
 seeds, bacteria in, (55) 818.

Population—*see also* Rural population.

- Conference, World, proceedings, (59) 386.
 distribution and cultivated land in Sweden, (55) 80.
 distribution by age groups, (58) Ohio 684.
 in north Auckland, distribution, (51) 118.
 problems in United States and Canada, (59) 385.
 progress of, (59) 684.
 relation to cultivated area, (55) 884.
 study of three townships, (59) N.Y. Cornell 386.
- Populations, make-up of offspring, formulas, (57) 722.
- Populus species, introduction into South Africa, (57) 440.
- Porcupine extermination, (59) 554.
- Poria incrassata*—
 affecting Douglas fir, (56) 250.
 cause of wood decay, (54) 255.
 control, (51) 156.
 resistance to sodium fluoride and zinc chloride, (56) 853.
 timber destruction by, (51) 53.
- Poria* spp., notes, (54) 150; (59) 54.
- Poria subacida*, notes, (58) 54.
- Pork—
 and pork products, statistics, (56) U.S.D.A. 891.
 carcasses, freezing, (58) 683.
 cost of production, (51) Oreg. 689, Ind. 891; (54) Can. 164; (55) Ind. 79; (56) Ill. 385; (57) Ind. 585; (58) Ill. 380; (59) Ind. 783; (60) Ill. 282.
 cracklings, protein in, nutritive value, (56) 290.
 economy of different cuts, (58) Ill. 386.
 from home-grown feeds and farm by-products, (53) 70.
 frozen, vitamin A in, (51) 268.
 home cured, (53) 71; (57) Ky. 291.
 home curing, directions, (58) Ga. 387.
 pie poisoning at Derby, (51) 272.
 production, (59) N.Dak. 867.
 experiments, (60) 658.
 feed and other requirements, (57) Ohio 188.
 feed values for, (59) Mich. 564.
 in 1924, (54) 466.
 in South Africa, (51) 775.
 in Sweden, (53) 668.
 on Wyoming corn, (56) Wyo. 269.
 sunlight as factor, (53) Wis. 463.
- products, flavoring from fish meal, (52) 769.
 products, prices at public markets, (52) 692.
 proteins, biological value, (52) 762.
 quality, effect of herring meal, (58) 167.
 quality, effect of pea rations, (54) 760.
 quality, studies, (58) Ill. 355.

Pork—Continued.

- salting on the hoof, (54) Iowa 860.
 soft, effect of oats, (55) 865.
 soft, papers on, (57) 761.
 soft, prevention, (58) S.Dak. 765.
 soft, relation to soy bean feeds, Ill., (56) 370; (60) 259.
 soft, studies, (51) Ga. 173, N.C. 871; (52) Fla. 270; (53) Ga. 272, N.C. 775; (54) Fla. 367; (55) Ga. 161, N.C. 263, U.S.D.A. 264, 363, Miss. 565, Miss. 667; (56) Ark. 369; (57) N.C. 269, Ga. 270; (58) Miss. 66; (59) Ala. 67, U.S.D.A. 69, Ga. 261, Ala. 663, Calif. 765; (60) Ark. 857.
- soft, studies with rice products, Ark., (55) 61; (58) 357.
 trade in England and Wales, (59) 684.
 vitamin A in, (54) 390.
- Porodaedalea pini*, notes, (54) 150.
- Porosagrotis orthogonia*, effect of weather, Mont., (52) 453; (54) 554.
- Porthesia similis*, notes, (53) 558.
- Porthetria dispar*, *see* Gipsy moth.
- Porto Rico—
 College, notes, (55) 99.
 Insular Station, notes, (57) 300; (59) 399.
 Insular Station, report, (51) 899; (53) 195; (58) 96.
 Station, notes, (51) 498; (55) 900; (57) 100.
 Station, report, (51) 898; (54) 698; (56) 598; (57) 494; (58) 599; (60) 795.
- Portulaca grandiflora*, ever-segregating race in, (54) 727.
- Porzol I, use against cereal smut, (54) 247.
- Posthormostomum commutatum in United States, (60) P.R. 774.
- Posts, *see* Fence posts.
- Posture, review of literature, (57) 292.
- Potamopyrgus antipodum zelandeae* as intermediate host of liver fluke, (58) 679.
- Potash—
 absorption by humic acid, (53) 420.
 availability, effect of manure, (53) Wis. 415.
 concentration essential for plant growth, (60) Ala. 121.
- deposits—
 in Poland, (57) 21.
 in United States, hearings on, (52) 214.
 of southwest Texas, (53) 516.
 Solikamsk, (59) 817.
 determination in mixed fertilizers, (56) 504.
 determination, method, (54) 612.
- effect on—
 citrus fruit, (60) Fla. 139.
 cotton bolls and foliage, (56) 323.
 crop yields, (57) Mass. 20.
 growth and composition of plants, (55) 221.
 muck soils, (55) 516.

Potash—Continued.

- effect on—continued.
 - nitrogen transformation in moor soils, (53) 118.
 - peaches, (51) N.J. 644.
 - purity of sugar cane juice, (56) 524.
 - soil reactions, (56) 22.
 - soy bean chlorosis, (58) Del. 420.
 - sweet potatoes, (51) 342; (55) 436; (57) N.J. 742.
 - tomatoes, (57) Tex. 534; (59) Iowa 39.
 - yield and quality of grapes, (56) 644.
- extraction from greensand, (55) 422.
- fertilization of fishponds, (51) 625.
- fertilizers, comparison, (55) Ind. 18.
- fertilizers, effect on apples, (60) 43.
- fertilizing value, (54) Ohio 123, 816; (55) Mo. 219, Miss. 237, Oreg. 625.
- for citrus fruits, studies, (56) Fla. 832.
- from biotite and sericite, (51) 22.
- from blast furnaces, (51) U.S.D.A. 122.
- from kelp, (51) 610, 728, 818.
- from leucite, (51) 423.
- in banana plants, (60) P.R. 739.
- in cylinder soils, (52) 119.
- in fertilizers, determination, (51) 700.
- in fertilizers, effect, (57) Ind. 317.
- in greensands of New Jersey, (51) 121.
- in Hawaiian soils, availability, (51) 420.
- in soil—
 - and crop removal of, (57) Tex. 511.
 - determination, (51) 314; (55) 814.
 - effect of cropping, (53) Tex. 617.
 - effect of lime and fertilizers, (56) 622.
 - relation to water requirements of plants, (58) 722.
- industrial development, treatise, (56) 213.
- industry—
 - domestic and foreign status, (56) 23.
 - in 1925, (56) 626.
 - in United States, (51) 625.
 - Russian, (51) 218.
- leaching from soil, (53) 117.
- minimum concentration for crops, (58) Ark. 315.
- plant response to, relation to soil requirements, (59) Ala. 22.
- production and sale in 1924, (55) 626.
- production from Minnesota shale, (52) 817.
- recovery from Steffen waste water, (53) 322.
- requirements of soil, determination, (55) 19.

Potash—Continued.

- sericite as source, (56) 322.
 - sources for agricultural use, (55) 222.
 - subsoil, availability, (53) 214.
 - tests on potatoes, (53) N.H. 432.
 - Texas, commercial possibilities, (57) 21.
 - waste liquors, effect on soil and plants, (55) 815.
 - world's resources in, (60) 511.
- Potassium—
- abnormal absorption over sodium by the constructed cell, (55) 627.
 - absorption by plants, effect of light, (59) 215.
 - absorption by wheat seedlings, effect of pH, (58) 213.
 - acid phthalate, effect on young tomato plants, (55) 519.
 - adsorption from different sources, (60) 421.
 - ammonium nitrate, fertilizing value, (60) N.C. 719.
 - ammonium phosphate, fertilizing value, (60) N.C. 719.
 - assimilation by plants, effect of soil reaction, (54) 515.
 - availability—
 - effect of liming, (58) 621.
 - effect of nitrogenous fertilizers. (60) Ala. 120.
 - effect of sulfur and gypsum, (52) Ky. 421.
 - estimation, (59) Ohio 209.
 - in soil, (56) Ohio 512.
 - in soil, measurement, (52) Pa. 214; (58) 518.
 - to plants, effect of manure, (59) 212.
 - bearing rocks, uses for fertilizers, (52) 514.
 - behavior in milk, (51) 316.
 - biphosphate, effect on acid soils, (52) 621.
 - carbonate, action on calcareous soils, (54) 810.
 - carbonate, effect on acid soils, (52) 621.
 - carbonate, effect on availability of phosphoric acid, (51) 324.
 - chlorate as weed poison, (57) 135.
 - chloride—
 - depressing effect on grain, (58) 532.
 - effect on growth of tomato plant, (56) 441.
 - effect on soy beans, (51) Del. 132; (52) 339.
 - fertilizing value, (52) Del. 119; (53) Ohio 217; (54) 20; (55) Ark. 18.
 - microscopical identification, (51) 10.
 - value for tea soils, (55) 220.
 - compounds, substitution of sodium for, (58) 204.

Potassium—Continued.

- crop producing power, (59) 514.
- crop response to, (58) 620.
- cyanide, effect on *Fusarium lini*, (55) 630.
- deficiency, effect on young apple trees, (55) 323.
- determination—
 - effect of silica dishes in, (59) 413.
 - in foods, (56) 614.
 - in presence and absence of sulfates, (56) 504.
 - method, (54) 410.
 - perchlorate method, (51) 204; (59) 412.
- effect of variation in a wheat ration, (60) 168.
- effect on cotton yields, (60) S.C. 717.
- effect on orange trees, (52) Calif. 26.
- effect on quality of crops, (58) 620.
- excitant effect on leaf activities, (57) 119.
- ferrocyanide as source of iron for plants, (55) 518.
- fertilizers, notes, (60) Oreg. 716.
- fertilizing value, (58) P.R. 537.
- from greensand, (56) 122.
- from silicate rocks, value, (51) 327.
- in animal body, distribution, (58) Mo. 460.
- in animal nutrition, (56) 465; (57) 64.
- in blood serum, determination, (52) 411.
- in orthoclase, water solubility, (60) Ariz. 517.
- in plant tissues, distribution, (54) 521; (58) 213.
- in plants as indicator of supply in soil, (56) 720.
- in soil solution, effect of liming, (59) Ala. 617.
- in soils as indicator of fertilizer requirements, (58) 507.
- in sugar cane juice, determination, (58) P.R. 508.
- iodide as goiter preventive, (56) Mont. 173.
- iodide, effect on sugar beets, (55) 222.
- iodide feeding for pigs, (53) Iowa 777; (54) 567.
- leaching experiments, (51) 212.
- liberation by calcic and magnesian additions, (51) 20.
- liberation from soils, (51) 218.
- losses from soils, (51) Tenn. 320.
- nitrate, microscopical identification, (51) 10.
- permanganate—
 - as aid in rooting cuttings, (58) 838.
 - for grape *Oidium*, (57) 851.
 - use in drinking water for poultry, (53) 682.
- phosphate, effect on acid soils, (52) 621.

Potassium—Continued.

- replacement in soil, (51) 324.
 - requirement of cereals, (53) R.I. 325.
 - requirements of soil, determination, (51) 20.
 - requirements of soil provinces of eastern United States, (58) 620.
 - rôle in plant nutrition, (60) Ark. 804.
 - salts, crop response to, (53) 724.
 - salts, effect on ewes, (53) Iowa 768.
 - salts, effect on nitrification of ammonium sulfate, (59) 424.
 - salts, effect on optical rotation of gelatin, (58) 610.
 - salts, fertilizing value, (51) 727.
 - selective absorption by plants, (57) 215.
 - selective take-up by plants, (58) 523.
 - silicate, effect on acid soils, (52) 621.
 - sodium tartrate, microscopical identification, (51) 10.
 - solubility, effect of fertilizers and cropping, (52) Ohio 214.
 - solubility tests, (56) 422.
 - sulfate, effect on acid soils, (52) 621.
 - sulfate, fertilizing value, (51) 623; (52) 526.
 - supply of soil, factors affecting, (53) 516.
 - supply to crops from manure, (54) Ohio 197.
 - uptake and development, (55) 426.
 - water-soluble and acid-soluble, relation to that removed by crops, (60) Tex. 804.
 - xanthate, action, (55) Calif. 352.
 - xanthate for garden nematodes, (59) Calif. 747.
 - zeolites, hydrolysis, (60) Ariz. 515.
- Potato—
- anthracnose, biology, (53) 46.
 - anthracnose, studies, (58) 550.
 - aphid as vector of potato mosaic, (54) 847.
 - aphid, life cycle and color varieties, (54) 457.
 - aphid, notes, (51) Mich. 149; (55) N.Dak. 555.
 - aphid, transmission of virus diseases by, (60) 243.
 - aphids, summary, (54) Me. 658.
 - Association of America, proceedings, (51) 340; (53) 634; (56) 338; (57) 730; (60) 329.
 - bacterial blight, notes, (54) Fla. 245.
 - bacterial scurf, (54) 546.
 - beetle, Colorado—
 - control, (56) Wis. 756; (58) Minn. 862; (59) Idaho 757.
 - discussion, (54) 448.
 - distribution, fluctuation in, (54) 556.
 - effect of arsenical sprays, (56) 554.
 - eradication, (57) Idaho 755.
 - hibernation studies, (54) 556.
 - in British Columbia, (51) 256.

Potato—Continued.

- beetle, Colorado—continued.
 - in Canada, (55) 258; (57) 167.
 - in France, (54) 461; (57) 63; (60) 851.
 - notes, (52) Idaho 851; (59) N.H. 248.
 - parasite of, (54) 758; (57) 451.
 - problem, (59) 553.
 - spread in France, (53) 159.
- beetle in South Africa, (56) 759.
- beetle, stinkbug enemy of, (51) Mich. 551.
- black dot disease, saltation in organism, (55) 147.
- black dot disease, studies, (55) 46; (58) 49, 550.
- black heart, physiological studies, (57) 349.
- black scab, notes, (57) 446.
- black scurf, control, (59) Ohio 238, Mich. 542.
- black scurf, notes, (56) 50, Minn. 547.
- black wart—
 - in British Isles and Europe, (53) 546.
 - notes, (52) 149; (59) 542.
 - resting spores, in soil, (53) 46.
- blackleg—
 - cause, (52) 350.
 - control, (52) Mont. 447.
 - relation to seed-corn maggot, (53) 545; (55) 763; (58) 654.
 - seed-piece transmission, nature, (59) 848.
 - studies, (51) Mich. 148; (53) Mich. 751; (54) 651; (55) Mich. 842.
- blight—
 - control, (54) 652; (55) N.J. 444; (57) 250; (60) 349.
 - early, in Bermuda, (53) 852.
 - early, studies, (55) N.H. 825; (58) Me. 341; (59) 542.
 - epidemic, effect of weather, (57) 545.
 - experiments, (57) 443.
 - in Colombia, (58) 550.
- blight, late—
 - action of insoluble oxides on, (53) 545.
 - control, (51) 156; (52) Fla. 242; (54) Fla. 651; (59) 641.
 - control, effect of spray pressure, (53) N.H. 445.
 - notes, (53) 46; (55) 147, 546; (56) 541; (57) 540; (58) 647; (60) 242.
 - oospores of, (52) 645.
 - relation to tomato blight, (56) W.Va. 549.
 - studies, (57) 446.
 - susceptibility to, (57) 349, 646.
- blight—
 - notes, (56) 747; (58) 442; (59) 48; (60) 345.
 - organism, overwintering, (58) 654.

Potato—Continued.

- blight—continued.
 - organism, production of sexual organs, (60) 833.
 - organism, sources of foliage and tuber infection, (60) 833.
 - relation to weather conditions, (58) 342.
 - resistant varieties, (57) 150, 844.
- blossom, pollinizing mechanism, (55) 522.
- blue spot, studies, (60) 152.
- brown rot resistant varieties, (56) Fla. 143.
- canker—
 - biology, (59) 642; (60) 549.
 - effect of temperature, (51) Wis. 446.
 - in Germany, distribution, (53) 352.
 - in Silesia, (57) 844.
 - organism, relation to host, (53) 46.
 - resistant varieties, (60) 349.
- crop, commercial, origin and distribution, (58) U.S.D.A. 80.
- crosses, effect of virus diseases, (60) Wash.Col. 814.
- curl, studies, (53) 244.
- dartrose, studies, (52) 847.
- disease, serious, in France, (52) 847.
- diseases—
 - and injuries in Germany, (54) 248.
 - and pests in Belgium, (51) 544.
 - and pests, papers on, (57) 730.
 - control, (51) Minn. 134, Kans. 248; (54) 231; (55) Minn. 348, 447; (56) N.Y.Cornell 351, 547; (58) Minn. 849, Minn. 850.
 - degeneration, (51) Nebr. 351; (53) U.S.D.A. 45, 544, 648, Vt. 853; (54) 46, Mont. 343, Nebr. 344, Nebr. 347; (55) 752; (57) Ohio 144; (58) Ark. 337; (59) 445, 542, Nebr. 840.
 - effect of environment, (53) Nebr. 351.
 - importance and spread, (52) Me. 246.
 - methods of study, (56) 451.
 - new treatment, (57) 646.
 - on limestone soils, (58) Pa. 339.
 - spread and effect on yield, (56) Me. 149.
 - standardizing, (56) 451.
 - descriptions, (51) Ohio 850.
 - detected in seed tubers, (51) Ohio 850.
 - in British Columbia, (55) 546.
 - in Dutch East Indies, (53) 46.
 - in Florida, (54) Fla. 651.
 - in France, (54) 46; (57) 544.
 - in Indiana, (56) 547.
 - in Ireland, (55) 747.

Potato—Continued.

- diseases—continued.
- in Italy, (57) 446.
 - in Java, (55) 447.
 - in Ontario, (51) 542.
 - in Pennsylvania, (56) 828.
 - in Scotland, (55) 246.
 - in Switzerland, (55) 737.
 - in transit and storage, (54) 747.
 - leaf and tuber, (57) 446.
 - near Nanking, control, (57) 640.
 - new treatment for, (59) 641.
 - notes, (51) Mich. 152, U.S.D.A. 152, Idaho 844; (54) Fla. 342, Mich. 648; (55) 246, Fla. 841; (56) 451; (59) 641; (60) Fla. 147, 242, 345.
 - of curl type, (52) 645.
 - papers on, (60) 330.
 - parasitic, summary, (55) 750.
 - pocket atlas, part I, (55) 47.
 - pocket atlas, part II, (56) 50.
 - review of literature, (51) 545.
 - running-out, in England, (56) 848.
 - seed-borne, control, (59) Nebr. 840.
 - studies, (51) N.Dak. 846; (52) Utah 748; (54) Nebr. 344, 449; (56) Utah 540, Fla. 840; (57) N.H. 349; (59) N.J. 337, N.Dak. 848.
 - summary, (52) Mich. 346.
 - susceptibility, relation to fertilizers, (55) 546.
 - virus, in Ireland, (51) 652.
 - virus, insect transmission, (60) 62, 243.
 - virus, losses from, (60) Mont. 744.
 - virus, studies, (53) 245; (55) Oreg. 650, 750, Idaho 842; (57) 443, 645.
 - eelworm, control, (59) 242.
 - farming in Hastings area, (59) Fla. 182.
 - farms in New Jersey, business records, (57) N.J. 783.
 - fllea beetle—
 - control, (52) Va.Truck 44; (57) N.Y.State 258; (59) Wis. 55; (60) Wash.Col. 842.
 - life history and habits, (60) Colo. 65.
 - repellents against, (51) 55.
 - studies, (55) N.Dak. 555; (60) West.Wash. 756.
 - transmission of tomato mosaic by, (56) 349.
 - transmission of virus disease by, (60) 243.
 - floral parts of different varieties, (52) 228.
 - flowers as varietal characteristics, (57) 631.
 - foliage diseases, notes, (51) Wash.Col. 150.
 - foot rot, studies, (58) 550.

Potato—Continued.

- Fusarium wilt, notes, (55) Mont. 147.
- giant hill disease, studies, (53) Vt. 853.
- globulin, nutritional value, (59) 291.
- heat rot, cause, (51) 248.
- hills, spacing, (51) Conn.Storrs 835.
- hollow heart, cause, (60) 644.
- hollow heart, studies, (55) Mich. 46; (56) 338; (57) Mich. 544; (60) Mich. 52.
- hopperburn, insect transmission, (51) 543.
- hybrids, abnormal segregations in, (58) 526.
- industry in New Jersey, (58) N.J. 384.
- insects, insecticides for, (56) Minn. 554.
- insects, notes, (55) Oreg. 659.
- insects on Long Island, control, (60) N.Y.State 453.
- insects, subterranean, studies, (59) Ohio 249.
- inspection and certification, (52) Can. 846.
- internal brown spot, studies, (59) 149.
- internal rust spot, studies, (52) 645; (59) 848.
- leaf curl, studies, (54) 249.
- leaf roll—
 - and mosaic outbreak in sound stock, (57) 446.
 - and related diseases, (57) 51.
 - cause, (51) 351.
 - control, (52) N.Y.State 548; (57) Idaho 740; (58) 243.
 - description and control, (60) Miss. 832.
 - dissemination by insects, (57) Ind. 654.
 - effect of locality of origin, (52) 51.
 - effect of origin of tubers, (52) 645.
 - effect of removing net necrosis tubers, (51) N.H. 149.
 - effect on composition of host, (58) 50.
 - in Idaho, (56) 246.
 - in Ireland, (55) 447.
 - notes, (51) Ind. 845; (52) Me. 246; (55) 243, 246; (56) 848; (57) 343, Ind. 638; (59) 641.
 - on seedlings, (53) 248.
 - protozoa associated with, (53) 646.
 - studies, (51) 652; (52) Ind. 547, Utah 745; (55) Ohio 46; (57) 545.
 - transmission, (52) 645, 748, Idaho 844; (54) 546, 847.
 - tubers, phloem necrosis in, (51) 153.
- leafhopper—
 - as bean pest in Ohio, (60) 163.
 - biology, (59) N.C. 758.
 - biology and control, (59) 58.

Potato—Continued.

- leafhopper—continued.
 - cause of alfalfa yellowing, (59) 241.
 - control, (51) Iowa 452, Wis. 453; (55) U.S.D.A. 152; (57) N.Y. State 258; (59) Wis. 155.
 - dissemination of potato leaf roll by, (57) Ind. 654.
 - injury to apple leaves, (56) 59.
 - notes, (52) 855; (56) Wis. 756, Fla. 855.
 - on alfalfa, (52) Mich. 355; (57) Tenn. 654, 656; (59) 458.
 - on clover, (59) 845.
 - relation to tipburn, (51) 153.
- leaves, starch production in, (60) 519.
- leaves, tip and margin burn, etiology, (60) Ark. 829.
- marginal leaf roll, description, (53) 648.
- meal, analyses, (52) U.S.D.A. 78.
- mosaic—
 - and related diseases, (56) Wash. Col. 541; (57) 51.
 - condition of leaves, (52) 645.
 - control, (52) N.Y.State 548; (57) Nebr. 539.
 - control in Golden Wonder variety, (58) 749.
 - curious effect on leaf cells, (56) 848.
 - description and control, (60) Miss. 832.
 - disastrous effect on McCormick variety, (55) Md. 653.
 - effect of environment, (58) 848.
 - effect of intermittent temperatures, (57) 249.
 - effect on globulins, (59) N.Dak. 842.
 - in Idaho, (56) 246.
 - in Ireland, (55) 447.
 - in Northwest, (53) 648.
 - insect carriers, (57) 359.
 - masking at high altitudes, (53) 648.
 - new host for, (53) 648.
 - notes, (51) Ind. 845; (52) Me. 246, Wash.Col. 845; (53) 46; (56) Kans. 842; (57) 343, Ind. 638; (60) Oreg. 745.
 - on seedlings, (53) 248.
 - relation to temperature, (52) 350.
 - studies, (51) 652; (52) Utah 745.
 - summary, (54) Wash.Col. 841.
 - temperature studies, (53) 646.
 - transmissible to tobacco, (57) 252.
 - transmission, (52) Idaho 844; (54) 847.
 - virus, infection of tomato and tobacco with, (54) 451.
 - visibility of symptoms, (52) 645.

Potato—Continued.

- mosaic-free Triumphs, production, (60) 349.
- necrosis from cross-inoculation, (55) 750.
- necrosis, studies, (60) 52, Wash.Col. 833.
- net necrosis and leaf roll, relation, (59) 542.
- net necrosis, description, (59) 148.
- net necrosis, notes, (57) 350.
- phloem, anatomical and microchemical alterations in, (52) 645.
- plant—
 - bug in Florida, (57) 856.
 - cells, senescence and rejuvenescence, (54) Vt. 818.
 - characters, (53) 532.
 - growth, rôle of mother tuber in, (60) 816.
 - sour sickness, notes, (57) 749.
- planters and diggers, description, (53) 390.
- plants—
 - bacteriologically sterile, culture, (56) U.S.D.A. 723.
 - nutrition in water culture, (53) 221.
 - premature desiccation, (53) 45.
- powdery scab, notes, (57) 545.
- psylla, new disease caused by, (60) 330.
- Rhizoctonia—
 - after manure treatment, (57) 447.
 - control, (52) Wash.Col. 748, Idaho 844; (55) Idaho 653, Idaho 842; (56) 352; (57) Idaho 740; (58) Mo. 428, 749, N.Y.State 844; (59) Wash. Col. 46, N.Dak. 841.
 - notes, (52) Wash.Col. 845; (54) 249, Wash.Col. 450.
- ring disease, notes, (55) 346.
- root galls, notes, (59) 536.
- rot fungi, temperature relations, (55) 445.
- rot in Uganda, cause, (55) 543.
- rusty spot disease, (58) 342.
- scab—
 - control, (51) 153, Ohio 445, N.J. 653, Idaho 844; (52) 51, Mich. 346, N.J. 743, Idaho 844; (53) Minn. 150; (54) 747; (55) N.J. 44, Miss. 147, Alaska 447, 750, 751; (56) Wis. 746; (57) N.J. 47; (58) Mo. 428, N.Y.State 844; (59) Ohio 238, Mich. 542, Idaho 748, N.Dak. 841, 848; (60) Conn.Storrs 549.
 - development, factors affecting, (56) 51.
 - effect of soil moisture and acidity, (53) 546.
 - effect of source of nitrogen, (51) N.J. 652.

Potato—Continued.

- scab—continued.
- effect of sulfur, Mich., (51) 148; (52) 351.
 - gnat, notes, (57) Ohio 162; (60) 166.
 - notes, (55) 843; (56) Minn. 547, Kans. 842; (60) 344.
 - papers on, (56) 339.
 - relation to Actinomyces strains, (60) 447.
 - relation to soil moisture, (54) 49.
 - relation to tuber growth, (55) 147.
 - sulfur as soil-treatment for, (55) Minn. 349.
 - scurf, studies, (57) N.J. 48.
 - seedling selection, progress in, (59) Mich. 598.
 - seedlings, tests, Alaska, (55) 433; (57) 522.
 - selection farm at Oostwold, (52) 645.
 - silver scab, studies, (52) 847.
 - situation, (54) Ohio 598.
 - skin spot, relation to corky scab, (52) 645.
 - soils, preparing and fertilizing, (56) Mich. 899.
 - spindle tuber—
 - control, (58) Minn. 828.
 - description and control, (60) Miss. 832.
 - field identification, (60) 349.
 - notes, (52) Me. 246, N.J. 743; (53) Nebr. 445, 648; (55) Nebr. 447; (56) Kans. 842.
 - spread of, (58) U.S.D.A. 550; (59) Me. 598.
 - studies, (54) Nebr. 347, 651; (57) Nebr. 539; (59) Nebr. 840.
 - transmission, (58) 654.
 - transmission by grasshoppers, (60) 61.
 - spindling sprout, effect on yield, (51) N.H. 149.
 - sprain, notes, (57) 350.
 - sprouts as index of seed value, (51) Md. 834.
 - stipple streak disease—
 - description, (51) 545.
 - studies, (52) 645; (57) 150, 844.
 - stocks, deterioration in, (60) 448.
 - storage rots, studies, (53) 45; (55) Mont. 148; (57) 639.
 - synonym committee, report, (54) 35; (55) 530; (60) 133.
 - tipburn, etiology and specificity, (51) 153.
 - tipburn, relation to water pores and stomata, (51) 545.
 - tracheoverticilliose in Italy, (58) 848.
 - trials, Lord Derby Gold Medal, report, (60) 133.
 - tuber—
 - abnormalities, (54) 724.
 - color, studies, (56) 429.
 - development, (51) 729.

Potato—Continued.

- tuber—continued.
- formation, precocious, (55) 25.
 - infection by *Alternaria solani*, relation to storage conditions, (57) Fla. 843.
 - infection with *Fusarium oxysporum*, critical temperature, (54) 746.
 - tuber moth—
 - control, (56) 360.
 - in storage, control, (57) 164.
 - life history and control, (60) Md. 842.
 - studies, (56) Va. 556.
 - tuber—
 - resistance to *Phytophthora*, (52) 645.
 - rot, cause, (56) Me. 246.
 - set in, factors affecting, (51) 340.
 - tissue, isoelectric point, relation to toxicity of anions and cations, (54) Mo. 743.
 - tissue, water absorption by, (51) Mo. 751.
 - unit plantings, (60) N.Dak. 34.
 - tuber worm—
 - distribution, (60) 556.
 - in France, studies, (53) 653.
 - life history and control, (59) Va.Truck 251.
 - notes, (55) 555; (59) Guam 555.
 - on Eastern Shore of Maryland, (55) 356.
 - parasite of, (51) 762.
 - studies, (55) Va.Truck 356.
 - tuberization—
 - and endophytes, (55) 348.
 - chemical changes, (53) 635.
 - effect of X-rays, (60) 135, 524.
 - tubers—
 - composition, effect of leaf roll, (57) 646.
 - cutting, (53) 236.
 - dormant and nondormant, metabolism of nitrogen compounds, (57) 818.
 - dormant, hastening germination, (55) 829.
 - dormant, hastening sprouting, effect of temperature, (59) 828.
 - form and size, factors affecting, (54) 638.
 - germinability, relation to soundness and yield, (53) 45.
 - healing of wounds in, (52) 218.
 - immature seed, relation to degeneration, (57) 645.
 - killing, time temperature curves, (54) 652.
 - Micrococcus prodigiosus* affecting, (57) 545.
 - net necrosis, (60) 349.
 - number and size, effect of fertilizers, (53) 635.
 - off-type, (55) Can. 27.
 - respiration after injury, (58) 820.

Potato—Continued.

- tubers—continued.
 respiration, relation to blackheart, (52) Calif. 349.
 rest period, factors affecting, (58) 431.
 sprouting, (60) 524, Alaska 728.
 sprouting, effect of carbon disulfide, (57) 528.
 starch grain development, (57) 618.
 starch grain size and cell size in, (59) 428.
 stem-end browning, (55) N.Dak. 542.
 stem-end discolorations, causes, (53) 852.
 superterranean, production, (57) 518.
 unripe, use for seed, (54) 248, 249.
 verticillium disease, (53) 546; (54) 250.
 viroses, standardization of names, (59) Me. 543.
 viroses, studies, (59) Me. 543.
 warehouses, economic organization, (54) Minn. 387.
 wart—
 control, (54) 347; (55) 653, 843; (57) 350.
 dissemination, (59) U.S.D.A. 242.
 economic importance, (55) 751.
 history, distribution, and control, (57) 250.
 immune varieties, list, (52) 635.
 immunity, inheritance, (52) Pa. 243; (56) 51.
 immunity of French varieties, (57) 545.
 immunity, varietal, (52) 148.
 infection, conditions, (56) 650.
 infection experiments, (55) 751; (57) 844.
 introduction and spread in America, (55) 751.
 notes, (56) 541, 748; (59) 536.
 organism, germination of resting bodies, (54) 546; (59) 642.
 organism, viability of winter sporangia, (58) 849.
 resistance, nature, (58) 849.
 resistant varieties, (56) 352.
 resistant varieties, breeding, (57) 447.
 studies, (54) 231, 546; (55) 848; (57) 151.
 sulfur treatment, (55) 752.
 susceptible varieties, (57) 350, 447.
 wilt—
 and dry rot, studies, (51) 153.
 and filosity, (52) 847.
 and potato stem-end rot, notes, (51) Nebr. 752.
 control, (52) Pa. 243; (55) Oreg. 448.

Potato—Continued.

- wilt—continued.
 notes, (55) 148, Oreg. 650.
 witches' broom, notes, (52) Idaho 844, Wash.Col. 845; (56) 352; (57) 250; (59) 849.
 witches' broom transmission to tomato plants, (58) 342; (60) Mont. 744.
 Potatoes—
 and raspberries, undesirability of rotating, (60) Oreg. 745.
 and weather in Wyoming, (55) 15.
 as orchard intercrops, (58) Can. 837.
 Birgitta, new variety, (52) 438.
 breeding experiments, (51) Mich. 133, N.J. 636; (52) Mich. 334, N.J. 732, Utah 732, Wash.Col. 829; (53) 230; (54) 231, Mich. 634; (55) N.J. 31, 223; (56) Utah 525, Wash.Col. 525; (58) 530; (60) Can. 639, Wash.Col. 814.
 breeding in Germany, (51) 248.
 breeding, methods, (53) Minn. 425, 628.
 breeding work and genetic studies, (56) 338; (58) 218.
 bud inhibition and apical dominance, effect of thiourea, (57) 26.
 bud mutation in, (56) 128; (60) 330.
 bud mutations and chimerical nature, (58) 423.
 certification, (53) Ohio 96, 635, N.C. 835; (55) Mich. 97, N.Dak. 435; (59) Me. 598.
 certification in Pennsylvania, (56) 828.
 certification, papers on, (56) 339.
 certified and uncertified seed, comparison, (59) Miss. 36.
 certified seed—
 comparison, (53) La. 528; (55) Ohio 132, Miss. 228.
 northern-grown, (54) Mo. 733.
 production, (56) Can. 636.
 regulations governing production in Canada, (59) 135.
 tests, (56) S.C. 531, Miss. 731; (57) Mo. 424, Tenn. 639.
 value, (51) N.H. 135, La. 830; (53) 529; (55) Miss. 134; (56) Tenn. 436; (58) Mich. 432; (60) Miss. 735.
 certified strains, notes, (53) Conn. Storrs 737.
 chemical treatments for bud growth, (60) 425.
 cold storage of, (53) Mo. 431.
 Colorado, composition, variations in, (54) Colo. 437.
 competition in, (55) 336.
 composition, (54) 639.
 composition, effect of nitrates, Colo., (51) 533; (59) 133.
 concentrated fertilizers for, (54) Mass. 123.
 cooked, feeding value for poultry, (60) Ohio 766.

Potatoes—Continued.

- cost of production, (52) W.Va. 589; (53) U.S.D.A. 489; (59) N.H. 284, N.J. 382.
- costs and profits, (52) N.J. 787.
- cultivation and spraying tests, (51) Minn. 134.
- cultivation tests, (53) Minn. 131, Okla. 133.
- culture—
- experiments, (51) 36, Minn. 636; (52) Minn. 35, Ky. 338, Oreg. 436, Mont. 437, U.S.D.A. 527, Idaho 828, U.S.D.A. 828; (54) Utah 332; (55) Alaska 433, Oreg. 637, Mo. 639, Minn. 734; (56) 35, Ga.Coastal Plain 524; (57) Alaska 522, 524; (58) Can. 133; (60) Ga.Coastal Plain 132, Minn. 132, 133, Oreg. 731.
 - handbook, (59) 436.
 - in California, (53) Calif. 532.
 - in Germany, (57) 432.
 - in India, (57) 629.
 - in Indiana, (57) 528.
 - in Kentucky, (57) 331.
 - in Ohio, (53) 636.
 - in Quebec, (52) 338.
 - in Scotland, (54) 831.
 - papers on, (56) 338.
 - storage, and marketing in British Columbia, (51) 340.
- cut, wound healing, (56) 629.
- data for consumption and prices, (54) 286.
- degeneration—
- and maturity of seed, (57) 645.
 - in, (56) Conn.Storrs 821; (57) Nebr. 539.
 - in, effect of high temperature, (59) 127.
 - in, effect of mountain climate, (60) 225.
- development, effect of nutrients, (52) 123.
- digestibility by fowls, (53) 172.
- digestibility, effect of preparation, (57) 889.
- digging machine tests, (52) 289.
- disease-free stock, notes, (54) Mich. 648.
- disease-free strains, (59) Wash.Col. 46.
- dormancy abbreviation, (53) 636.
- dormancy, relation to maturity and storage factors, (59) Calif. 134.
- dormant, effects of chemical treatments, (59) Calif. 134.
- dusting experiments, (59) 536.
- dusting in Vermont, (54) 747.
- dusting v. spraying, N.Y.State, (52) 533, 534.
- Dutch, disease resistant varieties, (53) 852.
- duty of water for, (54) N.Mex. 680.

Potatoes—Continued.

- early—
- fertilizer experiments, (60) 38.
 - harvesting, (55) Nebr. 636.
 - increasing farm profits with, (56) Ind. 785.
 - maturity and yield trials, (54) 35, 828.
 - premature tuber formation, (52) 645.
 - rotation experiments, (54) Pa. 337.
 - storage tests, (57) N.C. 226.
 - varieties, (57) 230.
- effect of—
- acid soil, (54) 213.
 - borax, (51) N.J. 625.
 - climate, (53) N.H. 431.
 - early and late planting and sprouting, (53) Can. 137.
 - fertilizers in relation to soil moisture, (52) N.J. 724.
 - Hemiptera on plant tissue, (58) 455.
 - length of day, (60) P.R. 740.
 - seed treatment, (59) 343.
 - temperature on tuber production, (51) 340.
- effect on following wheat crop, (52) 439.
- Ekishirazu, in New York, (53) 852.
- equipment for production, tests, (54) 583.
- experiments, Ohio, (60) 135, 735.
- experiments in Latvia, (54) 735.
- experiments in Rhine Province, (51) 638.
- feeding, effect on milk flavor, (52) U.S.D.A. 578.
- feeding value, (52) S.Dak. 171; (53) Can. 870; (55) N.Dak. 570.
- fertilizer experiments, (51) Minn. 133, N.H. 135, Wis. 421; (52) Minn. 35, S.C. 528, 723; (53) 20, Minn. 131, 142, 218, Can. 530; (54) Ga.Coastal Plain 131, 437, S.C. 635, 828; (55) Ark. 31, N.J. 31, 220, 231, Minn. 332, Ark. 435, Nebr. 636, Oreg. 637, Mo. 639, Fla. 824, N.H. 826; (56) 35, Mont. 133, S.C. 525, Wis. 714, Wis. 715, Wis. 716; (57) N.C. 226, N.H. 331, Pa. 431, Pa. 436, Alaska 522, Okla. 523, Mich. 614; (58) 227, Ark. 321, Ill. 333, Mo. 428, S.C. 632, Ga. Coastal Plain 733; (59) 20, 21, 213, 319, Ala. 625; (60) 25, Ala. 130, Fla. 130, Ga.Coastal Plain 132, Minn. 132, Ohio 135, Ala. 139, 330, Oreg. 731, S.C. 732, West. Wash. 732, Ark. 813.
- fertilizer experiments in North Wales, (57) 431.
- fertilizer requirements, (52) Pa. 233; (55) Wis. 122.

Potatoes—Continued.

fertilizers for, (56) Ark. 333, Can. 436; (57) 730.
 field experiments, factors affecting, (52) W.Va. 734.
 following alfalfa, yields, (51) U.S. D.A. 135, Wyo. 136.
 forage and seed yields after other crops, (59) Wash.Col. 32.
 freshly dug, germination, (56) Ark. 333.
 from housekeeper's standpoint, (54) Colo. 487.
 genetic studies in, (53) 628; (56) 429; (58) 729.
 germ cells in, formation and degeneration, (52) 126.
 German, varieties, (59) 629.
 germination, effects of stimulants, (59) 435.
 Gold Medal, tests, (57) 524.
 growing, labor-saving machinery for, (60) Pa. 379.
 growing, manual for club members, (51) 599.
 grown in cheesecloth bags, results, (59) Conn.Storrs 430.
 growth and quality, effect of potash, (51) 396.
 growth and respiration, relation to temperature, (56) Minn. 218.
 growth as affected by various nutrient solutions, (52) Md. 518.
 growth in artificial light, (51) 25.
 harvesting studies, (60) 481.
 healthy, transmission of viruses from, (54) Wis. 249.
 hill-unit selection, (54) 639.
 hot water and hot air treatment, effect, (53) 853.
 improved culture, (56) Mich. 899.
 improvement at Svalöf, (54) 437.
 improvement by hill selection, (57) Utah 431.
 improvement for Michigan, (57) 331.
 in highlands, (59) 641.
 in storage, spotting and shrinking, (59) 543.
 inheritance of color in, (52) 32; (57) 520.
 inheritance of cropping in, (54) 125; (58) 526.
 injuries from frost, (58) 148, U.S. D.A. 654.
 insect and disease control, (56) Wis. 755.
 insects affecting, (54) N.Y.State 553; (55) N.Dak. 555; (58) 451.
 irrigation experiments, (54) Wash. Col. 827; (56) 35, Utah 525; (59) Wash.Col. 32, N.Mex. 222; (60) Oreg. 132.
 King Edward, inheritance of color pattern, (52) 32.
 labor incomes from, (56) Fla. 884.
 late, time for planting, (53) Mich. 339.

Potatoes—Continued.

manuring experiments, (51) Minn. 119; (52) 722.
 market quality, improving, (51) Mich. 533.
 marketing, (52) Calif. 92.
 marketing in England and Wales, (57) 191.
 marketing in Minneapolis and St. Paul, (58) 589.
 maturity in, (56) 136.
 McKelvie's mutations, studies, (54) 223.
 mountain, in France, yields, (60) 225.
 mulching test, (60) Fla. 130.
 mutations in, (52) Me. 428.
 New Jersey, seed value, (57) N.J. 727.
 New York, marketing, (53) N.Y.Cornell 794.
 Ohio, shipments, (59) Ohio 482.
 on four soil types, seed stock, quality, and composition, effect of fertilizers, (59) 526.
 optimum soil reaction for, (53) 320.
 oversized, for seed, value, (55) 530.
 papers on, (52) 833; (60) 329.
 photoperiodism of, (60) 625.
 physiological shrinkage, (53) 635.
 physiological studies, (59) 428.
 planting experiments, (53) Md. 332, Ariz. 733; (59) Mich. 432, Idaho 728.
 pollen sterility in, (56) 632; (58) 320.
 pollination studies, (53) 128.
 potash and seed tests with, (51) N.H. 135.
 potash for, (53) N.H. 432.
 premature sprouting in, (60) 242.
 prices and shipments from Florida, (59) 886.
 prices, factors affecting, (54) Minn. 786.
 prices, index numbers, (59) N.Dak. 885.
 production, (56) Colo. 636.
 and improvement, (57) Alaska 522.
 and marketing, (53) Mich. 91.
 and prices, (60) S.C. 784.
 effect of meteorological factors, (52) 349.
 in Idaho, (59) Idaho 182.
 on irrigation projects, (54) Wash.Col. 434.
 power and labor requirements, (60) 79.
 prices, and destinations, (60) S.Dak. 285.
 statistical data, (51) U.S.D.A. 291.
 productivity, effect of stimulation and depression, (51) 532.
 profits from, factors affecting, (59) Mass. 485.
 quality, (60) 225.
 renewed growth due to grafting, (53) 519.

Potatoes—Continued.

- research activities in Germany, (59) 328.
- respiration at low temperatures, (57) 118.
- respiration in, (55) Md. 336.
- respiration, relation to storage and transportation, (53) 636.
- root behavior and yield under irrigation, (54) 130.
- rotation experiments, (51) Ohio 434; (52) N.Y.Cornell 526; (54) 31, Wyo. 733; (58) U.S.D.A. 531.
- row competition and border effect, (52) N.Y.State 534.
- running out, causes, (53) Ohio 541.
- seed—
 - affected with black heart, (51) Mich. 532.
 - changes during planting period, (55) Ohio 132.
 - comparative tests, (60) Conn. Storrs 533.
 - cut v. whole, (55) 231.
 - disease-free, sources, (54) Pa. 343.
 - disease transmission studies, (55) N. Dak. 542.
 - disinfecting with mercury dust, (54) 652.
 - disinfection studies, (52) N.J. 745; (56) 339.
 - dormant, effect of storage temperatures, (60) 331.
 - dry land and irrigated, comparison, (55) U.S.D.A. 132.
 - dusting with sulfur, (59) N.H. 222.
 - effect of soil type, (54) 831.
 - effect of sprouting first at bud end, (57) Ind. 627.
 - experiments, (51) U.S.D.A. 135.
 - factors affecting value, (52) 228.
 - fall home grown, value, (51) Mo. 741.
 - for northern Ohio, (55) Ohio 33.
 - germination and disease, (59) 641.
 - hot formaldehyde treatment, (52) Kans. 445.
 - improvement, (53) 634; (55) Fla. 841.
 - irrigated and dry land, productivity, (60) Mont. 729.
 - leaf roll in, factors affecting, (59) N.H. 237.
 - mosaic-free, production, Wis., (53) 443; (56) 751.
 - northern-grown, value, (60) Ill. 223.
 - of same variety, variations in yield, (53) 635.
 - old v. fresh cut, (60) 332.
 - papers on, (57) 730.
 - Phytophthora rot on, effect, (56) 547.
 - planted during hot weather, preventing decay, (60) 332.

Potatoes—Continued.

- seed—continued.
 - production, (53) 837; (54) Nebr. 328; (57) Ohio 251; (59) Wash.Col. 32.
 - production, effect of soil type, (53) 635.
 - production in southwest Virginia, (60) 331.
 - Rhizoctonia in, control, (56) Kans. 842.
 - rotting and mosaic, (58) 41.
 - selection, (51) Minn. 133; (59) Nebr. 840.
 - selection, relation to environment, (54) 651.
 - size, and date of planting, papers on, (56) 338.
 - size and yields, (55) 830.
 - size experiment, depression of check-row yields, (52) 635.
 - size of pieces, test, (52) U.S.D.A. 36; (54) Wyo. 733; (55) N.J. 31; (56) Mont. 133; (58) Ark. 321; (60) 38.
 - source and cutting, (52) Mont. 438.
 - source, character and treatment, (59) U.S.D.A. 133.
 - source tests, (51) Tenn. 337; (52) S.C. 528; (56) S.C. 525, Ariz. 731, Conn.Storrs 821; (57) N.J. 727; (58) Mo. 428; (59) N.C. 728.
 - spring-grown, value, (53) Ariz. 734.
 - sprouting before planting, (51) 138.
 - sprouting stages, (59) Ohio 223.
 - stimulation experiments, (57) 119; (58) 625.
 - stock, (55) Idaho 825.
 - storage after cutting, (60) 331.
 - storage experiments, Ohio, (57) 829; (60) 735.
 - storage rot control, (55) 750.
 - strain tests, (55) La. 433; (60) Mont. 729.
 - studies, (54) S.C. 635; (55) N.J. 31, N.C. 228.
 - treatment, (51) N.H. 149, Wash. Col. 150, Wash.Col. 153, Kans. 248, 544; (53) Mo. 431; (54) 652, Wyo. 733, Utah 848; (55) Oreg. 637; (56) N.Y.State 242, Minn. 547; (57) Wyo. 250; (58) S.Dak. 748; (59) Conn. State 46, Idaho 728, Idaho 748.
 - treatment, effect of presprinkling with water, (52) 449; (54) 848.
 - treatment, effect of time and strength of application of fungicide, (59) 149.
 - treatment, field test of mercuric chloride solutions, (57) 844.

Potatoes—Continued.

seed—continued.

- treatment for Corticium disease, (58) 49.
- treatment for scab and Rhizoctonia, (60) Conn.Storrs 549.
- treatment in Manitoba, (56) 50.
- tuberization, (55) Calif. 332.
- valuation, (52) 645.
- viability and composition, factors affecting, (58) 635.
- vigor from sprayed and unsprayed plants, (51) N.J. 653.
- vigor of sprouts relation to position on seed piece, (52) 635.
- virus diseases in, (54) 747.
- virus-free stocks, (59) Mich. 444.
- winter storage, effect on yield, (54) 234.
- seedling experiments, (51) Minn. 133. Minn. 134, Wyo. 136, Ohio 434, N.Dak. 833; (52) N.J. 732, Idaho 828; (53) Can. 530, U.S.D.A. 834; (54) Mich. 634, Wash.Col. 827; (56) Wash.Col. 525; (57) N.J. 32, N.H. 330, Mo. 424, Mich. 628, Tenn. 628, Idaho 726, N.J. 727; (60) Oreg. 731.
- selection and cooking, (60) 892.
- selection experiments, measuring effect, (58) 226.
- shipments and unloads, (53) U.S.D.A. 293.
- shrinkage studies, (60) Wash.Col. 814.
- soil preparation and seed selection, (55) Minn. 332.
- soil types and phosphate requirements, (60) 511.
- solanine in, relation to fertilizers, (54) 235.
- solar energy used by, (53) 508.
- spacing and selection tests, (53) U.S.D.A. 528.
- spacing experiments, (59) Wash.Col. 32.
- spray irrigation for, (52) 287.
- spraying—
 - and dusting experiments, (51) N.J. 653; (52) N.J. 743; (53) Ohio 46, Conn.State 442, Ohio 541, 853; (54) Mich. 332; (55) N.J. 42, 252, Ohio 652; (56) Me. 338; (57) Ohio 144, N.Y.State 258, Mich. 528; (58) Ohio 653, N.Y.State 756, N.Y.State 857.
 - cooperative, (51) 544.
 - demonstrations, (51) 45.
 - experiments, (51) Kans. 248; (52) Mich. 351, Kans. 446; (53) Minn. 131, N.H. 431, Ariz. 746, N.C. 755; (54) Fla. 245; (55) Minn. 349, Minn. 735; (56) Minn. 547; (57) N.J. 47, N.J. 741; (58) Minn. 849, Minn. 850; (59) N.J. 338; (60) Minn. 132.

Potatoes—Continued.

spraying—continued.

- in Pennsylvania, results, (60) 350.
- v. dusting, (52) Mich. 346; (54) Fla. 342, 652, 747; (56) 51; (58) N.H. 736; (59) N.H. 237.
- v. dusting for leafhopper control, (59) Wis. 155.
- standard grades, (53) Mich. 798.
- starch in, effect of fertilizers, (57) 227.
- statistics, (53) U.S.D.A. 92; (58) Idaho 80.
- storage, (54) 231; (56) 37, Ohio 299, Ill. 333.
 - and planting tests, (57) Ohio 125.
 - and transportation diseases, (57) Mich. 642.
 - early and late varieties, (51) 341.
 - immediately after harvest, (60) 331.
 - in contact with various substances, (56) Can. 636.
 - in India, (53) 45.
 - shrinkage in, (60) 330.
 - tests, (51) 340; (52) 830; (55) Ohio 132; (59) 627; (60) Minn. 132.
- stored, Fusarium rots in, (59) U.S.D.A. 751.
- stored in fertilizer bags, effects, (57) 331.
- stored in sweet potato storage houses, (59) N.C. 729.
- strength of culms, factors affecting, (57) 327.
- studies in Ontario, (60) 535.
- tests, (59) Hawaii 626.
- time of harvesting and sources of seed, (55) N.H. 825.
- time of planting, relation to weather, (56) Ohio 337.
- time of planting tests, (57) Nebr. 523.
- tipburn injury, relation to color in tissue, (52) 139.
- treatise, (54) 248; (55) 336; (58) 634; (59) 889.
- uneven stands in, cause, (57) 730.
- use of sweet clover and straw on, (56) Minn. 524.
- utilization for starch and flour, (55) U.S.D.A. 787.
- v. corn silage for beef cattle, (60) Wash.Col. 855.
- v. corn silage for lambs, (60) Wash. Col. 856.
- value in human nutrition, (59) 290.
- variation during growth and storage, (53) 338.
- varietal differences in response to irrigation, (55) 336.
- varietal differentiation, serological, (59) 620.
- varietal resistance to bacterial diseases, (57) 645.

Potatoes—Continued.

- varieties, (51) Mich. 96, U.S.D.A. 135, Oreg. 739, R.I. 741, Idaho 830; (52) Minn. 35; (54) R.I. 30; (55) Hawaii 526; (60) Mont. 729.
 and source of seed tests, (54) Fla. 651.
 and yields, (56) Ill. 230.
 characteristics, and methods of roguing, (57) 828.
 classification, (54) 133; (58) 635, 736.
 determination by arrangement of leaves, (59) 328.
 differentiating by chemical tests, (60) 225.
 free from virus diseases, (57) Idaho 740.
 German, susceptibility to late blight, (57) 646.
 identifying, (54) 133.
 in British Isles, (57) 37.
 in Poland, (56) 828.
 in Switzerland, (55) 737.
 in United States, (56) 338.
 light sprout test for, (59) 436.
 of peasant plantings in Moscow, (58) 736.
 studies, (57) Hawaii 326.
 synonyms, (51) 236; (52) 635.
 synonymy and incidence of wart, (57) 528.
 synonymy and wart susceptibility, errors of, (57) 844.
 variations in chromosomes, (59) 621.
 yields, (51) Va. 35; (54) 639.
 variety descriptions, abbreviating, (55) 737.
 variety tests, (51) Minn. 133, Minn. 134, 232, Minn. 636, N.Dak. 833; (52) Ga.Coastal Plain 225, Alaska 528, Utah 732, Idaho 828, 830; (53) Minn. 130, Minn. 131, Wyo. 133, Md. 332, N.Dak. 334, U.S.D.A. 528, N.Dak. 529, Can. 530, Ariz. 733, U.S.D.A. 834; (54) Ga.Coastal Plain 130, 736; (55) U.S.D.A. 132, 231, Minn. 332, Alaska 433, Oreg. 637, Minn. 734, Minn. 735, Idaho 825; (56) 35, Ark. 332, Ga.Coastal Plain 523, Minn. 524, Fla. 821; (57) Tex. 126, 227, Alaska 522, Okla. 523, U.S.D.A. 524, Idaho 726; (58) Alaska 427, Mo. 428, Ga.Coastal Plain 732; (59) Wash.Col. 32, N. Mex. 222, Wyo. 223, Miss. 824; (60) N.Dak. 34, Ga.Coastal Plain 132, Minn. 132, Oreg. 132, Alaska 728, Oreg. 731, Wyo. 733, Wash.Col. 814, Fla. 817.
 variety tests in Norway, (58) 227.
 variety tests on moor soils, (54) 735.

Potatoes—Continued.

- ventilated storage for, (52) 438.
 virus-free strains, (55) Mich. 842.
 vitamin B in, (56) 89.
 vitamin C in, effect of storage, (60) Mont. 792.
 wild and cultivated, types of sterility, (51) U.S.D.A. 231; (58) 133.
 wound periderm formation in, (58) 748.
 yield—
 and dry matter, effect of planting date, (56) Can. 436.
 and market quality, (53) Mich. 339.
 and rainfall in Bavaria, (51) 509.
 and variability, effect of spacing, (56) 828.
 effect of source of seed, (58) Ill. 323.
 effect of time of planting, (59) Nebr. 824.
 effect of weather, (56) 207.
 tests, field plat technique, (51) 340.
 yields, (56) Wyo. 526.
 factors affecting, (53) Can. 530, Conn.Storrs 751.
 from whole and cut sets, (60) Wyo. 733.
 on different soil types, (54) 831.
 on muck lands, (56) Mich. 823.
 trend in, (56) U.S.D.A. 685.
 ?Potential and lyotropic series, (60) 503.
 Potteries, rural, and decorative crafts, (57) 484.
 Poultry—*see also* Chickens, Ducks, Fowls, Hens, *etc.*
 accounts, (52) U.S.D.A. 92.
 age of parents, relation to hatchability, livability, and fecundity, (59) 568.
 air requirements, (55) 180; (56) Iowa 881; (59) Iowa 81.
 anatomy and physiology, (52) 772.
 and egg marketing, (56) Ky. 182.
 appliances, plans and construction, (51) Calif. 77.
 Australorp, origin, (55) 65.
 bedding, tests, (60) West.Wash. 767.
 body temperature, (53) 183.
 body weight and egg production, (53) N.J. 877.
 book, popular, (54) 568.
 breeders in Missouri, method of certifying, (56) 671.
 breeding, (52) Idaho 875; (55) Can. 364.
 age as factor in, Mo., (51) 776; (58) 467.
 and exhibition, papers on, (59) 360.
 and selection, Wash.Col., (56) 567; (60) 859.

Poultry—Continued.

breeding—continued.

- confinement v. range, (54) Can. 763.
- experiments, (51) Iowa 471.
- for egg production, (52) Ind. 173, Utah 773; (53) 332; (54) Can. 64.
- records, (54) Calif. 273; (60) 861.
- sex-linked method, (58) 29.
- stock, selection, (54) 865; (58) N.J. 468.
- to extend profitable age, (60) Oreg. 766.

breeds—

- American and foreign, (53) 71.
- and races, papers on, (55) 166.
- British, description, (52) 876.
- broodiness, (51) Mich. 576.
- descriptions, (53) 671; (54) 863.
- egg production in, Conn.Storrs, (51) 874; (52) 173; (59) 164.
- in Australia and New Zealand, (52) 168.
- in Rumania, (55) 768.
- papers on, (59) 360, 363.
- standard, death rates, (59) 568.

brooder—

- electric, (56) 481; (58) Calif. 486; (59) Calif. 781.
- equipment and operation, (58) West.Wash. 78.
- for nutrition experiments, (55) 367.
- house for Connecticut, (57) 678.
- house, portable, description, (60) Ohio 781.
- house, portable, plans, (57) 678.
- house, sanitary, construction, (59) Ohio 165.
- stove or Dutch oven, (56) 783.

brooders and hovers, types, (59) Okla. 266.

broodiness, relation to fecundity, (55) Mass. 165.

business, four-year plan of development, (52) West.Wash. 391.

Cantonese, characteristics, (54) 273.

clam and oyster shells for, value, (53) Iowa 778.

clubs, constitution and by-laws for, (53) 695.

cold storage holdings, (55) U.S.D.A. 686.

colony houses, plans and construction, (56) 884.

color in, Vriesendorp's theories, (57) 27.

conditions in Arizona, (56) Ariz. 669.

Congress, Third World's, editorial, (54) 403; (57) 301.

Congress, World's, announcement of meeting, (60) 799.

Poultry—Continued.

Congress, World's, proceedings, (54) 471; (55) 165; (59) 360.

consumption in Pennsylvania, (59) Pa. 681.

control of fruit pests by, (58) 756.

cooperative assembling units, (58) Minn. 82.

cooperative organizations of California, (60) 681.

cost of production, (52) N.J. 787.

costs and returns, (51) Mich. 191.

course, teaching, (51) 598.

crate fattening, (54) Can. 273; (55) N.J. 266, Iowa, 567.

crate fed, weak bones in, (59) 464.

crate feeding, (59) N.Dak. 869.

crossbred table, production, (55) 166.

crossbreeding, (56) Can. 468.

crossbreeds, inheritance in, (52) Kans. 430.

culling and feeding, (52) 773.

culling for egg production, (58) 269.

culling, principles, (51) 277; (52) Mich. 77, 675; (54) 273; (57) Okla. 568; (60) 861.

cycles in egg production, (58) 631.

disease—

diagnostic laboratory, report, (57) 674.

new, (52) Mich. 782.

new, due to filtrable virus, (54) 478; (58) 77.

notes, (56) Kans. 875.

program of World's Poultry Congress, (58) N.J. 369.

resistance, genetic studies, (59) 276.

diseases—see also specific diseases.

and hygiene, (55) 166.

and parasites, (60) 579.

and pests, control, (55) N.Dak. 578.

and the veterinarians, (60) 72.

control, (56) 176.

control, effect of chemicals, (60) 77.

diagnosis, (51) 682; (55) N.J. 73; (58) 273; (59) Calif. 775; (60) 71.

diagnosis, seasonal distribution as aid, (58) 177.

effect of chemicals, (56) 574.

handbook, (54) 478.

in Canada, (58) 472.

in Great Britain, (56) 477.

in Los Baños, (51) 286.

in New York, (53) 183.

in Washington, (58) West.Wash. 77.

outbreaks, (57) Nebr. 573.

papers on, (55) 177; (59) 369.

prevention and control, (52) Kans. 484.

report, (59) 170.

Poultry—Continued.

diseases—continued.

- studies, (51) Del. 184, 581, Ind. 879; (52) Ill. 86, Kans. 481; (53) 680, 681, 786, N.C. 786; (54) 175; (55) R.I. 275, 371; (56) Utah 571; (57) N.J. 79, 180, 280, N.C. 280, 377, R.I. 472, N.J. 772, 773; (58) Pa. 370, Mo. 480, 578; (59) 175, R.I. 677; (60) Ill. 274, Pa. 374.
- summary, (51) 384; (54) Ariz. 578, 777.
- survey, (59) Guam 581.
- treatise, (51) 482.
- use of vaccines in, (54) 74.
- distribution and prices in Great Britain, (52) 693.
- domestic, origin, (51) 228; (52) 823.
- dressed, standards for, (59) 465.
- economy of standard type in, (53) 273.
- education, papers on, (59) 363.
- effect of irradiation and cod-liver oil, (58) 268.
- egg-producing organs, normal and abnormal, (51) West.Wash. 682.
- equipment, homemade, (52) 889.
- excreta, uric acid in, (53) 503.
- exhibition, method of awarding prizes, (59) 569.
- exhibitions, papers on, (55) 166.
- experiments, (51) Iowa 471, Ohio 471, Mo. 776, Idaho 873; (52) Kans. 474, Ky. 475, Ohio 476; (53) Ind. 172, N.Mex. 173, Okla. 173, Mo. 471; (54) Can. 164, Can. 272, V.I. 273, Can. 470, Mo. 762, Can. 763, Can. 764, Wash.Col. 864; (55) Ark. 64, Ind. 64; (56) Ill. 372, Minn. 566, S.Dak. 567, S.Dak. 669; (59) Wis. 70, Iowa 71; (60) West.Wash. 766.
- extension projects, (56) 790.
- farm equipment, (60) Ill. 882.
- farming—
- commercial, treatise, (52) 876.
 - economic study, Wash.Col., (52) 894; (57) 584.
 - European, notes, (51) N.J. 874.
 - principles, treatise, (53) 174.
- farms, egg production, costs, and receipts, (54) N.J. 766.
- farms in British Columbia, (59) 87.
- farms in New Jersey, (57) N.J. 783.
- fat absorption and assimilation in, (60) 72.
- fattening, (54) Mo. 166; (57) N.C. 272.
- feathers, marketing and value, (51) 176.
- feed prices, relation to egg production, (52) N.J. 676.
- feeding, (51) Mont. 277; (56) Tex. 373, Wash.Col. 567.
- and breeding experiments, Can.. (59) 160; (60) 564.

Poultry—Continued.

feeding—continued.

- and nutrition experiments, Ill. (54) 367; (56) 270.
- enzymes in, (56) 768.
- experiments, (51) Can. 275, Can. 276, Wis. 472, N.C. 874; (52) Calif. 74, Miss. 272, Can. 571, Utah 773, Idaho 875; (53) 374, Ohio 576, 669, 670, Iowa 778, Can. 874; (54) Can. 763, 864; (55) Ohio 164, 266, N.Mex. 467, Iowa 567, Miss. 568, 771, Idaho 866; (56) 72, Del. 372, 670, Wash.Col. 868; (57) Idaho 70, N.J. 765; (58) Ill. 361, Del. 467, Mo. 467, S.Dak. 766; (59) Colo. 262, Ohio 263, Wyo. 263, 665, Idaho 769, Ind. 769, N.C. 769; (60) Ky. 261, N.Y.State 468, Ark. 859.
- for winter egg production, (52) West.Wash. 77.
- heavy grain, effects, (54) 669.
- in Canton, (51) 577.
- methods, (59) Ohio 263.
- papers on, (55) 166; (59) 361.
- principles, (54) Wash.Col. 568.
- principles and practice, (57) Calif. 70.
- feeds—
- analyses, (55) Can. 260.
 - commercial v. home mixed, (51) 672; (54) Can. 164.
 - digestibility, (53) 375.
 - digestibility and production coefficients, (58) 868.
 - effect on fertility and hatchability of eggs, (58) Ark. 360.
 - effect on hatchability and egg production, (53) Ohio 873; (56) Kans. 867.
 - energy values, (56) Ill. 270.
 - home-grown, (51) West.Wash. 378.
 - notes, (58) 868.
 - palatability, (57) Ohio 868.
 - Philippine, studies, (53) 374.
- fence, O. A. C. portable, plans, (55) Oreg. 78.
- flesh and eggs, antineuritic vitamin in, (52) 161.
- flesh and fat, vitamin A in, (55) 593.
- flock, commercial unit, (57) N.C. 271.
- flock, cost and income, (52) Mo. 492.
- flock management, (56) Kans. 867.
- flocks, accreditation recommendations, (59) 374.
- flocks, causes of death in, (55) 876.
- force molt studies, (60) Ala. 172.
- future Mendelian research in, (55) 165.
- genetic studies, (59) Conn.Storrs 430, 522.
- green feed and pasture for, (60) Oreg. 173.
- green feed for, (53) N.J. 72; (55) N.J. 266; (57) Ohio 662; (59) West.Wash. 432.

Poultry—Continued.

health, effect of housing and feeding, (59) 470.

hotel markets for, (59) N.H. 284.

house—

curtain, double-roller, (51) West. Wash. 685.

Michigan shed type, description, (55) 884.

semimonitor, construction, (55) Ohio 481.

suburban unit, description, (51) N.J. 685.

houses—

and equipment, (56) 482; (58) 781; (59) U.S.D.A. 179.

and equipment for Texas, (53) 86.

and equipment, specifications, (51) 889.

artificial lighting, (52) 889; (55) 379.

artificial lighting, equipment, (56) 684.

automatic switch for, (52) Mich. 476.

colony brooder, drawings and bill, (52) Ill. 90.

colony brooder, plans and construction, (56) 81.

construction, (52) U.S.D.A. 289, Mo. 388, N.J. 488; (53) Wash. Col. 288, 487, 892.

construction in North Carolina, (56) 81.

construction in Vermont, (52) 889.

dimming lights for, (55) Wash. Col. 280.

for Kansas, (52) 488.

for Wisconsin, (56) 783.

germ content of air, (57) N.C. 280.

heat and insulation in, (59) Ind. 782.

litter for, (56) Ohio 271.

modern fresh-air, (53) 274.

multiple brooder, construction, (51) N.J. 486.

multiple unit, plans, (57) N.J. 582.

O. A. C. portable brooder, plans, (55) Oreg. 78.

painting and preservation, (57) N.J. 779.

plans and construction, (53) 86, Mont. 791; (54) 283; (57) Ill. 187, 882; (58) 183.

plans and construction for Maine, (58) 183.

portable, plans and construction, (57) 82.

portable summer colony, for pullets, (55) Ohio 481.

specifications, (58) Minn. 885.

straw lofts for, (59) Wyo. 282.

temperature in, (54) Can. 65.

Poultry—Continued.

houses—continued.

temperature regulator, automatic, (59) 586.

temperature tests and ventilation, (57) Ind. 675.

ventilation, (54) N.J. 180, Wash. Col. 879; (59) 379.

ventilation and construction, Nebr., (54) 368; (57) 579; (59) 881.

ventilation experiment, (56) S.Dak. 567.

housing in England and Wales, (59) 363.

housing in Florida, (53) 274.

husbandry—

class project in, (52) 96.

courses in, (59) 363.

institute of Great Britain, work, (55) 198.

research in, (52) N.J. 273; (56) 668.

teaching methods, (55) 486.

textbook, (60) 489.

treatise, (56) 892.

hybrid vigor in, (58) 629.

immunization experiments, (55) 475.

improvement, (58) Minn. 868; (59) 361.

in Australia, metazoan parasites, (56) 778.

inbreeding, effect on bones, (60) Conn. Storrs 530.

inbreeding in, studies, (56) Conn. Storrs 817; (58) 528; (59) Conn. Storrs 430.

incubating and brooding, (51) N.Mex. 471.

industry, (54) U.S.D.A. 66; (56) Kans. 886; (53) Idaho 384, U.S.D.A. 888.

in California, (56) Calif. 689.

in Connecticut, (53) 576.

in Europe, (55) U.S.D.A. 284.

in New Jersey, statistics, (59) N.J. 384.

in Wales, (55) 65.

in Washington, (56) 786.

papers on, (59) 363.

inheritance in, (55) Conn. Storrs 26; (57) R.I. 423; (58) 29; (59) R.I. 623.

inheritance of—

body weight in, (53) R.I. 629.

breed characters, (56) Kans. 817.

color and pattern characters, (52) 430.

earlobe color in, (60) 632.

egg-laying capacity, (55) N.Mex. 467.

fertility and hatchability in Mass., (51) 429; (54) 865.

morphological characters, (60) Conn. Storrs 529.

plumage color, (58) Iowa 425.

rate of feathering, (53) 427.

Poultry—Continued.

- inheritance of—continued.
 skin color, (58) 629.
 structural types in dorsosacrum,
 (60) 631.
 internal parasites in, (56) Pa. 175.
 intestinal parasites, removing, (56)
 575.
 intestinal worms, (53) Wis. 479.
 investigations, (60) Can. 566.
 judging, significance, (59) 361.
 judging team, training, (51) 95.
 kikuyu grass for, (52) 372.
 laying houses, construction, (55) 683;
 (57) 882; (58) West.Wash. 78.
 leg weakness and paralysis, notes, (60)
 671.
 leg weakness in, (51) Wis. 472.
 Leghorn—
 fertility and hatchability, effect of
 feeding, (60) West.Wash. 767.
 inheritance of egg production,
 (57) N.J. 28.
 inheritance of fecundity in, (53)
 N.J. 29.
 lice and mites affecting, (59) Ohio 498.
 lice and mites, control, (55) Tenn. 177.
 lice, control, (53) 681.
 line breeding v. outcrossing, (54) Can.
 272.
 live broilers, marketing in New York
 City, (60) N.H. 286.
 management, (52) 274, Kans. 474;
 (55) Kans. 265.
 and cost of production, (59)
 N.Mex. 262.
 at University of New Hampshire,
 (58) 869.
 effect on hatching quality of eggs,
 (56) 671.
 in New Hampshire, (54) 272.
 instruction in Cornwall, (52) 597.
 textbook, (54) 863.
 marketing, Ky., (54) 387; (60) 284,
 485.
 marketing in England and Wales, (56)
 387.
 marketing in North Dakota, (59)
 N.Dak. 384.
 marketing, papers on, (59) 362.
 mash hoppers for, (58) N.J. 169.
 mashless rations, (54) 670.
 meat flavor, effect of cod-liver oil feed-
 ing, (56) 670.
 meat production, (51) N.J. 673.
 mortality, classification, (53) 786.
 nitrogen metabolism, variations, (60)
 469.
 nutrition, calcium-phosphorus ratio in,
 (59) Wis. 71.
 nutrition, effect of ultra-violet light,
 (53) Me. 375.
 nutritional diseases, (51) 781.
 nutritional leg weakness in, (60) Pa.
 364.

Poultry—Continued.

- nutritional requirements, (54) 669;
 (57) N.J. 72, Mo. 457, Mo. 462; (58)
 Mo. 466.
 organizations and action of govern-
 ments concerning, (55) 166.
 paralysis, control, (59) N.H. 277.
 parasites—
 external, internal medication for,
 (59) U.S.D.A. 278.
 methods of destruction, (58) 177,
 paper on, (59) 470.
 studies, (60) 671, 672.
 parasitism, summary, (60) 579.
 pathological studies, (51) 682.
 pedigree hatching and record keep-
 ing, (54) 471.
 plant, four-unit, operation, (56) N.C.
 867.
 plants, incinerator for, (60) N.J. 173.
 Plymouth Rock—
 body characters and egg produc-
 tion, (51) 673.
 egg production in, (52) Conn.
 Storrs 173.
 poisoning by Daubentonia seed, (59)
 Fla. 581.
 poisoning by death camas, (60) 182.
 post-mortem examinations, (55) 177.
 practices in California, (51) 577.
 practices in South Africa, (51) 777.
 preparing for table, losses in, (54)
 190.
 prices, (59) Ohio 482.
 prices of breeding stock, hatching
 eggs, and baby chicks, (57) Idaho
 272.
 prices, relation to feed costs, (60)
 Ohio 483.
 problems, (51) 176.
 Producers' Cooperative Association
 of Ohio, (60) Ohio 683.
 production-bred, vigor in, (59) Mass.
 770.
 products, marketing, (58) Pa. 381.
 products, marketing, treatise, (51)
 95; (53) 397.
 products, production and commerce,
 papers on, (55) 167.
 races, modification, (55) 166.
 raisers, English, principles and prac-
 tices, (56) N.J. 568.
 raising, (57) U.S.D.A. 270, 368.
 for club members, (52) 196, 696.
 guidebook, (57) 766.
 in back yards, (56) U.S.D.A. 271.
 in Czechoslovakia, (54) 471.
 in Georgia, (54) 471; (58) 570.
 in Kansas, (60) 365.
 in various countries, papers on,
 (55) 167.
 intensive, Crumazone method,
 (59) 465.
 on intensive system, (51) 376.

Poultry—Continued.

raising—continued.

- sunlight as factor, (53) Wis. 463.
- treatise, (51) 176, 577; (54) 270, 471, 863; (55) 869; (57) 868; (58) 570; (59) 465.
- use of electricity in, (56) 579.
- range paralysis of, (56) Mich. 878.
- range v. confinement in winter, (54) Ky. 371.
- rations for crate fattening; (54) Can. 65.
- rations, useful facts concerning, (59) N.J. 568.
- records for pedigree work, (58) Pa. 570.
- research, developments, (54) 568.
- research, use of diseased fowl in, (58) 281.
- Rhode Island Red—
 - cost of raising, (53) N.C. 793.
 - inbreeding, (51) 130.
 - inheritance of plumage color in, (57) 624.
- roundworms, control, (52) Calif. 59; (57) La. 578.
- safeguards, (51) West.Wash. 77.
- scratch grain for, value, (57) Ind. 662.
- second year course, (54) 188.
- sex modifications and sex identification at hatching, (59) 221.
- sex ratio in, (51) 230; (52) 77; (60) 325.
- sex-linked characters in, (60) 218.
- sex-linked cross, characteristics, (60) 634.
- sex-linked inheritance in, (53) 877.
- short courses, (59) U.S.D.A. 685.
- show, future, in development of industry, (59) 361.
- shows, financing and managing, (53) 695.
- Silky, inheritance of black pigment in, (57) 624.
- sources of vitamin A for, (52) Calif. 875.
- standard breeds, death rates, (59) 374.
- standard-bred, fitting and exhibiting, (56) Kans. 374.
- studies, (56) Can. 468.
- surgical operations performed on, (52) West.Wash. 86.
- survey in Kansas, (59) Kans. 165.
- treatise, (55) 869.
- types, (51) 180; (54) 863.
- use of iodine for, (56) 679.
- vaccination against pox and diphtheria, (57) 878; (58) 179.
- variations in production and changes in weights, (60) 469.
- vegetable proteins for, (60) Ala. 172.
- vent picking, cause and remedy, (60) Ohio 468.
- vitamin A deficiency in, Calif., (52) 77; (53) 477.

125253 .33—32

Poultry—Continued.

- vitamin A for, sources, (56) Calif. 373.
- vitamin deficiency disease, (52) 782.
- vitamin requirements, (51) 376, Ill. 771; (52) 273.
- White Leghorn, inbreeding, (55) Conn. Storrs 26.
- White Leghorn, maintenance requirements, (60) 468.
- winter management, (54) Mich. 569.
- worms in, control, (57) Idaho 184.
- worms, iodine solutions for, (54) Mich. 674.
- young stock, summer care, (51) 777.
- Powder-post beetles—
 - beetle predacious on, (52) 559.
 - temperatures fatal to, (52) 458.
- Power, F. B., editorial notes, (56) 601.
- Power—
 - agricultural, cost, (55) 479.
 - and irrigation, coordination, (54) 580.
 - and labor studies in Pennsylvania, (60) 79.
 - capacity and production in United States, (59) 179.
 - capacity of man, dynamometer for testing, (60) 481.
 - farm, from small streams, (52) U.S.D.A. 888.
 - for cultivation and haulage on farms, (59) 585.
 - human, maximum, and its fuel, (53) 863.
 - on farms, papers on, (57) 83.
 - plant testing, treatise, (58) 681.
 - plants—
 - electrical equipment, (51) 187.
 - hydroelectrical, on farms, development, (52) 888.
 - operation, handbook, (55) 781.
 - pipng systems, (51) 188.
 - small, for farm and workshop, (55) 881.
 - problems of the farm, (60) 279.
 - resources of Snake River, (51) 885.
 - transmission, (51) 485.
 - use in agriculture, (54) U.S.D.A. 685.
- Pozzuolana, nitrifying power of, (56) 120.
- Prairie dogs—
 - damage to range grasses by, (52) U.S. D.A. 250.
 - destruction, (53) Okla. 155.
 - destruction of range by, (53) 824; (54) 25.
 - extermination, (51) 357.
 - Zuni, life history and control, (55) 351.
- Prairie hay—
 - digestibility, N.Dak., (51) 809; (55) 564.
 - feeding value, (56) Kans. 364.
- Prairie—
 - insects, (57) 556.
 - problems in entomology, (54) 257.
 - soils, clay layer in, (58) Mo. 415.
 - soils, nature of burn-outs, (52) 813.

Prairie—Continued.

- soils of Canada, effect of exclusive grain culture, (54) 623.
- soils, organic matter and nitrogen contents, (54) Nebr. 315.
- soils, red, ammonification in, (56) 21.
- vegetation, development, (59) 523.

Prairies—

- brush, of Minnesota, plant succession in, (55) 124.
- of central United States, vegetation, (57) 525.
- origin in Illinois, (52) 627.
- Praon simulans*, notes, (57) 452.
- Precipitates, turbidimetric determinations, (52) 310.
- Precipitation = run-off + evaporation + drainage, meaning of equation, (52) 114.
- Precipitation—see also Rainfall, Snow, Snowfall, etc.
 - evaporation, and run-off relations, (60) U.S.D.A. 79.
 - in drainage area of Great Lakes, (55) 312.
 - in Russia, fluctuations in, relation to sun spots, (58) 115.
 - v. snow surveys for predicting stream discharge, (55) U.S.D.A. 312.
- Precipitin, agglutination by, (60) 665.
- Preformationist doctrine, new, (56) 327.
- Pregnancy—

- diet during, (59) 290.
- disease of ewes, (59) 80.
- duration after removal and transplantation of ovaries, (60) 633.
- early determination of, (51) 575.
- effect of diet on rickets in offspring, (56) 796.
- effect on cholesterol and phosphatide content of blood, (55) 767.
- effect on metabolism of goat, (53) 664.
- effect on postpubertal ovogenesis, (52) 630.
- in rats, calcium and phosphorus balances during, (60) 592.
- metabolism in, (53) 365; (54) 292.
- tissues of, hormone content, (57) 724.

Prenolepis spp., notes, (55) 858.

Preservatives, use in food, (53) 160.

Preserves, recipes, (57) 890.

Pressure, effect on plant growth, (52) 518.

Pretzel manufacture, flour for, (58) U.S.D.A. 590.

Price—

- fixing by governments 424 B. C.—1926 A. D., bibliography, (56) U.S.D.A. 388.
- level, general, predicting, (55) Minn. 283.
- movements, effect on agriculture, (53) 895.
- spreads, (53) U.S.D.A. 294.

Prices—

- analysis and forecasting, (60) 883.
- and price indexes in Canada, (55) 785.
- and purchasing power of farm products, (55) Mo. 589.

Prices—Continued.

- and supply, interrelationships, (60) N.Y. Cornell 84.
- artificial, effect on economic stability, (54) 184.
- behavior of, (59) 589.
- factors affecting, bibliography, (55) U.S.D.A. 186.
- farm, index numbers, types, (53) 92.
- farm, reliability and adequacy of data, (57) U.S.D.A. 85.
- index numbers, Ohio, (53) 898; (54) 184, 389, 588; (55) 82, 482; (56) 183, 285, 581; (57) 299, 494, 697, 883; (58) 381, 684; (59) 180, 482, 783; (60) 183, 483, 782.
- index numbers, (59) Iowa 86.
- market, analysis, (53) 294.
- of farm products, (59) Ind. 785.
- of farm products, index numbers, (55) S.C. 588, 686, Iowa 686.
- of farm products, research in, (58) 887.
- paid by farmers for commodities, index numbers, (60) U.S.D.A. 287.
- science of, treatise, (53) 898.
- stabilization, relation to organization of agriculture, (53) 190.
- studies, (60) Ill. 282.
- wholesale, index numbers, (60) 589.
- wholesale, index numbers, revised, (58) 686.
- wholesale, new index numbers, explanation, (58) 686.
- Prickly pear, see Cactus.
- Primrose, linkage work in, (60) 527.
- Primula—
 - obconica, leaf disease in, (56) 551.
 - sinensis, inheritance in, (60) 810.
- Primulas for garden and greenhouse, treatise, (60) 144.
- Prionoxystus macmurtrei—
 - life history and control, (53) 358.
 - pupal case, (52) 355.
- Prionus californicus, studies, (60) N.Mex. 64.
- Pristiphora pallipes, males and intersex-like specimen, (56) 661.
- Pristomerus hawaiiensis, parasite of pink bollworm in Hawaii, (58) U.S.D.A. 457.
- Privet—
 - disease of seedlings and twigs, (58) 55.
 - effect of ringing, (52) 125.
 - European, anthracnose, notes, (58) 54.
- Privies, intestinal parasites in, (52) 891.
- Probstmayria spp. parasitizing equines, (52) 85.
- Prochalia pygamaea, notes, (60) Tex. 164.
- Prociophilus erigeronensis—
 - life history, (53) Ohio 555.
 - notes, (54) Ohio 155.
- Prodenia—
 - litura, notes, (53) 558; (55) Guam 152; (60) Guam 844.
 - perfecta, notes, (60) Oreg. 753.
 - sp., notes, (56) 155.

- Producers' and Consumers' Conference, (56) 487.
- Profanurus* sp., parasite of sugar cane borer eggs, (60) 656.
- Proflavine, therapeutic value in abortion disease, (57) 873.
- Prolamines, behavior in mixed solvents, (58) 111.
- Prolamines, physicochemical properties, (54) 801.
- Proline, effect on growth, (51) 862.
- Prontaspis yanontsis on oranges in Japan, (53) 158.
- Proof box, automatic, for flour test, (59) 311.
- Proparsanol, therapeutic value in experimental trypanosomiasis, (60) 178.
- Property transfers, regulation, (51) 687.
- Prophanurus—
 alecto, rearing, (60) 252.
 emersoni, notes, (51) U.S.D.A. 857.
- β -Propylindolinone, antineuritic properties, (56) 92.
- Prosyleus phytolymus, control, (58) 665.
- Prosenia siberita—
 notes, (56) U.S.D.A. 860.
 parasite of Japanese beetle, (60) 563.
- Prosimulium hirtipes, notes, (57) N.H. 62.
- Proso—
 classification, (55) 134.
 varietites, (52) U.S.D.A. 827.
 variety tests, (53) N.Dak. 334.
- Prospaltella—
 as egg parasite of codling moth, (53) 861.
 forbesi n.sp., description, (59) 358.
 perniciosi, notes, (52) 557.
 sp. on codling moth eggs, (52) 454.
 spp., parasitic on Aleurocanthus, (58) 666.
- Prosperity, industrial, and the farmer, treatise, (58) 78.
- Prostate emulsion, effect on metabolism of rabbits, (55) 766.
- Prosthogonimiasis—
 distribution, (59) Mich. 477.
 of fowls, newly recognized, (53) 778.
- Prosthogonimus—
 rôle of dragon flies in transfer, (57) 774.
 sp., notes, (55) Mich. 877.
- Protamines and histones, (60) 202.
- Protargol, treatment for bovine piroplasmiasis, (58) 175.
- Proteases, plant, specific action, (54) 627.
- Protein—
 alcohol-soluble, from polished rice, (55) 306.
 consumption, effect of temperature, (52) 761.
 consumption of children, (56) Ohio 493.
 diet, effect on blood chemistry, (58) 689.
- Protein—Continued.
 diet, high—
 and unilateral nephrectomy, response of, (59) 892.
 effect on kidneys, (51) 71; (54) 391, 890; (55) 592; (56) 591.
 of lactating rat, effect on young (56) 90.
 physiological effects, (53) 863; (55) 293; (57) 89.
 excess, effect on young, (52) 364.
 feeds, combinations, feeding value, (60) Iowa 466.
 feeds, high, for poultry, comparison, (58) S.Dak. 766.
 fractions of cauliflower, (56) 9.
 hydrolysates—
 incomplete, fractional analysis, (52) 803.
 titration, (59) 806.
 hydrolysis—
 new product, (54) 408.
 products, (58) 9.
 products, diamino nitrogen in, (60) 415.
 intake as indicated by urinary nitrogen, (56) 692.
 intake in North and South, (58) 492.
 metabolism—
 effect of muscle work, (53) 762.
 in cows, (55) 870.
 in man, effect of temperature, (55) 693.
 in pigs, (54) 269.
 in soy beans, (60) 518.
 in underweight children, (60) 92.
 with clover and timothy rations, (59) N.Y.Cornell 365.
 milk, preparation, apparatus, (54) 506.
 new, from spinach leaves, (52) 708.
 nitrogen determination in, Van Slyke's method, (54) 805.
 nitrogen, small amounts, determination, (54) 9.
 rations, low, digestibility by cows, (54) 570.
 requirements—
 minimum, of heifers, (54) Mo. 768.
 of calves, (52) 268.
 of chicks, (54) 866.
 of cows, Ohio, (54) 768; (57) 175.
 of diabetic children, (57) 689.
 of heifers, Mo., (52) 373; (53) 473.
 of man, (58) 493.
 of pigs, (59) 868.
 storage in protoplasmic tissue, (54) Mo. 792.
 substitutes for milk goats, (53) 275.
 supplements, effect on bone development in pigs, (57) 461.

Protein—Continued.

- supplements for chicks, (53) Minn. 472.
- supplements for dairy cattle, (57) Del. 272.
- supplements for fattening cattle, (53) 570.
- supplements for laying hens, Idaho, (51) 873; (57) 71.
- supplements for pigs, (51) Del. 173; (52) Pa. 270, Minn. 470, S.C. 570; (53) Minn. 469; (54) Ark. 62, Del. 665, S.C. 665; (56) Iowa 267, S.C. 268, Del. 369; (57) Nebr. 566; (58) Pa. 359, Del. 464, S.C. 668, S.C. 669; (59) Mich. 68, Ind. 765; (60) Del. 763, Oreg. 765, S.C. 765.
- supplements for steers, (51) Iowa 468.
- survey of Minnesota wheat, (56) 437.
- test, commercial, on wheat, (56) 340.
- value of foods in nutrition, (57) 891.
- value of meat, relation to connective tissue in, (57) 593.

Proteins—

- action of quinones on, (60) 413.
- analysis, (51) 504, 712; (55) 714; (56) 13.
- and amino acids, interrelations, (52) 665.
- and theory of colloidal behavior, treatise, (54) 108.
- and vitamin B, relation, (60) 895.
- animal and vegetable, effect on egg production, (53) Mo. 71.
- animal, for chicks, (59) Ind. 769.
- animal, for laying hens, (53) Ind. 172, Iowa 778; (55) N.J. 64; (57) N.J. 766.
- arginine determination in, (56) 710.
- as affecting pig feeding, (52) 674.
- aspartic and glutamic acids in, (60) 502.
- at different levels, biological value, (51) 569.
- basic amino acids of, determination, (60) 414.
- basic, studies, (59) 309.
- beef, as supplement to cereal proteins, (57) 389.
- biological value, (56) Ill. 363.
- biological value, measuring, (51) 407.
- calories furnished by, and respiratory quotient, (51) 263.
- capacity to bind acids and bases, (51) 100.
- chemistry of—
 - applications, treatise, (56) 9.
 - historical survey, (54) 7.
 - recent advances in, (53) 105.
 - relation to nutrition, (54) 890.
- combination with phthalein dyes, (59) 415.
- concentration in wheat flour, (59) 111.
- crude, in wheat and flour, percentages, (52) U.S.D.A. 312.
- crude or true, in feeding standards, (51) 570.

Proteins—Continued.

- crystalline, with tuberculin activity, (55) 374.
- crystalloidal and colloidal behavior, (54) 6.
- decomposition, (51) 801; (53) 310.
- determination, Hahn's method, (57) 10.
- determination in meat and meat products, (60) 14.
- effect on solubility of calcium phosphate, (58) 507.
- equivalent weight determination, (59) 15.
- for growing chickens, sources, (52) Miss. 272.
- for laying hens, sources, (52) Pa. 273, Can. 571, Tex. 572; (53) N.Mex. 173, Can. 875; (54) Pa. 369, Ky. 370; (55) Ark. 64, Miss. 568; (56) Pa. 373, S.Dak. 669; (58) Miss. 67.
- foreign, sensitization of pigeons to, (56) 475.
- from animal products, growth values, (59) 567, 861.
- gluten, of wheat flour, (53) 409.
- heat denaturation, (58) 501, 502.
- histidine in, (55) 306, 310.
- in alfalfa, effect of nitrogenous fertilizers, (52) 530.
- in alfalfa leaves, analysis, (52) 802.
- in animals and plants, sex differences, (58) 566.
- in beef heart, kidney, and liver, (57) 90.
- in blood plasma, effect of immunization with *Bacillus abortus*, (52) 883.
- in cocoa and chocolate, (56) 491.
- in corn and tankage, supplementary relation, (58) 568.
- in corn leaves, analysis, (52) 802.
- in corn, utilization by hens, (56) 166.
- in cottonseed, (54) 202.
- in cottonseed products, digestibility, (59) 862.
- in edible portion of orange, (53) 711.
- in eggs, pork, and wheat, biological values, (52) 762.
- in flour, effect of yeast fermentation, (56) 502.
- in foods of Dutch East Indies, digestibility, (52) 63.
- in foods of India, (52) 65.
- in formalized serums, changes in, (52) 801.
- in fresh vegetable tissues, (56) 708.
- in grains, effect of geographical factors, (58) 631.
- in Japanese foods, (60) 291.
- in Japanese foods, nutritive value, (58) 688.
- in legumes, (56) 708.
- in linseed meal and cottonseed meal, comparison, (59) Ohio 258, 862.
- in meat products, nutritive value, (55) 188.

Proteins—Continued.

- in milk—
 - effect of chymosin, (59) 110.
 - for laying hens, (55) Iowa 567.
 - maintenance values, (51) 365.
 - meat, etc., maintenance values, (55) 790.
 - rate of secretion, (56) 473.
 - value in reproduction, (51) 563.
- in North Dakota wheat, (53) N.Dak. 838.
- in oatmeal, dietetic value, (56) 391.
- in organs of domestic animals, nutritive value, (55) 487.
- in parasites, sensitizing powers, (56) 776.
- in poultry feeding, comparative efficiency, (54) Nebr. 368.
- in sea food, equality, (56) 793.
- in sesame seed, (58) 409.
- in the diet, control, (60) 686.
- in thin and fat individuals, specific dynamic action, (52) 160.
- in wheat, (58) N.Dak. 34.
 - as price factor, (57) Nebr. 633.
 - biological value, (56) 290.
 - bran and endosperm, (54) 309.
 - bran, nutritive properties, (56) 188.
 - effect of nitrogen fertilizers, (57) 829.
 - effect of time of irrigation, (57) 132.
 - estimating, (59) 38.
 - factors affecting, (52) Calif. 38, 440; (55) 234; (56) Idaho 339; (60) Mont. 729.
 - flour, amino acid distribution in, (51) 409.
 - flour, preparation and analysis, (59) 112.
 - increasing, (56) 430.
 - methods of determining, (55) Mont. 739.
 - of 1927 crop, (58) N.Dak. 433.
 - relation to grades, (55) 382.
 - relation to hardness, (58) 533.
 - testing methods, (54) 505; (56) U.S.D.A. 614.
- in white bread and toast, digestibility, (51) 861.
- in wool, studies, (57) 308.
- isoelectric points, (55) 801.
- lectures on, (55) 592.
- molecular weights, (53) 711.
- natural, composition and characterization, (56) 501.
- nutritive value, (52) 363.
- nutritive value, effect of heat and oxidation, (57) 90.
- nutritive value, methods of measuring, (60) 892.
- oxidation, effect of glutathione, (55) 409.
- phosphorus determination in, (56) 504.
- physical chemistry, bibliography, (54) 408.

Proteins—Continued.

- physicochemical studies, (54) 801.
- selection by pigs, (57) N.J. 70.
- serum, fractionation by electro dialysis, (58) 610.
- serum, osmotic pressure, (59) 801.
- specific dynamic action, (52) 665.
- structure determination, (57) 707.
- sulfur in, (54) 501; (58) 10.
- supplementary relations, (51) 570.
- synthesis by plants, (56) 25.
- synthesis in *Chlorella*, (51) 27.
- titration with indicators, (59) 309.
- transformation into carbohydrates, loss of energy in plants, (58) 523.
- tryptic digestion in vitro, effect of fat, (56) 694.
- tryptophane and cystine in, (52) 802.
- tryptophane in, (55) 208.
- tyrosine in, (55) 306, 310; (60) 501.
- urea substitution for, (53) 672.
- utilization in milk production, (53) 274.
- value for laying pullets, (60) Wash. Col. 860.
- vegetable—
 - for poultry, (60) Ala. 172.
 - isoelectric points, (55) 801.
 - nutritive value, (51) 557.
 - studies, (52) 63; (53) 364; (55) 189; (57) 89; (60) 189.
 - treatise, (51) 501.
- Proteolysis—
 - in flour preparations, (54) 109.
 - in flour suspensions, (59) 310.
- Protease determination, Hahn's method, (57) 10.
- Proteus vulgaris*, stimulating effect on *B. lactis acidii*, (57) 76.
- Protocalliphora—
 - avium, notes, (53) 552.
 - splendida sialis, infestation of blue-bird nests by, (58) 263.
- Protochlorophyll, nature of, (60) 520.
- Protogyny in corn, inheritance, (51) 129.
- Protoparce—
 - quinquemaculatus, effect of constant humidities, (59) 59.
 - quinquemaculatus, parasite of larva, (57) 362.
 - sexta, *see* Tomato worm.
 - sexta jamaicensis, notes, (51) 55.
- Protopectin—
 - and pectin, relation, (52) 11; (54) 7.
 - studies, (56) 613.
- Protopectinase, preparation, (60) 239.
- Protoplasm—
 - adhesion to cell wall, (54) 520.
 - coagulation, (58) 625.
 - colloid chemistry of, treatise, (53) 309.
 - injuries to and protection, (59) 723.
 - isoelectric point for, (56) 325.
 - living, H-ion concentration, (52) 624.
 - living, permeability to ions, (59) 619 723.

Protoplasm—Continued.

- of beet, permeability, effect of temperature, (57) 217.
- of plants, protein properties, (56) 723.
- of plants, structural organization, (59) 722.
- of wheat root hairs, effect of pH, (52) 124.
- penetration of cations into, (55) 729.
- physical state and functioning, (54) 124.
- reaction to reagents, (52) 215.
- reaction to salts, (53) 124.
- streaming of, studies, (51) 521.

Protoplasmic—

- material, extraction from leaf cells, (51) 309.
- tissue composition, changes due to partial starvation, (58) Mo. 411.

Protozoa—

- action on bacteria in soil, (54) 718.
- biology, (55) 758.
- effect on nitrogen fixation, (54) 718; (60) 510.
- human, host-parasite specificity, (56) 457.
- in American soils, (58) 615.
- in Egyptian soils, effect of summer fallow, (56) 119.
- in garden soils, studies, (56) 809.
- in Imhoff tanks, distribution and succession, (57) N.J. 781.
- in intestines, thermal therapy for, (54) 657.
- in man, (51) 179.
- in man, catalogue, (53) 855.
- in man, host-parasite relation, (55) 852; (57) 854.
- in man, manual, (54) 855.
- in man, neocarsphenamine treatment, (54) Mich. 675.
- in partially sterilized soil, (51) 18.
- in plants, (52) 645.
- in plants affected with mosaic, (53) 646.
- in rumen and reticulum of American cattle, (57) 771.
- in soils—
 - and mosses of Spitzbergen, (54) 813.
 - counting, effect of culture media, (54) 119.
 - development, effect of sunlight, (54) 120.
 - of different areas, (54) 812.
 - of Egypt, effect of summer fallow, (53) 513.
 - of South Africa, (53) 618; (56) 118.
 - of United States, (53) 19.
 - studies, (57) 17, 510; (60) 316.
- problem of adaptation, (55) 758.
- relation to soil bacteria, (54) 420.

Protozoan—

- cysts, resistance to disinfectants, (54) 591.

Protozoan—Continued.

- diseases of dairy cattle, (52) U.S.D.A. 583.
- Protozoology—
- human, treatise, (56) 675.
 - treatise, (56) 657.
- Protozyme—
- effect on egg production, (57) N.J. 765.
 - effect on pigs, (57) N.J. 764.
 - feeding value, N.J., (55) 868; (57) 73.
 - growth-promoting properties, (56) 670.
- Provisions, Chicago trade in, (51) 298.
- Prune—
- brown rot outbreak in Oregon, (53) 151.
 - brown rot, studies, U.S.D.A., (51) 155, 757.
 - brown-pocket heart rot, studies, (56) 152.
 - chlorosis, studies, (59) Idaho 750.
 - pits, vitamins in, (59) 595.
 - pulp for ice cream, (58) 71.
 - root borer, control, (51) 363; (60) Oreg. 753.
 - root borer, notes, (60) 651.
 - root rot, notes, (58) 656.
- Prunes—
- as affected by tree cricket, (52) 658.
 - cold storage studies, (60) 541.
 - culture in Pacific States, (52) U.S.D.A. 237.
 - dehydration, (55) Calif. 507.
 - dried, determination of moisture in, (57) Oreg. 806.
 - dried, standardization, (60) 682.
 - drying, (51) Oreg. 808; (52) Calif. 14.
 - dwarfing, shriveling, and dropping, (56) N.Y.State 850.
 - effect on urinary acidity, (51) 64.
 - fertilizer experiments, (56) 43.
 - fresh, canning, (52) Calif. 14.
 - harvesting, (55) Oreg. 341.
 - Italian, vigor and yield, (60) Oreg. 738.
 - notes, (59) Calif. 737.
 - on various stocks, (60) 541.
 - picking maturity test, (59) Idaho 738.
 - potometer studies, (52) Calif. 41.
 - production and marketing, (57) U.S. D.A. 191.
 - production and prices, (60) Calif. 784.
 - pruning experiments, (52) Calif. 42.
 - time of picking, effect on canning quality, (55) 411.
 - transpiration studies, (52) Calif. 40.
 - use in ice cream, (57) Calif. 276.
- Pruning—*see also special trees and shrubs.*
- general principles, (51) Kans. 40.
 - treatise, (53) 641.
 - wounds, healing, (55) 237.
 - wounds, treatment, (52) Wash.Col. 837.
- Prunus—*see also Cherries and Plums.*
- amygdalus amara, disease affecting, (56) 354.

- Prunus*—Continued.
 genetic studies, (60) 125.
 genus, water relations, (55) Calif. 424.
 mume as stock for apricots, (53) Calif. 449.
 nematode resistant species, (56) Tenn. 145.
 spp., behavior of polyploids in, (57) 32.
 spp., crown gall resistance in, (57) Calif. 244.
 stocks resistant to crown gall, Calif., (52) 53; (59) 748.
 triloba plena, fire blight affecting, (52) 449.
 umbellata, pistillate flowers of, (58) 740.
- Prussic acid—*see also* Hydrocyanic acid.
 action on growth of fungi, (60) 807.
 effect on germinating-ripeness of wheat, (59) 517.
 forcing studies with, (57) 321.
 fumes, effect on trees, (55) 519.
- Psallus seriatus*—
 distribution and host plants, (55) 53.
 life history studies, Tex., (55) 353, 458.
 notes, (52) 454, S.C. 553.
 studies, (55) U.S.D.A. 661.
- Psalmopoeus pulcher*, notes, (55) Ark. 50.
Psara bipunctalis, notes, (59) 558.
Psara phoeopteralis, life history, (56) 557.
Pselaphidae, distribution, (57) 553.
- Pseudaonidia duplex*—
 control, (54) 156.
 summary, (53) 51, 653.
 winter mortality, (52) 454.
- Pseudaphycus*—
angelicus, notes, (54) 559.
angelicus websteri, notes, (54) Mich. 354.
utilis, notes, (53) 653.
- Pseudiglyphomyia nigrovariegata*, notes, (52) Iowa 358.
- Pseudoleptomastix squamulata*, notes, (54) 559.
- Pseudocneorrhinus setosus*, notes, (51) Conn.State 852.
- Pseudococcus*—
boninsis, notes, (54) 457.
bromeliae, enemies of, (53) 653.
citri, *see* Mealybug, citrus.
comstocki, biology and control, (53) Va. 757.
comstocki on bananas, (60) 559.
comstocki on catalpa, control, (54) 658.
gahani, biology, (52) 855.
gahani, control, (56) 360.
gahani on citrus, (52) 455.
ilacinus, life history and habits, (59) 354.
maritimus, mosaic transmission by, (53) Iowa 748.
maritimus, notes, Mich., (54) 354, 656.
- Pseudococcus*—Continued.
maritimus on gladiolus and calla, (58) 559.
maritimus parasites in California, (54) 558.
nipae, *see* Coconut mealybug.
pandani on coconut palm, (56) 58.
tirolensis, notes, (53) 652.
variabilis, description, (53) 653.
- Pseudodioscosia dianthi*, description, (60) 646.
- Pseudogonatopus iowensis* n.sp., description, (52) 859.
- Pseudomonas*—
aeruginosa infection in a calf, (56) 477.
alboprecipitans, notes, (58) 545.
apii, control, (52) N.Y.Cornell 245.
campestris, studies, (51) 152; (54) N.Y.State 543; (57) 248; (59) 343.
celebensis n.sp., notes, (54) 150.
celebensis, provisional name, (53) 250.
cerasus, notes, (52) Calif. 49.
citri, *see* Citrus canker.
citriputeale, notes, (58) 555, 658.
dissolvens, notes, (55) Ark. 847.
dissolvens, notes, (55) Ark. 847.
flaccumfaciens, notes, (59) 640.
holci n.sp., description, (56) Iowa 542.
juglandis, notes, (60) 831.
maculicolum, studies, (51) N.Y.State 152.
malvacearum, notes, (57) 644; (60) 241, 832.
medicaginis, notes, (56) Utah 540.
musae, notes, (53) 250.
phaseoli, notes, (52) 146.
pisi, notes, (53) 43; (54) Wis. 248; (58) 652.
pruni, notes, (53) Colo. 146.
savastanoi, notes, (51) 549.
 spp., notes, (56) 843.
tritici, notes, (55) 346; (56) 749.
tumefaciens, notes, (51) 248; (60) 553.
tumefaciens, strains, (59) 341.
tumefaciens, studies, (58) 245, 246, 247.
- Pseudoperonospora cubensis*, studies, (51) Del. 147, 156.
- Pseudoperonospora humuli*—
 description, (55) 749.
 mycelial invasion of host, (57) 150.
 notes, (52) 748; (56) 748, 847; (60) 345.
 perennial mycelium in, (57) 348.
 studies, (59) 51; (60) 348.
- Pseudopeziza*—
medicaginis, notes, (54) 448; (56) Utah 540.
ribis, notes, (56) 747, 748; (58) 442.
tracheiphila, notes, (54) 253; (57) 850, 851; (59) 547.
- Pseudophillipia quaintanci*, notes, (55) Miss. 658.
- Pseudoplea medicaginis* n.sp., description, (58) 48.

- Pseudopregnancy, increased food consumption in, (56) 665.
- Pseudorabies, notes, (54) 171.
- Pseudotuberculosis, (60) 574.
- Pseudotuberculosis of canary birds, (58) 180.
- Psila rosae, *see* Carrot rust fly.
- Psilocybe atomatoides as fermenting agent, (53) 522.
- Psilotrema spiculigerum, life history studies, (54) 172.
- Psithyrus laboriosus in bee hives, (60) 847.
- Psorocoptes cuniculi, notes, (53) 82, 587.
- Psoroptes communis var. ovis, ovigerous females, effect of dipping fluids, (60) 574.
- Psychoda alternata, control in sprinkling filters, (59) N.J. 380.
- Psyllaephagus arbuticola n.sp., description, (56) 362.
- Psyllia—
 buxi, notes, (55) N.J. 152.
 mali, *see* Apple sucker.
- Psyllids of South Africa, (59) 456.
- Psylliodes affinis, transmission of virus diseases by, (60) 243.
- Pterogon proserpina, parasite of, (53) 55.
- Pteromalidae in Spain, (54) 59.
- Pteromalus—
 puparum, parasite of cabbage butterfly, (51) 555.
 sp., notes, (51) 761; (53) 259.
 variabilis, notes, (51) 553.
 variabilis, oviposition and feeding, (53) 560.
- Pteronidea ribesii, gynandromorph of, (56) 662.
- Ptinus fur, outbreak, (53) 652.
- Ptinus spp. as stored product pests, (54) 152.
- Ptychomyia remota—
 n.sp., description, (53) 257.
 notes, (59) 655.
 parasite, biology, (57) 761.
 studies, (57) 264.
- Public domain, utilization and disposal, (51) Utah 688.
- Public health, *see* Health.
- Puccinia—
 anomala, aecial stages, (52) 545.
 antirrhini, life history notes, (56) 250.
 asparagi, *see* Asparagus rust.
- coronata—
 alternate hosts, (56) 446; (57) 746.
 control, (51) 156.
 effect of alternate hosts of physiologic forms, (58) 544.
 epidemiology studies, (55) 845.
 notes, (57) 158; (59) 540.
 coronifera on winter rye, (56) 651; (57) 642.
- dispersa—
 aecial stages, (52) 545.
- Puccinia—Continued.
 dispersa—Continued.
 annual cycle of uredoform, (59) 540.
 notes, (57) 747.
 endiviae, notes, (54) 449.
- glumarum—
 cytological study, (59) 541.
 in United States, (52) 648.
 notes, (57) Calif. 247, 840, 842.
 tritici, notes, (57) 542.
- graminis avenae—
 inheritance of resistance to, (57) 746.
 physiological specialization, (53) 847; (56) Minn. 447.
 resistance in oats, breeding for, (57) 147.
- graminis—
 forms in Scotland, (57) 147.
 notes, (56) 448; (57) 444.
 physiologic forms, (58) Nebr. 44.
 poeae in Michigan, (55) 844.
 poeae in United States, (52) 243.
 resistance in Berberis, nature of, (59) 843.
 secalis, biologic specialization, (53) 848.
 secalis, notes, (57) 747.
 species, spore characters and histology, (56) 648.
 tritici, forms, (55) Nebr. 650, 845.
 tritici, resistance of wheat to, (51) 448; (56) 652.
 tritici urediniospores, studies, (55) Nebr. 45.
 urediniospore germination, (52) 347.
- helianthi, notes, (54) 144.
- helianthi-mollis, notes, (56) 51; (57) 351.
- malvacearum—
 anomalies in sporulation, (57) 541.
 notes, (56) 542.
 variability in, (52) 746.
 wintering over and infection, (56) 152.
- maydis, life cycle, (53) 246.
- menthae, studies, (56) 547.
- mirabilissima, new British record, (53) 542.
- n.sp., life cycle, (53) 246.
- penniseti, notes, (55) 245.
- podophylli, composite life history, (53) 347.
- podophylli, expulsion of aecidiospores by, (52) 450.
- pringsheimiana, notes, (59) 645.
- prunispinosae, notes, (53) 43; (57) 549; (59) 45.
- purpurea, notes, (57) 443.
- sorghii, infection and spore germination, (58) 544.
- sorghii, notes, (52) 148; (56) 49, 449.

Puccinia—Continued.

- spp., aecial stages, (53) 749.
 spp. in France, (57) 541, 641.
 spp., notes, (51) 46; (53) Ga. 246;
 (54) 145, 247; (55) 346; (57) 446,
 639, 840; (58) 444.
 spp. on barley, (51) 47.
 spp. on golden top grass, (55) 844.
 spp. on wheat, (51) 247.
 suaveolens, notes, (58) Ohio. 434.
 suaveolens, studies, (55) 251, 552.
 subnitens on spinach, (52) 351.
 triticina—
 form 11, cytological study, (55)
 652; (57) 542.
 physiologic specialization in, (58)
 651.
 strains, (53) 646.

Pucciniastreae, uredo stage, (58) 728.

Pucciniopsis caricae, relation to papaya,
 (58) 153.

Pueraria javanica as green manure and
 cover crop, (52) 732.

Puffer fish oil, antirachitic value, (56)
 296.

Pullets—

- as breeders, (53) 273.
 changes in egg weight, (52) 675.
 cost of production and time of hatch-
 ing, (58) Minn. 868.
 cost of putting into lay, N.C., (57)
 271; (59) 770.
 cost of raising, (52) Pa. 273; (53)
 Can. 875; (54) Pa. 369.
 death rate of three breeds, (60) 567.
 early v. late hatched, for winter pro-
 duction, (54) Can. 164.
 effect of crate feeding before laying,
 (54) Can. 765.
 effect of different levels of animal pro-
 teins, (60) Pa. 364.
 egg production, (57) Idaho 765.
 egg production, effect of artificial light,
 (58) Del. 168.
 feeding, all mash method, (54) Ohio
 568.
 feeding and management in close con-
 finement, (60) N.J. 364.
 feeding experiments, (51) N.J. 673;
 (52) Kans. 474; (60) West.Wash.
 767.
 green feed requirements, (60) West.
 Wash. 767.
 intestinal parasites, (57) Can. 574.
 January hatched, (57) Ohio 494.
 late, hastening maturity, (54) Can.
 763.
 late-hatched, effect of artificial light
 on egg production, (60) 861.
 laying ability, effect of time of hatch,
 (57) N.Mex. 174.
 laying, effect of sunlight, (59) Wis. 70.
 Leghorn, rate of maturing and egg pro-
 duction, (54) 766.
 Leghorn, rate of maturity and first-
 year production, (55) 771.

Pullets—Continued.

- nonlaying and laying, calcium, phos-
 phorus, and nitrogen balance, (54)
 568.
 pedigreed and nonpedigreed, compari-
 son, (55) Miss. 568.
 pedigreed, egg production, Miss., (55)
 669; (58) 67.
 rearing in confinement, (56) N.J. 869.
 selection for egg production, (53) Iowa
 778.
 time of hatch, relation to egg pro-
 duction, (60) Ky. 261.
 200-egg, production performance, (51)
 N.J. 674.
 type as basis for selection, (59) Iowa
 71.
 v. hens for fertility of eggs and mor-
 tality of chicks, (54) Can. 272.
 weight and egg production, (54) V.I.
 273.
 weight, relation to growth rate, (59)
 870.
 winter confinement, effect on egg pro-
 duction, (58) 168.
 winter fecundity, correlation studies,
 (52) Mass. 729.
 Pullus sp., notes, (60) 455.
 Pulmonary—
 congestion in calves, acute, (53) 279.
 mycoses and causative parasites, (51)
 680.
 Pulp—
 and paper industry of Canada, (51)
 649.
 manufacture from Australian woods,
 (51) 245.
 production by chlorine process, (60)
 697.
 testing methods, (57) 13.
 wood—see also Paper pulp and Wood
 pulp.
 consumption and trade, (54) 542.
 in Lake States, (55) 242.
 resources of Canada, (52) 743.
 situation in United States, (51)
 U.S.D.A. 843.
 Pulvinaria—
 amygdali—
 life history, N.Y.State, (57) 760;
 (58) 857.
 midsummer sprays for, (59) N.Y.
 State 250.
 notes, (60) N.Y.State 452.
 summary, (56) N.Y.State 257.
 floccifera, notes, (55) Miss. 658.
 iceryi, notes, (56) 552.
 iceryi, outbreak, (57) 856.
 maxima, studies, (54) 156.
 sp., notes, (59) Guam 555.
 vitis, see Maple scale, cottony.
 Pumice stone, behavior during dehydra-
 tion of organic liquids, (51) 203.
 Pumping—
 for drainage in San Joaquin Valley,
 (52) Calif. 783.

- Pumping--Continued.
 from deep wells, effect on water table, (57) 473.
 irrigation, experiments in Kansas, (53) 282.
 plants, motor-driven, information on, (51) Ariz. 788.
- Pumpkin—
 bacterial leaf spot, notes, (57) 343.
 beetle, red, control, (55) 857.
 bugs, trap crop for, (54) 53.
 leaves, vitamin A in, (52) 65.
 mildew, control, (56) Colo. 839.
 pink spots, notes, (58) 647.
 seed cake, composition and nutritive value, (54) 263.
 seeds, anthelmintic value, (52) Ohio 84.
 seeds, effect on growth of rats, (51) 73.
- Pumpkins—
 canned, composition, (53) 457.
 drying, (52) Calif. 14.
 effect on flavor and odor of milk, (58) U.S.D.A. 69.
 feeding value, (56) Wash.Col. 566; (58) 865; (59) Wash.Col. 68.
 storage test, (51) N.Dak. 837.
 systematic study, (58) Iowa 838.
 vitamin A in, (52) 65, 762.
 vitamin B in, (52) 762.
- Pumps—
 air lift, studies, (52) 285.
 centrifugal, tests, (56) Mont. 280.
 deep-well, farmers' purchase agreement, (59) Calif. 83.
 deep-well turbine, tests, (54) 382.
- Puncture vine—
 control, (55) 741; (58) 36; (59) 332.
 eradication, (59) Calif. 736.
- Pundaluoya simplicia—
 dimorphism in, (52) 155.
 life history, (54) 657.
- Puppies—
 effect of carbon tetrachloride, (54) 174; (59) 470.
 new anthelmintic for, (57) 872.
- Purdue—
 handbook of agricultural facts, 1924, (51) Ind. 493.
 University, notes, (51) 97; (52) 98, 797; (53) 97, 697; (54) 599; (55) 198, 496; (56) 699; (57) 900; (58) 697; (59) 299, 797; (60) 600.
- Purin bodies, chemistry, (51) 407.
- Purnell Act—
 and cooperation in research, (53) 1.
 editorial, (52) 301.
 history, (55) 384.
 St. Louis conference on, editorial, (52) 601.
- Purple leaf moth of coconuts in Fiji, (53) 859.
- Purple scale—
 control, (54) 53; (56) 555, Fla. 855.
 notes, (56) 552.
 on citrus, (54) V.I. 259.
- Purslane—
 as weed in Cuba, (54) 239.
 white rust, notes, (55) 346.
- Putnam scale—
 in Arizona, (56) Ariz. 755.
 on cranberries, control, (59) Wash. Col. 40.
- Putting greens, requirements, (53) 139.
- Pyæmia, corynebacterial, of foals, (59) 170.
- Pycnoscelus surinamensis—
 control, (56) 256.
 intermediary host of eye worms of poultry, (58) 481.
 notes, (57) 381.
 on roses, (54) 657.
- Pyelonephritis—
 of cows, (54) 380; (58) 878.
 of cows, organism associated with, (55) 374.
- Pyocyanus bacillosis and mastitis due to *P. aeruginosa*, (56) 477.
- Pyralidae—
 biological notes, (54) 755.
 Formosan, systematic study, (60) 252.
- Pyralis farinalis as alfalfa hay pest, (53) 361.
- Pyrameis cardui—
 notes, (58) Ohio 434.
 on Canada thistles, (52) 453.
- Pyrausta—
 ainsliei, notes, (59) Iowa 55.
 nubilalis, see Corn borer, European.
 penitalis, notes, (59) Iowa 55.
 spp., biology, (57) 361.
 spp., notes, (53) 559.
- Pyrenomycetes—
 higher, imperfect stage, (54) 524.
 studies, (55) 522.
- Pyrethrum—
 anthelmintic value, (55) 271.
 culture, (58) 451.
 English-grown, as insecticide, (60) 839.
 extracts, insecticidal value, (60) S.C. 755.
 insecticide from Dalmatia, (52) 155.
 spray for control of Japanese beetle, (58) 263.
- Pyrheliometric observations at Montezuma, Chile, (56) U.S.D.A. 508.
- Pyridine, action on amino acids, (60) 203.
- Pyrite effect on calcium and magnesium in soil, (51) 321.
- Pyrophorus luminosus, notes, (51) 855.
- Pyropolyporus robiniae, notes, (54) 150.
- Pyrotol, use, (57) 776.
- Pyrrrole salt as iron substitute for plants, tests, (58) 125.
- Pyrrolidone carboxylic acid, metabolism experiments, (51) 64.
- Pyruvic acid—
 determination, (52) 312.
 production by nodule bacteria, (58) 616.

- Pythiacystis citrophthora—
and Phytophthora cactorum, relation, (58) 52.
enzymes of, (58) Calif. 443.
notes, (54) W.Va. 745; (56) 748; (57) 56; (59) 152, 548.
resistance to, cause, (57) Calif. 244.
toxic action of calcium cyanamide on, (58) 340.
- Pythiacystis sp., notes, (59) Calif. 747.
- Pythium—
and Phytophthora merging into one genus, (53) 645.
aphanidermatum, notes, (53) 851; (55) 244; (57) 347; (58) 549; (60) 546.
arrhenomanes n.sp., description, (60) 447.
artotrogus, notes, (53) 854; (54) 549.
butleri, notes, (57) 540.
completens n.sp. on geranium, (52) 749.
damping-off of seedlings, (59) 637.
debaryanum and related species, studies, (53) 855.
debaryanum, notes, (53) 248, 351, N.C. 746; (54) 48, 549; (57) 843; (58) 443; (59) 341, Fla. 541.
debaryanum on pine roots, (51) 356.
proliferum on strawberry roots, (60) 553.
root rot of soy bean, (55) 753.
rootlet rot of sweet potatoes, description, (52) 547.
sp., control, (51) 152, 156.
sp. in Porto Rico, (55) 248.
sp., notes, (57) P.R. 442; (58) 47, 548, N.Y.State 844.
sp. on Cucurbitaceae, new strain, (54) 246.
spp., description, (59) 342.
spp., notes, (51) 353; (57) 442, 648, 749; (58) 143; (59) 849.
spp. on tobacco, (59) 643.
ultimum, notes, (59) 341.
- Quack grass—
control, (58) S.Dak. 734.
eradication, (53) Mich. 740; (60) 336.
leaf blotch, notes, (52) 448.
- Quail—
accessible water, critical factor in existence, (60) 555.
California valley, parasites and parasitic disease in, (60) 276.
diseases, (59) 279.
gizzard worm, life cycle, (60) U.S.D.A. 876.
in arid Southwest, cause of delimiting, (60) 555.
investigations and development of preserves, (58) 855.
life history investigations, (53) 252.
- Quarantine—
control of insects, (54) 154.
No. 43, operation, (51) 161.
practices in Mexico, (58) 661.
- Quaylea whittieri, notes, (53) 260.
- Quebracho forests of South America, (52) 445.
Quenching cracks, steel, origin, (54) 682.
Quercetin in apple peels, identification, (52) 502.
Quercus incana climax forest, epiphyte succession in, (54) 424.
Quicklime, chemico-physical effect, (52) 723, 723.
Quilta oryzae n.sp., description, (58) 858.
Quilts, patchwork, treatise, (56) 397.
- Quince—
aerial galls, (58) 554.
black rot, notes, (56) 748.
blight resistant varieties, (56) Tenn. 145.
burknots, summary, (60) 153.
diseases, notes, (56) 747.
fire blight, history and control, (57) 846.
fire blight, studies, (52) Tenn. 549.
leaf and fruit blotch, notes, (56) 748.
leaf blotch, notes, (60) 831.
rootstocks for pear propagation, studies, (60) 541.
- Quinces—
Japanese, as sources of jelly, (60) Ill. 230.
Japanese, value for preserving purposes, (59) 90.
nonvolatile acids of, (58) 711.
spray schedules for, (51) N.J. 144; (53) N.J. 37; (55) N.J. 38, Ohio 38; (57) N.J. 42.
- Quinhydrone electrode—
and its applications, (57) 804.
application to soils, (58) 506.
drift in potential, (60) 621.
for estimation of pH of urine and blood, (55) 615.
for measuring reaction of soils, (55) 505.
theory, construction, and operation, (56) 111.
use in pH determination, (52) 204.
use in pH determination of blood serum, (54) 205.
use in pH determination of feces, (55) 311.
- Quinones, chemical action on proteins and amino acids, (60) 413.
- Quinisol treatment for pleuropneumonia in horses, (59) 676.
- Rabbit—
diseases, studies, (60) 276.
experimental station in California, (55) 900.
fur, Angora, use in knitting, (60) 97.
shelters, construction, (58) U.S.D.A. 584.
skins for fur, (56) U.S.D.A. 597.
snuffles, organisms associated with, (53) 784.
- Rabbits—
American domestic, standard of perfection, (60) 660.

Rabbits—Continued.

- and hares, crossing experiments, (53) 630.
 Angora, wool production, (60) 567.
 Angora, wool production, value and uses, (51) 177.
 as pest in Australia, (60) 647.
 birth weight, morphogenetical value, (56) 818.
 blood pressure and pulse rate, (58) 476.
 breeding, (58) 869.
 breeding and management, (52) 876.
 breeding in Belgium, (59) 363.
 British, cutaneous spirochetosis in, (59) 671.
 calcification processes in, (56) 593.
 Chinchilla—
 for food and fur, (59) U.S.D.A. 666.
 genetic studies, (59) 725.
 treatise, (57) 175.
 Chinchilla-Japanese cross in, (57) 30.
 chromosome numbers in, (53) 523; (55) 818; (58) 823.
 color inheritance and linkage in, (57) 323.
 coloring, modifications and mutations in, (54) 428.
 control in orchards, (56) Mo. 355.
 cottontail, diseases of, (60) 72.
 destruction in New South Wales, (53) 153.
 destruction with calcium cyanide, (51) 759.
 diseases and treatment, (56) 679.
 diseases of, (57) 473.
 Dutch and English patterns, (60) 631.
 Dutch, inheritance of pattern, (55) 524.
 Endamoeba dysenteriae infection with, (55) 375.
 epidemic among, (56) 880.
 experimental rickets in, (54) 595.
 female, effects of sperm injections, (60) 32.
 filterable virus infection, (52) 681.
 for food, treatise, (54) 866.
 fur, management, feeding, and preparation of skins, (54) 274.
 fur, raising, treatise, (56) 168.
 fur, treatise, (58) 767.
 genetic independence in size of body parts, (51) 736.
 growth studies, (60) 660.
 Himalayan, factors affecting pattern, (60) 220.
 Himalayan, partial albinism in, (54) 429.
 important diseases of, (58) 581; (59) 375.
 inheritance of—
 birth weight, (52) 331.
 characters, (52) Kans. 427; (53) 522.
 eye defects, (56) Kans. 818.

Rabbits—Continued.

- inheritance of—continued.
 weight, (54) 432; (56) 330; (60) 631.
 Japanese, factors determining, (52) 332.
 Japanese, gametic purity, (52) 222.
 life history studies, (53) Ariz. 754.
 linkage between albinism and brown pigmentation, (54) 29.
 linkage in patterns of, (51) 430.
 maintenance ration, relation to body composition, (60) 464.
 metabolism, effect of ultra-violet radiation, (60) 899.
 new host of *Oxyuris evoluta*, (58) 581.
 newborn, weight, factors affecting, (54) 432.
 oestrous cycle in, (55) 29.
 of Colorado, control, (55) 454.
 of eastern Colorado, life history and control, (58) 157.
 offal, fertilizer material from, (56) 216.
 organ weights, (56) 463.
 ovulation in, (56) 331.
 oxygen poisoning, (57) 181.
 parasites and diseases, (60) U.S.D.A. 778.
 parasitized by *Coenurus serialis*, antibodies in serum, (54) 575.
 physiology of reproduction in, (59) 221.
 placentation in, studies, (57) 221.
 production of hidden hereditary factors in, (53) 526.
 raising, (54) 274; (55) 199; (57) 665, U.S.D.A. 766; (59) 666.
 reproduction as affected by Fowler's solution, (56) Ill. 363.
 reproduction in, treatise, (54) 866.
 resistance to infection with tubercle bacillus, (56) 777.
 Russian, back color, (52) 525.
 Salmonella pullorum infection, (60) 180.
 sex control in, possibility, (53) 731.
 spermatogenesis, (56) 475.
 spread of foot-and-mouth disease by, (60) 869.
 temperature of, (60) 59.
 use in abortion studies, (53) 885.
 vaccination against fowl cholera, (51) 184.
 white, varieties, (52) 825.
- Rabies—
 antiserum, rabicidal property, (57) 378.
 Conference, International, reports, (59) 173.
 control, (53) 178; (60) 72.
 control in Connecticut, (53) 80.
 etiology, (51) 382.
 fixed virus, testing, (55) 273.
 immunization, (52) 380; (53) 583; (57) 377.

- Rabies—Continued.
 immunization, duration, (60) Ohio 177.
 immunization, prophylactic, (51) 480; (54) 576; (59) 471.
 in dogs in Japan, Umeno's inoculation method, (53) 583.
 in man and animals, (55) 776.
 infected animals, blood and virus studies, (57) 378.
 laboratory diagnosis, error in, (55) 473.
 methods of treatment, (53) 79.
 notes, (57) 278.
 paper on, (54) 475; (59) 470.
 parasite, description, (52) 380.
 summary, (55) Kans. 577.
 transmission to rabbits, (54) 575.
 treatment in Palestine, (54) 576.
 vaccine, studies, (55) 473.
 virus, antigenic properties, (59) 580.
- Rabula frontalis, notes, (52) 154.
- Raccoons—
 raising, (54) 274.
 raising, treatise, (54) 866.
 trematode affecting, (55) 373.
- Race crosses, biological and social consequences, (54) 29.
- Rachela Bruceata, notes, (52) Wash.Col. 852.
- Racodineura antiqua, notes, (60) Oreg. 754.
- Radiant energy, solar, measurement in plant habitats, (51) 822.
- Radiation—see also Solar radiation.
 and photosynthesis, (59) 322.
 physiological effects, (60) 297.
 solar and terrestrial, (52) 615.
- Radiator finishes—
 effect on heat transmission, (53) 389.
 tests, (58) 486.
- Radiators—
 cast-iron, dissipation of heat by, (56) 384.
 heating effect, (54) 584.
 operating characteristics, (51) 290.
- Radio home study course on farm crops, notes, (55) 798.
- Radio receiving sets, construction, (51) Mich. 89.
- Radioactive—
 fertilizers, tests, (52) 426; (53) 517.
 waters, effect on plants, (55) 520.
- Radioactivity—
 and nitrogen fixation, (52) 22; (55) 721.
 effect on formation of new living plant masses, (60) 627.
 of pulped tomato fruits, (52) 519.
- Radiosensitive substances, color test for, (59) 596.
- Radiotherapy in plants, tests, (58) 422.
- Radish—
 and cabbage polyploid hybrids, (60) 324.
 black root, avenue of infection, (56) 51.
 black root, description, (59) 344.
- Radish—Continued.
 black root, notes, (57) 343; (58) Ind 243.
 black rot, notes, (51) Ind. 845.
 hybrids, notes, (52) Calif. 40.
 seeds, size, effect on plant production, (56) 24.
 soft rot, notes, (59) 644.
- Radishes—
 disease resistant varieties, (56) 549.
 effect of seed size, (60) 339.
 effect of various lengths of day, (56) 640.
 fertilizer experiments, (59) Guam 529.
 inheritance of color characters and hybrid vigor, (52) 30.
 inheritance studies, (52) 523.
 returns from, (56) Ark. 387.
 vitamin A and B in, (53) 62.
 vitamin C in, (59) 594.
- Radium—
 action on plant cells, (58) 217.
 activity in horticulture, (60) 338.
 exposure, effect on sexual organs of flowers, (58) 626.
 irradiation, effect on *Aspergillus fumigatus*, (59) 519.
 mutations induced by, (60) 127.
 radiations and crossing over, (51) 130.
 rays, effect on *Datura* buds, (56) 727.
- Ragi—
 culture in India, (57) 629.
 flowers, fertilization, (52) 529.
 smut, notes, (52) 544.
- Ragnus importunitas—
 life history and parasites, (59) 353.
 notes, (59) 653.
- Ragnus spp., notes, (51) 152.
- Ragweed leaf beetle, notes, (52) Me. 661.
- Ragwort, biological control, (60) 60.
- Rahar wilt—
 disease, resistance, (58) 148.
 notes, (58) 143.
- Railroad—
 abandonments, relation to highway transportation, (54) U.S.D.A. 179.
 and truck tonnage in Ohio, (57) U.S.D.A. 677.
- Rain—
 amount and composition at Cawn-pore, (56) 117.
 control and other weather vagaries, (56) 15.
 fertilizing value, Can., (52) 423; (54) 422.
 forest, tropical, of Panama, (60) 627.
 making, (52) 317.
 substances in, (56) U.S.D.A. 321.
 utilization by growing plants, (60) 214.
 water analyses from protected and exposed gage, (54) 413; (56) 212.
 water as source of nitrogen, (54) 615; (56) 120.
 water in Kentucky, nitrogen in, (52) 208.

Rain—Continued.

- water in Kentucky, sulfur in, (52) 208.
- water, storage in cisterns, (51) 885.
- Rainfall—*see also* Precipitation.
- abnormal, in Southern Rhodesia, (54) 510.
- and climatic cycles, (53) 825; (54) 25.
- and crop yield in the Tropics, (54) 130.
- and evaporation at Virgin Islands, (51) V.I. 811.
- and farming in Transvaal, (58) 512.
- and forest fires in Minnesota, (55) 539.
- and grain production in Sicily, (52) 16.
- and growth of redwoods, (54) 24.
- and March temperature in southern California, (57) 506.
- and production in Australia, correlations, (58) 14.
- and run-off, (58) 181.
- and temperature in Cuba, (54) 14.
- and wheat yield in Ohio, (52) 507.
- annual, and sun spot numbers in New Zealand, (60) 418.
- annual, in South Dakota, (54) S.Dak. 34.
- at Woburn Farm, (54) 510.
- curves for cotton in Rhodesia, (53) 317.
- cycles, effect on forestry, (57) 46.
- data, examination, (55) 116.
- data of British Isles, prediction value, (56) 807.
- data of Union of South Africa, (60) 207.
- deficiency, relation to southern pine beetle, (54) 461.
- distribution, effect on crops, (56) Kans. 823.
- effect of forests, (59) 507.
- effect on—
 - corn yield, (54) 115.
 - cotton yield, (55) 716.
 - crop yields, (56) 413, 730, 807.
 - hickory bark beetle, (52) 559.
 - lint length of Sea Island cotton, (54) 830.
 - sugar beets, (54) 235.
 - vegetation, (56) 15.
 - wheat yield, (53) 14; (54) 510.
- effective, (53) U.S.D.A. 210; (55) 312; (56) 15.
- excessive, distribution in United States, (60) U.S.D.A. 505.
- forecasting, (56) U.S.D.A. 314.
- grassland as source, (51) 718.
- Hawaiian, characteristics, (53) U.S.D.A. 211.
- heaviest, on Island of Guam, (52) 809.
- in Australia, relation to sun spots, (55) 806.
- in California, long-range forecasting, (57) 612.

Rainfall—Continued.

- in California, seasonal variability, (53) U.S.D.A. 719.
- in Gold Coast, relation to cacao yields, (60) 207.
- in India, forecasting, (54) 208.
- in Java in 1925, (55) 617.
- in Montpellier, (52) 16.
- in Morocco, (54) 210.
- in Netherlands Indies, (55) 508.
- in New England, (60) 505, 506.
- in New England during Nov. 1927 storm, (60) 114.
- in Oklahoma, divisions according to, (56) 616.
- in Palestine, effect on economic life, (55) 414.
- in Sumatra east coast, (53) 510.
- in Tropics, agricultural value, (59) 714.
- in Tropics, unfavorable conditions, (53) 813.
- interception by plants, (56) 414; (59) 417.
- map of Sweden, (52) 809.
- of 1924 in British Isles, (53) 413.
- periodicities, (57) U.S.D.A. 206, U.S.D.A. 506, 807.
- periodicities, Schuster's periodogram for study, (55) 115; (57) U.S.D.A. 207.
- relation to ascospore discharge in *Venturia inaequalis*, (57) 751.
- relation to lake level, (53) 316.
- relation to sugar beet late blight, (52) 351.
- relation to tree growth in Forest of Dean, (60) U.S.D.A. 17.
- relation to wool clip in Australia, (58) 513.
- seasonal, forecasting, (52) 207; (54) 614; (58) 312.
- summer, utilization by soil and plants, (55) 619.
- Rains, dust and salt, (59) 417.
- Rainstorm of New England, Nov. 1927, weather-map study, (60) 114.
- Rain-tree mealybug, notes, (53) 55.
- Raisin—
 - by-products, feeding value, (58) Calif. 268.
 - growers cooperative organizations of California, (60) 681.
 - industry in California, (52) 641; (57) Calif. 884.
 - pulp, digestibility by ruminants, (56) Calif. 261.
 - pulp, feeding value, (55) Calif. 357.
 - sirup, preparation, (52) Calif. 14.
- Raisins—
 - canned, preventing fermentation, (52) Calif. 14.
 - cull, feeding value, (51) 76; (58) Calif. 465.
 - saw-toothed grain beetle in, (54) 662.
 - saw-toothed grain beetle in, metal barriers for, (56) 157.

- Raisins—Continued.
standardization, (58) U.S.D.A. 238;
(60) 682.
- Ramie—
fiber and fabrics, characteristics and
uses, (59) 897.
general information, (55) 737.
- Rams—
cryptorchid, account, (56) 662.
purebred, improvement of flock with,
(53) Nev. 467, Can. 869.
- Ramularia—
anomala, notes, (56) 647.
areola, notes, (51) 248; (53) 148,
351; (56) 351; (60) 241.
biological studies, (58) 821.
lactea on violets, (55) 250.
obtusispora, notes, (58) 851.
primulae, notes, (54) 247.
sp., notes, (59) 535.
vallisumbrosae, notes, (58) 442, 443.
- Ranches—
organization, Colo., (59) 180; (60)
483.
organization and methods in South-
west, (60) U.S.D.A. 184.
organization in northern Great Plains,
(59) U.S.D.A. 181.
- Ranching in Oklahoma, history, (54) 485.
- Rancidity, detection in fats and oils, (54)
111.
- Range—*see also* Grazing.
and ranch studies in Wyoming, (56)
Wyo. 183.
cattle, *see* Cattle, range.
experiment station in Texas, (51) 708.
flocks, value of purebred rams for,
(53) Nev. 467.
flora, effect of burning, (57) Calif. 242.
forage plants, analyses, (52) Calif. 71.
grasses, seed germination in, (60) 538.
grazing land, management, (57) 660.
improvement, studies, (59) N.Mex. 222,
Calif. 727, Calif. 728.
land, waste, revegetation, (59) Colo.
34.
legislation and cattle statistics of New
Mexico, (56) 70.
livestock experiment station, (57) 659.
livestock extension work in Western
States, (54) U.S.D.A. 689.
livestock, food of, (58) 166, 564.
livestock ranches, studies, (58) Utah
488.
management essentials, (58) Calif.
224.
management, use of salt in, (55)
U.S.D.A. 462.
pasture studies, N.Dak., (55) 564;
(59) 864.
plants in national forests, studies,
(54) U.S.D.A. 541.
plants, poisonous, *see* Plants, poison-
ous.
reseeding tests, (56) Utah 525.
studies, aid in livestock production,
(53) 268.
- Range—Continued.
studies by experiment stations, (52)
U.S.D.A. 465.
watering places in Southwest, (54)
U.S.D.A. 559.
- Ranges—
account, (55) U.S.D.A. 664.
effects of early grazing, (60) 357.
grazing capacity, effect of rainfall,
(58) 14.
grazing capacity, increasing, (59)
Colo. 260.
national forest, cost and methods of
carrying cattle, (53) 168.
western, improving, (51) 34.
- Ransom, B. H.—
bibliography, (56) 755.
life work, (57) 762.
- Ranunculus—
acris, chromosomes of, (58) 218.
acris, gynodimorphic and normal
forms, (57) 122.
acris, homootypic division in, varia-
tion, (58) 823.
acris, meiosis in, (57) 122.
arvensis seeds, nutrient value, (54)
160.
- Rape—
as hog pasture, (58) 868.
cake, fertilizing value, (52) 526.
culture in British Columbia, (57) 34.
effect on flavor and odor of milk,
(58) U.S.D.A. 69.
hogging down, (55) U.S.D.A. 162.
hybridization studies, (57) 121.
pasture and alfalfa for hogs, compari-
son, (59) Mich. 564.
pasture, feeding corn with, (53) Ohio
575.
pasture for hogs, (51) Mich. 573;
(54) Can. 62; (55) Ohio 163; (56)
Iowa 266.
pasture v. oats for pigs, (52) Can. 873.
poisoning in cattle, (53) 279.
seed cake, feeding value, (53) 579.
seed, color and size, (57) 529.
seed oil, identification, (55) 805.
seed production, (55) Oreg. 637.
self-fertilization and inbreeding, (58)
133.
straw, composition, (51) 570.
varieties, (57) Tenn. 126.
variety tests, (56) Can. 432.
vitamin B in, (59) Ala. 661.
- Raphanus—
heterosis and dominance of size fac-
tors in, (52) 30.
raphanistrum, control, (54) 240.
sativus and Brassica oleracea, inter-
specific hybrids, (53) 730.
- Raspberries—
and potatoes, undesirability of rotating,
(60) Oreg. 745.
black, running out of, cause, (52)
N.Y.State 543.
black, winter pruning, (53) Mich. 343.

Raspberries—Continued.

- breeding, (52) 341; (53) Tex. 643; (54) Ill. 335; (55) N.C. 236, 836; (56) 742; (57) Can. 236, 536; (58) Ill. 333, N.Y.State 835; (60) Ill. 230, West.Wash. 740.
- culture, (53) Mo. 241, 343; (57) Alaska 533; (59) 441.
- culture, effect of soil variation, (60) Mich. 117.
- culture experiments, (58) Alaska 435; (60) Mont. 738.
- culture, systems, (60) West.Wash. 741.
- diploid and polyploid forms in, (51) 632.
- disease resistant varieties, (56) 549.
- fertilizer experiments, (52) 141; (55) Oreg. 644; (59) R.I. 633; (60) Oreg. 739.
- hardiness, relation to composition, (56) Mo. 644.
- insects affecting, (59) Calif. 754.
- new or noteworthy, (59) N.Y.State 233.
- nonvolatile acids in, (54) 7.
- notes, (52) N.Y.State 46, Alaska 536. of New York, (55) N.Y.State 39.
- preservation by freezing, (52) Calif. 15.
- pruning, (51) Kans. 40; (52) 640; (58) Mich. 840; (59) Ohio 232, Ohio 441.
- Queensland, tropical species, (53) 843; (54) 539.
- roguing, (59) Mich. 43.
- sterility in, (58) 739.
- Van Fleet, description, (58) Tenn. 336.
- Van Fleet, new hybrid variety, (52) U.S.D.A. 237.
- varieties, (56) Ill. 234; (59) N.J. 234; (60) Ill. 230.
- varieties, identification, (56) 345.
- varieties in England, (55) 239.
- varieties, susceptibility to mosaic, (55) Can. 835.
- variety, new, (54) N.Y.State 643; (59) 833.
- variety, notes, (51) N.Dak. 837; (53) Ohio 138.
- variety tests, (52) 840; (53) Ga. 239; (55) Ga. 137; (56) Ill. 343; (57) N.J. 735; (58) Miss. 37; (59) R.I. 633; (60) Tenn. 141, Alaska 736.
- winter injury, relation to time of pruning, (60) West.Wash. 144.
- winter protection, (53) U.S.D.A. 141.

Raspberry—

- anthracnose, control, (51) Wis. 655; (54) Ill. 350; (56) Ill. 241.
- anthracnose, notes, (55) 243; (56) 647; (57) 343.
- anthracnose resistant varieties, inheritance, (60) 155.
- beverages, notes, (52) Calif. 14.
- blue stem, control, (51) N.Y.State 851.

Raspberry—Continued.

- blue stem, notes, (54) 149; (56) 354; (59) 152.
- blue stripe wilt, studies, (56) 654; (57) 55, 753.
- cane blight, notes, (59) 535.
- canker, notes, (56) 354.
- chlorosis, studies, (52) Calif. 52.
- crown gall, control, Ill., (56) 241; (60) 239.
- crown gall, notes, (53) 547; (54) 842; (56) 653.
- disease, notes, (52) Calif. 49.
- disease-free plants, notes, (59) Ohio 239.
- diseases—
- affecting buds and stems, (60) 553.
- control, (56) U.S.D.A. 54; (58) 151.
- descriptions, (60) Mich. 56.
- notes, (52) N.Y.State 543, Utah 745; (55) Mass. 249, 550, Oreg. 650; (56) 354, 648.
- of the Southwest, (58) 442.
- studies, (57) 155, 353, Iowa 550, 753; (60) N.Y.State 451.
- virus type, studies, Mich., (55) 843; (57) 651.
- fruit rot, notes, (54) 745.
- fruit worm, notes, (60) West.Wash. 756.
- fruit worm on strawberry blossoms, (55) Conn.State 252.
- leaf and bud mite, (53) 561.
- leaf curl transmission, relation to insects, (54) 149.
- mildew, notes, (56) 748.
- mosaic—
- and leaf curl, (51) 549, 655.
- control, (51) N.Y.State 851; (54) 51, N.Y.State 543; (57) 850; (58) 249; (60) Conn.State 743.
- control, variation in, (59) 347.
- masking by high temperature, (58) 554.
- notes, (51) West.Wash. 655; (52) 346.
- studies, N.Y.State, (56) 241; (57) 549, 550; (58) 844.
- symptoms on, (59) 637.
- transfer from red to black varieties, (56) 54.
- plantations, management, (58) Mich. 141.
- powdery mildew, notes, (56) 54.
- root borer, notes, (55) 561; (57) N.J. 758; (60) 651.
- root borers, control, (56) Calif. 255.
- seeds, germination, (52) N.Y.State 46.
- spur blight, studies, (53) 650; (58) 152.
- stocks, comparison, (55) Mich. 342.
- streak disease, notes, (60) Oreg. 745.
- Verticillium wilt, notes, (57) 253, 850.
- yellow rust, studies, (57) 550.

- Rat—
 and flea survey of San Juan, Porto Rico, (58) 660; (59) 460.
 fleas in seaports of United States, (54) 157.
 fleas on board ship, destruction by heat, (54) 260.
 fleas, relation to plague in Shanghai, (59) 561.
 mite in South Australia, (58) 166.
 wood, anatomy, (56) 656.
- Rat-bite disease in United States, (52) 760.
- Rations—
 digestibility, effect of molasses, (54) 67.
 induction of calcifying properties by irradiation, (53) 865.
- Rats—*see also* Rodents.
 activity, effect of tobacco smoke, (55) 657.
 agouti hair in, (60) 631.
 albino—
 and Norway, treatise, (53) 274.
 body weight and length, correlations, (53) 31.
 chromosomes of, (59) 725.
 daily activity, analysis, (54) 463.
 seasonal differences in sex ratio, litter size, and weight, (53) 130.
 spermatogenesis in, (59) 623.
 surface area determination, (55) 592.
 voluntary activity, effect of diet, (59) 592.
 anatomy, laboratory manual, (53) 251.
 and mosquitoes, relation to malaria, (55) 762.
 black, fertility behavior, (55) 822.
 born in four seasons, differences in growth curves, (57) 825.
 breeding, and sex ratio, (53) 832.
 castrated, activity studies, (53) 733; (54) 730; (55) 227; (60) 326.
 castrated, fatigability, (55) 860.
 chromosomes of, (56) 727.
 color of fur as affected by diet, (51) 738.
 composition of bones, on various diets, (56) 89.
 composition of gains made by, (56) 161.
 control, (57) 552, U.S.D.A. 552.
 destruction, treatise, (58) 556.
 effect of alcoholism, (56) 32; (58) 731; (60) 221.
 effect of meat diet, (56) 590.
 effect of sodium fluoride, (54) 193.
 effect of X-rays on fertility, (54) 433.
 energy requirements for growth and activity, (58) 693.
 eradication, handbook, (59) 348.
 experimental, new feeding device for, (52) 261.
 experimental transmission of foot-and-mouth disease to, (52) 778.
- Rats—Continued.
 feeding experiments with egg white, (51) 862.
 female, factors affecting activity, (51) 527; (53) 429.
 female, family resemblance, (56) 820.
 female, sexual activity rhythm in, (51) 132.
 fertility, (55) 432.
 fertility and sex ratio, seasonal variations in, (60) 531.
 fertility and sterility in, (57) 323.
 field, extermination, (59) 554.
 food consumption, effect of rate of breeding, (59) 29.
 for research purposes, breeding and care, (51) 277.
 gastro-intestinal tract, pH of, (54), 391.
 greasy condition of fur, cause, (59) 293.
 growth—
 and reproduction, effect of minerals in ration, (53) 167.
 effect of manganese, (57) 892.
 effects of dietary deficiencies, (57) 595.
 food requirements, (58) 192, 592; (59) 489.
 food requirements, sex differences in, (53) 659.
 of reproductive systems following thyroparathyroidectomy, (53) 572.
 habits and control, treatise, (55) 657.
 hairlessness in, inheritance, (56) III. 225.
 in Hawaii, control, (53) 551.
 in India, paper on, (52) 154.
 inheritance of characters in, (52) Kans. 427.
 inheritance of eye defects in, (54) 226.
 injurious, in Sind and extermination, (59) 648.
 irradiated, antirachitic action on non-irradiated, (54) 491.
 laboratory epidemic in, (55) 473.
 length of sexual life, effect of rate of breeding, (59) 30.
 litter production and sex ratio in, (52) 523.
 magnesium content, (57) 892.
 male and female, activity, (55) 227.
 male, female behavior in, (51) 635.
 male, fertility as affected by X-rays, (53) 430.
 neuromuscular irritability to galvanic currents, (60) 493.
 nursing young, cod-liver oil requirements, (59) 491.
 oestrous cycle, effect of mammary gland substance, (53) 526.
 on purified rations, fertility, (56) 66.
 on synthetic diets, sterility in, (59) 294.
 on vegetarian diets, growth, (60) 591.

Rats—Continued.

- ovarian regeneration in, (59) 220.
 ovariectomized, effect of ovarian extract feeding on activity, (54) 229.
 parent, antenatal feeding, effect on young, (52) 166.
 physiology of reproduction in, (59) 221.
 poison from red squill, (58) 660.
 rachitic, effect of irradiated and non-irradiated fats, (54) 489.
 reproduction and rearing of young, effect of diet, (54) 159.
 spread of foot-and-mouth disease by, (60) 869.
 sterility in, on synthetic diets, (59) 593.
 sterility in, studies, (54) 527; (56) 464.
 temperament of, genetic analysis, (56) 224.
 threshold of fertility in, (51) 33.
 tree, pest of coconuts in Java, (60) 554.
 weight during gestation (57) 794.
 weight, effect of rate of breeding, (58) 630.
 weights of organs, relation to body weight, (54) 858.
 wild, *Bacillus enteritidis* in, (60) 59.
 wild, carriers of organisms of paratyphoid-enteritidis group, (58) 277.
 wild, disease in, (54) 256; (56) 656.
 X-rayed, hereditary abnormalities in, (51) 229.
- Rattan industry in Malay, (52) 145.
 Rattlesnake lung sac, mite from, (51) 657.
 Rattlesnakes, North American, venoms. (60) 665.
- Raw materials, conversion into animal products, treatise, (54) 262.
- Rayon—
 and silk properties, comparison, (55) 696.
 bacterial decay, (55) 392.
 breaking strength and stretch under varying humidities, (54) 493.
 cellulose acetate, identification of dyestuffs, (58) 696.
 cellulose acetate, removing stains from, (57) 96.
 changing uses, (60) U.S.D.A. 497.
 delustering, (59) 897.
 dry-cleaning, (57) 96.
 dyeing, (54) 596.
 dyeing and capillary test, (60) 496.
 effect of acids, (58) 197.
 filaments, microscopical investigation, (59) 795.
 handling, (54) 494; (56) 596.
 industry, growth, (55) 597.
 industry, new uses and methods of research for, (58) 95.
 industry, progress in, (60) 298.
 industry, treatise, (57) 96.
 inflammability test, (54) 298.

Rayon—Continued.

- knit underwear, washing instructions, (55) 296.
 laundering and cleaning, (54) 494.
 manufacture, methods, (58) 899.
 manufacture, possible cellulose bases for, (58) 898.
 moist, increasing stability, (58) 196.
 moisture in, (54) 298.
 papers on, (55) 896.
 physical and chemical properties, (60) 97.
 physical data, (58) 95.
 specifications, revised report, (55) 94.
 spun, characteristics and uses, (55) 494.
 treatise, (54) 697.
 tubulated, shape, dimensions, and strength, (58) 196.
 types, identification, (57) 96, 899.
 wet, irregularity in behavior, (55) 897.
 yarns, handling in knitting, (57) 198.
- Reading matter, periodical, in farm homes, (59) Okla. 487.
- Reagents, Merck's catalogue, (52) 805.
- Real estate, farm and city—
 assessment and equalization, (52) Kans. 294.
 assessment and equalization, correction, (52) Kans. 788.
- Real property in Delaware, assessment and equalization, (60) Del. 886.
- Recipes, laboratory, for food courses, (57) 89.
- Reclamation—
 and improvement in Netherlands, (55) 186.
 and rural development, special advisers on, report, (59) 383.
 Commissioner, report, (54) 875.
 Federal, achievements, (52) 182.
 in United States, (55) 884.
 in United States, economics of, treatise, (59) 383.
 law and practice, faults of, (52) 182.
 papers on, (53) 399.
 policies, (52) U.S.D.A. 90.
 Project, Belle Fourche, work of, (53) U.S.D.A. 398.
 project in Elko Co., survey, (53) Nev. 488.
 Project, Newlands, work of, (53) U.S.D.A. 899.
 Project, Umatilla, work of, (53) U.S.D.A. 398.
 Service of Canada, report, (53) 280, 789.
 survey, (52) 182.
- Recurvaria—
eryngiella n.sp., description, (56) 257.
 nanella, injury to fruit trees, (52) 453.
 nanella, notes, (52) U.S.D.A. 255.
 piceaella, notes, (51) Conn.State 852.
- Red as protective color in vegetation, (52) 640.

- Red bud leafhopper, notes, (51) 253.
- Red clover, *see* Clover, red.
- Red gum, control of stain and decay in, (58) U.S.D.A. 54.
- Red mite, European—
and apple aphid, combined spray for, (59) N.J. 349.
control, (51) 162, Md. 858; (55) Ohio 152, Mass. 254, N.J. 259; (58) 61, U.S.D.A. 864.
effect of insecticides on eggs, (53) Conn.State 450.
in Ohio, (51) 556.
notes, (51) 55; (57) N.J. 57, Ohio 162, N.J. 757; (59) Mich. 455.
overwintering eggs on peach, effect of sprays, (60) 558.
studies, (59) Ohio 249, 462.
- Red mite, studies, (54) Mich. 354.
- Red scale—
California, fungus attacking, (60) Guam 845.
control, (55) Calif. 352; (56) 555; (59) Calif. 756.
control in pear orchards, (55) 452.
on citrus, spray and fumigation combination for, (58) 347.
parasite of, (57) Calif. 257.
- Red spider—
citrus, control, (52) Calif. 60; (54) 554.
control, (52) Calif. 57, Mich. 759, 859; (54) Pa. 352; (56) 462, 555; (59) 160; (60) Pa. 356, Oreg. 753.
control in greenhouse, (52) 300; (53) 452; (56) 256; (60) Mass. 644.
life history and control, (59) 652; (60) 852.
life history studies, (59) Calif. 754.
naphthalene control, (59) 853.
notes, (58) 152, 657; (59) 53, N.Mex. 249, 855; (60) 248.
on bananas, (60) 559.
on cereals in Poland, (59) 861.
on conifers, (57) Ohio 162.
on hops, (53) 554.
studies, (57) Calif. 256.
value of oil emulsion sprays for, paper on, (56) 253.
- Red squill as rat poison, (58) 660.
- Red stripe weevil of coconuts, studies, (53) 259.
- Red wax scale, citrus pest in Japan, (53) 158.
- Redpolls, food habits, (52) U.S.D.A. 354.
- Redtop leaf spot, notes, (57) 251.
- Reducing agents, action on inactivated antiscorbutic factor, (56) 12.
- Redwater, *see* Texas fever.
- Redwater, Rhodesian, *see* African coast fever.
- Redwood—
artificial reproduction, (52) 841.
cells, long-lived, (58) 319.
industry, early development, (55) 540.
second-growth, revised volume tables, (52) 841.
- Redwood—Continued.
second-growth, yield tables, (52) Calif. 47.
seed dissemination, (57) Calif. 242.
seed, production and viability, (52) Calif. 47.
seeds, sterilizing, (53) 243.
stem analysis, (53) 823.
- Redwoods—
as climatic measure, (53) 614, 615; (54) 24; (55) 209.
discontinuous growth rings in, (52) 144.
of California, methods of afforestation, (57) 836.
popular account, (54) 447.
stem analysis, (54) 22.
- Refecation—
in rats, relation to carbohydrates in diet, (59) 686.
spontaneous occurrence, (58) 793.
use of term, (58) 792.
- Reforestation, *see* Forestation.
- Refrigerants, properties of, (56) 684.
- Refrigerating—
apparatus, electrical, for use in dairies, (60) 183.
apparatus, small, studies, (54) 583.
machine, absorption, treatise, (55) 96.
machine, compression, treatise, (59) 481.
machinery in dairy industry, (59) 481.
- Refrigeration—
and cold storage, bibliography, (54) U.S.D.A. 587.
electric, and agricultural uses, (58) 781.
electric, cost, (59) 585.
household, (58) 198, 599; (59) U.S.D.A. 695.
household, treatise, (57) 97.
in chemical industry, treatise, (57) 779.
mechanical, treatise, (53) 188; (59) 480.
plant equipment, (51) 188.
principles, treatise, (56) 783.
research in, (60) 584.
treatise, (60) 380, 781.
- Refrigerator—
car, short-type, efficiency, (54) U.S.D.A. 78.
cars, wire basket bunkers in, new type, (55) U.S.D.A. 280.
installations in Mexico and Central America, (51) 790.
- Refrigerators—
domestic, testing, (60) 380.
household, studies, (57) Ind. 695.
insulation for, (60) 380.
management in the home, (58) Ind. 797.
protecting from ants, (59) 455.
small, operation and efficiency, (53) Ind. 792.
- Regal lily, propagation and culture, (56) U.S.D.A. 743.

- Regulation in plants, (59) 820.
- Regurgitation in rumination, mechanism, (55) 678.
- Rehmiellopsis bohemica in Scotland, (55) 250.
- Reindeer—
grazing in Alaska, (56) U.S.D.A. 264.
meat, new source of food, (58) 268.
- Relapsing fever—
epidemiology, rôle of *Cimex lectularius* in, (57) 759.
intermediate host, studies, (58) 562.
- Relict method, application, (54) 25.
- Religion in country life, (54) 289.
- Remedies, new and nonofficial, (53) 278; (54) 275; (55) 874.
- Remigia repanda, notes, (53) 156; (56) 552.
- Renick, Felix, life and work, (54) 265.
- Rennet—
action, (54) 869.
concentration determination, (54) 771.
extract, manufacture, (52) U.S.D.A. 574.
increasing quantity in cheese making, (51) 278.
purification by adsorption, (54) 771.
- Rennin, coagulation of milk by, (52) 177.
- Rent and interest as shares in product of enterprise, (55) 783.
- Rent and land values, relationship, (52) Tex. 189.
- Repellents for blowflies, (60) 458.
- Reproduction—
and inheritance in animals, (56) Kans. 818.
and vitamin E, (56) 664.
cod-liver oil as source of vitamins for, (60) 395.
deficient diet, studies, (57) 897.
dietary requirements for, (51) 563; (53) 62, 565; (56) Ark. 363; (57) 896; (59) 490, 491, 492.
effect of—
diet, (58) 691.
meat in mixed diet, (56) 492.
salts, (59) Ohio 258.
synthetic diets, (58) 193.
vitamin A deficiency, (59) 688.
in alcoholic mice, (58) 320.
in birds, physiology, (56) 67.
in cows, physiology, (57) 460.
in horticultural plants, physiology, (58) Mo. 129.
in rats on purified rations, (56) 66.
lactation, and vitamin E, review of literature, (60) 493.
nutritional factors affecting, (55) N.C. 260.
nutritional requirements, (55) 90.
physiology, (52) 826; (54) 562.
relation to—
diet, (55) 293; (56) Mo. 559.
vitamin A, (52) U.S.D.A. 564.
vitamin B deficiency, (54) 262.
vitamin E, (54) 527, 561.
vitamin X, (51) 167.
- Reproduction—Continued.
specific vitamin for, (51) 564; (53) 866.
threshold for, (51) 33.
vitamin requirement for, (54) Mo. 758.
- Reproductive—
dietary complex, (55) Ark. 89.
organs, accessory, effect of X-ray sterilization, (57) 424.
organs of cow following parturition, changes in, (53) Minn. 385.
- Reptiles—
and amphibians, North American, check list, (51) 452.
and amphibians of Indiana, keys, (56) 754.
and amphibians of North Carolina, keys, (58) 157.
susceptibility to vaccine virus, (59) 375.
- Research—
agricultural, *see* Agricultural research.
and the land, treatise, (55) 601, 697.
conference on wheat, report, (60) 817.
fellowships, traveling, in Great Britain, (51) 99.
in flour milling industry, field for, (53) 614.
organic, introduction to, treatise, (53) 309.
publication of, (53) U.S.D.A. 483.
reviving interest in, editorial, (56) 401.
scientific, opportunities for a career, (58) 497.
value to milk trade, (54) 475.
work of Department of Agriculture, (53) 598.
work procedure, treatise, (56) 489.
- Resedaceae, evolution in, (52) 330.
- Reservoir and dam sites, geology, (60) 877.
- Reservoirs, protecting, forest cover in, financial limitation, (56) U.S.D.A. 76.
- Resin—
determination in cotton, (51) 716.
ducts in *Pinus silvestris*, anatomy, (52) 427.
formation in conifers, (52) 427.
forms, in Malay, (52) 146.
from waste Kauri wood, (56) 647.
fungi in, (55) 522.
- Resins—*see also* Oleoresins.
insulating, effect of moisture, (57) 777.
natural and synthetic, chemistry of, treatise, (56) 107.
paints, pigments, and varnishes, (57) 203.
- Resources of the Empire Series, (51) 896.
- Respiration—
activity and peroxidase in leaves, (58) 624.
aerobic and anaerobic, in leaves, (57) 320.
aerobic and anaerobic, in pea seedlings, (54) 726.

- Respiration—Continued.
 apparatus—
 for plant and soil studies, (53) 815.
 for racial metabolism, (59) 391.
 for small animals, (56) 14.
 simplified, description, (54) 204.
 calorimeter for large animals, notes, (51) 97.
 calorimetry with cattle, advances in, (57) 761.
 effect of nitrogen nutrient, (54) 124.
 effect of phosphates, (55) 728.
 methods of study, (59) 618.
 of abortus-melitensis group, (60) 666.
 of apples, effect of freezing, (59) N.Y. Cornell 215.
 of *Aspergillus niger*, effect of heavy metals, (59) 25.
 of Bartlett pears, (55) 141.
 of corn and catalase activity, (60) 522.
 of green plants in light, (54) 124.
 of injured potato tubers, (58) 820.
 of leaves, carbohydrate-amino acid relation in, (53) 821.
 of leaves, effect of carbon dioxide in air, (54) 23; (55) 629.
 of plant organs, anaerobic, mechanics, (58) 820.
 of plants, (56) 218, 425; (57) 22.
 of plants, effect of accumulated carbon dioxide, (60) 807.
 of plants, history of problems, (57) 215.
 of plants, rôle of phosphates, (60) 523.
 of potatoes, (55) Md. 336.
 of roots, (56) 516.
 of rubber, (58) 854.
 of soil, importance in carbon dioxide nutrition of plants, (60) 511.
 of soil, studies, (54) 513.
 of submerged plants, effect of oxygen in water, (58) 524.
 of submerged plants, effect of temperature, (59) 215.
 studies, (52) 516, 626; (55) 728.
- Respiratory—
 quotient and percentage of calories from food constituents, (51) 263.
 quotient, graphic presentation, (51) 557.
 system of plants, (53) 520.
- Resplendent shield bearer, studies, (51) 661.
- Reticularia lycoperdon, cultural characters, (54) 255.
- Reticulitermes—
 flavipes, notes, (54) Mich. 355.
 hesperus, control on power-line poles, (52) Calif. 58.
- Revenue, public, in Ohio, (60) Ohio 184.
- Reversible variations in trees, (53) 624, 625.
- Reymann Memorial Farms, activities, (53) W.Va. 174.
- Rhabditis—
 coarciata, cysts in, (55) 657.
 microbursaris n.sp., notes, (57) 749.
- Rhabdocline pseudotsugae—
 new on Douglas fir in Scotland, (57) 354.
 notes, (59) 647; (60) 247.
- Rhabdocnemis obscurus—
 and parasite, studies, (54) 58.
 control, (54) 257.
 notes, (56) Guam 251, 358; (59) 352; (60) Guam 845.
 parasite of, (59) Guam 555.
- Rhabdopterus picipes—
 control, (57) 860.
 on blueberries, (59) N.J. 351.
 paper on, (55) 253.
- Rhabdospora—
 carlinae n.sp., description, (60) 216.
 erythraeae n.sp., description, (60) 216.
 plantaginis n.sp., description, (60) 216.
 silenes n.sp., description, (60) 29.
 sp., notes, (57) 540.
- Rhacodineura antiqua—
 notes, (60) 64.
 shipment from England, (55) Oreg. 659.
- Rhaconotus—
 scirpophagae n.sp., description, (58) 666.
 sudanensis n.sp., description, (58) 666.
- Rhagium spp., winter quarters, (56) 856.
- Rhagoletis—
 cerasi, status in France, (59) 158.
 cerasi, summary, (59) 357, 860.
 cingulata, *see* Cherry fruit fly and Cherry maggot.
 pomonella, *see* Apple maggot.
 ribicola, *see* Currant fruit fly.
- Rhamnus species, susceptibility to Puccinia coronata, (57) 158.
- Rheosporangium aphanidermatus—
 notes, (54) 549; (56) 51.
 on pine roots, (51) 356.
- Rheumatism in children and vitamin B deficiency, (60) 594.
- Rhinanthaceae, nutrition in, (52) 425.
- Rhinoceros beetle—
 and other palm pests in Burma, (52) 154.
 control, (51) 662; (52) 554.
 notes, (57) 655.
- Rhinosporidiosis in equines, (58) 474; (60) 574.
- Rhizaglyphus hyacinthi, notes, (60) Oreg. 753.
- Rhizobium—
 genus, physiological studies, (59) Iowa 722.
 leguminosarum—
 effect of moisture and temperature, (57) 812.

Rhizobium—Continued.

- leguminosarum—continued.
 nodule-forming ability, effect of electrical charge, (60) Pa. 321.
 studies, (59) Iowa 26.
 vitamin B, synthesis by, (60) 294.
 radicicolum, modifying, (54) 419.

Rhizoctonia—

- bataticola, notes, (59) 636.
 blight of beans, studies, (53) 350.
 causing root disease in Uganda, (56) 752.
 crocorum, studies, (60) 346.
 crown rot of carrots, (56) Kans. 842; (58) 651.
 crown rot of soy bean, (57) 343.
 destruens, notes, (60) 156.
 development on alfalfa, (53) 44.
 disease of flax, notes, (53) 851.
 disease of potatoes—
 after manure treatment, (57) 447.
 biology, (57) 150.
 control, (51) Wash.Col. 153; (52) Wash.Col. 748; (54) 249, 746; (55) Oreg. 650; (56) 352, Kans. 842; (58) 749; (59) Nebr. 840; (60) Conn.Storrs 549, Wash.Col. 830.
 disease of Vigna, (58) 851.
 disease, studies, (58) 340.
 ferrugena, notes, (57) P.R. 442.
 lamellifera and Sclerotium bataticola, identity, (57) 745.
 lamellifera n.sp., description, (56) 752.
 lamellifera, notes, (53) 147, 148; (57) 145.
 napi, notes, (52) 151.
 on cabbage, effect of corrosive sublimate treatment, (55) 847.
 root rot of spinach, (56) Tex. 246.
 soil rot of tomato, (56) 648.
 solani—
 cause of potato-tuber rot fungus, (51) 545.
 control, (54) 652; (57) Wyo. 250, 646; (59) 348.
 development, (59) N.J. 338.
 enzyme activity, (54) 249.
 infection tests, (57) 447.
 notes, (52) N.Y.State 50, 352, 647, N.J. 744; (54) 246, Wis. 248; (55) 243; (56) Pa. 50; (57) 145, 343, 443, 548, 639; (58) 143; (59) 540, Fla. 846; (60) 242.
 on corn, (59) 447.
 on golf greens, (57) 343, 345, 346, 347.
 on peanuts, (59) 447.
 on Vigna, (56) 848.
 parasitism, factors affecting, (60) 643.
 parasitism, physiological conditions, (59) 445.
 strains, comparison, (59) 847.
 strains, notes, (56) 750.

Rhizoctonia—Continued.

- solani—continued.
 studies, (54) Wash.Col. 450, 546; (55) Idaho 653.
 sp., in citrus seed beds, (60) 353.
 sp. in Porto Rico, (55) 248.
 sp., notes, (51) 353; (53) 248; (54) 246; (57) 442, 540, 639, 750; (59) 535, 540.
 sp. pathogenicity on sweet potatoes, (51) Del. 147.
 spore formation, studies, (59) Mich. 445.
 spp., studies, (51) 156; (55) 246; (57) 246; (59) 849.
 tuliparum n.comb., notes, (53) N.Y. Cornell 355.
 tuliparum, notes, (59) 646.
 Rhizoctonias, importance of, (55) 347.
 Rhizoeus kondonis n.sp., notes, (53) 158.
 Rhizoglyphus hyacinthi, notes, (59) Mich. 456.
 Rhizopertha dominica—
 control by fumigation, (52) 359.
 notes, (56) 659.
 Rhizopus—
 artocarpi, studies, (53) 542.
 decay of sweet potatoes, temperature relations, (53) 752.
 fusiformis n.sp., description, (60) 448.
 necans, notes, (60) 646.
 nigricans—
 absorption of dyes by, (51) Mo. 751.
 and R. artocarpi, relation, (53) 542.
 notes, (57) 345; (58) 242, 555; (59) N.C. 750; (60) 29.
 relation to cotton insect pests in Egypt, (57) 644.
 structure and behavior of nucleus, (54) 628.
 rot of peach, (56) 647; (57) 849.
 rots, time-temperature relations, (60) 552.
 sp., notes, (52) Ill. 245; (53) 850; (55) N.J. 43.
 spp., notes, (59) 845.
 spp. on different hosts, (51) 354.
 spp., pectinase production by, (51) 753, 754.
 spp. spores, amylase in, (52) 126.
 Rhizosphaera kalkhoffii, cause of defoliation of conifers, (57) 354.
 Rhizotrogus solstitialis, notes, (59) 561.
 Rhode Island—
 College, notes, (51) 399, 600; (55) 798; (56) 97; (58) 600.
 Station, notes, (51) 399, 600, 697; (52) 700; (53) 198, 499; (56) 97; (57) 699; (58) 397, 600, 900; (59) 199, 500, 698; (60) 499.
 Station, report, (51) 797; (54) 96; (55) 299; (57) 494; (59) 695.
 Rhodes grass—
 characteristics and history, (53) 137.
 culture, (58) 432.

- Rhodes grass—Continued.
 hay v. alfalfa hay for cattle, (56) Ariz. 762.
- Rhodites rosae, biology and parasites, (60) 66.
- Rhodobacteriophora sanguinea, proposed name, (55) 818.
- Rhodobacterium lichenophorum n.sp., description, (55) 818.
- Rhododendron bug, summary, (58) 160.
- Rhododendrons—
 and hybrids, treatise, (52) 144.
 and their kin, culture, (60) N.J. 341.
 culture, (56) 837.
 culture, treatise, (52) 642.
 effect of aluminum sulfate, (60) 235.
 handbook, (52) 239.
 insects affecting, (53) 254.
 new white fly affecting, (60) 650.
 self-sterility in, (53) 41; (58) 644.
 silver-leaf fungus affecting, (58) 752.
- Rhodophyceae, iodine in, (60) 29.
- Rhoadales, evolution in, (52) 330.
- Rhogas rufocoxalis, notes, (59) 354.
- Rhopalomyia grossulariae, notes, (60) Oreg. 753.
- Rhopalosiphoninus tulipaella, notes, (58) 663.
- Rhopobota naevana, *see* Fireworm, black-head.
- Rhopobota vacciniana, *see* Fireworm, black-head.
- Rhoptromeris eucera tristis, parasite of frit fly, (58) 350.
- Rhubarb—
 crown rot, studies, (54) Pa. 344; (55) 247; (56) Pa. 145.
 culture experiments, (55) V.I. 339.
 culture in France, (54) 537.
 disease, notes, (52) Pa. 243.
 disease resistant, production, (60) Tenn. 141.
 diseased crowns and roots, cause, (59) Calif. 747.
 downy mildew, notes, (57) 51.
 fertilizer tests, (53) 398.
 forced, factors affecting growth, (54) Ill. 336.
 forcing, (60) Can. 540.
 frost blister, (57) 50.
 insect injury in France, (51) 662.
 mosaic, (56) 149.
 root rot, control, (51) 152.
 varieties and culture, (60) Can. 639.
 winter forcing, (58) Ill. 231.
- Rhyacionia—
 buoliana in northeastern States, (54) 755.
 frustrana bushnelli in Nebraska National Forest, (58) 261.
 frustrana, parasites of, (57) 365, 457, 560.
 frustrana, studies, (57) Nebr. 453.
- Rhynchaenus alni, metamorphosis and biology, (60) 851.
- Rhynchophorus—
 ferrugineus, control, (51) 662.
 schach, studies, (53) 259.
- Rhynchota from northern India, (52) 155.
- Rhyparida australis, new cotton pest, (51) 458.
- Rhysotheca halstedii, notes, (57) 351.
- Rhyssa persuasoria, life history, (60) 252.
- Rhytisma—
 acerinum, life history and cytology, (58) 218.
 general life history of genus, (56) 753.
- Ribes—*see also* Currants and Gooseberries.
 distribution of stomata, (60) Oreg. 745.
 eradication, effect on white pine blister rust, (52) 550; (56) 55.
 gall mites on, (59) 563.
 hybrid, chromosome combinations in, (58) 525.
 inoculation experiments with Cronartium spp., (60) 749.
 species, cytological studies, (60) 639.
 species, ecology of, relation to blister rust control, (51) 656.
- Rice—
 and by-products, feeding value, Calif. (52) 73; (57) 172.
 anomalous races in, (53) 831.
 awnedness in, inheritance, (58) 28.
 beriberi-preventing, standard for, (60) 295.
 blast in Uganda, (51) 46.
 blast, notes, (53) 246; (55) 244; (56) 842.
 borer, effect of submergence, (59) 654.
 borers, control, (53) 857.
- bran—
 antineuritic vitamin in, (56) 410.
 as supplement to camote vines for pigs, (53) 575.
 composition and digestibility, (51) Tex. 467.
 fat, phytosterols of, (56) 310.
 feeding value, (51) Tex. 75, 676; (57) Tex. 176.
 v. wheat bran, feeding value, (56) Ark. 375.
 breeding experiments, (51) P.R. 833; (54) 126, 231; (55) Tex. 332; (57) Tex. 126; (59) Tex. 729.
 brown spot disease, control, (51) P.R. 847.
 bug, notes, (56) Guam 251; (60) 846.
- by-products—
 effect on quality of pork, (58) Ark. 357.
 feeding value, (55) Miss. 565; (56) Ark. 369.
 for dairy cows, (60) Ark. 862.
 for laying hens, Ark., (55) 64; (58) 360; (60) 859.
 carbon dioxide output, effect of anesthetics, (56) 125.

Rice—Continued.

- case worm, notes, (52) 154.
- chlorosis, (51) Hawaii 851.
- chlorosis, cause, (60) 644, Ark. 834.
- chromosomes in, differences, (53) 831.
- color inheritance in, (59) 219.
- correlation between quantitative characteristics, (54) 127.
- crop, alkali removal from soil by, (59) Calif. 727.
- crosses, inheritance and correlation of characters, (55) 733.
- culms, number of nodes in, (56) 230.
- culture—
 - and preparation, treatise, (53) 636.
 - effect on soil microorganisms, (52) Calif. 22.
 - experiments, (51) La. 830; (52) 229; (53) La. 528; (55) La. 433; (56) 35; (57) La. 522; (58) 429.
 - experiments in Philippines, (60) 327.
 - in Amur Province, (55) 134.
 - in California, U.S.D.A., (52) 137; (55) 34.
 - in Dutch East Indies, cost and profit, (51) 391.
 - in Egypt, (52) 833.
 - in India, (57) 628.
 - in Louisiana, (54) U.S.D.A. 35.
- cultures, changes in pH value, (56) 324.
- damage by salt in irrigation, (58) Tex. 832.
- disease and fasting in pigeons, (56) 795.
- disease, studies, (57) 540, 639; (58) 594.
- diseases, control, (59) 540.
- effect of spacing on tillering, (52) 338.
- effect of water supply, (52) 338.
- experiments, (59) Calif. 436.
- experiments at Cortena, (51) Calif. 638.
- experiments in Philippines, (55) 434.
- false smut, notes, (57) 640.
- fertilizer experiments, (51) 139; (52) Guam 226; (53) Guam 430; (54) U.S.D.A. 36, Tex. 329; (55) Tex. 333; (57) Tex. 126; (59) Tex. 729, Tex. 730.
- field, effect of soy bean cake on, (53) 117.
- fields—
 - soil studies, (60) 510.
 - tabanids breeding in, (59) 357.
 - water grass control, (55) Calif. 332.
 - weeds in, (54) 834.
- flour of phosphate as fertilizer, (54) 721.
- flowers—
 - blooming, factors affecting, (56) 232.
 - pollination, (54) 533.

Rice—Continued.

- flowers—continued.
 - sterility in, (52) 833.
 - time of blooming, (52) 635.
- fusariosis, studies, (53) 151.
- gall midge in North Kanara, (59) 559
- germination—
 - and catalase activity, (56) 725.
 - and growth, effect of eosin and erythrosin, (57) 416.
 - and seedling growth, (52) 229.
 - factors affecting, (56) 136.
- globulins, (58) 111.
- glutelins of, (58) 110.
- glutinous gene, disturbing effect on Mendelian ratio, (60) 127.
- glutinous, vitamin B in, (55) 294.
- grain abscission, force necessary for, (59) 829.
- grains, sterilization, (56) 651.
- growth as affected by decomposition of Astragalus, (53) 215.
- gwabo disease, (51) 545.
- Helminthosporium disease, studies, (53) 853; (56) 650, 651.
- Hispa, notes, (52) 154.
- hulls, digestibility as affected by sodium hydroxide, (51) 372.
- hybrid vigor in, (56) 131.
- hybridization, (51) 32; (57) 30; (58) 635.
- improvement, (51) 236.
- in Azerbaijan and Persia, (56) 37.
- in Sind, studies, (60) 38.
- inheritance of agronomic characters, (59) 520.
- inheritance studies, (57) 822.
- injury from crabs, (52) 154.
- insects affecting, (58) U.S.D.A. 858; (59) 651.
- insects affecting in China, (53) 857.
- insects and mites affecting, (54) 257.
- irrigation by pumping, (51) 186; (53) 587.
- irrigation, studies, (56) Ark. 381.
- kernel, nitrogen compounds, (57) 308.
- kernel, vitamin B in, (58) Ill. 390.
- Kolamba, improvement by selection, (58) 635.
- land produce, cost of cultivation and values, (54) 183.
- lands, drainage in Sacramento Valley, (60) Calif. 877.
- linkage in, (54) 128; (58) 825.
- long-kerneled, value, (54) Calif. 225.
- lowland, germination, (56) 339.
- marketing, (52) U.S.D.A. 294.
- meal—
 - and corn meal, comparison, (59) 162.
 - by-products effect on pigeons, (59) 258, 294.
 - v. corn chops for cows, (55) Ark. 66.
 - v. ground barley, for pigs, (59) 163.

Rice—Continued.

- moisture in, before and after milling, (56) 37.
 moisture in under varying humidity, (54) 636.
 natural cross-fertilization, (54) 631.
 nutrition studies, (56) Ark. 332; (60) 291, Ark. 803.
 nutritive value, (57) 889.
 oil, composition, (56) 10.
 on dry fields, slug caterpillar affecting, (59) 253.
 100 years old, nutrient value and ferment content, (51) 368.
 pests, (56) 659; (60) 845.
 plant, aberrant, spontaneous origin, (59) 127.
 plant, history and culture, (52) 438.
 plant, mutations in, (57) 322.
 plants—
 branching, (54) 533.
 iron requirement, (57) 416.
 prevention of injury from *Astragalus*, (53) 215.
 Striga lutea affecting, (56) 548.
 polish, composition and digestibility, (51) Tex. 467.
 polish, feeding value, (51) Tex. 75; (52) Miss. 270.
 polish v. yellow corn, feeding value, (58) Ark. 362.
 polished, alcohol-soluble protein from, (55) 306.
 polished, feeding, effect on horses, (60) 72, 73.
 polishings, extract, vitamin B in, (54) 90.
 pollination, (51) 341.
 polyembryony in, (60) 31.
 proteins, digestibility, (52) 63.
 relation to beriberi in India, (51) 866.
 Rhizoctonia disease, studies, (59) 540.
 root aphid, life history and control, (53) 359.
 rough, handling, (52) U.S.D.A. 36.
 Sclerotium oryzae affecting, (52) 747.
 Sclerotium stem rot, notes, (55) Ark. 42.
 seasonal variation in, (53) 137.
 seed bed, heating water for, (52) 439.
 seed, germination tests, (57) 231.
 seed stimulation tests, (58) 625.
 seedlings, effect of sodium chloride in culture solutions, (59) 323.
 semisterility in, (54) 227.
 sesame spot, studies, (56) 650, 651.
 size of seedling tests, (52) 338.
 Smith shelling device, description, (60) U.S.D.A. 636.
 smooth-awned, (55) 134.
 soils, pH of, effect of irrigation, (60) Ark. 803.
 soils, transformation of nitrogen in, (60) 517.
 statistics, (54) 888.
 stem borer, notes, (59) 652.

Rice—Continued.

- stem rot, notes, (55) 244; (56) Ark. 347; (58) Ark. 337, 550; (60) Ark. 830.
 sterility in, (60) 546.
 sterility in, inheritance, (59) 127.
 straw, disintegration, (58) 166.
 straw, net energy value, (57) 865.
 tenancies, Philippine, (52) 189.
 tillering, (57) 731; (59) 135.
 time and rate of blooming in, (58) 134.
 tolerance to brackish water, (51) Hawaii 787.
 treatise, (52) 534.
 varieties—
 and selections, (58) 832.
 growth phases, (57) 432.
 in Burma, classification, (58) 134.
 of Turkestan, (55) 134.
 variety, new, (59) Tex. 729.
 variety tests, (54) Fla. 325; (57) Tex. 126; (60) Guam 813.
 vitamin A in, (52) 65.
 weeds, control, (53) 133.
 weevil—
 control, (58) 665.
 development of mid-gut, (58) 264.
 factors in ecology of, (57) Minn. 363.
 fumigation against, (52) 359, U.S.D.A. 661.
 notes, (56) S.C. 553; (59) 651.
 resistance to high and low temperatures, (52) 458.
 toxicity of hydrocyanic acid for, (60) 454.
 wild, nutritive properties, (51) 163.
 wild, studies, (58) 432.
 Richards's solution, staleness in, (54) 524.
 Richweed—
 poisoning, toxic constituent, (60) 176.
 poisonous to livestock, (56) 572; (59) 879.
 Rickets—
 and allied diseases, recent advances, (60) 394.
 and cereals, (57) 898.
 and cholesterol, (54) 195.
 and partial paralysis in swine, (57) 659.
 and xerophthalmia, simultaneous experimental production, (55) 695.
 cure, photochemical activation of sterols in, (59) 495; (60) 896.
 development in young, effect of maternal diet, (52) 565; (56) 90, 796.
 dietetic and light treatment, (52) 367.
 effect of—
 high voltage cathode rays, (57) 793.
 irradiated ergosterol on, (57) 693, 792, 794.
 light treatment, (54) 393, 695.
 milk from ultra-violet light treated cows, (55) 65, 90.
 sunshine and skyshine, (58) 495.

Rickets—Continued.

- etiology, (51) 770; (52) 565.
 evidence of, prior to 1650, (58) 92.
 experimental—
 effect of cereals, (56) 92.
 in rats, (51) 867.
 in swine, (59) 470.
 on purified food substances, (51) 371.
 studies, (51) 567; (54) 295, 595; (56) 296, 796; (60) 197.
 hydrochloric acid treatment for, (51) 371.
 in chicks, (53) 671; (56) 869.
 in chicks, effect of sunshine and irradiation, (60) 470.
 in chicks, effect of various feeds, (55) 366.
 in chicks, prevention, (59) 464.
 in dogs, (59) 494.
 in infants, activated ergosterol for, (58) 196.
 in infants, effect of cod-liver oil in diet of mother, (58) 90.
 in infants, irradiated milk for, (54) 492.
 in negroes, effect of ultra-violet rays, (58) 496.
 in pigs—
 and mineral requirements, (55) Ohio 163.
 as affected by nutrition, (52) Ohio 473.
 butter v. oleomargarine for, (59) 163.
 notes, (52) 674.
 prevention, (51) Wis. 469.
 relation to vitamin A, (54) 860.
 in rats—
 cod-liver oil v. irradiated ergosterol for, (59) 596.
 effect of phosphate added to diet, (59) 895.
 effect of varying acid-base balance, (59) 895.
 metabolism of calcium and phosphorus, (60) 494.
 relation to exercise, (54) 91.
 relation to tetany, (60) 494.
 studies, (57) 490; (58) 91.
 in Scottish industrial area, (55) 388.
 infant susceptibility, prenatal factor, (60) 898.
 infantile, clinical signs, (52) 566.
 infrequency in New Orleans and vicinity, (59) 494.
 inorganic blood phosphate as diagnostic symptom, (57) 792.
 irradiated material for treatment, (57) 792.
 newer knowledge, contribution of biology, chemistry, and physics to, (59) 295.
 paper on, (60) 197.
 pH of feces in, (59) 96; (60) 494.
 photoactivity of substances curative of, (52) 668, 669; (54) 92.

Rickets—Continued.

- prevention—
 and cure by bile, (52) 263.
 by feeding chicken tissue, (57) N.J. 71.
 by human milk from mother on adequate diet, (56) 91.
 by milk from irradiated mother, (56) 295, 593.
 by vitamin D absorption through skin, (57) 492.
 routine administration of cod-liver oil in, (56) 495.
 studies, (55) 388.
 sunlight v. diet, (56) 393.
 ultra-violet light v. irradiated air, (53) 877.
 protection by radiations through glass screens, (56) 593.
 protective action of human and cow's milk, (58) 495.
 recurrent, (55) 387.
 relation to calcium in human milk, (51) 867.
 relation to phosphorus in blood of newborn infants, (54) 792.
 skeletal signs, (52) 565.
 summary, (57) 898.
 susceptibility of rats to, factors affecting, (51) 71.
 treatment, (58) 297; (59) 690.
 by intramuscular injection, (57) 198.
 with activated ergosterol, (59) 595; (60) 694, 792.
 with active cod-liver oil concentrate, (52) 263.
 with irradiated cholesterol, (55) 595.
 with irradiated protein-free milk fat, (57) 791.
 with ultra-violet radiation, (52) 565; (60) 694.
 treatments, comparison, (53) 767.
 ultra-violet light therapy, as affected by eosin, (51) 71.
 value of irradiated food in, (55) 387, 594.
 Rickettsia—
 pediculi, notes, (53) 553.
 prowazeki, notes, (53) 552.
 ruminantium n.sp., notes, (55) 174.
 use of term, (53) 552.
 Rickettsia-like organisms in arthropods, (51) 551.
 Rieti Experiment Station for cereals, (52) 633.
 Rinderpest—
 active immunization, (60) 869.
 antiserum, potency, (54) 477.
 control by new prophylactic treatment, (60) 74.
 control in Kenya, (58) 576.
 epidemic in China, studies, (54) 276.
 epizootic, local serum production for, (57) 672.
 eradication in Poland, (51) 285.

Rinderpest—Continued.

- experimental transmission to deer, (57) 471.
 - immunization—
 - improved vaccine for, (60) 270, 869.
 - of suckling calves against, (52) 380.
 - single-injection method, (60) 869.
 - studies, (60) 477.
 - in deer, (57) 378.
 - in Nigeria, (60) 868.
 - in Western Australia, (53) 181; (59) 171.
 - inoculation—
 - immunity conferred on calves, (51) 585.
 - serum-simultaneous method, (56) 877.
 - use of goat virus in, (57) 574.
 - notes, (54) 171; (55) 173; (58) 474; (60) 370, 475, 869.
 - papers on, (60) 72.
 - prevention, (52) 480.
 - prophylactic inoculation against, (58) 473.
 - research on, (59) 471; (60) 370.
 - sequelae and germ carriers, (54) 276.
 - studies, (54) 871; (55) 677.
 - transmission experiments by insects, (55) 678.
 - treatment with iodine, (55) 273.
 - vaccine, studies, (58) 474.
 - virus in infected blood, distribution, (59) 274.
- Ring spot disease, hosts and symptoms, (60) 244.
- Rio Grande storage, effect on river erosion and deposition, (54) 479.
- Rio Grande Valley of Texas, general conditions, (52) Tex. 493.
- Ripersia—
- arenaria n.sp., description, (59) 354.
 - radicicola affecting sugar cane, (57) 856.
 - radicicola n.sp., description, (56) 156.
- River—
- gaging, treatise, (54) 280.
 - stages, daily, at gage stations, U.S. D.A., (51) 85; (53) 83, 788; (56) 177; (57) 776; (60) 277.
 - surveys, preliminary index, (55) 376.
- Roaches—
- biology, (51) 551.
 - breeding for insecticide tests, (60) 158.
- Road—
- bond issues, relation to total debt, (51) U.S.D.A. 589.
 - Congress, Fifth International, (55) U.S.D.A. 583.
 - demonstration, in Virginia, U.S.D.A., (55) 583; (59) 678.
 - experimental, report, (59) U.S.D.A. 478.

Road—Continued.

- materials—*see also* Gravel, Stone, *etc.*
 - for concrete, grading, (51) 886.
 - in Georgia, data, (51) 288.
 - of Kansas, tests, (56) 882.
 - proportioning by weight, (57) U.S.D.A. 81.
 - sampling and testing, standard methods, (51) U.S.D.A. 485.
 - sampling and testing, treatise, (56) 882.
 - testing laboratories, operation, (51) U.S.D.A. 685.
 - tests, U.S.D.A., (51) 289, 483, 684.
 - tests and inspection news, U.S.D.A., (51) 589, 888; (52) 183, 486.
 - roughness, instrument for measurement, (55) U.S.D.A. 781.
 - surfaces, asphaltic oil, (58) U.S.D.A. 78.
 - surfaces, tractive resistance, (51) 887.
 - tax burden, incidence, (51) U.S.D.A. 685.
 - transport, economics of, (53) 589.
 - transportation survey—
 - of Connecticut, (51) U.S.D.A. 289.
 - of Pennsylvania, (51) U.S.D.A. 685.
- Roads—*see also* Concrete and Pavements. and trails, legislation and regulations, (60) U.S.D.A. 779.
- and transportation, (54) U.S.D.A. 75.
 - brick, of Florida, (51) U.S.D.A. 483.
 - concrete, *see* Concrete roads.
 - construction—
 - and maintenance, treatise, (53) 186.
 - in national parks and monuments, (51) 484.
 - paper on, (56) U.S.D.A. 384.
 - treatise, (53) 388.
 - distribution of costs and utilization, (58) Ohio 374.
 - earth—
 - bituminous-treated, (59) U.S.D.A. 177.
 - grading, (53) 589.
 - unusual conditions in, (55) U.S.D.A. 278.
 - English, treatise, (53) 186.
 - gravel, rhythmic corrugations in, effect of haul, (52) U.S.D.A. 184.
 - gravel, tar surface treatment, (53) U.S.D.A. 284.
 - in California, traffic during 1922, (51) 485.
 - maintenance and reconstruction, treatise, (51) 387.
 - oiled earth, on Long Island, (52) U.S.D.A. 184.
 - rural public, mileage, income, and expenditures, (52) U.S.D.A. 783.
 - sand-clay and semi-gravel, (52) U.S.D.A. 184.

Roads—Continued.

- State, building, (56) U.S.D.A. 384.
- structural design, research on, (51) 288.
- subgrades, removal of capillary moisture in, (53) 83.
- topsoil, surface treatment, (58) U.S.D.A. 482.

Roadside—

- improvement in Massachusetts, (59) U.S.D.A. 281.
- markets, locating and operating, (57) W.Va. 86.
- planting, trees for, (56) U.S.D.A. 142.
- plantings, (55) U.S.D.A. 442.

Roberts, I. P., editorial note, (58) 701.

Robillarda jaczewskii n.sp., description, (59) 537.

Rock—

- blasting method, (53) Wis. 483.
- gardens, treatise, (57) 342; (60) 235.
- phosphate, *see* Phosphate.
- structure near reservoir site of Carlsbad irrigation project, (57) 81.
- toughness, effect of moisture, (60) U.S.D.A. 481.
- types, classification, (57) 15.

Rocks—

- crushed, nature, properties, and use, (51) 886.
- iodine content, (53) 202.

Rocky Mountain fever, prevention, (52) 480.

Rocky Mountain spotted fever—

- cause, (53) 552.
- in Montana, papers on, (58) 451.
- infection of ticks with, (53) 58.
- organism, cultivation, (55) 252.
- organism, identification, (53) 760.
- protective vaccine against, (54) 261.
- tick, eradication, (55) 252.
- tick, paralysis due to, (54) 676.
- tick, parasite of, (60) 461.
- tick, Rickettsia-like organisms in, (55) 552; (56) 173.
- virus and serum mixtures, peculiarities, (51) 480.

Rodent—

- pests in Colorado, control, (51) 251.
- pests, notes, (51) 252; (53) 154; (58) 256.

Rodents—*see also* Rats, Mice, etc.

- and other animals, color in, (57) 423.
- and parasites, (60) 838.
- bacterial disease, (53) 651.
- bull snake as natural enemy, (56) 56.
- chromosomes of, (56) 727.
- control, Kans., (52) 452; (56) 856.
- control, bacterial method, (60) 555.
- enemies of fruit and shade trees, (52) 353.
- in Kabarda-Balkarian province, (59) 553.
- inheritance of color and markings in, (54) 824.
- pH value of intestinal tract, (57) 789.

Rodents—Continued.

- poisoning, (55) 455.
- range, studies, (53) Ariz. 754.

Rodolia cardinalis, life history, (60) 654.

Roentgen rays, *see* X-rays.

Roesleria hypogea—

- life history, (51) 452.
- notes, (56) 748.

Roller for use on peat land, (52) 90.

Romaine diseases, control, (59) Fla. 541.

Rompers, designs for children, (58) U.S.D.A. 395.

Roof coverings, manufacture and application, treatise, (56) 78.

Roof, Gothic, in barn construction, description, (54) Mich. 584.

Roofing—

- materials, asphalt, testing, (55) 682, 683.

prepared, durability studies, Iowa, (53) 788; (55) 579; (59) 81.

prepared, pliability, machine for determination, (55) 781.

Roofs, heat flow through, (58) 483.

Roofs, insulation, (53) 287, 486.

Root—

aphid, insecticides for, (57) 358.

borer, giant, control, (55) N.Mex. 456.

borer, giant, in orchards, (60) S.C. 755.

crop experiments in Canada, (60) Can. 35.

crop production, economy of, (51) 592.

crop ration, optimum for dairy cows, (52) 677.

crops—

breeding experiments, (56) Can. 432.

comparative yields, (59) Mich. 524.

culture experiments, (58) Alaska 428.

effect of phosphatic fertilizers, (55) 421.

experiments, Can., (53) 135; (59) 432.

experiments in Philippines, (55) 434.

in British Columbia, production and utilization, (57) 34.

miscellaneous, (53) 398.

production and feeding to live-stock, (59) 662.

production on irrigation projects, (54) Wash.Col. 434.

seed production and marketing, (52) 830.

transmission of Diplodia by insects on, (51) 543.

variety tests, (52) Mont. 435; (55) Minn. 734; (57) Okla. 125; (60) Alaska 728.

vitamin A in, (57) Calif. 270.

development—

action of soil solutions on, (51) 517.

Root—Continued.

- development—continued.
 - and yield, relation to Holard, (54) 25.
 - devices for observing, (52) 830.
 - factors affecting, (52) 838.
 - of crops, treatise, (57) 415.
 - relation to certain bacteria, (60) 445.
- diseases of economic crops, (59) 636.
- growth—
 - effect of eosin, (60) 807.
 - from cuttings, types, (60) 639.
 - from seeds, (52) 217.
 - measuring, (52) 217.
 - studies, (54) 23; (55) 727.
 - upper critical concentration of oxygen in, (53) 421.
 - winter, (60) 521.
- grubs in Philippines, control, (54) 57.
- hair growth, studies, (60) 320, 511.
- hairs—
 - elongation, factors affecting, (55) 727.
 - elongation in Knop's solution and in water, (55) 727.
 - growth and stimulability, (54) 725.
 - of wheat, protoplasmic structure, effect of toxic substance, (60) 521.
 - pectic material in, (51) 126.
- knot, control, (54) Fla. 345.
- knot, effect of temperature and moisture, (55) 656.
- knot nematode—
 - control, Fla., (54) 247; (60) 155.
 - depth distribution in soil, (52) 654.
 - resistance in peach, seed transmission, (56) 54.
- maggots, notes, (59) Mich. 455.
- mealybug, insecticides for, (57) 358.
- parasites, phanaerogamic, (51) 734.
- pressure mechanism, (51) 427.
- pressure, solutes exuded by, (56) 424.
- pressures and exudation, (57) 815; (59) 124.
- rot, notes, (51) 542.
- rot organism strains, (55) Oreg. 651.
- rot, relation to lack of soil oxygen, (58) 340.
- saps, reactions, (57) 215.
- shoots, development, (58) 215.
- system as an osmotic apparatus, (56) 628.
- system of spring wheat, (60) 537.
- tip cells, cytological studies, (56) 27.
- tips, excised—
 - effect of light on growth, (56) 125.
 - growth under sterile conditions, (53) 123.

Roots—

- aeration, response of plants to, (53) 222.
- behavior in moist air, (54) 724.

Roots—Continued.

- bud formation on, (54) 523.
 - conduction of geotropic excitation in, (52) 217.
 - developed by cuttings, effect of leaves and buds on type, (60) 639.
 - effect on solubility of soil minerals, (59) 209.
 - elongation, effect of carbon dioxide accumulation, (53) 222.
 - esculent, formation, (56) 329.
 - fertilizer experiments, (51) Oreg. 529.
 - for laying hens, (51) Can. 276.
 - of meadow and pasture plants, characteristics, (56) 824.
 - of trees, mycorrhiza affecting, (51) 227.
 - reaction to aeration of soil, (57) 217.
 - reduction of nitrates by, (58) 624.
 - respiration, (56) 516.
 - respiration, relation to salt concentration of culture solution, (56) 628.
 - seminal and nodal, physiological activity, (55) 826.
 - studies, (57) 818.
 - supplying water to, rôle of capillarity, (60) 508.
 - value for milk production, (53) Can. 674.
- Rootstocks—
- effect on vigor and productivity of graft, (57) 237.
 - standardization, (60) 340.
- Repe, uses on the farm, (54) Ill. 682; (57) 582.
- Ropes—
- effect of sea water, (58) 197.
 - manufactured from sisal hemp, value, (58) 695.
- Rosa—
- differential polyploidy in, (60) 529.
 - odorata as grafting stock for indoor roses, (57) Ill. 242.
 - spp., chromosome studies, (54) 727.
- Rosales, relationships, (53) 424.
- Rose—
- aphid, notes, (52) Idaho 844.
 - aphid, soap spray for, (51) N.C. 854.
 - blossom blight, notes, (54) 745.
 - brown canker, outbreak, (58) 555.
 - canker in Ontario, notes, (58) 41.
 - canker, notes, (57) 540.
 - chafer and farm management, (54) 152.
 - chafer, control, (56) Colo. 854; (57) 860.
 - chafer, notes, (51) 157.
 - chafer, summary, (51) N.Y.State 858.
 - curculio in Manitoba, (52) 355.
 - cuttings, rooting and nonrooting, microchemical studies, (60) 826.
 - diseases caused by fungi, (54) 654.
 - diseases, causes and control, (59) U.S.D.A. 247.
 - leaf curl, notes, (59) 535.
 - leaf fungi, notes, (51) 46.

Rose—Continued.

- leafhopper—
 control, (51) 455; (58) Del. 455.
 in apple orchards, (58) Del. 454.
 notes, (52) 855.
 on apple, mirids predacious on,
 (54) 455.
- leaf-tyer, notes, (52) U.S.D.A. 255;
 (53) 155, 859.
- mildew, cause, (56) 751.
 mildew, control, (55) 346; (56) 752;
 (59) 842.
- sawfly, biology, (59) 660.
- sawfly, European, in New Brunswick,
 (60) 843.
- scale in British Columbia, (56) 458.
- Rose-apple trees, damage by leaf beetles,
 (60) Guam 845.
- Roselle—
 diseases, (53) 148.
 experiments in Philippines, (55) 434.
- Rosellinia—
 bunodes, control, (54) 150.
 caryae n.sp., life history, (52) 353.
 necatrix, studies, (59) 245; (60) 832.
 root disease, notes, (60) 344.
 sp., notes, (52) 653; (57) 639.
- Roses—
 annual change of soil, effect, (60)
 Ill. 231.
 annual treatise, (51) 346; (53) 41,
 539; (55) 442; (57) 341.
 breeding experiments, (56) S.Dak. 641;
 (57) Can. 237; (58) S.Dak. 738.
 Bulgarian oil-yielding, improvement,
 (53) 344.
 Columbia, fertilizer experiments, (59)
 N.J. 333.
 culture, (54) Mich. 645; (57) Miss.
 45, 142.
 culture experiments, (58) Ill. 334.
 culture in Arizona, (55) U.S.D.A. 438.
 culture, treatise, (51) 346; (52) 144;
 (55) 745.
 flower production, effects of phosphorus
 and sulfur, (58) Ill. 439.
 for northeastern America, breeding,
 (51) 347.
 greenhouse, heavy v. light pruning,
 (58) 239.
 greenhouse, strawberry rootworm af-
 fecting, (54) U.S.D.A. 556.
 handbook, (52) 741.
 hardy, culture in Canada, (58) 742.
 hybridization for amateurs, (51) 346.
 indoor, grafting stock for, (57) Ill.
 242.
 insects affecting, (52) 355.
 insects affecting in Great Britain, (54)
 656.
 insects affecting in Pennsylvania, (58)
 452.
 rambler, die-back disease of, (53) 153;
 (57) 450.
 red. coloring matter, (51) 522.
 selection studies, (54) Ill. 336.

Roses—Continued.

- sterility in, (58) 742.
 stocks for, (56) Ill. 234.
 treatise, (52) 344, 841, N.J. 741; (53)
 845.
 wild, in British Isles, treatise, (52)
 344.
- Rotation of crops, (51) Del. 132, Minn.
 133, Mo. 719, Nebr. 831; (52) Ohio 421.
 N.Y. Cornell 526, Utah 732, Wash. Col.
 829; (53) Minn. 130, Minn. 131, Wyo.
 133, Calif. 430, Ohio 529, Can. 530; (54)
 31, U.S.D.A. 132, Calif. 230, 530, S.C.
 624; (55) Ohio 132, La. 433, Nebr. 636,
 Oreg. 637, Minn. 735; (56) Minn. 524,
 S.C. 525, Wash. Col. 525, Wyo. 526; (57)
 Tex. 115, Tex. 126, N.C. 213, Minn. 226,
 Okla. 226, Md. 316, Va. 426, Alaska 522,
 Okla. 523, Ohio 615, Ind. 627, Idaho 726;
 (58) Ill. 322, Mo. 419, Ala. 427, Minn.
 828; (59) Wash. Col. 32, Ga. 221, Miss.
 325, Tex. 718, Tex. 729, N.C. 823, N.Dak.
 825; (60) N.Dak. 34, Minn. 132, Oreg.
 716, Alaska 728, Oreg. 731, Wash. Col.
 814.
 and cultural systems in Quebec, (54)
 434.
 and soil treatments, (59) N.C. 326.
 at North Dakota Station, (53)
 U.S.D.A. 333.
 effect on nitrification, (52) 816.
 effect on soil productivity, (55)
 U.S.D.A. 320.
 in Blackland region, (58) Tex. 531.
 in eastern Canada, (56) 622.
 in prairie provinces of Canada, (59)
 432.
 soil moisture as factor, (58) 718.
 symposium on, (57) 627.
 under irrigation, (58) U.S.D.A. 30,
 U.S.D.A. 530; (60) Mont. 729.
 value, (54) U.S.D.A. 813; (58) Ill.
 619.
 value of legumes in, (57) 627.
 yields from, (56) Iowa 634.
- Rothamsted Experimental Station, notes,
 (60) 800.
- Rotra in Madagascar, (56) 838.
- Roughage—
 digestibility unchanged in silo, (54)
 Ill. 357.
 dry, conversion into succulent feed,
 (60) 564.
 dry, v. silage, feeding value, (51) Kans.
 74.
 grinding, effect on digestibility of total
 ration, (60) Pa. 365.
 ground, feeding value, (59) Ohio 267.
 sampler, (51) 711.
 whole v. cut, feeding value, (54) 267.
- Roughages—
 comparison, (57) Okla. 563.
 energy value, (56) Ill. 263.
 for steers, (51) Wash. Col. 171; (56)
 Wash. Col. 560; (57) Tex. 169, Iowa
 266; (60) Iowa 465.

Roughages—Continued.

- grown on acid soils, effect, Wis., (51) 475; (53) 473.
- processing, value, (60) Ohio 462.

Roundworms—

- and insects, interrelation, (58) 754.
- in animals, (53) Wis. 479.
- in pigs, prevention, (57) U.S.D.A. 772.
- in pigs, treatment, (56) Ky. 164.
- in poultry, (51) N.C. 884; (56) Kans. 875; (57) 775; (58) Ill. 368, P.R. 574.
- in rabbits, (52) 859; (53) 552.
- iodine solutions for, (54) Mich. 674.

Roup—

- and allied diseases of fowls, etiology, (58) Mich. 776.
- and chicken pox vaccine, use, (52) Ky. 485.
- control, (51) 179.
- economic effect on egg production, (59) N.C. 375.
- etiology, (54) 74; (59) Mich. 470.
- in chickens, (59) Wyo. 277.
- paper on, (59) 370.
- studies, (57) N.C. 280, 578, 674.
- summary, (55) N.J. 374.
- use of term, (58) 776.
- vaccines and bacterins for, (56) Mass. 381.
- vaccines for, (51) Del. 185; (56) Del. 377; (57) Can. 574; (58) 678.

Royal—

- Agricultural Society, report, (53) 253.
- Army Veterinary Corps, history, (58) 273.
- Grain Inquiry Commission, report, (55) 687.

Rubber—

- areas, *Ganoderma lucidum* on, (58) 854.
- bark disease, new, (57) 255.
- bearing plants, culture in Black Sea region, (60) 444.
- brown bast, notes, (53) 147; (57) 255.
- brown bast treatment, (58) 156; (59) 647.
- budding in the field, (60) 827.
- chemistry, bibliography, (54) 208.
- chemistry of, (51) 210.
- Conference, International, at Brussels, proceedings, (52) 346.
- corky-barked mutations, (58) 336.
- cortex rot in Uganda, (59) 453.
- culture in East Indies, (54) 143.
- die-back due to a bug, (57) 652.
- Diplodia disease, (54) 550.
- diseases—
 - and pests, (53) 153; (54) 150, 454.
 - in Amazon Valley, survey, (55) U.S.D.A. 150.
 - in Burma, (59) 548.

Rubber—Continued.

- diseases—continued.
 - notes, (53) 148; (54) 144; (56) 541; (57) 56, 146, 639, 640; (58) 156; (59) 637.
- dry rot, notes, (60) 838.
- endemic leaf disease, notes, (56) 843.
- estates, smokehouses for, construction, (57) 882.
- field experimentation, (59) 143.
- Gottlob's technology, treatise, (57) 502.
- H-ion concentration, studies, (58) 854.
- industries of British Empire, (51) 896.
- industry in East Indies and government control, (51) 751.
- industry in Mindanao, (55) 746.
- industry, treatise, (51) 614.
- latex, dry rubber content, (57) 538.
- latex, properties and use, (53) 812.
- laticiferous vessels in bark, (57) 143.
- leaf fall disease, notes, (54) 549.
- losses due to excessive rains, (53) 414.
- mildew in Ceylon and Malaya, (58) 155.
- mildew in east Java, (60) 247.
- moldy rot in Malaya, (55) 757.
- parasites of, (55) 49.
- patch canker, notes, (56) 852.
- plantations and diseases, (59) 647.
- planting methods, (53) Guam 430.
- pollination studies, (60) 827.
- popular discussion, (52) 346.
- producing situation in Amazon Valley, (56) U.S.D.A. 539.
- production—
 - in Africa, (55) 444.
 - in Indo-China, (52) 644.
 - in Philippines, (55) 746.
- productivity from seedlings and budded stock, (51) 245.
- Research Institute of Malaya, notes, (56) 199.
- respiration in, (58) 854.
- root diseases, (54) 255; (55) 350, 756; (57) 255.
- seed crop, failure, (55) 150.
- seedlings collar disease, (56) 853.
- seedlings, importance of parentage, (57) 837.
- South American leaf disease, notes, (52) U.S.D.A. 550.
- thread blight, forms, (57) 158.
- tree roots, growing together, (58) 143.
- trees—
 - budding, principles and practices, (60) 743.
 - effect of fern and other growth on, (58) 155.
 - fertilizer experiments, (54) 45; (55) 840.
 - high yielding, selection, (58) 143.

Rubber—Continued.

- trees—continued.
 lightning injury to, (52) 353.
 longevity, (55) 444.
 sun scorch of exposed lateral roots, (58) 155.
 tapping experiments, (53) 845; (55) 649; (59) U.S.D.A. 143; (60) 237.
 tapping, periodical, (54) 542.
 yield curves, (51) 146.
 wet root rot, treatment, (58) 156; (60) 58.
 yields—
 and growth, (51) 444.
 and vegetative characters, (56) 744; (60) 828.
 from bud-grafted trees, (55) 649.
 increasing, (55) 746.
 of Funtumia, (60) 743.
 variability in, (59) 746.

Rubin test for human beings and animals, (54) 173.

Rubus—

- genus, crosses within, (57) Ga. 235.
 orange rusts, notes, (55) 149.
 spp., breeding experiments, (53) 141.
 spp., cytological studies in, (51) 333.
 spp., cultivated, (57) 137.
 spp., studies, (56) 532.
 variety tests, (56) Fla. 832; (58) 39.

Ruby eye in animals, heredity, (56) 428.

Rugs, handmade, (57) 493.

Rugs, spots on, removal, (58) 96.

Ruminants—

- in Philippines, metazoan parasites of, (53) 855.
 parasites in, (53) 760.
 physiology of stomach, (59) N.Dak. 358.
 piroplasmoses of, action of trypanblue, (56) 877.

Run-off—

- and rainfall, (58) 181.
 and soil erosion, studies, (51) Mo. 210.
 annual, in Rocky Mountains, variation in, (51) 286.
 effect of forests, (59) 507.
 evaporation, and precipitation relations, (60) U.S.D.A. 79.
 from small agricultural areas, (57) 579.
 water losses from soils, (57) Tex. 186.

Rural—*see also* Community, Country, Farm, etc.

- and urban relations, (60) 590.
 areas, sickness in, survey, (59) N.Y. Cornell, 388.
 bank movement, cooperative, in Finland, (59) 587.
 banks in Germany, (53) 592.
 cemeteries, survey, (60) Mich. 46.
 changes in western North Dakota, (59) N.Dak. 387.
 church—
 and Social Workers' Conference, notes, (51) 199.

Rural—Continued.

- church—continued.
 function, policy, and program, (54) 187.
 life in Middle West, treatise, (51) 94.
 new day for, treatise, (54) 486.
 papers on, (54) 289.
 problem, treatise, (54) 289.
 rôle of automobile in work of, (54) 689.
 task of, (54) 887.
 Town and Country Series, summary, (52) 494.
 treatise, (53) 797.
 churches, methods of conducting surveys, (55) 485.
 communities—
 commodity distribution in, (55) 84.
 new, impact of urbanism, (60) 88.
 recreation places, social aspects, (51) U.S.D.A. 95.
 community—
 Christian program for, (51) 94.
 formation of, (56) 890.
 of Acquacarina, general survey, (51) 297.
 organization, extension projects in, (57) U.S.D.A. 290.
 organizations, (55) Wis. 485.
 type in Utah, (60) 387.
 credit—*see also* Agricultural credit.
 Board of South Dakota, report, (54) 285.
 demography, (55) 84.
 depopulation in France, (53) 897.
 dietary habits, (59) Ga. 288.
 districts, desertion of, (51) 688.
 economic conditions, bibliography, (55) 481.
 economic studies, German approach to, (55) 684.
 economics—*see also* Agricultural economics.
 and bookkeeping, treatise, (51) 89.
 and sociology research in Southern States, (54) U.S.D.A. 782.
 and sociology, studies, (51) Wis. 487.
 and sociology, textbook, (57) 887.
 basic groups in, (59) 481.
 courses, (57) 83; (59) U.S.D.A. 686.
 data, (58) Ky. 78.
 department at Ohio Station, (53) Ohio 899.
 education in Great Britain, (58) 288, 687.
 elements, treatise, (52) 299.
 foundations of, treatise, (51) 290.
 in British Empire, (59) 285.
 in Europe, (58) 386.
 in Greece, (51) 688.
 laboratory manual, (52) 794.
 objectives and methods in research, (54) 101.
 outlines, treatise, (53) 694.

Rural—Continued.

- economics—continued.
 preparatory courses, (59) 481.
 principles, (53) U.S.D.A. 95.
 research in, (53) 87; (54) S.C. 684; (57) 82; (58) 887.
 research in, editorial, (57) 1; (58) 301.
 research, project outline in, (55) 301.
 scope and method, (58) 586.
 section of International Congress of Agriculture, papers of, (51) 687.
 selected list of references, (53) U.S.D.A. 288.
 station work in, history, (53) U.S.D.A. 687.
 studies, (52) N.J. 787; (55) Ohio 482, Ohio 684; (59) Conn.Storrs 482.
 study and teaching in England, (52) 396.
 textbook, (51) 196; (54) 188; (55) 888.
 workers, advanced degrees held by, (53) 7.
- education—*see also* Agricultural education.
 courses pertaining to, (53) 495.
 financing, (59) 889.
 Government publications on, (53) 397.
 papers on, (52) 898.
 reorganization in Cape Province, (51) 194.
 studies, (52) 396.
 survey committee of Indiana, report, (59) 186.
- electric construction, costs, (59) 586.
 England, rebuilding, treatise, (53) 693.
 family, improvement, (52) 897.
 group analysis, researches in, (55) 84.
 guide, Kelsey's, (53) 798.
 health services, (52) 597.
 highways, beautification, (53) Mich. 243.
 holdings in Norway, (51) 489.
 homes—
 fuels used in, (59) Ind. 782.
 lighting by kerosene and gasoline lamps, (60) Nebr. 497.
 papers on, (51) 299; (54) 84.
 plans, (60) Okla. 482.
- hospitals, (55) U.S.D.A. 85.
- industries—
 of England and Wales, (56) 487; (57) 484.
 of Scotland, (53) 393.
 of Wales, (57) 785.
- labor, *see* Agricultural labor.
 laborer, improvement of condition, (51) 687.
 libraries, (59) U.S.D.A. 288.
 libraries, community aspects, (60) 88.

Rural—Continued.

- life—
 bibliography, (53) U.S.D.A. 297.
 cooperative studies, (57) 382.
 economics and sociology, (58) 586.
 effect of automobile, (54) 689.
 expansion, treatise, (60) 890.
 improvement activities, papers on, (56) 889.
 in England, history, (52) 789.
 in Italy, relation to corn, (58) 632.
 in south China, (54) 288.
 needed readjustments in, (56) 389.
 play in, (54) 289.
 psychology, research problems in, (53) 898.
 relation to rural organizations, (57) Va. 787.
 sociology of, (56) 690.
 studies, (51) Wis. 487; (53) Mo. 493.
 treatise, (56) 187; (58) 788.
 young people's organizations as factor, (58) Mo. 490.
- living, objectives and methods in, (57) 382.
 mind, studies, (57) 191.
 New England towns, social participation in, (59) 286.
- organizations—
 making effective, (60) Wis. 486.
 relation to rural life, (57) Va. 787.
 studies, (57) Mo. 478.
- parent-teacher associations, source material for, (58) 891.
- parish, economic survey in England, (51) 94.
- party, need for in Great Britain, (51) 893.
- Pennsylvania, treatise, (53) 595.
- population—*see also* Population.
 and farm land, recent changes in, (59) 684.
 decrease in, effect, (55) 83.
 groups, (54) Mo. 287.
 high school education of, (53) 495.
 in France and rural schools, (54) 487.
 migration, analysis, (59) U.S.D.A. 387.
 migration in France, (51) 687.
 migration in Germany, causes and remedy, (55) 187.
 migration, methods for checking, (56) 889.
 migration to cities, (55) 84; (57) 83, Mo. 477; (58) 890; (59) 385; (60) 684.
 movement, (51) N.Y.Cornell 596; (59) Ohio 284, N.Dak. 387.
 movement in unincorporated territory, (59) 486.
 movements in Missouri, (53) Mo. 493.
 of Connecticut, origin and character, (60) Conn.Storrs 590.

Rural—Continued.

- population—continued.
 of New York, (60) N.Y.Cornell 487.
 of Ohio, (52) 494.
 of United States, (56) 890.
 of United States, social composition, (55) 187.
 recreation and use of leisure for, (54) 187.
 primary groups, (53) Mo. 494.
 problems in United States, (53) 390.
 property rights, evolution, (54) 284.
 recreation in Ohio, (59) 684.
 relations of the little town, (57) 786.
 religious organization, (51) Wis. 894.
 religious surveys, sociological significance, (51) 893.
 schools, *see* Schools, rural.
 service study, progress in, (53) 85.
 social—
 agencies in northern Illinois, (56) 890.
 organization, Wash.Col., (55) 589; (57) 590; (59) 589.
 organization, requisites to, (59) 487.
 problems, laboratory work in, (53) 193.
 problems, research in, (54) 200.
 problems, treatise, (52) 94.
 psychology, treatise, (53) 692.
 resources, handbook, (56) 487; (60) 591.
 survey in Iowa, (52) Iowa 694.
 work, developing, (52) 193.
 society, special interest groups in, (59) Wis. 887.
 sociology—
 course in, (58) 386.
 development, (55) 689.
 elements, textbook, (60) 591.
 extension work in, (58) 189.
 objectives and methods in research, (54) 101.
 papers on, (60) 88.
 research in, (58) 189, 586, 587, S.C. 687.
 research in, editorial, (58) 301.
 shifting bases, (55) 84.
 textbook, (56) 489.
 treatise, (60) 387, 591.
 standards, American, (54) 486.
 standards of living in the South, (53) 596.
 store credit, economic study, (52) N.Y.Cornell 295.
 taxation in Ohio, (60) Ohio 184.
 teachers in high schools, preparation, (52) 793.
 training laboratory, (51) Mo. 794.
 urban conflict, case study, (60) 88.
 young people, community relations, (59) Mo. 185.
 youth in the United States, literature on, (56) U.S.D.A. 84.
 youth, papers on, (59) 388.

- Rush weevil, notes, (53) 363.
 Rush work, (52) 794.
 Russian knapweed—
 control, (56) Mont. 133.
 in California, (53) 238.
 Russian Polar Expedition, bird fauna studied, (59) 853.
 Russian thistle, *see* Thistle.
 Rust—*see also specific host plants.*
 and smut fungi, treatise, (57) 441.
 black, in Scotland, (57) 147.
 cereal and barberry, in Denmark, (55) 348.
 Form XXI, experiments, (54) Nebr. 344.
 fungi, culture studies, (56) 542.
 infection of leaves in Petri dishes, (52) Conn.State 647.
 investigations, greenhouse culture methods, (55) 246.
 mites, control, Fla., (52) 251; (56) 855.
 mites, effect of fumigation, (55) 765.
 resistance, studies, (57) 746.
 species, aecidiospore discharge, (51) 650.
 studies, (59) Ind. 748.
 Rusts—
 biology, (52) 746.
 haustoria and host relations, (60) 148.
 in South Africa, (53) 245.
 infection tests, (58) 544.
 of Abies, comparative study, (60) 554.
 of Iowa, list, (57) 146.
 of Washington, list, (57) 819.
 studies, (58) 444.
 teliospores of, germination, (52) 447; (59) 843.
 Rutabagas, *see* Swedes.
 Rutaceae, susceptibility to citrus scab, (53) 855.
 Rutelinae, life cycles, (54) Kans. 461.
 Rutgers College, notes, (51) 398; (52) 99, 199, 699.
 Rutgers University, notes, (53) 98, 900; (54) 97, 399, 599, 900; (55) 397, 600, 699; (56) 197; (57) 396; (58) 300, 698, 900; (59) 900.
 Rutherglen bug, life history notes, (57) 759.
 Rye—
 abnormal types, (51) 848.
 and Aegilops hybrids, (55) 633.
 and oats mixture as hog pasture, (58) 868.
 and spelt, sterile hybrid, notes, (52) 628.
 and wheat hybrids—
 chromosome behavior in, (56) 634.
 cytological studies, (56) 31.
 fertile, segregation in, (56) 634.
 studies, (51) Wash.Col. 128; (56) 633; (58) 825; (60) 429.

Rye—Continued.

- as cover crop, (59) Ind. 626; (60) S.C. 718.
 as forage crop, (52) Utah 732; (54) Wash.Col. 329.
 bacterial blight, notes, (52) 448.
 baking quality, effect of fertilizers, (51) 530.
 bran, feeding value, (53) 666.
 breeding experiments, (51) Mich. 133; (52) Mich. 334, Kans. 433; (53) 230; (55) N.Dak. 527; (56) Ill. 230, Ill. 333; (59) N.Dak. 825.
 breeding work and genetic studies, (58) 218.
 chromosome numbers, (53) 426; (59) 821.
 cold resistance in, (60) 214.
 composition, effect of geographical factors, (58) 631.
 cover crop, effect on grapes, (54) 40.
 culture, (52) U.S.D.A. 828; (53) 330.
 culture, continuous, (52) N.J. 721.
 culture, continuous, with and without legumes, (55) N.J. 18.
 culture experiments, (51) 36; (52) Alaska 528; (56) 35; (57) Alaska 522.
 culture in Rumania, (54) 441.
 culture with green manure crop, (51) N.J. 622.
 duty of water for, N.Mex., (54) 680; (55) 478.
 effect of carbon dioxide, (55) 519.
 effect of preceding crop, (55) Miss. 527.
 electrocultural experiments, (54) U.S.D.A. 732.
 ergot, control, (51) N.Dak. 848.
 feeding value, (53) Minn. 469; (54) Mich. 567; (56) Mont. 269; (57) 761.
 fertilizer experiments, (52) 723; (59) 20, 21, 319.
 flour detection in wheat flour, (51) 613.
 freaks in, (58) 429.
 fusariose, dry treatment for, (58) 145; (59) 540.
 germination tests, (52) Mont. 435.
 germs, vitamins in, (58) 87.
 green, effect on flavor and odor of milk, (53) U.S.D.A. 879.
 green manuring experiments, (59) N.J. 319.
 growth in artificial light, (51) 25.
 hay, artificially cured, (58) 682.
 hay, feeding value, (54) Calif. 373.
 immunity to wheat take-all, (53) N.C. 747.
 improvement, N.C., (53) 735, 835.
 in Germany, papers on, (54) 235.
 inbreeding experiment, (58) 525.
 kernel, amino acids and polypeptides in, (53) 712.
 leaf blotch, notes, (52) 448.
 leaf rust, aecial stages, (52) 545.
 length of vegetative period, (60) 537.
 loose smut, studies, (58) 145.

Rye—Continued.

- mill feeds, digestibility, (54) 468, 565.
 moisture in, under varying humidity, (54) 636.
 mosaic disease, description, (54) U.S.D.A. 146.
 mosaic, studies, (58) 43.
 occurrence of bunt in, (54) 130.
 optimum soil reaction for, (53) 320.
 outbreak of *Puccinia coronifera* on, (57) 642.
 pasturing with hogs, U.S.D.A., (54) 162; (55) 161.
 percentage returns, (51) Ind. 830.
 phosphorus in, (60) 204.
 plants, decomposition, effect of age, (58) 516.
 potassium uptake and development, (55) 426.
 prices and profits, (52) N.J. 787.
 prices, index numbers, (59) N.Dak. 885.
 production in Saskatchewan, (58) 432.
 production on irrigation projects, (54) Wash.Col. 434.
 relation to wheat, (59) 589.
 resistant to rusts and powdery mildew, (54) 844.
 Rosen, merits, (55) Mich. 825.
 rotation experiments, (54) 31, 530, Calif. 230; (59) N.C. 728.
 rust resistant varieties, (51) Ind. 844; (57) 747.
 rust, tests, (53) Ga. 246.
 seeding experiments, (51) Minn. 133, Minn. 134, Minn. 636, Nebr. 831, N.Dak. 832; (53) Minn. 130, Can. 530; (55) Minn. 228, Nebr. 229, Minn. 332, Minn. 527; (56) Minn. 524; (57) 227.
 self-fertilization in, (56) Minn. 736.
 smuts, control, (58) U.S.D.A. 650.
 solar energy used by, (53) 508.
 species, characteristics of chromosomes, (58) 823.
 spike production, effect of temperature, (55) 438.
 spikes from Turkey, morphological studies, (57) 731.
 spray irrigation for, (52) 287.
 stalk smut, notes, (52) Idaho 844.
 statistics, (54) U.S.D.A. 888.
 sterility in, (53) 426.
 straw, composition, (51) 570; (59) 719.
 straw, decomposition in soils, (51) 415.
 straw, decomposition rate, (59) 719.
 straw structure, effect of silicic acid, (54) 219.
 stripe rust, notes, (52) 648.
 test for hay, (60) Minn. 132.
 top and root growth in, (55) N.J. 31.
 v. barley for pigs, (52) Mont. 471.
 varieties, (51) Ga. 132, R.I. 741; (54) R.I. 30; (55) Ark. 30, N.C. 228, N.Mex. 434; (56) Ind. 132; (57) Tenn. 126; (58) 830.

Rye—Continued.

- varieties—continued.
 and requirements, (58) 632.
 as nurse crops, (52) 833.
 characteristics, (55) Alaska 260.
 for Minnesota, (55) Minn. 132.
 for peat land, (55) Minn. 527.
 for Sweden, (53) 835.
 yields, (51) Va. 35.
- variety tests, (51) Minn. 133, Minn. 134, Ohio 433, Minn. 636; (52) Ga.Coastal Plain 225, Ind. 226, S.C. 528, N.J. 732, Wash.Col. 829; (53) W.Va. 31, Minn. 130, Minn. 131, U.S.D.A. 134, Ga. 230, N.Dak. 334, Ind. 431, Can. 530, Ariz. 733, N.C. 734; (54) Ga.Coastal Plain 130, 530; (55) Ga. 131, Minn. 332, Minn. 734, Minn. 735; (56) 35, Ark. 332, Ga.Coastal Plain 523, Minn. 524, Wash.Col. 525, Kans. 822; (57) Can. 33, Ga. 225, Minn. 226, Okla. 226, 227, Ind. 628, N.J. 727, 731; (58) Ark. 321, U.S.D.A. 532, S.C. 632, Ga.Coastal Plain 732, Minn. 828; (59) Wash.Col. 31, N.J. 325, N.C. 728, Nebr. 824; (60) Ga.Coastal Plain 132, Minn. 132, Ariz. 133, S.C. 732.
- viscosity and winter hardiness in, (57) 126.
- water requirements, (58) Can. 223.
- water utilization during growth, (60) 214.
- weed, distribution, (56) 640.
- wheat and *Aegilops* hybrid, notes, (58) 320.
- wild mountain, new variety, (53) 34.
- winter—
 culture, (54) N.Dak. 332.
 date of heading out, (55) 629.
 for western Canada, (60) 332.
 in Bavaria, phenology, (55) 716.
Puccinia coronifera on, (56) 651.
 seeding date, (56) S.Dak. 330.
- yields, (60) Mont. 730.
 and agronomic data, (52) Can. 733.
 and rainfall in Bavaria, (51) 509.
 effect of precipitation and temperature, (56) 413.
 effect of weather, (56) 207.

Ryegrass—

- breeding experiments, (54) 231; (58) 530; (59) 430.
 English and Italian, seed characters, (54) 736.
 Italian, for winter and early spring sheep grazing, (58) 668.
 Italian, pasture experiments, (57) N.Mex. 273.
 methods of covering, (51) 139.
 perennial, behavior in Denmark and Sweden, (53) 236.
 perennial, inheritance in, (60) 217.
 seed production, (52) 334.
 seed, studies, (55) 534.

Ryegrass—Continued.

- seed, western, impurities and determination of origin, (60) 539.
 smut, notes, (58) 656.
 western, seeding experiments, (53) Can. 530.
 western, variety tests, (53) Can. 530.
- Sabal causiarium*, *Phytophthora palmivora* on, (57) 550.
- Sacadoses pyralis*, life history, habits, and control, (60) 652.
- Sacaton Field Station, report, (55) U.S.D.A. 495.
- Saccharaphagos mochisa*, notes, (56) 155.
- Saccharin—
 determination, (57) 409.
 manufacture, (52) 805.
- Saccharomyces—
cerevisiae, atmospheric nitrogen utilization by, (51) 63.
ellipsoideus tropicus, notes, (59) 324.
ludwigii, action of chloroform on, (59) 517.
- Saccharomycetes, as affected by ultra-violet light, (51) 25.
- Saccharomycosis of horses, treatment, (58) 478.
- Saccharum species and hybrids, cytological studies, (56) 221.
- Safflower, breeding, (52) 830; (54) 231.
- Safflower wilt disease, (52) 151.
- Sagaritis—
 new species and key, (58) 266.
oxylus, notes, (59) N.J. 351.
- Sagrain, culture, (58) Miss. 328.
- Sahlbergella—
singularis, new parasites of, (60) 656.
 spp., life history and habits, (56) 757.
- Sainfoin, proteins of, (56) 708.
- Saissetia hemisphaerica*, *see* Hemispherical scale.
- Saissetia oleae*, *see* Black scale.
- Sakrand Agricultural Research Station, Sind, notes, (58) 398.
- Sal—
 borers, geographical distribution, (52) 154.
 heartwood borer, control, (54) 157.
 seed, effect of size on germination and development, (58) 842.
 volume and outturn tables for, (54) 143.
 volume tables and form factors for, (51) 146.
 volume tables for, (53) 541, 644; (60) 743.
- Salad dressings, bacteriological study, (59) 488.
- Salad recipes, (56) 691.
- Salan, disinfection studies, (58) 145.
- Salicaceae, sex in, modification, (54) 632.
- Salicylates, chaulmoogryl derivatives, (60) 204.
- Salicylic—
 acid, determination, (59) 807.
 aldehyde, decomposition by soil organisms, (53) 214.

- Saliva—
 diastatic activity, factors affecting, (53) 761.
 pH determination, (58) 388.
- Salivary digestion of starch, effect of halogen salts, (53) 761.
- Salmon—
 body oil, vitamin potency, (57) 894.
 canned—
 bacteriological study, (56) 589.
 chemical study, (51) 608.
 pellagra-preventive action, (60) 793.
 for prophylaxis of goiter, (55) 596.
 oil as source of vitamin A, (56) Calif. 373.
 oil made from canner refuse, vitamins in, (57) Calif. 271.
 poisoning in dogs, (55) 176; (60) Oreg. 774.
 poisoning, susceptibility of coyotes to, (57) 877.
- Salmonella—
 aertrycke, notes, (57) 879.
 classification, (54) 176.
 enteritidis—
 infection of cattle by, (57) 574.
 infection of rats by, (57) 573; (59) 579.
 N and R form, pathogenicity for mice, (57) 672.
 gallinarum—
 and *S. pullorum*, comparison, (55) R.I. 275.
 differential medium for, (60) 669.
 notes, (58) 282.
 group, heat-stable agglutinogens and sensitivity to bacteriophage, relation, (58) 773.
 group, human infection and intoxication by, (58) 278.
 group, studies, (55) 577.
 group, types of colonies, method of division, (58) 675.
 group, variation in, (56) 475.
 infection, second type, (58) 674.
 pullorum—
 agglutinability, relation to electrical charge, (56) Pa. 176; (59) 175.
 agglutination and pullorin tests for, (59) 374.
 agglutination tests, cloudy reactions, (60) 77.
 agglutinative and antigenic properties, (57) 381.
 antigens for complement fixation tests, preparation, (58) 576.
 atypical agglutinations, due to bacterial contaminations, (60) 581.
 cataphoresis and agglutination, (58) Pa. 372.
 differential medium for, (60) 669.
 dissemination in incubators, (60) 581.
- Salmonella—Continued.
 pullorum—continued.
 hydrogen sulfide production by, (60) Pa. 374.
 in baby turkeys, (60) 275.
 in eggs laid by reacting hens, (60) 670.
 in fowls, (53) 279; (55) 578.
 in intestines of baby chicks, (60) 669.
 in lungs of diseased chicks, (58) 880.
 in rabbits, (60) 180.
 infection, bacteriophage in relation to, (56) 575.
 infection causing salpingitis, (57) 774.
 infection, control, (60) Mass. 670.
 infection, tests for, (58) 177, 576.
 isolation, medium for, (60) 374.
 nature of, (56) Kans. 380.
 notes, (52) Kans. 484; (60) Ark. 874.
 production of gas by, (57) R.I. 576.
 studies, (55) 177, 375, 680; (56) Pa. 176; (57) Ohio 183, N.C. 280, N.C. 577; (58) Pa. 370, Ill. 371; (59) 582.
 sanguinarium, studies, (58) Pa. 370.
 schottmüller, notes, (56) Kans. 875; (57) N.J. 80.
 sp., notes, (58) 277, 278.
 spp., cultural and antigenic studies, (56) 879.
 suispestifer—
 cause of epidemic, (58) 478.
 infection of man, (57) 379.
 notes, (58) 176.
 studies, (59) 475.
- Salmonellosis of swine, studies, (53) 680.
- Salpingectomy, unilateral, in rats, effects, (57) 222.
- Salpingitis, enzootic, of pullets, (57) 774.
- Salsify decay, cause, (56) 350.
- Salsify seed production, (55) Idaho 536.
- Salt—
 absorption by storage tissues, (56) 219.
 administration, effect on nerve disturbances in avitaminous animals, (52) 68.
 amount on ham and bacon, effect, (56) Kans. 866.
 balance of plants, (54) Mich. 627.
 concentration, effect on assimilation of algae, (53) 828.
 consumption of sheep, Iowa, (53) 773; (55) 686.
 content of cotton fiber, (52) 35.
 effect on flavor of butter, (52) U.S.D.A. 575.
 effect on viability and growth of *Bacillus botulinus*, (52) 165.
 for cows, (56) 872.
 for horses, (55) Mich. 63.
 in butter, effect on quality, (55) 269.

Salt—Continued.

- in fish meal, effect on pigs, (55) 62.
 - iodized, loss of iodine from, (57) 803.
 - marshes, changes in vegetation due to drainage, (57) N.J. 776.
 - neutral, decomposition by colloids, (52) 509.
 - patch reclamation in South Australia, (51) 512.
 - preservation tests with tomatoes, (51) 239.
 - preservative action in catsup, (56) N.Y.State 711.
 - requirements—
 - of livestock, (55) U.S.D.A. 462.
 - of Marquis wheat, (52) Mich. 518.
 - of plants, factors affecting, (51) N.J. 630.
 - sickness in cattle, Fla., (56) 874; (60) 175.
 - solutions—
 - action on soil, (54) 717.
 - physiological values, relation to temperature, (59) 215.
 - toxicity and antagonism in, (57) 24.
 - stability in plants, (57) 25, 515.
 - system of soil, studies, (52) N.J. 719.
 - toxicity for chickens, (55) Ill. 671.
 - use in cooking vegetables, Ohio, (57) 192, 890.
 - use on soils, (53) 622.
 - water, effect on rice, (58) Tex. 832.
- Saltbushes and related species, (54) U.S.D.A. 36.
- Salting cattle, value, (58) 167.
- Salton Sea region, geologic and hydrologic data, (51) 185.
- Salts—
- absorption by plant cells, (55) 323; (57) 319.
 - adsorption by activated sugar charcoal, (52) 110.
 - butter, studies, (60) 572.
 - complex, treatise, (52) 409.
 - effect on intermediary metabolism, (52) 161.
 - effect on spermatozoa, (52) 730.
 - in milk, effect of diet, (51) 166.
 - in soil and moisture, relation, (53) 419.
 - inorganic, and dyes, antagonism between, (56) 125.
 - inorganic, effect on experimental anemia, (59) 793.
 - inorganic, metabolism, ward routine in studies, (58) 690.
 - mineral, value for sheep, (55) 462.
 - neutral, effect on soil reaction, (54) 620.
 - neutral, residual effects on soils, (54) Mich. 616.
 - requirements of wheat, (56) 515.
 - sodium and potassium, microscopical identification, (51) 10.

Salts—Continued.

- soluble, determination, use of electrolytic bridge, (58) U.S.D.A. 204.
 - soluble, loss in run-off water, (56) 118.
 - soluble, movement in soils, (53) 820.
 - toxicity and movement in arid soils, (52) N.Mex. 318.
 - vertical distribution in soils, (53) 723.
- Salvarsan compounds, action in experimental anthrax, (58) 477.
- Salvia anther smut, notes, (54) 255.
- Samples, adequate, constitution, (59) 412.
- San José scale—
- abundance and damage, estimating, (51) 356.
 - control, (51) 361, 552, 760, Mo. 760, Ind. 853; (52) Ill. 440; (53) Ohio 96, Ind. 154, N.Mex. 155, Mo. 451, 454, Ohio 556, N.C. 755; (55) Ohio 152, 252, Mass. 254, N.Mex. 456, Oreg. 662; (56) 60; (57) 164, 260, 455, Idaho 755; (58) 61, Mo. 436; (59) Ind. 758; (60) Oreg. 754, Wash.Col. 842.
 - control, scoring results, (55) 53.
 - dormant oil sprays for, (59) Idaho 758.
 - dormant treatments, effectiveness, (56) 857.
 - dry substitutes for liquid lime-sulfur for, (54) U.S.D.A. 658.
 - effect of sulfur, (53) 452.
 - in the Ozarks, control, (51) 660.
 - in Wisconsin, (56) 460.
 - new spray for, (51) 550.
 - notes, (55) 556, 759; (58) 857; (59) N.Mex. 249.
 - on cranberries, control, (60) Wash. Col. 845.
 - parasites of, (52) 557; (59) 358.
 - spraying experiments, (51) 157, 158; (60) Oreg. 753.
 - studies, (58) Del. 454.
- San Juan Canyon, Utah, survey, (52) 685.
- Sand bur—
- control, (57) U.S.D.A. 628.
 - notes, (53) U.S.D.A. 334.
- Sand cherries, bush form, (51) 839.
- Sand cherry—
- notes, (56) S.Dak. 532.
 - plum hybrids, notes, (53) U.S.D.A. 141.
- Sand—
- and clay, differences, (55) 477, 478.
 - and soil temperatures in Egypt, comparison, (53) 115.
 - deserts of Turkestan, (59) 812.
 - dunes, Atlantic coast, bacterial flora, (58) 18.
 - dunes, Lake Michigan, bacterial flora, (58) 515.
 - dunes, reclamation in Palestine, (53) 846; (57) 836.

- Sand—Continued.
flies—
 artificial feeding, technique, (57) 560.
 breeding method, (53) 860.
 outbreak in Texas, (57) 560.
 studies in India, (55) 856.
for use in concrete, new test, (57) 880.
grains of sewage filter, studies, (51) 186.
migration of bacteria through, (51) 591.
moist, bulking, effect on concrete, (51) U.S.D.A. 886.
proposed abrasion test for, (60) U.S.D.A. 779.
shale in, determination, (53) U.S.D.A. 683.
size and depth for filters, (52) 686.
strength ratios, effect of grading, (53) U.S.D.A. 483.
- Sandal spike disease—
 cause, (56) 654.
 notes, (52) 544.
 transmission, (52) 550, 551.
- Sands and—
 crushed rocks, nature, properties, and use, treatise, (51) 886.
 sand soils in Latvia, (54) 116.
- Sandstone rocks, weathering phenomena in, (55) 417.
- Sandy soils—
 acid, action of ammonium sulfate on, (56) 514.
 moisture supply to corn, effect of texture, (58) 414.
 moisture supply to crops in, (55) 810.
 of Latvia, (54) 116.
 resistance to wetting, (56) 415.
 tractor lug studies on, (56) 282; (57) 475.
 types, magnesium deficiency in, (59) N.C. 721.
- Sanitation—
 and house drainage, treatise, (53) 188.
 municipal and rural, treatise, (58) 885.
- Sanninoidea exitiosa, *see* Peach borer.
- Sanninoidea opalescens, control, (51) 363; (55) Oreg. 659; (60) Oreg. 753.
- Santa Lucia Mountains, ecology of, (54) 24.
- Santalaceae, Australian, root parasitism of, (57) 48.
- Santol, vitamin B in, (57) 94.
- Santonin—
 anthelmintic value, (52) Ohio 84; (57) 573.
 ascaricidal value, (54) 277.
 in veterinary practice, summary, (58) 874.
- Sap ascent—
 effect of cutting xylem or phloem, (58) 214.
 in plants, (56) 424.
 in trees and transport of food material, (54) 521.
 studies, (55) 627.
- Sap concentrations, studies, (55) 728.
- Sap conduction and stem anatomy, (57) 815; (59) 123.
- Sap extraction from living leaves, (53) 223; (58) 726.
- Sap flow in trees, (57) 516.
- Sap in plants, absorption and exudation pressures, (54) 426; (55) 628.
- Sap movements in plant roots, (56) 628.
- Sap movements in trees, (53) 624.
- Sap of Engelmann spruce, properties, (54) 25.
- Sap pressures, absorption and exudation, (56) 218.
- Sap transfer in grafted plants, (60) 214.
- Saperda candida, *see* Apple tree borer, round-headed.
- Saperda in New Jersey, (60) 556.
- Sapodillas, vitamin A in, (52) 65.
- Saponarin, formation, (53) 726.
- Saponin—
 reaction of protoplasm to, (52) 215.
 treatment of oily seeds with, (54) 427.
- Saprolegnia development, effect of hydrogen and calcium ions, (55) 729.
- Sapsucker and downy woodpecker, comparison of work, (51) 54.
- Sarcina—
 aurantiaca, food requirements, (60) 411.
 lutea resistant to pasteurizing temperatures, (59) N.Y.State 270.
 lutea, substances formed by, relation to yeast growth, (52) 162.
- Sarcocystis—
 blanchardi in Philippine carabao, (59) 174.
 muris, life history notes, (60) Wyo. 776.
 occurrence, (59) 777.
 rileyi of a domesticated duck, (54) 479.
 tenella, studies, Wyo., (56) 574; (59) 272.
- Sarcoma, experimental, in chickens, (59) 277.
- Sarcomatosis in poultry, (55) Mich. 877.
- Sarcophaga—
 carnaria, parasites of, (59) 660.
 diatraeae n.sp., description, (58) 266.
 diatraeae n.sp., notes, (59) 562.
 flavipes, parasite of Carolina mantis, (53) 157.
 helicis, notes, (59) N.J. 351.
 spp., notes, (58) 263.
 sternodontis, notes, (56) 361, 557.
- Sarcophagidae, puparia and larvae, (54) 57.
- Sarcoptidae, paper on, (55) 177.
- Sarcosporidiotoxin, toxic action and serological study, (56) 277.
- Sardines, canning methods, (56) 206.
- Sash houses, construction and management, (55) 438.
- Saskatchewan Overseas Livestock Marketing Commission, report, (60) 679.
- Saskatoon sawfly, life history, (56) 65.

- Satin moth—
 notes, (52) Wash.Col. 852; (57) Conn.State 161.
 summary, (57) U.S.D.A. 164.
- Sativin, definition, (54) 802.
- Sauerkraut—
 canned, chlorides in, (57) 193.
 commercial production, (57) 13; (59) U.S.D.A. 791.
 composition, variations in, (54) 803.
 destruction of vitamin C in, (55) 503.
 fermentation and quality, relation to temperature, (58) 712.
 fermentation, effect of inoculation, (53) 716.
 manufacture and preservation, (56) Mich. 392.
 mineral content, variations in, (54) 803.
 production, studies, (59) Wis. 12.
 quality, factors affecting, (58) 611.
 studies, (51) 315, 316.
 vitamin C in, (51) 714.
 yeasts of, (58) 612.
- Sausages, casings of cellulose for, (56) 291.
- Sawdust—
 effect on crop growth, (53) 121.
 feeding value, improving, (55) Mass. 561.
 fertilizing value, (58) 121.
 hydrolyzed, composition and feeding value, (56) 374.
 irradiated, antirachitic action, (56) 797.
 irradiated, effect on rats, (53) 264; (56) 295.
 sodium arsenite bait for grasshoppers, (55) 355.
- Sawflies—
 grain and black, morphological differences, (59) 861.
 on chokecherry, life history notes, (59) 660.
 parthenogenesis and sexuality, (56) 662.
 parthenogenetic, males and an intersex-like specimen, (56) 661.
- Sawfly—
 larvae aestivation, (58) 562.
 new, injurious to jack pine, (53) 861.
 western wheat-stem, in Canada, (51) 761.
 western wheat-stem, notes, N.Dak., (53) 652, 857.
- Saws—
 crosscut, sharpening, (52) U.S.D.A. 289.
 sharpening and fitting, (52) 888.
- Scab control by spraying, (56) Mich. 398.
- Scab mite on horses, (58) P.R. 574.
- Scabies—*see also* Mange and specific animals.
 auricular, in silver-black foxes, (52) 285.
 eradication, control, (52) 881.
- Scabies—Continued.
 of zebra and camel, control, (57) 875.
 psoroptic, of sheep, (55) 876.
- Scale insects—
 classification, (53) 359.
 control, (55) Calif. 351; (56) 555; (59) Tex. 759.
 control, lime-sulfur v. oils for, (59) N.C. 758.
 from China, list, (58) 59.
 greenhouse, control, (51) 361.
 immunity to insecticides, developing, (54) 454.
 in Palestine, (53) 157.
 in Rhine Valley, (53) 652.
 injurious to citrus, notes, (60) 559.
 mycosis, (51) 762.
 nectriae parasites on, (60) 162.
 new in State, (55) Miss. 658.
 notes, (56) 552.
 of citrus in Palestine, (58) 859.
 of Japan, (58) U.S.D.A. 256.
 of New Zealand, (58) 160.
 of trees and shrubs in Colorado, (53) 858.
 on citrus trees, (52) 853.
 Porto Rican, parasites of, (55) 858.
 resistance to fumigation, effect of temperature, (52) Calif. 57.
 studies, (55) Miss. 555.
 systematic and biological study, (52) Miss. 252.
- Scale—
 parasites from Java, (59) 257.
 parasites, Porto Rican, notes, (58) 863.
 situation and new oil emulsion for, (51) 550.
- Scalecide, insecticidal value, (55) Mass. 254.
- Scallops in Barnegat Bay, (51) N.J. 657.
- Scandinavian Veterinary Congress, report, (60) 867.
- Scaphiopus hammondi tadpoles, enemy of mosquito larvae, (58) 861.
- Scapteriscus vicinus, *see* Mole cricket, Porto Rican.
- Scarabaeidae—
 in Great Britain, summary, (59) 561.
 life cycles, comparison, (54) Kans. 460.
- Scarabaeids, hibernation, studies, (59) 159.
- Scarlet fever—
 epidemic due to ice cream, (54) 591.
 prevention, (52) 480.
- Scatophaga stercoraria, notes, (56) 659.
- Scelio, new species, parasites of Locusta migratoria, (60) 656.
- Scelionidae, new species, (57) 863.
- Schedius—
 kuvanae, parasite of gipsy moth, (53) 561.
 podontiae n.sp., description, (52) 361.
- Schistocerca—
 alutacea on cranberry bogs, (51) N.J. 659.
 gregaria in the Sudan, (56) 459.

- Schizonella colemani* n.sp., description, (52) 352.
- Schizonotus pailoti* n.sp., notes, (57) 264.
- Schizophyllum*—
- aleum, notes, (56) Wash.Col. 540.
 - commune, growth reaction toward acidity, (53) 224.
 - commune, notes, (57) 354.
 - commune on Japanese chestnut, (52) 749.
 - commune resistance to sodium fluoride and zinc chloride, (56) 853.
- Schizosaccharomyces bussëi*, notes, (59) 324.
- Schizotrypanum cruzi*, notes, (60) 564.
- Schoenobius bipunctifer*, notes, (51) 546.
- School—
- and country life, (56) 889.
 - and country life, treatise, (52) 795.
 - children—
 - coffee and milk drinking habits, (58) 291.
 - endemic goiter among, (58) 595.
 - health of, (52) U.S.D.A. 562.
 - nutrition classes for, (57) 689.
 - rural, dietary habits, (59) Mass. 790.
 - rural dormitories for, (57) Mont. 686.
 - rural, health of, (52) 597.
 - rural, nutritional survey, (56) Fla. 897.
 - supplementary feeding, effect, (58) 593; (60) 787.
 - community fairs in rural districts, (51) 694.
 - consolidations, data on, (53) 396.
 - financing, methods, (60) 587.
 - funds, State—
 - and apportionment, (59) 186.
 - apportionment, Delaware plan, (59) 889.
 - apportionment in Oklahoma, (59) 487.
 - apportionment, Massachusetts plan, (60) 887.
 - nurse, rural, helps for, (53) 95.
 - part-time continuation, nutrition project in, (52) 96.
 - system of Arkansas, (52) 195.
 - winter, for farmers, (52) West.Wash. 397.
- Schools—
- agricultural, *see* Agricultural schools.
 - consolidated, in Great Plains area, (54) 187.
 - Danish folk, organization, (60) 489.
 - folk high, of Denmark, development, (56) 389.
 - manual education in, (52) 396.
 - pioneer manual labor, (52) 96.
 - public, of Philadelphia, (52) U.S.D.A. 562.
 - rural—
 - Arbor Day program for, (55) Mich. 187.
- Schools—Continued.
- rural—continued.
 - elementary agriculture in, (52) 793.
 - financing, (59) 889.
 - high, legal provisions for, (53) 495.
 - high, organization and curriculum, (53) 194.
 - high, type for, (52) 298.
 - improvement by standardization, (53) 396.
 - in Colorado, (54) 85.
 - in France, relation to agriculture, (54) 487.
 - junior projects in, (52) 96.
 - of China, curriculum reconstruction, (55) 691.
 - papers on, (52) 898.
 - preparation of teachers, (53) 396.
 - project in teacher training, (52) 396.
 - rotating units in home and farm mechanics, (59) 187.
 - supervision, effect, (53) 396.
 - uses of auditoriums in, (52) 794.
 - servicing milk in, (55) 471.
 - southern, elementary agriculture for (52) 899.
 - traveling, for farm women, (54) 187.
 - vocational, *see* Vocational.
- Sciara—
- chromosome behavior in, (55) 819; (57) 221.
 - flies, life history and control studies, (58) Pa. 345.
 - similans, selective segregation of chromosomes, (60) 30.
 - sp., relation to potato blight infection, (60) 834.
- Science—
- and milk, treatise, (52) 373.
 - general, treatise, (53) 693.
 - of everyday life, treatise, (53) 693.
 - teaching, treatise, (56) 488.
- Sciences, humanistic and social, research in, treatise, (58) 890.
- Scientific—
- journals, changes in, (60) 499.
 - research, nature and method, course, (51) 705.
- Scirpoids, chromosomes of, (59) 219.
- Scirpophaga auriflua*, parasite of, (58) 666.
- Scirpus*, chromosome studies, (60) 429.
- Scleroderma fuliginosa*, notes, (57) 158.
- Scleropycnium aureum*, notes, (56) Ariz. 745.
- Sclerospora—
- graminicola—
 - conidia, nocturnal production, (51) 650.
 - conidial and oogonial stages, host relations, (59) Iowa 750.
 - notes, (57) 443; (58) 48, 549.
 - on Everglade millet, (60) 51.
 - on millet, (55) Fla. 841.
 - studies, (56) Iowa 846; (59) 342.

Sclerospora—Continued.

- macrospora, notes, (54) 247; (57) 50.
 maydis on corn, (60) 546.
 philippinensis on teosinte, effect, (56) 52.
 production of conidia at night, (53) 542.
 sacchari, notes, (57) 152, 647.
- Sclerostomiasis in Holland, (51) 384.
- Sclerotinia—
 americana, new name, (53) Md. 448.
 americana strains, studies, (55) 844.
 cinerea—
 and *Monilia oregonensis*, relation, (58) 53.
 cause of brown rot, (52) 450.
 control, (59) 245.
 growth, effects of acids and their sodium salts, (58) 24.
 inoculation experiments, (56) 453.
 notes, (51) U.S.D.A. 155; (52) Calif. 49; (54) Can. 149; (57) 752; (58) 657.
 pectinase of, (56) 516.
 strains, notes, (56) 747.
 cydoniae, conidial stage, occurrence in Britain, (57) 746.
 cydoniae, notes, (60) 831.
 fructicola, control, (57) U.S.D.A. 353.
 fructigena, notes, (51) 548; (57) 154; (58) 656.
 intermedia n.sp., description, (56) 350.
 libertiana—
 Manoilov reaction, application, (59) 722.
 notes, (54) 144; (58) 47; (59) 152; (60) Mont. 52.
 on dahlias, (54) 151.
 on lettuce, control, (55) 848.
 on sunflowers, taxonomy, (54) 748.
 on truck crops, (54) Pa. 344.
 oxycocci, notes, (56) U.S.D.A. 454.
 rots of vegetables, (54) 544.
 sclerotiorum, notes, (52) 151; (54) 549; (55) 547; (57) 150, 247, 351; (58) 47.
 sp., biologic specialization in, (57) 353.
 sp., notes, (53) 43; (54) 448; (57) 51.
 spp., control, (51) 152.
 spp., distribution, (60) 551.
 spp., notes, (51) 353; (56) Pa. 50; (57) 345, 649; (59) Fla. 541.
 trifoliorum, notes, (54) 450; (55) Oreg. 650; (59) Wash.Ccl. 47, 640; (60) Wash.Col. 830.
 trifoliorum, studies, (57) 149.
 vaccini-corymbosum, notes, (57) 343.
- Sclerotinias, fruit-rotting, studies, Md., (53) 448; (56) 748.
- Sclerotium—
 bataticola—
 and *Rhizoctonia lamellifera*, identity, (57) 745.
 in Uganda, (55) 543.
 notes, (54) 246; (59) 636; (60) 241.

Sclerotium—Continued.

- cepivorum, notes, (55) 848; (56) 351; (57) 645; (59) 148, 242.
 coffeicolum, notes, (57) 145.
 delphinii, notes, (59) 852.
 delphinii, proposed name, (55) 851.
 monohistum n.sp., studies, (57) 543.
 oryzae, notes, (51) 546; (52) 747; (55) 244; (56) Ark. 347, 852; (57) 546, 639; (58) 550; (60) Ark. 830.
 rhizodes, notes, (54) U.S.D.A. 452, 650.
- rolfsii—
 abortive sporophore of, (55) 844.
 and host plants, (57) 51.
 control, (59) Ga. 236.
 growth studies, (53) Ga. 246.
 notes, (51) 248; (53) 148; (55) N.C. 243, 244, 346; (56) 351; (57) Ga. 244, N.C. 245, 544, 546; (58) 156, Ga. 343, S.C. 646; (59) 246, Fla. 541.
 on peanuts, (59) 447.
 on yautia, (55) 849.
 physiology and parasitism, (59) 843.
 sp. on rubber, (55) 49.
 spp., notes, (55) 445; (59) 540.
 tuliparum, notes, (53) N.Y.Cornell 355; (55) 851; (58) 752; (59) 646.
- Scolopendra spp., notes, (55) Ark. 50
- Scolytids on conifers, list, (54) 662.
- Scorpions—
 combating in central Brazil, (53) 357.
 habits and injury from, (58) 855.
 notes, (55) Ark. 50, 758; (56) 760.
 venom of, action, (60) 555.
 venom of, effect, (53) 157.
- Scotland, rural, during the war, (57) 289.
- Scottish Cattle Breeding Conference, proceedings, (54) 265.
- Scottish Milk Agency, organization and operation, (60) 590.
- Scotts Bluff—
 Experiment Farm, report, (51) U.S. D.A. 197.
 Field Station, work, (58) U.S.D.A. 599.
- Scours—
 in suckling pigs, control, (59) 79.
 in young calves, (53) 182.
- Scraper for cleaning droppings boards, description, (60) Ohio 781.
- Scrapie—
 in sheep, cause, (60) Ky. 266.
 studies, (53) 279; (54) 71.
- Screenings, feeding value, (59) 161.
- Screw worm fly—
 chemotropic tests, (57) U.S.D.A. 167.
 repellents for, (55) 558.
- Screw worms—
 larvicides for, (54) 660, 661.
 repellents for, (54) 661.
- Scripophaga gilviberts, notes, (59) 652.

- Scrotum—
 function, new evidence, (60) 727.
 temperature-regulating function, (56) 522.
- Scurvy—
 alimentary tract in, (57) 691.
 and ultra-violet light, (54) 92.
 appearance, relation to age, (55) 193.
 composition of bones in, (58) 693.
 diets for study, (51) 270.
 effect of pregnancy on, (52) 367.
 effect on structure of testes, (56) 664.
 effect on subsequent nutrition and growth of guinea pigs, (52) 669.
 experimental, in guinea pigs, (59) 295, 597.
 experimental, metabolism in, (53) 164.
 experimental, specific ration for, (56) 696.
 in adults, (59) 896.
 in infants and adults, (60) 197.
 metabolism studies, (59) 597; (60) 96.
 prevention in the navy, (55) 194.
 variation of complement during, (52) 264.
 weight of organs in, (58) 90; (60) 95.
- Scutellum rot on corn, (53) Ill. 851.
- Scutigera immaculata—
 affecting asparagus, (52) Calif. 57.
 as greenhouse pest, (58) 347.
 biology and control, (53) 58.
 control, (53) Calif. 450; (55) Calif. 352; (60) 558, Oreg. 753.
 habits and control, (59) 462.
 in greenhouse soil, control, (60) Pa. 355.
 notes, (52) 459.
 studies, (59) Ohio 249.
- Scythe, use, (52) 488.
- Sea food—
 biological values, (59) 95, 688.
 nutritional value, (56) 793.
- Sea grapes, insects affecting, (60) 557.
- Sea kale root cuttings, regeneration of roots and shoots, (53) 324.
- Sea salts, action on leaf tissues, (57) 515.
- Sea water—
 effect on ropes, (58) 197.
 elimination of iodine from, (53) 201.
- Seal oil, vitamin A in, (51) 565.
- Secale genus, cytology, (59) 821.
- Secalin, definition, (54) 802.
- Secodella subopaca, description, (57) 365.
- Secretions, internal, properties, treatise, (54) 889.
- Sedatives in treatment of botulism, (53) 368.
- Sedimentation—
 bacterial agencies in, (60) 713.
 studies, (53) 824; (60) 713.
 theory of, (53) 16.
 treatise, (56) 619.
 tubes, descriptions, (51) 207.
- Sedum telephium as primary food plant of *Aphis gossypii*, (56) 60.
- Seed—
 analyst, relation to uniform weed legislation, (52) 737.
 and weed control in Wisconsin, (54) 640.
 certification—
 in Germany, (57) 133.
 manual, (55) 740.
 relation to plant diseases, (56) 242.
 summary, (54) 238.
 certified, production, (51) Minn. 134.
 coat, structure and development, (52) 516.
 coats, selective permeability characters in, (54) 818.
 coats, semipermeable, relation to entrance of toxic solutes, (52) 29.
 color of *Linum usitatissimum*, genetic studies, (57) 120.
 control in Wisconsin, (54) 640.
 control service in Denmark, (52) 231.
 control station in Budapest, report, (53) 340.
 disinfectants—
 effects, (58) 746.
 new, (55) 845; (58) 43.
 tests, (53) 646.
 disinfection, (55) 347; (57) N.C. 245; (58) 144.
 drill, equalization of depth of seeding, (60) 584.
 dusting machines, (58) 845.
 grain, machine threshing, effect, (51) 389.
 Growers' Association, Canadian, report, (56) 738.
 growing in Soviet Russia, (54) 132.
 law amended, (54) N.Y.State. 442.
 law, Kansas, text, (54) 738; (57) 633.
 law of Colorado, text, (54) Colo. 37.
 pickler, directions for construction, (56) 350.
 testing, (52) 638.
 and registration in Scotland, (54) 238.
 Congress, International, (51) 500; (54) 238.
 in Denmark, (55) 338.
 in England and Wales, (52) 639; (54) 136; (55) 534; (57) 532; (60) 138.
 in Kansas, (57) 633.
 in Montana, (52) Mont. 638.
 in New Zealand, (54) 136; (56) 40; (57) 532.
 in Pennsylvania, (57) 38.
 in Russia, (53) 535.
 in Sweden, (60) 138.
 laboratory, work of, (51) N.Y. State 39.
 manual, (59) 438.
 methods in Holland, (57) 531.
 rules, (51) N.Y.State 744; (56) U.S.D.A. 531.

Seed—Continued.

- testing—continued.
 station in New Zealand, operations, (59) 632.
 station in Sweden, (56) 640; (57) 830.
 technical regulations in Germany, (58) 638.
 value to the farmer, (51) 39.
 tests, (51) N.H. 39; (52) N.H. 737; (53) N.J. 238; (54) N.H. 834; (55) Me. 137; (56) Vt. 439, N.H. 738; (58) Me. 737, N.H. 737, Vt. 835; (60) N.H. 229.
 tests of market packets, Conn.State, (57) 40; (59) 41.
 treatment, (52) 49; (56) 447, 648, 649.
 biological testing, (56) 649.
 conflicting results, (60) N.Y.State 444.
 dry, in Hungary, (54) 247.
 dry method, (57) 146; (58) 648, 649, 747; (59) 48.
 dust and liquid methods, comparison, (59) N.Y.State 239.
 effect on germination and growth, (57) 219.
 for corn diseases, (58) Iowa 748.
 for crops, value, (57) Nebr. 445; (59) 343.
 for disease control, (53) 43.
 for diseases, physiological action of solutions, (56) 446.
 for pepper diseases, (53) 852.
 for seed-borne diseases, (56) Kans. 349.
 for smut control, (58) 650, U.S.D.A. 650, 746, 747; (60) 240.
 fungicidal, use of powders in, (54) 452.
 injury from fungicides, (58) 144.
 material for cereals, tests, (57) 839.
 of grain, standard and proprietary, (58) 745.
 of grain with continuous dusting machines, (59) 538.
 of grain with electrically controlled hot water, (58) 745.
 rapid pickling method, (60) 547.
 rôle of temperature in, (57) 146.
 stimulating effect, (52) N.J. 726; (58) 747.
 temperature studies, (54) 247.
 tests, (59) 639.
 wet, (58) 648.
 wet, in dry apparatus, (58) 746.
 wetting with minimal proportions of liquid, (60) 547.
 with corrosive sublimate, effect of presoaking, (52) Fla. 242.
 with formaldehyde, water and limewater baths following, (55) 845.

Seed—Continued.

- treatment—continued.
 with mercury preparations, (58) 648.
 Seed-borne infections, control, (53) N.C. 747.
 Seed-corn maggot—
 chemicals attractive to, (51) 162; (55) N.J. 51.
 notes, (53) Iowa 755.
 nutritional studies, (59) 560.
 on tobacco, (55) Conn.State 253.
 relation to potato blackleg, (53) 545; (55) 763; (58) 654.
 studies, (60) Oreg. 753.
 Seedling machines, single grain, development, (56) 80.
 Seedling damping-off, (59) 637.
 Seedling leaves, morphology and physiology, (57) 219.
 Seedlings, channels of transport from storage organs, (51) 627.
 Seeds—
 absorptivity of fungicides by, (56) 447.
 Act of Canada, (53) 238.
 action of high temperatures on, (59) 724.
 aged, precocity in, heritability, (58) 522.
 agricultural, determination of origin, (54) 238.
 agricultural, papers on, (58) 35.
 aleurone layer in, (57) 618.
 analyses, (51) N.J. 641; (53) 139, Iowa 436; (60) 40.
 analyses in New York State, (56) 39.
 and bacteria, symbiosis, (55) 818.
 as carriers of plant diseases, (57) 637.
 buried, vitality, (52) 726.
 Chicago trade in, (51) 298.
 composition, relation to seedling growth, (56) 815.
 diseased, (51) 39.
 dormant, of Xanthium, continuous respiration studies, (56) 516.
 dry, peroxidases in, (58) 524.
 effect of ethylene stimulation, (58) 645.
 effect on pH equilibrium in solution, (53) 828.
 examination, phytopathological, (58) 745.
 forest, fumigating and sterilizing, (53) 243.
 from overseas, effect of voyage on germination, (52) 38; (55) 234.
 germinability, ascertaining without germination, (55) 322.
 germinability, prolonging, (53) 520.
 germinating—
 osmotic pressure, (54) 627.
 oxygen uptake, (58) 818.
 vitamin D formation in, (55) 695.

Seeds—Continued.

germination—

- and chemical stimulants, (58) 535.
- and growth, effect of irradiation, (57) 617.
- catalase variation in, (56) 24.
- depressing effect of treatments, (57) 518.
- effect of different forms of energy, (53) 828.
- effect of fertilizers, (58) 136.
- effect of high pressure, (59) 27, 228.
- effect of light, (54) 724.
- effect of X-rays, (56) 326.
- energy yield in, relation to composition, (53) 827.
- favorable effect of reduced oxygen, (58) 124.
- in absence of calcium, (59) 215, 427.
- minimum temperature, (53) 223.
- papers on, (52) 737.
- physiological aspects, (52) 516; (53) 24; (57) 219.
- rate, effect on later growth, (55) 826.
- relation to catalase, (60) 123.
- relation to temperature, (54) 341; (58) 22, 535; (60) 27.
- under water, (58) 22.
- hard coated, vitality, (58) 36.
- hard, studies, (54) 834; (56) 39.
- health of, (52) 647.
- hybrid, dormancy in, (57) 835; (60) 808.
- imported, U.S.D.A., (51) 733; (52) 520; (53) 728; (54) 821; (55) 818; (56) 326; (57) 220; (58) 25, 627; (60) 125.
- imported, control, (51) 238.
- improvement, symposium, (58) 835.
- impurities and determination of origin, (60) 539.
- in cereal culture, disinfection methods, (56) 749.
- infection with smut spores, studies, (58) 844.
- injury from fungi and insects, (55) 534.
- inspection, (51) Ind. 343; (52) Vt. 638, Ind. 836; (53) Me. 535; (54) Vt. 834; (55) N.J. 235; (56) Ind. 531, Me. 531; (57) Ind. 531, N.J. 532; (59) N.J. 228, Ind. 528.
- inspection in North Carolina, (53) 238.
- inspection, official, results, (51) 39.
- longevity, (52) 340, 638; (54) 238, 442; (55) 740; (60) 228.
- mixture problems, (57) 725; (60) 638.
- moisture determination in, (53) 638.
- neglected, in warehouses, weevil development in, (53) 159.
- nongermination in mother plant, (55) 323.

Seeds—Continued.

- of cereals, pickled, low temperature testing, (58) 745.
- of crops and weeds, key, (58) 433.
- of green manure, germination experiments, (57) 233.
- of Indian forest species, number and weight, (60) 742.
- of New York State, analyses, (54) 738.
- oil, *see* Oil seeds.
- oil determination in, (59) U.S.D.A. 415.
- oils of, extraction, (51) 509.
- origin, determination, (51) 39; (52) 535; (55) 534; (58) 433; (59) 137.
- packet, quality on sale in New York, (51) N.Y.State 238.
- phospholipins in, relation to other constituents, (58) 711.
- planting and treatment of seedlings, (55) 835.
- pretreatment, effect on growth and stimulation, (57) 415.
- production and marketing, treatise, (58) 229.
- pure, work, (60) Mont. 729.
- quality, (51) N.Dak. 836.
- registered and certified, in Wisconsin, (54) 499.
- registered, growing in Alberta, (52) 836.
- selected, for vegetable growers, (54) 835.
- selective absorption of ions by, (54) 817.
- self protection against disinfectants, (60) 524.
- soaking before planting, effect, (60) 640.
- statistics, (51) U.S.D.A. 491.
- sterilization with uspulun, effect, (52) 347.
- stimulants for, (57) 718.
- stimulated, behavior of plants from, (57) 119.
- stimulation, (58) 624, 625.
- stimulation as problem in germination, (57) 517.
- stimulation effects, (55) 125.
- stored, protection from insects, (51) 358.
- suspension of vitality in, (59) 427.
- tropical, viability test, (52) 536.
- vegetable, in packets, quality, (54) N.Y.State 643.
- vegetable, nutritional factors, (58) 738.
- vegetative and reproductive capacity, effect of fertilizers, (58) 530.
- viability, determination by electrical conductivity method, (56) 627.
- viability determination by reagents, (55) 343.
- vitality and distribution, (55) 125.

Seeds—Continued.

- water absorption, effect of temperature, (52) 624.
weed, *see* Weed seeds.
weight relation to plant growth, (51) N.J. 627; (53) N.J. 23; (55) 835; (56) 24.
Seepage losses in canals, measurement, (51) 386.
Segregation—
 in aberrant sweet clover forms, (55) 523.
 in plants, (53) 330.
 in plants and animals, (55) 523.
Seguidilla as citrus cover crop, (55) 644.
Sclanaspidus articulatus, notes, (56) 552.
Selection—
 natural and artificial, theory, (57) 820.
 papers, on, (54) 125.
Selenia tetralunaria—
 eggs, toxicity of 3:5-dinitro-o-cresol, (56) 359.
 toxicity of organic chemicals to, (57) 557.
Selenium compounds, effect on plants, (55) 728.
Self-feeders—
 construction and use, (52) Ohio 770; (57) Ill. 678.
 for calves, (51) 378; (52) 678.
 for cows, (52) Ill. 477.
 for pigs, (51) Mo. 275; (52) Can. 673; (53) Can. 870, U.S.D.A. 870; (54) Can. 62, Can. 270.
 for pigs, value, (51) Ark. 774.
 of simple design and low cost, (59) 586.
 v. hand-feeding for pigs, (52) Can. 874; (57) Nebr. 566.
Self-feeding and self-watering for pigs, value, (56) Nebr. 564.
Semen, undescribed constituent of, (52) 630.
Semesan—
 fungicidal value, (55) 544, Oreg. 651.
 stimulation of seeds by, (60) 149.
Senegin, reaction of protoplasm to, (52) 215.
Senescence, kinetics of, (51) 73.
Senility in plants, (57) 321.
Separators, methods of washing, effect on cream and skim milk, (54) S.Dak. 170.
Septic gangrene in lambs, (54) 477.
Septic tanks—
 description, (53) 591.
 design, factors affecting, (54) Ill. 381.
 efficiency and design, factors affecting, (59) Ill. 381.
 for farm sewage disposal, (56) 81, 385.
 for South African conditions, (57) 782.
 household, tests, (53) 792.
 notes, (55) Mich. 683.
 proposed regulations for, in France, (55) 783.
 studies, (58) Ill. 373.
 2-chamber, notes, (56) Ill. 280.

Septicemia—

- acute, of foxes, (51) Mich. 180.
aggressin, vaccination experiment with, (55) 272.
diseases of swine, diagnosis, (58) 75.
hemorrhagic—
 bacteria, comparative study, (55) 174.
 immunization, (53) 382; (56) Ill. 276.
 in cattle in India, (56) 477; (58) 472.
 in livestock, (60) Oreg. 776.
 in swine, (60) 873.
infection experiments, (51) N.Dak. 881.
 notes, (54) Nebr. 379.
 organisms, characteristics and development, (51) Nebr. 879.
 organisms, correlations between, (53) 679.
 studies, (51) S.Dak. 480, 582.
of a fowl, perfect recovery from, (51) 384.
of *Bacillus abortus* in man, (58) 673.
of cutworms in Russia, (59) 858.
of ducks, paper on, (59) 370.
of foals, (59) 780; (60) Ky. 266.
of fowls, (57) N.J. 79.
of silkworms, (59) 858.
Septobasidium spp., outbreak on tea, (57) 354.
Septogloeum—
 arachidis, notes, (55) 245.
 cydoniae, notes, (54) 247.
Septoria—
 acanthina, notes, (54) 247.
 antirrhini, notes, (53) 550.
 apii, achromatic variations in, (60) 642.
 apii, notes, (57) 643; (59) Ohio 447, 534, 536, Mich. 542.
 callistephi, notes, (56) 54.
 cirsii, notes, (58) Ohio 434.
 disease of cereals and grasses, (52) 448.
 gladioli, notes, (56) 549, 551; (58) 443.
 glycines, life cycle, (53) N.C. 746.
 glycines, notes, (54) Del. 647; (55) 752; (56) Del. 348.
 heliianthi, notes, (56) 51; (57) 351.
 hypochoeridis n.sp., description, (60) 29.
 lactucae, notes, (59) Fla. 541.
 lavandulae, notes, (56) 748.
 leucantheri, notes, (58) 659.
 lycopersici, notes, (51) 353; (52) U.S.D.A. 548, N.J. 744; (57) 640; (58) 647.
 lycopersici, relation to temperature and humidity, (56) 247.
 oligocarpa n.sp., notes, (57) 653.
 paenoniae berolinensis, notes, (54) 51, 144.

- Septoria—Continued.
 petroselinii apii, notes, (53) 147; (54) 144.
 rubi, notes, (55) Oreg. 650.
 secalis, notes, (57) 343.
 sp., control, (51) 152.
 spp., notes, (54) Wis. 248, 449.
- Sequoias—
 as climatic measure, (53) 614, 615; (54) 24.
 popular account, (54) 447.
 treatise, (52) 345.
- Serapis, value against liver fluke, (58) 577.
- Serica brunnea, notes, (59) 561.
- Sericite as source of potash, (51) 22; (56) 322.
- Sericopelma communis, notes, (55) Ark. 50.
- Sericothrips gracilipes n.sp., description, (51) 762.
- Sericulture, *see* Silk and Silkworms.
- Serology and microbiology, technique, (54) 71.
- Serphoidea, synopsis, (51) 764.
- Serradella—
 behavior, (51) N.C. 832; (52) Fla. 224.
 effect of acid soil, (54) 213.
 spray irrigation for, (52) 287.
- Serratia marcescens, studies, (52) N.Y. State 519.
- Serum—
 adsorption of indicator in pH determination, (53) 610.
 calcium determination in, (53) 505.
 diagnosis for study of relationships, (57) 318.
 diagnostic studies of Rosales, (53) 424.
 precipitation reaction, multiple zones in, (60) 73.
 preparation, (57) 378.
 proteins and formaldehyde, reaction between, (52) 801.
- Sesame—
 notes, (55) Calif. 331.
 oil, composition, (51) 607.
 oil determination in margarins, (51) 411.
 oil, sulfuric index, (52) 411.
 seed, proteins of, (58) 409.
 wilt, notes, (60) 546.
- Sesamia nonagrioides, parasite of, (57) 451.
- Sesamum—
 indicum varieties in Turkestan, (53) 36.
 inheritance studies, (59) 223.
 root disease, notes, (57) 639.
 wilt disease in India, (58) 241.
- Sesbania—
 aculeata as green manure and cover crop, (52) 732.
 seeds poisonous to chickens, (58) 97.
- Sesia, *see* Aegeria.
- Setaria—
 digitata n.sp., notes, (53) 760.
 in eyes of horses, (56) 678.
 italica, inheritance in, (53) 831.
 spp. parasitizing equines, (52) 85.
- Setora nitens, parasite of, (52) 554.
- Sewage—*see also* Sludge, Tannery waste, *etc.*
 analysis and interpretations, (53) 288.
 analysis, standard methods, (55) 410.
 chlorination for odor control, (60) 381.
 dairy waste, disposal, (55) 683.
 disposal—
 and water supply on farms, (56) W.Va. 81.
 at Jamshedpur, (52) 215.
 biology, (52) 786.
 biology, N.J., (51) 658, 685, 687; (52) 890; (54) 584; (55) 281.
 farm, (51) Calif. 89; (53) 487; (56) 779; (58) 184, Mo. 481.
 farm, septic tanks for, (56) 81, 385.
 home, treatise, (53) 188.
 papers on, (59) N.J. 379.
 plant, Bacillus coli and B. aerogenes reduction in, (58) 585.
 plant, bacteriological study, (52) N.J. 188.
 rural, in England, (58) 797.
 studies, (52) 389.
 summary, (57) 187.
 system, tile and septic tank, (51) Mich. 96.
 systems, (52) 786.
 systems for Florida rural homes, (56) 483.
 systems for rural homes, (57) 477.
 farm, description, (56) 779.
 farm, experimental, at Lyallpur, (54) 482.
 farm, measurements of flow, (54) Ill. 382.
 farm, municipal, in India, (55) 180.
 filter, protozoan fauna, (53) 288.
 industrial waste, treatment, (60) 676.
 irrigated areas, studies, (53) 683.
 problems, solving, treatise, (57) 782.
 purification—
 activated sludge process, (51) Wis. 423.
 studies, (58) 378.
 technique, (51) 889.
 research, (57) N.J. 82.
 screenings, digestion, (58) 683.
 settling tank design, studies, (58) 683.
 sludge, aerobic decomposition, (53) 87.
 sludge digestion, gases from, (59) 283.
 sludge, fertilizing value, (52) 121; (55) Tex. 321.
 solids digestion, carbon and nitrogen changes in, (59) 179.
 solids, fresh, seeding, (59) N.J. 380.
 solids in Imhoff tanks, (57) 188.

Sewage—Continued.

- substation, report, (57) N.J. 779.
 - tank gases, studies, (56) 82.
 - treatment, chemistry of, (60) 204.
 - treatment plants, digestion of vegetable wastes, (59) 379.
 - utilization for agriculture, (54) 815.
- Sewer pipe design, Kutter's n determinations, (53) 890.
- Sewer trench width, relation to load on pipe, (51) 89.
- Sewerage systems for farm homes, (52) 587; (55) 394.
- Sewers partly full, velocity of flow in, (51) 386.

Sewing—

- at home, present trends, (58) U.S.D.A. 299.
- at home, simplifying, (54) 189.
- clubs, outlines of exercises, (51) 494.
- essentials, textbook, (52) 696.
- Government master specifications for stitches, seams, and stitching, (59) 98.
- handbook, (55) 394.
- manual, (52) 794.
- materials, treatise, (53) 496.

Sex—

- as factor in beef production (54) 267.
- cells of the chick, studies, (55) 734.
- change in papayas, (59) 821.
- characteristics, secondary, and interstitial glands, (53) 525.
- characters, mechanism of development, (58) 426.
- characters, secondary—
 - effect of follicular hormone, (55) 822.
 - function, (51) 230.
 - in fowls, determination, (53) 130, 632.
- chemical test for, (57) 761.
- chromosomes—
 - and sex determination, (53) 731.
 - in dioecious plants, (56) 27.
 - in fowls, linkage relations in, (54) 325.
 - in fowls, topography, (57) 30.
 - in monkeys, (51) 334.
 - treatise, (60) 325.
- control in rabbits, possibility, (53) 731.
- determination—
 - and differentiation, (53) 524.
 - and differentiation in cattle, (54) 265.
 - at hatching in fowls, (60) 728.
 - by Manoloff test, (58) 827.
 - in animals, (55) 636; (59) 128.
 - in Cladocera, (54) 229.
 - in plants, (57) 326.
 - in plants, time of, (54) 128.
 - regulation of growth and quantitative theory, (58) 827.
 - review, (53) 731.
 - studies, (51) 527; (55) 226; (56) 730.
 - theoretical explanations, (51) 430.

Sex—Continued.

- difference in linkage in rats and mice, (56) 130.
- differences of protein in animals and plants, (58) 566.
- differentiation in bees, (53) 655.
- differentiation in fowls, (54) 825.
- effect on rate and economy of gain in cattle, (59) Nebr. 863.
- expression in flowering plants, (51) 527.
- function in fowls, determination, (60) 430.
- glands and metabolism, (53) 665; (54) 562; (55) 765, 766.
- glands, function, effect of undernutrition, (51) 566.
- glands in hens, embryogenesis, (59) 522.
- hormones, effect on erythrocytes and hemoglobin in fowls, (56) 769.
- in fowls, Mendelian nature of, (55) 431.
- in hemp, (54) 728; (58) 426.
- in pigeon hybrids, (55) 821.
- in plants and animals, comparison, (55) 822.
- in plants, change of, (56) 815.
- in sheep, (51) 736.
- in the strawberry, (53) 536.
- inheritance and fertility, treatise, (58) 320.
- inversion in the hen, (57) 625, 626.
- linkage in canaries, (56) 818.
- physiology, introduction, treatise, (54) 431.
- preponderance in sire's offspring, (60) Ill. 221.
- ratio—
 - abnormality in *Drosophila obscura*, (60) 634.
 - and control in animals, (54) 29.
 - and fertility, effect of X-rays, (54) 528.
 - changes in, factors affecting, (54) 526.
 - in fetuses in pigs, (55) 635.
 - in *Gambusia*, (60) 634.
 - in mammals, (51) 230; (57) 30.
 - in man, (56) 32.
 - in man and horses, effect of polygyny, (55) 635.
 - in man, seasonal variations, (51) 335.
 - in mice, (53) 732; (55) 226.
 - in mice and rats, effect of alcoholization, (56) 32, 227; (60) 33.
 - in mollusks, (57) 223.
 - in *Peromyscus*, (60) 634.
 - in poultry, (51) 230.
 - in sexual and parthenogenetic species, (57) 553.
 - of offspring of alcoholized male mice, (60) 812.
 - seasonal, in pigs, (56) 71.
 - studies, (51) 633, 634; (52) 629, 630; (58) 221.

- Sex—Continued.
 reversal—
 complete, in adult pigeon, (52) 129.
 following ovariectomy in fowls, (53) 832.
 in animals, (58) 529.
 in birds, (53) 30.
 in fowls, (55) 165; (58) 827.
 in hemp, (54) 527; (60) 626.
 in sweet corn, control, (60) 526.
 in *Xiphophorus helleri*, (60) 325.
 sterility and diminutive copulatory organ in fowls, (60) 129.
 transition in *Arisaema japonica*, (56) 33.
- Sexes—
 biochemical differences in molds, (57) 124.
 biochemical separation, (59) 518.
 differential death rate among animals, (53) 525.
 in *Drosophila*, temperature and time of development, (58) 220.
 in *Mucors*, biochemical differences, (55) 520.
 in plants, biochemical differences, (59) 620.
 nutritive needs during growth, (51) 459.
- Sexual activity rhythm in rats, (51) 132.
- Sexual cycle—
 effect of hysterectomy, (58) 630.
 in rats, effect on activity, (51) 528.
- Sexual—
 dimorphism in *Mercurialis annua*, (56) 517.
 maturity in male rats, (51) 528.
 states, secondary, nature and cause, (57) 26.
- Sexuality—
 abnormal, in animals, (56) 224.
 and heredity fundamentals, (57) 722.
 in plants, papers on, (58) 220.
 premature, in farm animals, (60) 464.
- Sexually mature condition in immature females, induction, (52) 130.
- Shad body oil, vitamin A potency, (57) 894.
- Shading, effect on vegetables, (51) Ohio 441.
- Shamrock, effect of altering length of day, (55) 629.
- Sharāqi land, soil temperature in, (51) 722, 723.
- Shasta daisy disease, (60) 837.
- Shasta daisy leaf blotch, (58) 659.
- Sheep—*see also* Ewes, Lambs, *etc.*
 administration of draughts to, (58) 676.
 Ancon, description, (55) 732.
 as grazing animal and test of productivity of pastures, (58) 667.
 Asiatic breeds, (51) 670.
 black disease, cause, (60) 871.
 Blackface, types of fibers in, (52) 170.
 blackhead Persian, primitive coat, (59) 662.
- Sheep—Continued.
 blowflies—
 control, (54) 660; (55) 762.
 in domesticated animals, (53) 159.
 in South Africa, distribution, (60) 562.
 studies, (58) 61; (60) 60.
 botfly, *see* *Oestrus ovis*.
 breeding, (51) Tenn. 374; (52) 169; (54) Can. 61, Pa. 363; (55) N.H. 863; (57) N.H. 367, 764; (59) 221.
 age and season, (55) Can. 360.
 and wool production in Peru, status and prospects, (59) 96.
 experiments of Bell, (51) 526.
 for fleece improvement, (56) 70.
 for taillessness, (56) S.Dak. 561.
 Hampshire v. Rambouillet rams for, (60) Mont. 761.
 in Oberhessen, (51) 275.
 results, (51) N.H. 129.
 scrub v. purebred ram for, (53) Okla. 68.
- breeds—
 and management, (54) 268.
 British, fleece fibers, (59) 194.
 comparison, (56) 763.
 in Rumania, (55) 768.
 care and management, (53) Okla. 467; (59) W.Va. 163.
 club, manual, (52) 794.
 coarse-wooled, development in Russia, (56) 764.
 color inheritance in, (53) 228; (60) 324.
 Corriedale, adaptation, Tex., (57) 170; (59) 764.
 cost of feeding, (51) Can. 172.
 cost of production, (60) Ohio 83.
 costs and profits on irrigated farms, (53) Oreg. 894.
 crossbred, inheritance of size and conformation, (59) N.H. 220.
 crossbreeding, (56) Pa. 164.
 cryptorchid testes of, (54) 826.
 culling on basis of live weight, (60) Mont. 761.
 dietetic diseases, under Australian conditions, (59) 170.
 digestion and metabolism on mixed hay, (58) 565.
 digestion trials, (58) Ill. 356.
 dips, tests, (55) 876.
 disease, braxy-like, in Victoria, (57) 875.
 diseases—
 and pests in South Africa, (54) 477.
 in South Australia, (59) 171.
 notes, (51) 481, 681; (56) Utah 571; (59) 471, 577.
 parasitic, (60) 867.
 prevention, (57) 379.
 earless and short-eared, inheritance in, (53) 729.
 experiments, (51) N.Dak. 870; (58) Can. 565, U.S.D.A. 567.

Sheep—Continued.

- fattening, production requirement, (57) 763.
 feeder, Turrefield automatic, description, (59) 883.
 feeding—
 and breeding experiments, Can., (59) 160; (60) 564.
 and management, (55) Minn. 285.
 and management, effect on wool, (56) 562.
 and nutrition experiments, (56) Ill. 263.
 experiments, (51) Kans. 74, Okla. 572; (52) Calif. 72, Ind. 170; (53) U.S.D.A. 370, Can. 868, Can. 869; (54) Ky. 362; (55) 60, Ohio 160, 259, Can. 360, Tex. 360, Oreg. 665; (56) Ill. 367, 374, Ind. 562; (57) Calif. 268, Mo. 460; (58) Ind. 267, 565; (59) N.Dak. 865; (60) Ill. 257, Mont. 761.
 fertility in, (53) 667; (56) 668.
 fertility in, effect of meteorological factors, (56) 508; (59) 314.
 fleece, evolution in, (59) 662.
 freshly shorn, attacked by birds, (51) 550.
 gastro-intestinal parasites, control, (53) Ohio 584.
 goiter control in, (56) Mont. 173.
 grazing, effect on hay crop, (58) 267.
 Gromet pattern in, inheritance, (51) 734.
 hair fineness in, (54) 859.
 halfbred, segregation in, (55) 330.
 hookworm, development, (58) 775.
 immunization against anthrax, (55) 272.
 in North Wales, parasites of, (55) 271, 274.
 industry—
 economic situation, (57) 660.
 in British Columbia, (58) 267.
 in Canada, (53) 868.
 relation to tariff, (54) 186.
 studies, (58) Kans. 463.
 world's, (51) U.S.D.A. 772.
 inheritance in, (53) Okla. 427, Wyo. 630; (54) 224.
 inheritance of colors and patterns in, (58) 94.
 inheritance of horns in, (55) 732.
 inoculation with bovine Anaplasma, (53) 182.
 internal parasites of, (53) 183.
 introduction into New Zealand, (51) 374.
 Italian, breeds, (52) 370.
 lamb, mutton, and wool statistics, (51) U.S.D.A. 491.
 leather, chrome and vegetable tanned, (59) 694.
 lice, control and eradication, (58) U.S.D.A. 858.
 liver flukes in, (58) 279; (59) 475.

Sheep—Continued.

- losses in feed lots, Colo., (55) 270; (56) 878; (59) 271.
 losses in Idaho, causes, (54) 173.
 lung affection, (58) 474.
 lung disease, (54) Mont. 379.
 maggot flies—
 biological control, (57) 160.
 introduction into France, (59) 657.
 notes, (58) 163.
 maggots, Australasian, parasite of, bionomics, (60) 656.
 maintenance, requirement, (57) 68.
 management, (52) Kans. 467.
 management in southwest Virginia, (53) Va. 68.
 management on the range, (57) 660.
 manure, value, (57) Ohio 115.
 market classes and grades, (55) U.S. D.A. 562.
 marking problem, (56) 95.
 Merino—
 absence of uniformity in growth of fleece, (57) 867.
 horn development, effect of castration, (56) 663.
 kemp fiber in, (54) 268.
 v. East Prussian, meat and wool production, (54) 268.
 white as dominant color, (56) 428.
 mortality in Victoria, causes, (59) 170.
 muscle parasite, (59) Wyo. 272.
 nasal fly, summary, (54) 157.
 necrosis in musculature and myocard, (60) 574.
 new anthelmintic for, (57) 872.
 nutrition studies, Ill., (54) 361; (57) 68.
 on Australian wheat farms, management, (54) 466.
 on pasture, time used in foraging and resting, (52) 868.
 parasites—
 carbon tetrachloride for, (58) Ill. 367.
 in Pennsylvania, prevention and control, (60) 872.
 studies, (60) 75, Mont. 772.
 pasturage for, Nev., (56) 264; (58) 65.
 pasture values and methods for, (56) Kans. 865.
 pasturing, (57) U.S.D.A. 565.
 pasturing along irrigation canals, (51) N.Dak. 870.
 pasturing in forest reserve, (54) Can. 61.
 Piebald, and their crosses, (56) 32.
 piebald pattern in, genetic composition, (56) 818.
 poisoning—*see also* Livestock poisoning, Plants, poisonous, and specific plants.
 by chokecherry, (55) Nev. 371.

Sheep—Continued.

- poisoning—continued.
 by greasewood, Nev., (59) 876, 877.
 by milkweed, (60) 478.
 by silvery lupines, (54) Wyo. 772.
 by western chokecherry, (59) Nev. 275.
 pox encephalitis, (59) 173.
 pox virus, transformation into vacinia virus, (58) 474.
 practice in Ohio, (59) 470.
 pregnancy disease, (58) 878.
 prices, index numbers, (59) N.Dak. 885.
 production, (53) 68; (54) Colo. 268; (60) Miss. 856.
 and prices, trends, (55) 786.
 experiments, (56) S.C. 561.
 foreign and domestic, (58) 865.
 in Australia, (55) 60.
 in central Alberta, (56) 763.
 in Minnesota, (52) 870.
 in New Hampshire, (51) 772.
 in Red River Valley, (56) Minn. 560.
 in South Africa, (51) 772.
 in South Carolina, (53) 272.
 in southeastern Ohio, (55) Oh. 80.
 need of care in flock management, (59) Mich. 99.
 relation to climate, (52) 870.
 survey, (53) N.Dak. 272.
 treatise, (57) 661.
 projects in Corn Belt, (53) 571.
 race characteristics, (54) 564.
 Rambouillet—
 quality of fleece, (57) Okla. 565.
 weight of fleece, (57) Tex. 170.
 wool studies, (57) Wyo. 367, 762, 763; (60) U.S.D.A. 465.
 ranches, management, costs, and returns, (57) Wyo. 681.
 ranches, return on investment, (57) N.Mex. 680.
 ranching in Utah, (58) Utah 783.
 range, fleece weights, factors affecting, (51) Tex. 75.
 range, food of, (58) 166.
 range, management in New Mexico, (52) 870.
 ratio of births and slaughter, (53) 167.
 rations for, (53) Okla. 66.
 rectal temperatures, (59) 864.
 reticulo-endothelial system of, (60) 574.
 reversed badger-face pattern in, (56) 28.
 Romanov, selection, (59) 865.
 Romney-cross, breeding, (54) 161.
 salt consumption, (55) Iowa 666.
 scab, control, (55) 876.
 scab, infectivity of kraals, (52) 84.
 scab mite, life history studies, (59) Tex. 759.

Sheep—Continued.

- scab mite, studies, Tex., (54) 379; (57) 160.
 scab, notes, (54) 171; (57) 278.
 sex in, (51) 736.
 shearing methods, (52) 672.
 shearing once and twice a year, Tex., (55) 361; (57) 170; (59) 764.
 silage production for, (58) Nev. 65.
 skeletal development in, (56) 764.
 soft and stiff hair in faces, inheritance, (54) 127.
 Southdown, history, characteristics and management, (52) 870.
 specific disease in, cause, (54) 678.
 stiff wool tuft on rump, inheritance (54) 127.
 stomach worms in, *see* Stomach worms.
 surface area, check formulas, (60) Ill. 258.
 testes, experiments on, (53) 428.
 ticks, eradication, (54) Wyo. 773.
 toxic action of *Stachys arvensis* on, (53) 888.
 urine, analysis, (60) Ky. 266.
 viscera, composition, (52) 159.
 Wallachian, milk productiveness, (53) 881.
 water consumption, (57) 762.
 weight of fleece, relation to skin folds, (59) Tex. 764.
 Welsh Mountain, fertility and sex ratio, (57) 460.
 Wensleydale, inheritance in, (52) 332.
 winter fattening, (58) 764.
 wool characters inheritance, (51) 526.
 Sheetings, wide cotton, analysis, (60) 198.
 Shellfish, nutritive value (55) 889.
 Shelter belt—
 investigations (52) U.S.D.A. 527.
 plantation, tests, (56) Mont. 138.
 Shelton, E. M., editorial note, (59) 706.
 Shepherd's purse—
 heterozygous phenotype in, (57) 121.
 inherited pollen sterility in, (57) 824.
 Sherbets—
 bacterial content, (60) 573.
 manufacture, (56) N.Y.State 189.
 manufacture, defects in, (57) 466.
 Shingles—
 asphalt, testing, (55) 682.
 types, comparison, (60) Pa. 342.
 Ships carrying fruit, refrigeration conditions, (57) 139; (60) 551.
 Shisham, ensiled, for dairy cows, (55) 67.
 Shivers in sheep, (59) 171.
 Shoe leather, properties, (55) 494, 897.
 Shoeing of domestic animals, (55) 70.
 Shoes, leather, selection and care, (57) U.S.D.A. 298.
 Shoes made of chrome leather vegetable-tanned leather, (51) 614.
 Shorea robusta, *see* Sal.
 Shot-borer beetle, trapping, (57) 862.
 Shot-hole borer—
 on cherries, (52) West.Wash. 56.
 on grapevines, (59) 658.

- Shot-hole borer—Continued.
 on Hevea, (53) 259.
 on tea, control, (54) 157; (57) 761.
- Shot-hole disease, studies, (60) 552.
- Shredded wheat biscuits, irradiated, effect, (53) 568.
- Shrews, American long-tailed, taxonomic review, (60) U.S.D.A. 158.
- Shrimp muscle, nitrogen distribution and percentages of amino acids, (54) 408.
- Shrimps, vitamin A in, (52) 65.
- Shrubs—
 and flowering trees, handbook, (56) 443.
 and trees, hardy, in North America, manual, (57) 142.
 and trees of California gardens, treatise, (56) 346.
 and trees of Panama Canal Zone, handbook, (53) 540.
 and trees of Rocky Mountain region, identification, treatise, (57) 142.
 and trees, ornamental, treatise, (53) 41; (59) 142.
 and trees, propagation, treatise, (58) 142.
 chlorosis of, (57) Idaho 750.
 cultivation, treatise, (57) 242.
 culture, (60) 235.
 culture, treatise, (52) 642; (58) 142.
 for green manure in Bombay, (59) 513.
 for Minnesota, lists, (51) Minn. 141.
 germination studies, (52) 516.
 hardy, for landscape planting, (55) Mich. 240.
 hardy in British Isles, (53) 243.
 identification, handbook, (53) 243.
 identification in Florida, (54) 541.
 insects affecting, (59) Conn.State 56.
 insects affecting in Pennsylvania, (56) 458.
 of British Columbia, identification and uses, (55) 241.
 of Indiana, (52) 444.
 of Siam, list, (51) 243.
 ornamental, propagation, (53) Wis. 438.
 propagation by cuttings, (57) 137.
 pruning, (53) N.J. 345.
 pruning, treatise, (55) 539.
 vegetative reproduction, (57) 138.
- Shume Forest Reserve, reafforestation with cedar, (52) 444.
- Sickness in rural areas, survey, (59) N.Y. Cornell 388.
- Sida spp. as weed in Cuba, (54) 239.
- Sieve tubes, function, (57) 23.
- Signiphora pulchra, notes, (52) 557.
- Silage—
 alfalfa, preparation, (51) Wis. 467.
 analysis, methods, (55) 410.
 and hay, proportions for long yearling steers, (52) Wash.Col. 767.
 and silage costs, (54) Miss. 685.
 and silos, (55) Okla. 463.
 and silos, treatise, (58) 761.
- Silage—Continued.
 apple pomace, feeding value, (57) Idaho 666.
 as fodder in western India, (54) 663.
 bacteriology, (52) 376; (60) 852.
 beet pulp and tops, composition, (52) U.S.D.A. 267.
 cane, feeding value, (51) Kans. 74.
 cane, utilization by cows of grain in, (58) Okla. 269.
 cane v. kafir for milk production, (59) Okla. 666.
 careless weed, notes, (53) Ariz. 433.
 changes in chemical composition, (52) 268.
 clover, production, (60) Minn. 132.
 composition and characteristics, (54) 857.
 composition and value, (54) 560.
 conservation in Germany, (54) 560.
- corn—
 and soy bean, feeding value, Iowa, (53) 779; (55) 569.
 cost of production, (59) Wis. 483.
 destruction of vitamin C in, (55) 503.
 early maturing v. late maturing for, (58) Ill. 362.
 feeding value, (51) U.S.D.A. 171, Wash.Col. 171, Can. 578; (52) Utah 80, Ind. 169, Miss. 169; (54) Wyo. 759; (55) Va. 67.
 feeding value compared with hegarí, (54) Ariz. 358.
 feeding value for breeding ewes, (59) Wis. 67.
 fermentation changes in, (54) 856.
 immature, feeding value, (56) Ill. 271.
 loss of juice from, (53) Ohio 572.
 loss of nutrients in, (51) Mo. 373.
 net energy value, (57) 562.
 stover, digestibility, (54) Ill. 357.
 stover, v. corn, Mich., (51) 171; (52) 369.
 v. corn and soy bean, feeding value, (52) Miss. 169.
 v. mangels for dairy cows, (54) Can. 473; (57) Okla. 569.
 v. Napier grass, Fla. (55) 870; (60) 174.
 v. oat, pea, and vetch, (54) Can. 473.
 v. roots and corn silage for milk production, (54) Can. 274.
 v. sorghum, feeding value, (52) Fla. 275, S.C. 577.
 v. sunflower, (53) Can. 674, Can. 867; (54) Can. 474; (59) W.Va. 166.
 v. swedes for ewes, (56) Wis. 763.
 v. sweet clover, (54) Can. 473.
 v. sweet clover pasture for sheep, (58) U.S.D.A. 567.

Silage—Continued.

- corn—continued.
 value for milk production, (53) Can. 674.
 yields and costs, (59) Wis. 33.
 cost of making, (54) Mo. 782.
 crops—
 and leguminous hay crops, comparison, (55) Fla. 824.
 and methods, new and old, (55) 767.
 comparison, (53) Can. 530.
 seeding experiments, (53) Can. 530.
 tests, (55) Miss. 636; (56) Fla. 821.
 under irrigation, yields, (57) U.S.D.A. 524.
 variety tests, (60) Oreg. 731.
 yields, (51) Nebr. 831.
 cutter design, factors involved in, (55) 882.
 cutters, cost of operating with electricity, (58) Mich. 485.
 cutters, tests, Wis., (53) 483, 486.
 cutting with electric motors, (59) 883.
 darso, digestibility, (53) Okla. 168.
 digestive trials, (59) Iowa 72.
 disease in cattle, (55) N.Dak. 575.
 drainage liquids, composition, (51) 273.
 dry stover, feeding value, (56) Ill. 366.
 effect on pregnant ewes, (53) Can. 869.
 experiments at Nagpur, (56) 666.
 experiments with, (51) Wis. 467.
 feeding value, (51) Kans. 274, N.Dak. 869; (52) 276; (55) 267, N.Dak. 564; (56) 471.
 feeding value for wintering cattle, (56) Oreg. 365.
 from legumes with corn and cane, (53) Ark. 465.
 from mixture of Sudan grass and legumes, (52) 68.
 grass, analyses, (52) 167.
 grass, feeding value, (57) 66.
 green forage, composition and feeding value, (52) 167.
 in England, (57) 661.
 Japanese cane, feeding value, (54) Fla. 372.
 kafir and cane, comparison, (57) Okla. 569.
 kafir, utilization of grain in, (58) Okla. 269.
 losses in wooden tower silo, (57) 168.
 making and feeding, (57) 882.
 making, changes during process, (51) 669.
 moldy, effect on livestock, (51) 382; (53) Minn. 465.
 monograph, (60) 358.
 Napier grass, feeding value, (54) Fla. 372.
 Napier grass v. Japanese cane, (52) Fla. 275.

Silage—Continued.

- nutrients and energy in, (57) 659.
 oat and pea, feeding value, (60) Mont. 769.
 oat and pea v. sunflower, for cows, (56) Mont. 169.
 oat and tare, feeding value, (52) 375.
 oat, pea, and vetch, feeding value, Can., (51) 578; (53) 879.
 oat, pea, and vetch v. corn, (54) Can. 473.
 oat, pea, and vetch v. sunflower, Can., (54) 267; (55) 358.
 oat v. sunflower, for fattening steers, (53) 67.
 plants, electrical, construction and operation, (53) 168.
 potato, feeding value, (52) U.S.D.A. 78.
 problem in southeastern area, (59) Ohio 731.
 problems, (51) 34.
 process of making in clamp silo, (55) 463.
 process of making in stacks, (55) 463.
 production and feeding, (53) Mo. 66.
 production, changes in, (53) Wis. 65.
 production for sheep, (59) Nev. 865.
 quality for milk production, (57) Pa. 176.
 rot, new type, (56) Wis. 761.
 ryegrass and clover stack, nutritive value, (55) 464.
 sorghum, feeding value, (52) Miss. 169; (59) 162.
 sorghum v. corn for milk production, (58) S.C. 671; (59) Ariz. 570.
 sorghum v. sunflower, (54) 564.
 sorgo, as roughage for calves, (59) U.S.D.A. 66.
 sorgo, tests, (53) Nebr. 434.
 stack, nutritive value, (55) 464.
 studies, (54) P.R. 672; (55) 861; (56) Kans. 871.
 Sudan grass, optimum stage of growth for, (54) 856.
 • summer, (55) Iowa 569.
 summer, as pasture supplement, (53) Iowa 779.
 sunflower—
 composition and digestibility at different stages, (52) Ill. 79.
 feeding value, (51) Can. 578; (52) Calif. 78, Ill. 79, Ill. 80, Miss. 169, Mont. 477; (53) Ariz. 769, Mont. 772, Can. 878, Can. 879; (60) Mont. 769.
 fermentation changes in, (54) 856.
 quality relation to acidity, (52) Mont. 69.
 v. corn, (51) Can. 579; (52) Can. 375; Wash.Col. 767; (54) Can. 474; (56) N.Y.Cornell 336.
 v. oat and pea for cows, (56) Mont. 169.
 v. oat, pea, and vetch, Can., (54) 267; (55) 358.

Silage—Continued.

- sunflower—continued.
 - value for milk production, (53) Can. 674.
 - weight and lateral pressure, (56) Mont. 281.
- sweet clover, feeding value, N.Dak. (51) 876; (55) 570.
- sweet clover, v. corn, (54) Can. 473.
- tests with steers, (59) N.Dak. 864.
- utilization of grain in, (58) 865.
- v. straw, feeding value, (51) Kans. 74.
- v. swedes for milk production, (56) 671.
- value for milk production, (51) Nebr. 876; (54) Ind. 373.
- value in experimental ration for cows, (59) 667.
- Silana farinosa*, life history and habits, (56) 64.
- Silani, new cover and forage crop, (53) 137.
- Silene, growth in artificial light, (51) 25.
- Silica—
 - and electrolytes, interaction, (54) 417.
 - buffering effect on magnesia induced toxicity, (53) 517.
 - cause of yield-increasing action, (54) 218, 219.
 - dishes, effect on potassium determinations, (59) 413.
 - effect on availability of phosphoric acid, (52) 212.
 - gel, recovery of nitrogen oxides by adsorption on, (54) 318.
 - in feeding stuffs, (54) 857.
- Silicate—
 - rocks, potash-bearing, use as fertilizers, (51) 327.
 - soils, weathering products, decomposition, (60) 509.
- Silicic acid—
 - action in presence of phosphoric acid deficiency, (54) 722.
 - rôle in plant nutrition, (51) 523.
- Silicon—
 - determination, sources of error in, (52) 614.
 - fertilizing value, (56) 323.
 - in tissues, determinations, (51) 612.
- Silk—
 - acetate, and its dyes, treatise, (57) 598.
 - action of acids and alkalis on, (60) 496.
 - action of microorganisms on, (55) 696.
 - and rayon properties, comparison, (55) 696.
 - artificial—
 - dyeing, (56) 898.
 - papers on, (54) 493.
 - review of literature, (54) 697.
 - studies, (54) 897.
 - tenacity and elongation, (57) 297.
 - treatise, (55) 796.
 - types, identification, (57) 96, 899.

Silk—Continued.

- Association of America, report, (56) 95.
- broad, manufacture and tariff, (55) 195.
- changing uses, (60) U.S.D.A. 497.
- degumming, methods, (60) 597.
- dyed, testing for fastness to perspiration, (60) 298.
- effect of dry cleaning, (56) 95.
- eri, origin, characteristics, and preparation, (59) 897.
- fabrics, dissecting and calculating, (54) 697.
- fabrics, weighted, effect of sunlight and perspiration, (60) 598.
- fastness of dyes on, (54) 597; (59) 796.
- fiber, weighting with tin, process, (54) 298.
- fibers, rusty brown discoloration, (58) 392.
- from Uganda, degumming tests, (56) 823.
- industry in central China, (54) 493.
- industry of South China, (53) 558.
- industry, use of waste products for poultry feed, (59) 362.
- inflammability test, (54) 298.
- insulation resistance, effect of humidity, (60) 696.
- isoelectric point, determination, (56) 712; (59) 694.
- manufacture, rôle of chemistry in, (55) 597.
- microorganisms on, (55) 195.
- mildew effect on, (59) 196.
- new acetate, properties, (58) 394.
- production in Germany, (60) 844.
- protective agents against action of alkali, (60) 599.
- raw, classification, (54) 298; (59) 897.
- raw, cohesion in, (54) 298.
- raw, international trade in, (53) 295.
- raw, production in China, (54) 55.
- raw, standardization, (58) 392.
- real and artificial, quality tests, (54) 298.
- terms, dictionary, (54) 394.
- thread, defects in, (58) 898.
- weighting, practice and ethics, (54) 493.
- Silkworm—
 - bacterial diseases, (52) 659; (59) 858.
 - cocoons of different breeds, fibers, (58) 596.
 - disease bacillus, specificity, (54) 658.
 - disease, gattine, etiology and epidemiology, (57) 261.
 - diseases, notes, (53) 558.
 - fungus disease, control, (57) 61.
 - industry in China, (54) 55.
 - new sex-linked mutation in, (55) 427.
 - work in Burma, (55) 556.

- Silkworms—**
 acquired immunity in, (55) 761.
 experimental work with, (57) 857.
 experiments in Bulgaria, (55) 456.
 genetic studies, (60) 430.
 gra-serie affecting, (53) 255; (54) 457.
 inheritance of egg color in, (53) 522.
 linkage group in, (60) 430.
 nutrition, (57) 453.
 ovary development, (56) 360.
 races, for introduction into Egypt,
 (57) 260.
 rearing, (54) 457; (59) 652, 654.
 rearing, handbook (55) 662.
 rearing in Burma, (52) 155.
 rearing, handbook, (55) 662.
 respiratory system in, studies, (58)
 160.
 secretion of silk substance in, (58)
 663.
 sex-linked translucent gene in, (60)
 430.
- Silo—**
 walls, making impervious, (53) Iowa
 788.
 walls, treatment, (59) Iowa 81.
 wooden tower, losses in, (57) 168.
 wooden-hoop, construction, (57) 882.
- Silos—**
 advantages and plans, (51) Mo. 889.
 and silage, (55) Okla. 463.
 capacity studies, (53) Iowa 788.
 electrical and German, comparison,
 (53) 377.
 filling costs, Wis., (53) 487; (56) 484.
 filling, dangers from poisonous gases,
 (55) Mich. 697.
 filling, studies, (56) Wis. 778; (59)
 Kans. 762.
 homemade crib, construction, (53) 188.
 in Germany, numbers and capacity,
 (54) 560.
 in Germany, treatise, (58) 682.
 kinds, (51) 396.
 pit and trench, plans and construc-
 tion, (58) 184.
 plans and construction, (55) Okla. 481;
 (57) 882.
 tower and pit, comparison, (56) 666.
 tower, drainage from, (51) 272.
 trench—
 construction and filling, (51) Mo.
 889.
 for North Dakota, (52) 488.
 in Minnesota, (54) 283.
 plans and construction, (53) 188;
 (57) 678.
 studies, (59) N.Dak. 881.
- Silphinae of Minnesota, keys, (58) Minn.
 459.**
- Silt, Colorado River, relation to irrigation,
 (59) U.S.D.A. 82.**
- Silt, Colorado River, studies, (55) Ariz.
 376.**
- Silts, quaternary, of France, texture, (54)
 117.**
- Silvanus surinamensis, notes, (55) 854.**
- Silver—**
 benzoate test for olive oil, (60) 14.
 compounds, separation, (58) 12.
 Silver fish, control, (59) Mich. 250.
 Silver salts, treatment for bovine pro-
 toplasmosis, (58) 175.
 Silver-leaf disease, studies, (52) 846; (56)
 850; (57) 448; (59) 449, 450.
 Silversalvarsan, treatment for bovine
 piroplasmosis, (58) 175.
 Silver-Y moths, notes, (56) 659.
- Silviculture—**
 International Congress of, proceedings,
 (60) 641.
 on an ecological basis, (56) 538.
 treatise, (53) 644.
- Simaethis pariana, life history and control,
 (56) 361.**
- Simuliidae—see also Black flies.**
 British, species, key, (54) 659.
 early stages, life history and structure,
 (54) 659.
 of North America, new species, (57)
 262.
- Simulium—**
 bracteatum fatal to goslings, (57) 658.
 columbaczense in Rumania, (53) 257.
 damnosum, development of Onchocerca
 volvulus in, (54) 773; (56) 62.
 ornatum attacking cow's teats, (57)
 658.
 spp., notes, (57) N.H. 62.
- Sinapis—**
 alba seed germination, stimulation,
 (57) 415.
 arvensis, control, (54) 240.
- Sincamas roots, vitamin B in, (57) 94.**
- Sinea diadema, biology, (51) 158.**
- Sinusitis in turkeys, argyrol for, (56) 478.**
- Sipha flava—**
 notes, (56) 552.
 outbreak in British Guiana, (60) 847.
- Siphonophora rosae floridae, parasite of,
 (52) N.Y.Cornell 360.**
- Sires—see also Bulls.**
 breeding ability, evaluating, (54) Ill.
 322.
 breeding index, (58) 731.
 breeding value, measuring, (58) Ill.
 675.
 dairy, proving, (58) U.S.D.A. 169.
 dairy, selection of, (59) Wis. 28.
 dairy, transmitting ability, (57) 660;
 (60) Ill. 262.
- Guernsey—**
 comparison, (54) Mo. 374; (59)
 167.
 progeny performance, (54) Me.
 673.
 sons of, progeny performance, (55)
 Me. 171.
 transmitting qualities, (55) Me.
 470.
- Holstein-Friesian—**
 comparison, (52) Mo. 376.
 transmission of butter fat percent-
 ages, (55) Del. 872.

Sires—Continued.

Holstein-Friesian—Continued.
transmitting ability, (55) U.S.D.A.
170.

inferior, costly effect, (54) Iowa 860.
proved, value, (54) U.S.D.A. 770.

purebred—

dairy, introduction, (58) U.S.D.A.
571.

effect on grade and scrub stock,
(51) 73.

selection, (52) S.Dak. 276.

value, (59) U.S.D.A. 74.

value for sheep breeding, (53)
Okla. 68.

Sirex cyaneus, natural enemies in England,
(60) 252.

Sirup—*see also specific kinds.*

cane sugar, making, (57) La. 506.

manufacture, (56) 506.

Sirups—

heat penetration during processing,
(59) 91, Calif. 91, Calif. 488.

pectin and pentosan content, (53) 207.
solids and moisture in, (55) 112.

Sisal—

and henequen, reciprocal crossings,
(53) 332.

culture in Ceylon, (59) 135.

culture in German East Africa, treatise,
(56) 828.

hemp, value for marine cordage, (58)
695.

industry in British Empire, (52) 229.
international trade, (53) 296.

physiological disease, notes, (57) P.R.
442.

production tests, (60) Guam 814.

Sitodiplois mosellana and Contarinia tritici,
differentiation, (60) 850.

Sitones hispidulus, egg studies, (56) 458.

Sitophilus spp., factors in ecology of, (57)
Minn. 363.

Sitostanol preparation, (52) 709.

Sitosterol preparation, (52) 709.

Sitosterol reduction, (52) 709.

Sitotroga cerealella, *see* Angoumois grain
moth.

Size inheritance, nature of, (54) Me. 323.

Skeletal anomalies, human, inheritance,
(60) 32.

Skew arch tests, progress report, (54)
U.S.D.A. 384.

Skim milk—

and grain supplements for calves, (51)
S.Dak. 468.

and products, value as spreaders, (54)
337.

as grain substitute for pigs, (54)
U.S.D.A. 162.

dry, effect of previous heating, (58)
689.

dry, effect on pH of ceca in chicks,
(54) Calif. 277.

dry, moisture determination in, (59)
608.

Skim milk—Continued.

fed to hogs, returns from, (58) Vt. 784.
feeder for chicks, (51) Ohio 277.

feeding value, (51) Mich. 573; (53)
Wis. 470, Ariz. 774; (55) Miss. 566,
Fla. 863.

for baby beef, (55) 862.

for laying hens, (51) Can. 276.

number of cells in, (56) N.Y.State 274.

paracasein of, effect of acids on di-
gestibility, (55) 370.

pasteurization methods, (55) 472.

powdered, feeding value, (52) 371.

powdered, for calves, (55) Mass. 561;
(56) 568; (58) Pa. 363.

powdered, for coccidiosis, (58) Ill. 372.

sour, concentrated, (56) U.S.D.A. 571.

sour, feeding value, (51) Idaho 873;
(55) Idaho 866; (57) Mo. 462.

testing, (58) 871.

tests, Roese-Gottlieb v. Babcock, (51)
207.

types for ice cream, (60) 664.

use in sprays, (52) 56.

v. beef scrap for poultry, Can., (54)
164, 272.

v. grain for calves, (53) Wyo. 674.

v. milk powder for pigs, (53) Can. 872.
viscosity, effect of temperature, (58)
572.

vitamin A in, (57) 894.

Skin—

disease of imported Guernsey bulls,
(57) P.R. 468.

diseases, paper on, (57) 180.

diseases, report, (53) 78.

of rats on various diets, changes in,
(59) 592.

penetration by ultra-violet rays, (60)
898.

worm, life history and control studies,
(59) Calif. 754.

worm, notes, (57) 854.

Skins, *see* Hides.

Skrjabinema ovis, notes, (58) 176.

Skunks, raising, (54) 274.

Skylight, December, antirachitic effect, (57)
794.

Skyshine, antirachitic effect, (58) 495.

Slag, *see* Phosphatic slag.

Slaughterhouse offal, utilization, (51) 210.

Slaughtering, scientific, (58) 667.

Sleep, effect on basal metabolism of chil-
dren, (60) 290.

Sleeping sickness, prevention, (52) 480.

Slick spot soils, (57) Idaho 709.

Slide rule, special, for purity calculations,
(51) 113.

Slime disease, effect of previous crop, (59)
636.

Slope exposure, studies, (53) 824; (54) 25.

Sludge—*see also* Sewage.

activated—

fertilizing value, (51) Wis. 423,
728; (52) 215; (53) Wis. 416;
(54) 811; (56) Wis. 714.

- Sludge—Continued.
 activated—continued.
 manufacture, (51) 728.
 production, composition, and value,
 (56) 514.
 chemical characteristics, (57) 781.
 digestion—
 effect of lime, N.J., (57) 779, 781.
 effect of temperature, (57) 782.
 hydrogen-ion control in, (57) 781.
 tanks, behavior, (59) N.J. 379.
 tanks, experiments, (57) N.J. 780.
 from cellulose industry, effect on
 plants, (51) 123.
- Slugs—
 control, (53) 252.
 garden, barriers used against, (59) 552.
 rôle in tobacco mosaic transmission,
 (60) 646.
 salt-line barrier for, (60) Guam 845.
- Smartweed borer, notes, (59) Iowa 55.
- Smerinthus populi, parasite of, (57) 451.
- Smilacin, reaction of protoplasm to, (52)
 215.
- Smiththurus—
 hortensis as crop pest, (52) 852.
 sp., notes, Va.Truck, (52) 43; (55)
 253.
 viridis, economic status and bionomics,
 (60) 846.
 viridis, life history and bionomics, (59)
 457.
 viridis, notes, (60) 60.
- Smith, E. F., editorial notes, (56) 601.
- Smith-Lever Act—
 county agent work under, (55) U.S.D.A.
 288.
 first decade under, editorial, (55) 1.
- Smoke—
 acid injury to forest trees, distinguish-
 ing, (55) 519.
 and smoked foods, formaldehyde in,
 (57) 505.
 and soil acidity, (55) 118.
 constituents, toxicity to living organ-
 isms, (54) 221.
 effect on wet wash, (56) 898.
 gases, effect on plants, (58) 521.
 injury, control, (60) 345.
- Smut—*see also* Cereal smut, Grain smuts,
and specific hosts.
 and rust fungi, treatise, (57) 441.
 control by seed treatment, (60) Can.
 347.
 control, substances used for, (54) 147.
 control tests, Utah, (52) 747; (56)
 543.
 diseases, cause and control, (60) 149.
 effect on sugar content of cornstalks,
 (57) 49.
 fungi, new tendencies in study, (57)
 641.
 fungi, physiology and genetics, (60)
 346.
 fungi, physiology of germination, (57)
 641.
 fungi, studies, (56) 843.
- Smut—Continued.
 spores, germination, effect of carbon
 dioxide, (57) 49.
 treating machine, construction, (52)
 Calif. 50.
 treatment tests, Minn., (51) 150; (53)
 149; (55) 348.
- Smuts—
 biology, (52) 746.
 fungicides for, tests, (58) 648.
 life history and physiology, (56) 648.
 New Zealand species, key, (57) 839.
- Snail—
 European brown, pest in orange groves,
 (59) Calif. 757.
 Kalutara, control, (60) 839.
- Snails—
 as garden pests, (53) 552.
 attacked by luminous larva of firefly,
 (58) 56.
 attacking young sycamores, (53) 252.
 effect on sugar cane root disease, (52)
 449.
 white, eradication campaign, (57) 357.
- Snakeroot, white—
 poisoning, (53) Ill. 78.
 toxic constituent, (58) 367; (60) 176.
 toxicity, (51) Ind. 878; (55) 874.
- Snakes—
 as host of chigger mite, (53) 656.
 chromosomes of, studies, (58) 25.
 key to species, (56) 56.
 North American, venoms, (60) 665.
 of Iowa, (56) Iowa 552.
 relation to agriculture, (53) Iowa 755.
 studies, (55) Iowa 554.
- Snapdragon rust—
 control, (51) N.H. 149.
 life history notes, (56) 250.
 resistant varieties, Ind., (51) 844;
 (59) 748.
- Snotsiekte in cattle, (52) 84.
- Snout beetle on apple trees, (60) 563.
- Snow bunting, food habits, (52) U.S.D.A.
 354.
- Snow—
 fertilizing value, Can., (52) 423; (54)
 422.
 geographical distribution in Italy, (51)
 115.
 holding, effect of cover crops, (53)
 U.S.D.A. 141.
 nitrogen compounds in, (56) 120.
 substances in, (56) U.S.D.A. 321.
 surveys, (56) Utah 576.
 surveys v. precipitation for predict-
 ing stream discharge, (55) U.S.D.A.
 312.
 v. water for poultry, (53) Can. 876.
- Snowball blossom blight, notes, (54) 745.
- Snowfall, relation to run-off, (55) U.S.D.A.
 116.
- Snuff as insecticide, (57) 657.
- Snuffles in rabbits, cod-liver oil for, (58)
 481.
- Snygamus laryngeus in cattle, (57) P.R.
 468.

Soap—

- and fat industry, (54) 708.
- detergent action, fundamental principles, (54) 806.
- detergent efficiencies, comparison, (54) 8.
- germicidal properties, (54) 393, 796.
- laundry, use against aphids, (51) N.C. 854.
- manufacture and cleansing action, (54) 597.
- nicotine preparations, deterioration, (52) 309.
- powder, analysis, (51) 318.
- solutions and colloid chemistry, (54) 6.

Soaps—

- deflocculating and frothing powers, relation, (58) 716.
- neutral fat in, determination, (58) 716.
- of various oils, behavior on dilution, (58) 715.
- pure, germicidal properties, (53) 609.
- selection and economic use in the home, (53) Mo. 496.

Social—

- conditions, determinants in, (54) Mo. 783.
- insects, (53) 156.
- organizations and agencies in North Dakota, (60) N.Dak. 88.
- organizations for rural people, (54) 486.
- participation in rural New England, (59) 286.
- research, new, (57) 484.
- research of American Sociological Society, (55) 83.
- Science Research Council, report, (59) 389; (60) 685.
- sciences, abstract journal for, (58) 605.
- statistics, textbook, (57) 486.
- survey in town and country areas, (54) 486.
- work, relation to the family, (56) 891.

Sociology—

- relation to budgetary studies, (59) 684.
- research in, editorial, (57) 1.
- rural, *see* Rural sociology.

Sod, renovation, (60) Mont. 730.

Soda, caustic, *see* Sodium hydroxide.

Soda, fungicidal properties, (52) 646; (60) 49.

Sodatol as farm blasting material, (51) 387, Wis. 483.

Sodium—

- alkalies formation in soils, (55) 811.
- arsenite—
 - and sodium fluosilicate, relative toxicities, (59) 57.
 - as insecticide, (59) 58; (60) 162.
 - as weed poison, (57) 135.
 - effect on crops, (58) 256.
 - effect on soil organisms, (55) 119.
 - for barberry eradication, (53) 748.

Sodium—Continued.

arsenite—continued.

- insecticidal value, (60) Tenn. 161.
- samples, composition, (52) 82, 178.
- uses for weed killing, (53) U.S. D.A. 327.
- azide as dust and liquid fungicide, (59) Wash.Col. 46.
- bicarbonate, effect on soil acidity, (54) 20.
- biphosphate, effect on acid soils, (52) 621.
- bisulfate, effect on solubility of tricalcium phosphate, (54) 218.

carbonate—

- and sodium bicarbonate in central Asiatic soils, (57) 16.
- effect on ammonification and nitrification, (52) Idaho 813.
- effect on soil acidity, (52) 621; (54) 20.
- effect on sulfur content of hair, (54) 501.
- formation, (52) Calif. 21.
- leaching experiments, (51) 212.

chlorate—

- as herbicide, (58) 433.
- as weed poison, (57) 135.
- for eradication of quack grass, (60) 336.
- spray for bindweed control, (59) Kans. 137.

chloride—*see also* Salt.

- action on plants and soils, (53) 21.
- effect on alfalfa, (52) 723, N.J. 724; (55) N.J. 22.
- effect on ammonification and nitrification, (52) Idaho 813.
- effect on colorimetric determinations of pH, (56) 204.
- effect on rice seedlings, (59) 323.
- effect on sweet potatoes, (51) 342.
- effect on tomatoes, (57) 416.
- effect on uric acid concentration in blood, (52) 860.
- fertilizing value, (54) 20.
- for barberry eradication, (53) 748.
- in air, distribution and transport, (59) 417.
- in canned sauerkraut, (57) 193.
- leaching experiments, (51) 212.
- microscopical identification, (51) 10.
- of sylvinite, specific action, (51) 818.
- resistance of corn to, (54) 522.
- tolerance of plants as affected by temperature, (52) Calif. 25.
- tolerance of plants for, (51) Hawaii 788; (56) 724.
- value in corn ration, (56) 666.
- citrate administration with carbon tetrachloride, effects, (56) 572.
- compounds, substitution for potassium, (58) 204.

Sodium—Continued.

- deficiency in corn ration, (57) 366.
- determination—
- colorimetric micromethod, (58) 608.
 - in blood serum, (53) 12.
 - in foods, (56) 614.
 - iodometric method, (52) 806.
- dinitrocresylate, toxicity to eggs of moths, (57) 656.
- effect on orange trees, (52) Calif. 26.
- excretion, effect of potassium intake, (56) 465.
- ferroporphosphate, kinetics of oxidation by, (55) 628.
- fertilization of sugar beets, (53) 516.
- fluoride—
- as an insecticide, (52) 850.
 - as bait for cutworms, (53) 256.
 - effect on rats, (53) Iowa 768.
 - effect on urea determination, (60) 416.
 - for cattle lice, (56) 156; (58) Ala. 450.
 - insecticidal value, (58) 560.
 - mixed with organic dinitro compounds for wood preservation, (60) 879.
 - penetration in wood, visual determination, (56) 853.
 - resistance of wood-destroying fungi to, (56) 853.
 - success with, (59) 456.
- fluosilicate—
- and lime, (59) 455.
 - and sodium arsenite, relative toxicities, (59) 57.
 - application by airplane to sugar cane, (60) U.S.D.A. 250.
 - experiments for cane borer, (56) 758.
 - for blister beetle control, (55) 662; (56) 860.
 - for soil treatment, (56) Wash.Col. 554.
 - insecticidal value, (52) Tenn. 555; (53) 253, 357, 556; (55) Tenn. 152; (56) Tenn. 154; (58) 560; (60) Tenn. 161.
 - special light, preparation, (59) 63.
 - toxicity, (60) 248.
 - use in grasshopper baits, (56) 155.
 - v. calcium arsenate for boll weevil control, (56) 158.
 - value, (60) 356.
- formate, oxidation, (55) 628.
- hydroxide effect on digestibility of grain hulls, (51) 372.
- hydroxide, effect on flax and cotton fabric, (54) 196.
- hypochlorite—
- for foulbrood of bees, (51) Conn. State 852.
 - phenol coefficient of disinfecting powers, (52) 776.

Sodium—Continued.

- hypochlorite—continued.
- use against *Bacillus* larvae, (53) 259.
- in animal body, distribution, (58) Mo. 460.
- in blood serum, determination, (53) 206.
- in plants, distribution, (57) 609; (58) 213.
- iodine treatment of Rochester's water supply, (53) 463.
- nitrate—
- action, effect of methods of application, (51) 120.
 - and ammonium sulfate, comparison, (56) 23, 623.
 - and ammonium sulfate, relative lime needs, (57) 813.
- nitrate, effect on—
- apples, (52) Pa. 233; (56) Del. 342.
 - composition of cocksfoot, (55) 335.
 - cotton, (59) Ala. 625.
 - cracking of sweet potatoes, (57) N.J. 48.
 - nodulation of soy beans, (52) 339.
 - nutrition of tomato, (52, N.Y. Cornell, 44.
 - peaches, (59) N.C. 739.
 - phosphate and potassium availability, (60) Ala. 120.
 - quality of sugar beets, (56) 637.
 - soil reactions, (56) 22.
 - soy beans, (51) Del. 132.
 - strawberry yield, (56) 443.
 - sugar beets, (52) 834.
 - sulfur oxidation, (51) N.J. 624.
 - wheat, (54) 811; (55) 832.
- nitrate—
- efficiency, effect of pH of soil, (55) 221.
 - fertilizing value, (51) Miss. 134, N.H. 142, 623, La. 830; (52) 422, 526; (53) Ind. 139, Iowa 742; (54) Ohio 123, 218; (55) Ark. 18, N.J. 38, N.C. 219, Miss. 527, Oreg. 625; (56) N.Y. Cornell 334.
 - injury to strawberries, (53) N.H. 437.
 - microscopical identification, (51) 10.
 - nitrogen availability in, (59) N.J. 318.
 - nitrogen availability under varying conditions, (53) 619.
 - properties and fertilizing value, (57) Tenn. 115.
 - time of applying to sugar beets, (57) 732.
 - toxicity to wheat sprouts, (53) 21.
 - use, (57) 317.
 - use in curing meats, (55) 86, 591; (56) 188.

Sodium—Continued.

- phosphate, effect on acid soils, (52) 621.
 - plus potassium determination, electrolytic method, (58) 112.
 - replaceable in soil, determination, (60) 615.
 - salts, effect on starch formation in leaves, (59) 25.
 - silicate, effect on—
 - acid soils, (52) 621.
 - barley yields, (60) 623.
 - grassland, (51) 216.
 - silicofluoride—
 - and arsenical mixtures, toxicity to plants, (56) U.S.D.A. 554.
 - bactericidal action, (59) 339.
 - for peach bacterial spot, (56) 453.
 - sprays, effect on peach, (57) 752.
 - substitute for, (60) Ill. 238.
 - specific reagent for, (58) 608.
 - sulfate—
 - action on mortars, effect of steam treatment, (59) 377.
 - action on Portland cement, (55) 377; (56) 281.
 - effect of long-continued soil treatment with, (60) N.Y.State 422.
 - effect on acid soils, (52) 621.
 - effect on ammonification and nitrification, (52) Idaho 813.
 - leaching experiments, (51) 212.
 - soundness test, relation to absorption of sedimentary rock, (58) U.S.D.A. 582.
 - sulfide, hydrolytic action on wool fiber, (59) 411.
 - titanate, effect on plant production, (53) 22.
 - trichloracetate, effect on reduction of copper solutions by glucose, (51) 505.
 - 2-bromo-ethylsulfonate, preparation, (58) 710.
 - zeolites, hydrolysis, (60) Ariz. 515.
- Softwoods, structure, (60) 544.

Soil—

- abo-abo, of Occidental Negros, (60) 211.
- acidity—*see also* Soils, acid, and Liming.
 - active, (51) 617.
 - and adsorption, Mich., (53) 798; (54) 512.
 - and lime deficiency, studies, (52) 21.
 - and liming, (55) 517; (60) Oreg. 717.
 - and moisture, effect on potato scab, (53) 546.
 - and nature of base exchange, (59) 420.
 - and organic matter, studies, (52) 319.
 - and solubility as affected by sulfur, (52) 423.

Soil—Continued.

- acidity—continued.
 - and use of lime in tea soils, (54) 422.
 - clay as essential element, (54) 215.
 - correcting, (57) Ohio 114.
 - determination methods, (53) 610; (55) 214.
 - determination, rôle in rock phosphate and lime treatment, (60) 22.
 - determination, sources of error in thiocyanate method, (55) 12.
 - due to nitrogenous fertilizers, correction, (59) 120.
 - effect of alkaline carbonates and earths, (54) 20.
- acidity, effect on—
 - crop growth, (53) 125; (54) 213.
 - nitrogen bacteria, (58) 822.
 - soil fungi, (54) 119.
 - sugar cane, (57) 315.
 - tea growth, (59) 141.
 - tobacco root rot, (55) Mass. 450.
- acidity—
 - exchange, studies, (55) 318.
 - for forest soils, (58) 17.
 - forms, effect on solubility of phosphates, (54) 214.
 - in woodland soils, (51) 722.
 - ion exchange in relation to, (56) 115.
 - ionimetric determination, (56) 809.
 - measurement and relation to plant distribution, (51) 513.
 - measuring intensity factor, (52) 613.
 - methods applied to soil survey work, (60) 112.
 - nature, (55) 213; (56) Wis. 715.
 - of a rice field, effect of soy bean cake, (53) 117.
 - of air-dried samples, (52) 619.
 - papers on, (52) 17; (56) 17; (60) 507, 508, 509.
 - plant injury from, (55) 418.
 - qualitative tests for, (52) 310.
 - reappearance after saturation with lime, (57) 712.
- acidity, relation to—
 - base exchange, (54) 317.
 - plant distribution, (55) 510.
 - root rot, (57) 447.
 - smoke, (55) 118.
 - soil productivity, (54) 214.
 - soil type groups, (52) 811.
 - spinach production, (57) Va. Truck 832.
- acidity—
 - studies, (51) 325, Ind. 814; (52) 319, N.J. 741; (53) N.C. 818; (54) 121, 212, 416; (55) 720, 811; (58) Del. 416; (59) Wis. 19, Mich. 419, N.Dak. 813.
 - symposium, (54) 213.

Soil—Continued.

- acidity—continued.
 - testing for, (51) Mich. 15, Iowa 421.
 - tests, modified Comber method, (56) 718.
 - theories, (54) 417.
- aggregates, disintegration, methods, (53) 117.
- air, carbon dioxide in, (51) 814; (57) 113; (58) 418.
- air factors, (54) 514.
- alkalinity, relation to petrographic composition, (54) 416.
- amendments in South Australia, (51) 422.
- analysis—
 - by bacteria, (51) 723.
 - chemical, handbook, (57) 504.
 - continuous mechanical, (59) 609.
 - elements in, (53) 416.
 - hydrometer method, (59) 422. 809.
- analysis, mechanical, (53) 212; (55) 214, 509, 808; (59) 509.
 - application to Swiss agriculture, (60) 116.
 - colloidal determination in, (53) 816.
 - curves for, (53) 815.
 - hydrometer for, (57) 809.
 - methods, (52) 121; (57) 15.
 - papers on, (60) 508, 513, 514.
 - simplification, (56) 315.
- analysis—
 - microbiological, as aid to classification, (57) 713.
 - preliminary ammonia treatment, (55) 17.
 - replaceable bases and dispersion, (59) 421, 422.
 - studies, (52) 717; (53) 722; (54) Fla. 316.
 - under field conditions, (60) 509.
 - value, (51) 399; (52) 209.
- and plant air, volume and composition, (53) 823.
- auger, use on farm, (55) Calif. 280.
- bacteria—
 - activity, effect of green manure, (56) 420.
 - adaptability to climate, (55) 514.
 - adsorption of, (55) 620.
 - counting method, (55) 319.
 - daily changes in, (57) 714.
 - destruction by protozoa, (57) 17.
 - determination of number, (53) 117.
 - development, effect of nutritive elements, (53) 321.
- bacteria, effect of—
 - alkali salts, (53) 512.
 - antiseptics, (55) 514.
 - carbon disulfide, (52) 721.
 - cyanamide, (52) 513.
 - decomposition of organic matter, (51) 620.
 - forms of lime, (56) 215.

Soil—Continued.

- bacteria, effect of—continued.
 - green manuring, (51) 517.
 - lime nitrogen, (60) 714.
 - plant growth, (60) 714.
 - sterilization of soil, (54) 420.
- bacteria—
 - effect on paraffin coating of plant roots, (57) 358.
 - effect on resorption of biogenetic elements, (54) 419.
 - estimation from stained films, (60) 714.
 - factors affecting activity, (53) Mo. 415.
 - growth-accessory substances produced by, (57) 18.
 - in frozen soils, (55) 720, 812.
 - methods of study, (57) 622; (60) 20.
 - necessity for crops, (51) 215.
 - of arroyo soil of Arizona, (55) 629.
 - papers on, (60) 510.
 - plate counts, (54) 515.
 - punctiform - colony - forming, (54) N.Y.State 621.
 - relation to fertility, (51) 516; (57) 17; (60) 713.
 - relation to fungi, (53) 321.
 - spore-forming, activity, (51) N.Y. State 15.
 - staining, (58) 813.
- bacteriology—
 - goal in, (51) 399.
 - papers on, (58) N.Y.State 119.
 - studies, (51) 323, Tenn. 323 N.J. 622, Idaho 812; (52) 720, Idaho 813; (54) Del. 621; (55) Oreg. 620, Mich. 812; (60) Del. 714.
- biology, methods, (60) 511.
- biology studies, progress, (52) 118.
- blowing, control, (52) U.S.D.A. 828.
- blowing, effect of cover crops, (53) U.S.D.A. 141.
- boring apparatus, description, (60) 711.
- characteristics, treatise, (56) 617.
- chemistry committee, program, (51) 399.
- chemistry work, (51) N.J. 622.
- colloids—see also Soils, colloidal.
 - adsorption by, (60) 509.
 - and base exchange, (56) 416; (59) Ala. 613.
 - and tillage, (53) 589.
 - and water, relation, (60) 509.
 - binding power, (52) 211.
 - climatic agencies in relation to, (53) 719.
 - composition, (52) U.S.D.A. 508.
 - current definitions, (59) 511.
 - determination, (57) 710; (58) 513.
 - electrodialysis, bases removed by, (56) 115.
 - electrokinetic behavior, relation to base exchange capacity, (56) 415.

Soil—Continued.

- colloids—continued.
 - estimating, (52) 619; (53) 319.
 - heat of wetting, (52) 418; (53) 817.
 - quantity and quality, determination, (60) 115.
 - relation to plant nutrition, (56) 723.
 - removal, effect, (52) 419.
 - retention of phosphorus by, (58) 615.
 - studies, (53) 510; (56) 18; (57) 711.
 - suction force of soils as index, (54) 417.
 - symposium, (51) 799.
 - variations in, (59) 418.
- color, effect of liming and cropping, (59) Ohio 207.
- color, effect of moisture on, (51) 14.
- colors, papers on, (60) 512.
- compounds involved in base exchange reactions, (60) 513.
- compounds, movement, effect of liming, (59) 115.
- condition, effect of earthworms, (58) 814.
- conditions and plant growth, treatise, (56) 714.
- conditions in Lamsiekte and Styfsiekte soils, (60) 574.
- conservation, future trends in, (56) 513.
- conservation, studies, (52) Kans. 420.
- constituents and plant withdrawals, (52) Calif. 20.
- core sampler, description, (55) 509.
- cultures, physiological balance in, experimental study, (60) 720.
- cylinders, changes in, (52) 119.
- cylinders, percolation movements, (54) Mo. 717.
- deficiencies, electro dialysis in studies, (60) 509.
- dispersions, solid, effect of electrolytes, (59) 315.
- dynamics, (56) 680; (59) Ala. 677.
- erosion—
 - a national menace, (59) U.S.D.A. 207.
 - and deposition measurements, (53) 823.
 - and surface run-off, studies, (51) Mo. 210.
 - as research problem, (52) 386.
 - cause and prevention, (52) 22.
 - control, (54) Ill. 381.
 - experiments, (55) U.S.D.A. 778; (59) Ind. 782.
 - from early plowed wheat land, (56) 75.
 - from soy bean land, (55) 581.
 - in tea soils, measurement, (56) 75.
 - of farm lands, control, (51) Mo. 618.
 - papers on, (60) 513.

Soil—Continued.

- erosion—continued.
 - prevention, (55) 879; (56) 316; (60) 481.
 - studies, (53) 117; (57) Mo. 411, Ind. 675; (60) 713.
 - waste through, (55) 779.
 - experiment fields, work on, (55) Ill. 320.
 - experiments, conclusions from, (57) Okla. 512.
 - extracts—
 - clear, collodion sacks for obtaining, (56) 408.
 - electrical conductivity, (51) 515.
 - H-ion concentration, (55) 316, 317.
 - phosphorus in, effect of liming, (56) 213.
 - specific conductivities, (60) 712.
 - uniform preparation, (60) 507.
 - factors, effect of soil reaction, (54) 122.
 - fatigue, biological cause, (55) 446.
 - fauna, (54) 25.
 - fertility—
 - and colloidal behavior of soils, (56) 808; (60) 23.
 - and crop production, treatise, (55) 508.
 - and humus, studies, (55) Iowa 514.
 - and moisture conservation studies, (59) Tex. 719.
 - chemical determination, (60) 514.
 - distribution, (54) 118.
 - effect of rotation, (51) S.Dak. 421.
 - effect of soil relief, (60) 803.
 - experiments, (51) Minn. 119; (53) Minn. 119, Okla. 119; (54) Tex. 315, Ky. 317, Mich. 616; (55) Colo. 219, Mo. 219, N.C. 219, Minn. 320; (56) Minn. 513, Colo. 810, Ky. 812; (58) Minn. 816; (59) Ill. 318, Miss. 318; (60) Can. 25, Pa. 25.
 - experiments at Craibstone, (58) 514.
 - factors, theory and practice, (54) 424.
 - index, (51) 416, 620.
 - maintenance, (53) 142, Ohio 217.
 - maintenance, effect of drying, (53) 18.
 - maintenance with green manure, (59) 513.
 - of North Carolina, (51) N.C. 811.
 - permanent, (53) Ill. 723; (54) U.S.D.A. 814.
 - problems, (51) Wash.Col. 119.
 - rebuilding, (52) 233.
 - relation to its iron and manganese, (56) 718.
 - relation to microorganisms, (54) 718; (57) 17; (60) 713.
 - relation to wild legumes, (58) 515.

Soil—Continued.

fertility—continued.

- requirements, (56) Ohio 323.
- studies, (51) Iowa 421, Wis. 421, Ind. 621, Minn. 621, Ind. 724, R.I. 725, Ind. 814, Nebr. 814, N.C. 815; (52) Ind. 211, Mich. 317, Ky. 421, Wash.Col. 814; (53) Wash.Col. 216, Ind. 419, Okla. 420; (54) R.I. 17, Ill. 313, Nebr. 314; (55) Ark. 17, Ind. 18, Ohio 122, Tex. 320, Nebr. 624, Oreg. 625, 721, Minn. 722, Mich. 808, N.H. 814; (56) Ind. 119, Pa. 119, Ill. 212, Ark. 319, Ill. 319, 419, Wash.Col. 508, Wash.Col. 509, Wash.Col. 513, Ariz. 719; (57) N.J. 18, Ohio 114, Minn. 213, N.C. 213, R.I. 413, La. 512, Ind. 614, Mich. 614, Tenn. 615, Ind. 714, N.J. 714; (58) Ark. 315, Ill. 316, N.Y.State 816; (59) Mich. 423, Ind. 615, R.I. 615, Nebr. 816; (60) Minn. 119, Ill. 212, Pa. 317, 507, 511, Oreg. 716, Oreg. 717.
- studies at Rothamsted, (52) 211.
- studies in Ceylon, (58) 620.
- studies in India, (54) 810; (56) 509.
- studies in Moscow Government, (58) 817.
- studies in Switzerland, (51) 623.
- system, use of oat straw in, (56) 119.
- tests, (59) Ohio 212.
- under irrigation, maintaining, (51) Utah 787.
- formations in drilled well, notes, (60) Fla. 199.
- foundations, dynamics of, (54) 580.
- fumigation experiments, (54) Fla. 345, Pa. 353.
- fumigation with paradichlorobenzene, (56) Calif. 255.
- fungi studies, (59) Iowa 18; (60) 124, 510.
- gels and adsorption, theory, (55) 719.
- gels and artificial gels, differences in heat of reaction, (56) 718.
- granulation, effect of water, (52) 418.
- heterogeneity, control, (54) Minn. 731.
- heterogeneity, effect on plat yields, (57) 224.
- heterogeneity in experimental fields, (53) 134; (55) 617.
- humidity and insolation, relation to lupines, (55) 424.
- hygroscopicity, effect of fertilizers, (60) 21.
- improvement, studies, (57) Tex. 115.
- improvement studies at Rothamsted, (52) 816.
- improvement, value of sulfur in, (51) 728.

Soil—Continued.

- information for North Carolina, (58) N.C. 817.
- insects, paper on, (54) 53.
- leachings, chemical characteristics, (60) 507.
- management—
 - and crop production, treatise, (52) 696.
 - and fertilization in Arkansas, (52) 816.
 - and fertilization, treatise, (58) 116.
 - in eastern Canada, (56) 622.
 - in prairie provinces of Canada, (59) 432.
 - studies, (51) Minn. 119, Mo. 719; (52) West.Wash. 322; (53) Minn. 119; (55) Minn. 320; (56) Ill. 319, Minn. 513; (57) Okla. 214, Md. 316; (58) Ill. 316, Mo. 419, Minn. 816; (59) Iowa 18.
 - textbook, (51) 493; (57) 812.
 - treatise, (51) 116.
- map of Iberian Peninsula, (60) 508.
- map of Java area, (57) 812.
- mapping and classification, papers on, (52) 17.
- mapping, papers on, (56) 511; (60) 512, 513.
- material layer, earth's, dynamic forces in, (60) 509.
- materials, thermal diffusivity and conductivity, (52) 811.
- mechanics, principles, (55) 476.
- microbiology, (52) N.J. 720; (53) 215; (57) N.J. 716; (59) N.J. 316; (60) 507.
- microbiology, applications, (59) 512.
- microbiology, treatise, (57) 113.
- microbiology, trends in, (51) 812.
- microorganisms, *see* Soil bacteria and Microorganisms.
- mineralogy, treatise, (57) 314.
- moisture—*see also* Soil water.
 - a factor in rotations, (58) 718.
 - and acidity, effect on potato scab, (53) 546.
 - and salts, mutual effects, (53) 419.
 - availability to crops in sandy soil, (55) 810.
 - capillary rise, (57) Calif. 212.
 - conservation, (52) Wash.Col. 620; (54) Wash.Col. 316; (59) 207.
 - constants, (56) Utah 576.
 - constants and determination of vesicular coefficients, (55) 810.
 - control, engineering features, (56) 177.
 - critical, in plant life, (60) 116.
 - determination, (52) Calif. 810; (59) 113.
 - determination, effect of soil salt movement, (53) 116.

Soil—Continued.

- moisture, effect of—
 cultivation, (55) Ark. 121.
 fallowing, (55) 810.
 mulch, (53) 719.
 paper mulch, (59) Calif. 717.
 sugar cane trash, (55) 725.
- moisture, effect on—
 ammonifying and nitrifying powers, (54) 811.
 color, (51) 14.
 crop yield, (55) 719.
 development of cabbage yellows, (56) 448.
 tobacco, (53) U.S.D.A. 339.
 wheat composition, (53) 748.
- moisture—
 electrical determination, apparatus for, (54) 118.
 equivalent, (53) 318; (56) 208; (60) 508.
 field measurement, (51) 812.
 fixation, (54) 512.
 forms, absorption and retention, (57) 880.
 imbibitional, (51) 513.
 in Michigan soils, (55) Mich. 315.
 in northeast India, (55) 509.
 in small columns, capillary distribution, (51) U.S.D.A. 318.
 measurement, (55) 619.
 minimum, available to plant roots, (55) 16.
 movement, (59) 83.
 movement in fall and spring, (56) 19.
 movement, vapor phase, (56) 317.
 phenomena, relation to light, (56) 415.
 problems, (60) Wash.Col. 877.
 problems, application of hydrodynamics to, (57) Calif. 580.
 rate of depth of penetration, (57) 711.
 regulation, factors affecting, (58) 582.
- moisture, relation to—
 cold resistance of wheat seedlings, (58) 822.
 cotton sore shin disease, (59) Fla. 846.
 cover crops, (58) 816.
 cultivation and plant growth, (60) 511.
 infection, (55) 44.
 irrigation, (57) 775.
 mechanical composition, German research on, (59) 115.
 plant growth, (56) 317; (58) 623; (60) 721.
 sweet potato pox, (58) 50.
 tomato wilt, (51) 755.
- moisture—
 relations, physical theory, (53) 817.
 requirements of healthy and infected beans, (53) 543.

Soil—Continued.

- moisture—continued.
 retention in soils, (60) Ark. 803.
 rôle of colloids in, (55) 718.
 studies, (52) Calif. 19, 512; (54) 512, Mo. 716, Wash.Col. 809; (55) Nebr. 619, Oreg. 625; (56) 20, Wash.Col. 509; (57) P.R. 413, Nebr. 511; (58) Mo. 419; (60) 712.
 studies in apple orchards, (58) 234.
 study, application of capillary potential to, (60) 712.
 tank experiments, (52) Utah, 719.
 utilization by plants, (58) 812.
- mulch, effect on moisture absorption, (53) 719.
 nitrogen as affected by lime, (51) Tenn. 320.
 nitrogen-fixing power, determination, (54) 120.
 nomenclature, papers on, (60) 512.
- nutrients—
 availability, Neubauer seedling method, (55) 320, 814.
 determination, (55) 19.
 estimation by seedlings, (53) 319; (58) 16.
 relation to vegetation and reproduction, (55) 727.
 requirements, (51) 20; (54) 814; (60) 507.
 solubility, effect of growing plants, (59) 209.
- organisms, decomposition of toxins by, (56) Ala. 21.
 organisms, relation to liming and phosphate fertilization, (58) 720.
 organisms, studies, (54) 119, 418.
 particles, total surface, effect of electrolytes, (54) 211.
 physics and mechanics, (54) 76.
 physics, recent advances in, (51) 399.
 physics, research methods, (56) 414.
 physics, studies, (54) Mich. 616; (55) 580; (56) Utah 576.
- porosity, effect on rate of infiltration of water, (59) 584.
 porosity, measurement, (55) 619.
 potassium, availability, (56) Ohio 512.
 potassium, determination, (51) 204, 314.
 potassium replacement in soil, (51) 324.
- productivity—
 and distribution of population in Auckland, (51) 118.
 effect of pulverizing and drying, (60) 514.
 relation to microbiological processes, (54) 215.
 relation to soil acidity, (54) 214.
 studies, (54) Tenn. 217.
- profiles—
 in southern Illinois, (57) 709.
 Michigan, studies, (57) 808.

Soil—Continued.

- profiles—continued.
 - of various countries, papers on, (60) 512.
 - on Gezira Research Farm, (60) 711.
 - properties, (51) Mich. 117.
 - scheme for study, (60) 507.
 - studies, (52) 210; (56) 511.
- provinces of eastern United States, potassium requirements, (58) 620.
- publications of United States and Canada, classified list, (57) U.S.D.A. 410.
- pulverization, measurement, (52) Calif. 86.
- reaction—
 - and Azotobacter test, (55) 721.
 - and crop growth, (53) 320.
 - and lime requirement, (53) 510.
 - and nitrogen fixation, correlation, (60) 421.
 - and plant diseases, (55) 347.
 - as indicators of weeds, (60) 713.
 - changes and acid fertilizers, (55) 419.
- reaction, effect of—
 - bacteria and fertilizers, (56) 419.
 - green manures and crop residues, (59) Colo. 117.
 - lime, (55) 222.
 - neutral salts, (54) 620.
 - urea, (54) 516.
 - water logging, (59) 812.
- reaction, effect on—
 - absorption of phosphorus and potassium, (54) 518.
 - availability of phosphoric acid, (52) 212.
 - organic matter, (54) Wash.Col. 809.
 - pH of leguminous saps, (58) 623.
 - plant growth, (54) 121; (58) 613, 718.
- reaction in alfalfa fields, (57) 712.
- reaction investigations, use, (54) 122.
- reaction, relation to—
 - ammonia in soil, (54) 514.
 - calcium adsorption, (51) 515.
 - crop yields, (54) 814.
 - exchange bases in, (59) Ohio 208.
 - plant successions, (56) 317.
- reaction—
 - residual effects of neutral salt treatments, (55) 510.
 - resistance to change in, (51) Del. 116.
 - studies, (51) 116; (54) 708, 719; (60) 508, 514.
 - testing, soiltex method, (52) 17.
- regions, climatic, of European countries, (60) 508.
- regions of Terek District, (59) 510.
- respiration apparatus, description, (53) 815.
- salinity and stand in cotton, (60) 328.
- salt system, studies, (52) N.J. 719.

Soil—Continued.

- salts, relation to crop yield, (52) 121.
- sampler, (54) 511; (58) 810.
- samples, acidity, effect of drying, (52) 619.
- samples, miscellaneous, value, (51) Idaho 511.
- sampling method, (52) 115, Mich. 717; (55) 314; (58) U.S.D.A. 15.
- scarifiers, electric, installation, (54) 283.
- science—
 - fundamentals, textbook, (60) 18.
 - in 1925, review of German literature, (56) 414.
 - international conference, (51) 399.
 - International Congress, editorial, (57) 101.
 - International Congress, notes, (56) 400.
 - International Congress, proceedings, (60) 507.
 - International Society, meeting of second commission, (56) 17.
 - pioneer workers, passing of, (58) 405.
 - recent accomplishments in Russia, (59) 612.
 - treatise, (60) 207.
- series and types, classification, procedure, (52) 116.
- sifter for subterranean insects, (60) 556.
- solution—
 - analyses, uniformity and utility of data, (58) 116.
 - composition, (52) Calif. 19; (55) 626.
 - concentration, effect of absorption by plants, (58) 417.
 - effect of pH, (56) Kans. 811.
 - research, papers on, (60) 509.
 - secular and seasonal changes in, (52) 418.
 - significance for plants, (58) 614.
- solutions—
 - combined fraction of, (55) 622.
 - of fallow soils, variations in, (54) 211.
 - phosphates in, concentration, (52) Calif. 20.
 - phosphorus in, effect of liming, (56) 213.
 - physiological action, (54) Calif. 525.
 - reaction and chemical composition, (55) 316, 317.
 - studies, (54) 211; (55) Calif. 316; (56) Wis. 715.
- sterility in Germany, (55) 17.
- stresses, method of study, (53) 683.
- structure—
 - effect of mechanical treatments and soluble salts, (59) 421.
 - factors affecting, (53) 580.
 - new method of study, (60) 712.

Soil—Continued.

- structure—continued.
 - stability, factors affecting, (60) 711.
- surfaces and polished metal, friction between, (53) 588.
- survey and land cover studies, (53) 814.
- survey, chemical determinations for, (57) 710.
- survey in Alabama—
 - Cherokee Co., (60) U.S.D.A. 209.
 - Choctaw Co., (52) U.S.D.A. 717.
 - Crenshaw Co., (52) U.S.D.A. 510.
 - Greene Co., (56) U.S.D.A. 617.
- survey in Alberta, Medicine Hat Sheet, (57) 16.
- survey in Arizona—
 - Benson area, (52) U.S.D.A. 115.
 - San Simon area, (52) U.S.D.A. 617.
 - Winslow area, (51) U.S.D.A. 511.
- survey in Arkansas—
 - Lonoke Co., (53) U.S.D.A. 616.
 - Pulaski Co., (55) U.S.D.A. 314.
- survey in California—
 - Big Valley area, (51) U.S.D.A. 618.
 - Coachella Valley area, (57) U.S.D.A. 15.
 - Eureka area, (53) U.S.D.A. 16.
 - Gilroy area, (58) U.S.D.A. 718.
 - Hollister area, (59) U.S.D.A. 16.
 - Lancaster area, (55) U.S.D.A. 214.
 - Palo Verde area, (55) U.S.D.A. 215.
 - Victorville area, (52) U.S.D.A. 617.
- survey in Delaware, Sussex Co., (52) U.S.D.A. 321.
- survey in Florida, Lake Co., (56) U.S.D.A. 417.
- survey in Georgia—
 - Bibb Co., (56) U.S.D.A. 418.
 - Carroll Co., (51) U.S.D.A. 21.
 - Dooly Co., (56) U.S.D.A. 511.
 - Fannin Co., (55) U.S.D.A. 618.
 - Jenkins Co., (55) U.S.D.A. 415.
 - Muscogee Co., (56) U.S.D.A. 418.
 - Rabun Co., (51) U.S.D.A. 618.
 - scope of, (52) 115.
 - Screven Co., (52) U.S.D.A. 321.
- survey in Idaho—
 - Minidoka area, (60) U.S.D.A. 617.
 - Twin Falls area, (54) U.S.D.A. 415.
- survey in Illinois—
 - Grundy Co., (51) Ill. 511.
 - Johnson Co., (54) Ill. 210.
 - Lee Co., (57) Ill. 508.
 - Logan Co., (58) Ill. 206.
 - Marion Co., (56) Ill. 809.
 - Mason Co., (52) Ill. 510.
 - Mercer Co., (53) Ill. 720.
 - Ogle Co., (58) Ill. 206.
 - Randolph Co., (55) Ill. 215.
 - Saline Co., (56) Ill. 117.

Soil—Continued.

- survey in Illinois—continued.
 - Will Co., (57) Ill. 15.
 - Woodford Co., (57) Ill. 508.
- survey in Indiana—
 - Clay Co., (56) U.S.D.A. 810.
 - Gibson Co., (56) U.S.D.A. 617.
 - Kosciusko Co., (57) U.S.D.A. 314.
 - Lawrence Co., (59) U.S.D.A. 609.
 - Monroe Co., (59) U.S.D.A. 17.
- survey in Iowa—
 - Appanoose Co., (59) U.S.D.A. 17; (60) Iowa 210.
 - Benton Co., (53) U.S.D.A. 416; (57) Iowa 508.
 - Boone Co., (51) Iowa 719.
 - Clarke Co., (55) U.S.D.A. 314; (60) Iowa 210.
 - Dallas Co., (51) U.S.D.A. 619; (55) Iowa 314.
 - Delaware Co., (53) U.S.D.A. 616.
 - Des Moines Co., (53) U.S.D.A. 416; (57) Iowa 509.
 - Dickinson Co., (53) Iowa 511.
 - Dubuque Co., (53) Iowa 511.
 - Emmet Co., (53) Iowa 511.
 - Fayette Co., (51) Iowa 212.
 - Floyd Co., (54) U.S.D.A. 616; (58) Iowa 206.
 - Greene Co., (52) U.S.D.A. 321; (57) Iowa 509.
 - Grundy Co., (53) U.S.D.A. 212; (58) Iowa 206.
 - Hardin Co., (54) Iowa 812.
 - Harrison Co., (59) U.S.D.A. 610.
 - Jasper Co., (53) U.S.D.A. 416; (56) Iowa 17.
 - Jefferson Co., (54) U.S.D.A. 617; (60) Iowa 210.
 - Johnson Co., (51) Iowa 117.
 - Mahaska Co., (51) Iowa 21.
 - Mills Co., (51) Iowa 719.
 - O'Brien Co., (52) U.S.D.A. 18; (56) Iowa 18.
 - Page Co., (52) U.S.D.A. 416; (55) Iowa 416.
 - Plymouth Co., (59) U.S.D.A. 510.
 - Winneshiek Co., (57) U.S.D.A. 208; (60) Iowa 210.
 - Woodbury Co., (55) Iowa 415.
 - Worth Co., (54) U.S.D.A. 415; (58) Iowa 206.
 - Wright Co., (51) Iowa 212.
- survey in Kentucky—
 - Garrard Co., (52) U.S.D.A. 416.
 - Muhlenberg Co., (51) U.S.D.A. 213.
- survey in Louisiana—
 - Natchitoches Parish, (54) U.S.D.A. 16.
 - Washington Parish, (54) U.S.D.A. 617.
- survey in Maryland—
 - Allegany Co., (53) U.S.D.A. 417.
 - Dorchester Co., (55) U.S.D.A. 215.
 - Garrett Co., (56) U.S.D.A. 315.

Soil—Continued.

- survey in Maryland—continued.
 - Somerset Co., (51) U.S.D.A. 720.
 - Wicomico Co., (53) U.S.D.A. 417.
- survey in Massachusetts—
 - Norfolk, Bristol, and Barnstable Counties, (51) U.S.D.A. 619.
 - Worcester Co., (58) U.S.D.A. 414.
- Survey in Michigan—
 - Berrien Co., (56) U.S.D.A. 810.
 - Kalamazoo Co., (55) U.S.D.A. 215.
 - Manistee Co., (55) U.S.D.A. 216.
 - Ogemaw Co., (60) U.S.D.A. 211.
 - Ottawa Co., (56) U.S.D.A. 315.
 - Van Buren Co., (55) U.S.D.A. 618.
- survey in Minnesota, Jackson Co., (59) U.S.D.A. 810.
- survey in Mississippi—
 - Alcorn Co., (52) U.S.D.A. 618.
 - George Co., (54) U.S.D.A. 16.
 - Perry Co., (59) U.S.D.A. 206.
- survey in Missouri—
 - Andrew Co., (52) U.S.D.A. 717.
 - Caldwell Co., (52) U.S.D.A. 322.
 - Cole Co., (52) U.S.D.A. 209.
 - Mississippi Co., (52) U.S.D.A. 510.
 - Ray Co., (57) U.S.D.A. 209.
- survey in Montana—
 - Daniels Co., (53) Mont. 720.
 - Phillips Co., (57) Mont. 410.
 - Roosevelt Co., (54) Mont. 617.
 - Valley Co., (57) Mont. 16.
- survey in Nebraska—
 - Antelope Co., (52) U.S.D.A. 718.
 - Boone Co., (53) U.S.D.A. 212.
 - Burt Co., (57) U.S.D.A. 509.
 - Cuming Co., (55) U.S.D.A. 619.
 - Dawson Co., (54) U.S.D.A. 617.
 - Deuel Co., (52) U.S.D.A. 718.
 - Howard Co., (51) U.S.D.A. 214.
 - Jefferson Co., (54) U.S.D.A. 415.
 - Johnson Co., (51) U.S.D.A. 620.
 - Kearney Co., (56) U.S.D.A. 810.
 - Merrick Co., (56) U.S.D.A. 117.
 - Nance Co., (54) U.S.D.A. 415.
 - Pawnee Co., (51) U.S.D.A. 720.
 - Perkins Co., (52) U.S.D.A. 718.
- survey in Nevada—
 - Las Vegas area, (56) U.S.D.A. 316.
 - Moapa Valley area, (60) U.S.D.A. 18.
- survey in New Jersey, Trenton area, (55) U.S.D.A. 416.
- survey in New York—
 - Cayuga Co., (56) U.S.D.A. 316.
 - Genesee Co., (58) U.S.D.A. 207.
 - Tompkins Co., (52) U.S.D.A. 322.
- survey in North Carolina—
 - Camden and Currituck Cos., (55) U.S.D.A. 216.
 - Cherokee Co., (52) U.S.D.A. 417.
 - Cumberland Co., (54) U.S.D.A. 16.
 - Durham Co., (52) U.S.D.A. 115.
 - Haywood Co., (54) U.S.D.A. 415.
 - Polk Co., (57) U.S.D.A. 411.

Soil—Continued.

- survey in North Carolina—continued.
 - Rutherford Co., (60) U.S.D.A. 802.
 - Sampson Co., (55) U.S.D.A. 416.
 - Yadkin Co., (59) U.S.D.A. 610.
- survey in North Dakota, McHenry Co. (53) U.S.D.A. 417.
- survey in Nyasaland, (53) 115.
- survey in Ohio—
 - Clermont Co., (59) U.S.D.A. 114.
 - Fulton Co., (59) U.S.D.A. 423.
 - Miami Co., (55) Ohio 217.
- survey in Oregon—
 - Benton Co., (52) U.S.D.A. 210.
 - Clackamas Co., (55) U.S.D.A. 416.
 - Polk Co., (58) U.S.D.A. 810.
- survey in Pennsylvania—
 - Adams Co., (55) 808.
 - Greene Co., (53) U.S.D.A. 616.
- survey in South Carolina—
 - Greenville Co., (51) U.S.D.A. 811.
 - Lexington Co., (54) U.S.D.A. 416.
 - Spartanburg Co., (52) U.S.D.A. 511.
- survey in South Dakota—
 - Beadle Co., (52) U.S.D.A. 18.
 - Douglas Co., (57) U.S.D.A. 808.
 - Grant Co., (58) U.S.D.A. 313.
 - McCook Co., (52) U.S.D.A. 417.
 - Union Co., (52) U.S.D.A. 417.
- survey in Sun River irrigation area, (60) Mont. 116.
- survey in Tennessee—
 - Dickson Co., (56) U.S.D.A. 511.
 - Henry Co., (53) U.S.D.A. 814.
 - Maury Co., (55) U.S.D.A. 717.
 - Rutherford Co., (51) Tenn. 812.
- survey in Texas—
 - Cameron Co., (57) U.S.D.A. 209.
 - Coleman Co., (56) U.S.D.A. 618.
 - Dallas Co., (51) U.S.D.A. 511.
 - Dickens Co., (55) U.S.D.A. 217.
 - Harris Co., (60) U.S.D.A. 315.
 - Reeves Co., (56) U.S.D.A. 716.
 - Rockwall Co., (56) U.S.D.A. 18.
 - Tarrant Co., (51) U.S.D.A. 214.
 - west-central area, (59) U.S.D.A. 610.
- survey in Utah, Uinta River Valley area, (54) U.S.D.A. 416.
- survey in West Virginia—
 - Grant Co., (56) U.S.D.A. 316.
 - Mercer Co., (56) U.S.D.A. 418.
 - Mineral Co., (56) U.S.D.A. 316.
 - Tucker Co., (53) U.S.D.A. 814.
- survey in Wisconsin—
 - Adams Co., (51) U.S.D.A. 414.
 - Green Co., (60) U.S.D.A. 211.
 - Green Lake Co., (59) U.S.D.A. 316.
 - Ozaukee Co., (55) U.S.D.A. 17.
 - Walworth Co., (51) U.S.D.A. 812.
 - Washington Co., (55) U.S.D.A. 17.
- survey, nature and purpose, (55) Tex. 314.
- survey, papers on, (52) 17.

Soil—Continued.

survey work in Michigan, (52) Mich. 796.

surveys, use in forestry, (60) 513.

suspensions—

distribution curves of particle size in, (57) 314.

method of preparation and degree of dispersion, (57) 810.

preparation, (53) 117.

stability, (54) 811.

tank investigations, (54) Fla. 212.

temperature—

and sand temperature in Egypt, comparison, (53) 115.

at Giza, (60) 802.

determinations, (51) 722.

determinations from April to October, (52) 620.

effect of altitude and slope exposure, (53) 19.

effect of forest cover, (56) 837.

effect of irrigation, (53) 318.

effect of manure, (51) 325.

effect of moisture, (55) 629.

effect of mulches, (57) Calif. 211.

effect of paper mulch, (59) Calif. 717.

effect on cotton, Fla., (59) 846; (60) 151.

effect on development of cabbage yellows, (56) 448.

effect on rice germination and disease, (56) 651.

effect on wheat composition, (53) 748.

effect on white grubs, (51) 723.

factors affecting, (55) 316.

measuring, importance of, (60) 709.

records at Arlington Farm, (60) 508.

temperature, relation to—

cereal diseases, equipment for study, (56) 350.

cotton germination and growth. (58) Fla. 225.

cotton wilt, (59) Ark. 640.

plant diseases, (56) Wis. 445.

temperature, studies, (58) Fla. 208; (60) S.C. 734.

temperature studies in Egypt, (56) 117.

temperatures—

during sharâqi period, (51) 722, 723.

in Saskatchewan, (58) 811.

maximum and minimum, device for measuring, (54) 418.

under cotton in Egypt, (58) 634.

tests for subgrades, significance, (56) U.S.D.A. 177.

thermometers, description, (53) 815.

tilth and cultivation, studies, (54) 623.

tilth quality, factors affecting, (54) Nebr. 815.

Soil—Continued.

tilth, studies, (57) Nebr. 511.

toxicity, methods of diagnosing, (53) 224.

toxicity, studies, (53) 224.

treatments for control of damping-off in coniferous seed beds, (59) 348.

type as factor in farm economy, (55) Conn.Storrs 684.

type, effect on composition of plant juices, (60) 209.

types—

bacteriological study, (59) 210.

classification, (57) 15.

climatic, of Czechoslovakia, (60) 19.

diversity in prairie provinces, (59) 810.

homogeneity in organic matter and nitrogen, (58) 617.

in North Carolina, N.C., (51) 811; (57) 214.

in north-central Indiana, (56) 617.

in Spain, distribution, (60) 508.

of various countries, papers on, (60) 512.

relation to exchangeable calcium and magnesium in, (60) 208.

Rumanian, pH determination, (60) 509.

uniformity, test, (54) 179.

Vita, tests, (56) Can. 513.

water—*see also* Soil moisture.

conservation, (53) 17.

displacement of, (54) 15.

freezable, U.S.D.A., (52) 719, 783.

movement in, (51) 513.

of the New Jersey coast, (54) 212.

relation to vapor pressure, (54) 618.

vapor, absorption from air, (55) 719.

velocity of movement, (60) 675.

zeolites and plant growth, (60) Ariz. 515.

zeolites, studies, (60) 509.

Soilgro, tests with, (55) 721; (56) 321.

Soiling—

crop, Japanese barnyard millet for, (57) Oreg. 430.

crops, culture experiments, (57) 427.

crops, use, (54) Iowa 867.

v. pasture for cows, (52) Mont. 477.

Soils—

abandoned virgin, in Cuba, (52) 534.

absorption capacity, (54) 118.

absorption of bases by, (52) 419.

absorption of iron and aluminum by, (60) 516.

acid—*see also* Soil acidity.

action of neutral salts, (59) 511.

action of superphosphate on, (55) 815.

and correction by liming, (54) 422.

Soils—Continued.

- acid—continued.
 biological activities in, (53) Oreg. 418.
 extent in Nebraska, (51) Nebr. 815.
 lime requirement, (53) Ohio 516; (57) 712.
 replaceable bases in, (52) Calif. 319.
 action of chlorides on, (53) 21.
 adsorbed, aluminum in, (55) 318.
 adsorption and absorption of bases by, (51) 514.
 adsorption of dyes by, (53) 617.
 adsorption, studies, (60) 507.
 adsorptive capacity, estimation, (53) 617.
 aeration—
 as affected by barometric pressure, (52) 116.
 effect on *Impatiens balsamina*, (56) 425.
 relation to root growth, (57) 217.
 significance, (58) 340.
 studies, (51) 320; (52) Mich. 317; (53) 824; (54) 25.
 air-dried, reaction, (60) 508.
 air-drying, effect, (60) 508.
 alkali, *see* Alkali.
 alluvial, microorganisms in, (55) La. 513.
 alluvial, of Netherlands, natural and chemical changes, (52) 618.
 alternate wetting and drying, and freezing, effect, (56) 316.
 aluminum silicate, molecular condition, reaction, and fertilizer requirements, (54) 217.
 ammonia absorption by, (53) 19.
 ammonia determination in, (51) 813; (52) 612; (53) 11.
 ammoniacal nitrogen determination in, (53) 10.
 ammonification, *see* Ammonification.
 anaerobiosis in, (52) 720.
 and civilization, treatise, (58) 15.
 and crops, textbook, (51) 598.
 and dilute acids, interaction, (54) 620.
 and electrolytes, reactions, rôle of electronegative ions in, (54) 316.
 and fertilizers, (51) 719; (60) 25.
 and fertilizers, chemistry of, (59) 114.
 and fertilizers, treatise, (55) 16.
 and manures, science of, treatise, (55) 211.
 and pavement conditions in Michigan, (55) U.S.D.A. 479.
 and plants, moisture relationships, (56) 209.
 and plants, reciprocal action, (55) 324.
 and subsoils, improvement, (51) 512.
 aqueous vapor pressure, (59) 421.
 arable, formation, (60) 711.
 arable, improvement in, (52) 118.

Soils—Continued.

- arid, bacteria in, (54) 24.
 arid, nitrogen-fixing organisms in, (59) 815.
 arid, studies, (52) N.Mex. 317.
 as regional element, (60) 513.
 bacterial processes, studies, (55) 319.
 base exchange in, (54) 316, 317; (57) Ariz. 613; (58) 614.
 base unsaturation in, (60) 509.
 bearing capacity, (59) 478.
 biological properties, modifications during fallow period, (57) 811.
 biophysical and biochemical studies, (56) 315.
 black cotton, nitrogen changes in, (53) 618.
 black turf, in Transvaal, origin, (53) 510.
 bog, *see* Bog.
 Brazilian coffee, humus in, (53) 418.
 brown earth, in Finland, analyses, (55) 515.
 brown earth types in southern Sweden, (55) 217.
 brown loess, of Missouri, utilization, (54) Mo. 17.
 buffer action in, mechanism, Del., (54) 620; (58) 416; (60) 713.
 buffer capacity determination, (57) 315.
 calcareous—
 available phosphate, (53) 720.
 available phosphoric acid in, (56) 20.
 determination of replaceable bases in, (60) Ariz. 504.
 calcium in, relation to pH, (51) 514.
 capillary rise in, (53) 419.
 capillary rise in, apparatus for determining, (59) 612.
 carbon-nitrogen ratio in, (56) 210.
 cation concentrations in, relation to biological processes, (55) 212.
 chemical study, mechanical dispersion as aid, (59) Ohio 208.
 classification, (56) 17; (59) Conn. State 16; (60) 512, 513.
 and nomenclature, memoirs, (54) 414.
 and utilization, (57) N.J. 716.
 committee, program, (51) 400.
 in Quebec, (59) 810.
 mechanical, (55) 509; (57) U.S.D.A. 613.
 principles, (57) U.S.D.A. 474.
 relation to native vegetation, (52) 17.
 scheme, Kopecky, (54) 616; (56) 479.
 clay, *see* Clay.
 clay and silt loam, management, (51) Ind. 414.
 colloid chemistry of, (54) 6; (55) 718.
 colloidal—*see also* Soil colloids.
 behavior and fertility, (60) 23.
 behavior, effect of exchangeable bases, (60) 509.

Soils—Continued.

- colloidal—continued.
 - cohesion in, (54) 581.
 - fraction, studies, (55) 811; (58) 16.
 - material, nature of, (55) 718.
 - maximum water-retaining capacity, (54) 14.
 - percolation, relation to swelling and cohesiveness, (55) 16.
 - properties, (56) U.S.D.A. 208.
 - unusual properties, (55) 117.
- composition—
 - effect of irrigation water, (59) Wash.Col. 18.
 - from mechanical analysis and hygroscopicity, (54) 211.
 - relation to water extract, (60) 619.
- congress, editorial, (54) 402.
- coniferous timber, studies, (52) Idaho 816.
- consistency determination, (56) U.S. D.A. 882.
- constant phenomena in, (60) 509.
- contraction and expansion on wetting, (56) 717.
- cropped, ammonifying powers, (54) 813.
- cropped continuously to grain, rebuilding, (56) Mont. 119.
- crop-producing capacity, factors affecting, (51) 323.
- cultivated, adsorption power, (54) 813.
- cultivated, nitrogen activity, (53) 511.
- cultivation—
 - art and science of, (60) 221.
 - effect on crops, (55) 219, 619.
 - motorized, in Germany, (52) 785.
 - studies, use of dynamometer in, (56) 480.
 - treatise, (57) 710.
 - with ballistite, (51) 387.
 - without fertilizer, effect on nitrogen in, (58) 210.
- decolorizing value, improved tube for determination, (54) 205.
- degrees of saturation of absorbing complex, humus-zeolite, (60) 509.
- depleted and virgin, studies, (51) 322.
- deteriorated tropical, improvement, (60) 622.
- development from acidic and basic rocks, (60) 512.
- differentiation into mapping units on uniform basis, (60) 507.
- disinfection, (59) 553.
- disinfection, steam and chemical, (54) 347.
- disinfection with acetic acid, (59) 239.
- dispersion factor, (54) 618.
- distribution in United States, (60) 710.
- dried at different temperatures, heat of wetting, (54) 418.
- dried, changes in, (57) 811.
- dry, aqueous vapor pressure, (51) 319.

Soils—Continued.

- drying, chemical changes in, (53) 19.
- drying, effect on colloid constituents, (58), 614, 812; (59) 418.
- effect of air drying, (53) 419.
- effect of fertilizers on exchangeable cations in, (60) 422.
- effect of heating, (51) 515.
- effect of storage, (52) 121.
- effect of sulfur as fertilizer, (59) Md. 425.
- effect on plant life, (55) 811.
- electrical conductivity, effect of drying, (54) Wash.Col. 875.
- electrodialysis, (60) 620.
 - and the Mattson cell, (58) 514, 717.
 - apparatus for, (58) 717.
 - choice of electrodes, (59) 114.
- energy sources and microbiology, (51) 18.
- evaporation power, (55) 316.
- evolution and classification, treatise, (59) 608.
- exchange bases in, studies, (57) Ohio 114.
- exchangeable bases extracted from, (59) 420.
- exchangeable hydrogen in, amount and avidity, (60) 509.
- facts for farmers, (54) Ill. 616.
- fallow, nitrates in different layers, (60) 421.
- fertilizer requirements—
 - determination, (52) 621; (53) 420; (54) 815; (55) 515, 814.
 - Neubauer method of determination, (59) 318.
 - potassium content as indicator, (58) 507.
 - relation to colloidal alumina and silica, (54) 118.
- fertilizers for, (55) Conn.State 320.
- fine-textured, physical composition, (55) Calif. 315.
- Finnish, properties, (60) 513.
- flocculation studies, (53) Mo. 414.
- forest, *see* Forest.
- forest and meadow, physical properties, (53) 113.
- frozen, bacterial types in, (55) 812.
- frozen, microbiological studies, (55) 720.
- frozen, microorganisms in, (54) 119.
- geology and mineralogy of, (60) 617.
- German, phosphoric acid requirements, (55) 19.
- glacial—
 - and loess, parallelisms, (54) Nebr. 314.
 - limestone, Ohio, (54) 511; (55) 17.
 - of Minnesota, studies, (56) 618.
 - sandstone and shale, (55) Ohio 619.
- greenhouse, fertilizers for, (53) Ohio 514.

Soils—Continued.

- heating, effect on soil population, (51) 16.
 heaving, cause, (60) 378.
 heavy alkaline, organic matter in, (56) 718.
 heavy and light, fertilizing, (51) Mich. 96.
 heavy, importance of pH control, (51) 721.
 heavy, moisture equivalent, (56) 717.
 Hood River, studies, (55) Oreg. 643.
 humid-tropical and humid-temperate, comparisons, (56) 116.
 H-ion concentration determination, (51) 805; (52) 121.
 H-ion determination, errors in, (53) 408.
 hygroscopic coefficient, (54) 619.
 impermeable, studies, (53) N.Mex. 114.
 in cereal culture, disinfection methods, (56) 749.
 in Gilroy region, (55) Calif. 315.
 infertile, toxic organic constituents, (51) 19.
 inoculation—
 effect on assimilation of nutrients, (54) 419.
 experiments, (51) 214.
 with *Azotobacter*, (54) 419, 719.
 inorganic constituents, determination, (51) 314.
 introduction to scientific study, treatise, (59) 113.
 introductory course in, organization, (51) 396.
 iodine determination in, (58) 507.
 iron absorption by, (56) 417.
 irrigated, effect of cropping on nitrogen and organic carbon, (57) 714.
 irrigated, potential alkalinity, (51) 711.
 lime requirements—
 and soluble calcium in, (51) 514.
 determination, (51) 814; (53) 510, 621; (54) 121, 122; (56) 23; (60) 22.
 determination from weeds, (59) 210.
 for definite pH value, (60) 419.
 measuring, (60) 622.
 papers on, (56) 17.
 relation to buffer quality and pH, (54) 214.
 standard soils for estimating, (53) 120.
 limed, loss of constituents in soil zones, (56) 721.
 long cultivated, changes in, (60) 511.
 loss of nitrates from, (53) 321.
 magnesian, cause of infertility, (56) 418.
 manganese as active base in, (59) 511.
 manured, effect of caustic lime, (54) Pa. 317.
 mathematical analysis, effect of fertilizers, (52) 816.

Soils—Continued.

- maximum molecular moisture holding capacity, determination, (60) 508.
 Mediterranean red, origin, (53) 115.
 microbial forces in, (58) 615.
 microscopical and bacteriological examination, (60) 510.
 mineral constituents, effect of liquid manure, (54) 422.
 mineral, humification, measuring, (53) 503.
 mineralized, soil solution formation, (60) 618.
 moisture capacity, (54) 512; (57) 711.
 moor, *see* Moor and Peat.
 mottled colors in, importance, (52) 17.
 movement of soluble salts in, (53) 820.
 muck, *see* Muck.
 Nebraska Grundy, studies, (57) 710.
 negative adsorption of electrolytes by, (55) 622.
 nitrate in, (51) 813.
 nitrifying capacity, (52) N.J. 720.
 nitrogen content, *see* Ammonification, Nitrification, and Nitrogen.
 of abandoned plantations in India, (53) 16.
 of Alberta, nitrate production in, (56) 621.
 of Alberta, sulfur in, (59) 813.
 of Assam, humus content, (56) 719.
 of Auckland, chemical aspects, (51) 118.
 of Bavaria, lime requirements, (55) 815.
 of Bernardsville area, analyses, (53) N.J. 16.
 of Bombay Deccan, nitrogen recuperation in, (55) 218.
 of Burma, buffer action, (53) 510.
 of Calhoun Co., Michigan, fertilizers for, (55) Mich. 122.
 of California, cultivation studies, (53) Calif. 419.
 of Cattavia Valley, Island of Rhodes, analyses, (52) 18.
 of central Asia, sodium in, (57) 16.
 of Ceylon, absorption of fertilizers by, (56) 320, 419.
 of Chatsworth area, analyses, (53) N.J. 416.
 of Chile, genesis, (60) 513.
 of Colorado, fungi in, (59) 512.
 of Cuba, composition of concretions, (51) 721.
 of Cuba, treatise, (59) 206.
 of Delaware, lime requirements, (51) Del. 122; (54) 817.
 of Delaware, reaction studies, (60) Del. 316.
 of Denmark, lime requirements, (53) 510.
 of digbase origin, (53) 616.
 of east coast of Sumatra, (52) 718.
 of England, algae in, (59) 814.
 of Esthonia, (55) 17.

Soils—Continued.

- of Europe, nickel and cobalt in, (54) 210.
- of Finland, Azotobacter in, (55) 813.
- of Florida, (54) 511.
- of Georgia, Burke Co., analyses, (53) 212.
- of Georgia counties, analyses, (57) 314.
- of Georgia, Early Co., analyses, (51) 21.
- of Georgia, Richmond Co., analyses, (51) 619.
- of Germany, reaction, (52) 319.
- of glacial region, Ohio, (56) 210; (57) 209.
- of Great Plains, (51) 21.
- of Hawaii, effect of paper mulch, (56) 209.
- of Hawaii, potash availability in, (51) 420.
- of Hawaii, solutions, iron, aluminum, and manganese in, (52) 117.
- of Henry County, classification, (60) Ill. 617.
- of Illinois, Hancock Co., (52) Ill. 209.
- of Illinois, Rock Island Co., (54) Ill. 511.
- of India, ammonia fixation in, (53) 617.
- of Iowa, effect of gypsum, (53) 622.
- of Italy, reaction, (51) 116.
- of Java, survey, (52) 511.
- of Kansas, base exchange studies, (60) 509.
- of lower Rio Grande Valley, (52) Tex. 493.
- of Mediterranean region of France, (60) 508.
- of Michigan, profiles, (56) Mich. 398.
- of Michigan, southern peninsula, characteristics, (51) Mich. 213.
- of Michigan, water content, (55) Mich. 315.
- of Minnesota, pH value, (55) 622.
- of Nebraska, nitrification, factors affecting, (59) Nebr. 815.
- of Nelson district, New Zealand, (56) 319, 419.
- of New Hampshire, (51) N.H. 122.
- of New Jersey, lime requirement, (55) N.J. 223.
- of New York, lime requirements, (51) 423.
- of New Zealand, analyses, (51) 512.
- of North Carolina, fertilizer requirements, (51) 215.
- of North Carolina, studies, (60) N.C. 618.
- of North Wales, phosphate losses by leaching, (56) 721.
- of Northern Great Plains Field Station, (53) U.S.D.A. 114.
- of Ohio, classification, (54) Ohio 316.
- of Ohio residual sandstone and shale, (60) Ohio 117.
- of Oregon, replaceable bases in, (58) 117.

Soils—Continued.

- of Oregon, sulfur oxidation in, (51) 327.
- of Philippines, effect of lime, (51) 221.
- of Prince Edward Island, analyses, (60) 19.
- of Province of Voronezh, geology, (59) 114.
- of Purchase Region, (57) Ky. 209.
- of Pusa, studies, (53) 720, 721.
- of Rabun Co., Ga., analyses, (54) 812.
- of Rhode Island, (60) R.I. 18.
- of Russia, air drying of, (51) 415.
- of Russia, classification, (51) 811.
- of Russia, effect of desiccation, (58) 313.
- of Saratov experiment region, studies, (56) 716.
- of Scotland, characters, (55) 417.
- of Scotland, field study, (53) 213.
- of South Africa, nitrates in, variation, (52) 512.
- of South Africa, nitrification in, (52) 211.
- of South Africa, protozoa in, (53) 618; (56) 118.
- of South Australia, correction of, (53) 723.
- of South Carolina, minerals in, (60) S.C. 708.
- of Tennessee, future needs, (52) Tenn. 511.
- of Texas, bacterial flora, (53) 215.
- of Texas, composition and fertility, (52) Tex. 116.
- of Texas, Hidalgo Co., stages of leaching, (58) 15.
- of Texas, pH relation to incidence of woody plants, (58) 613.
- of Texas, studies, Tex., (55) 116; (58) 810.
- of Texas, sulfur in, (54) Tex. 315.
- of the Biesbosch in South Holland, studies, (52) 618.
- of the Dollards of Groningen, (52) 618.
- of the Sudan, composition, (53) 814.
- of the Sudan, studies, (53) 722; (56) 510.
- of Tompkins County, N.Y., and crop adaptations, (55) 624.
- of Transvaal—
 - chemical studies, (56) 116.
 - Highveld black turf, (51) 721.
 - physical properties, (51) 512.
 - reaction, (53) 616.
 - sandy and sandy loams, (51) 118.
 - Waterberg sandy, (52) 210.
- of Trenton area, composition, (60) N.J. 116.
- of Ukraine, survey, (53) 213.
- of United States, protozoa of, (53) 19.
- of United States, textural composition, (52) 208.
- of Washington, fertility, (58) Wash. Col. 216.

Soils—Continued.

- of West Virginia, analyses and fertility, (52) W.Va. 511.
- of western Canada, productivity, (55) 419.
- of Whiteside County, studies, (60) Ill. 209.
- of Yakima Valley, water relations, (60) 277.
- organic matter in, *see* Organic matter.
- organic phosphorus in, (51) 20.
- organic, profiles, (52) 417.
- oxidation of sulfur in, (55) 118.
- peat, *see* Peat and Moor.
- percolation of water through, (52) Calif. 19.
- pervious, hydrostatic uplift in, (59) 279.
- pH, effect of plant growth, (58) 623.
- pH, relation to plant distribution, (60) 627.
- pH value—
 - determination, (56) Wis. 715.
 - determination, antimony electrode in, (59) 709.
 - determination, quinhydrone and hydrogen electrodes for, (58) 506.
 - determination, quinhydrone electrode for, (55) 206.
 - effect of carbonic acid and soil-water ratio, (55) 213.
 - effect of fertilizers, (60) 22.
 - effect of soil-water ratio, (56) Wis. 715.
 - factors affecting, (57) 809.
- pH values, (58) 23.
- phosphate availability, determination, (52) 311.
- phosphoric acid absorption, (58) 722.
- phosphoric acid requirements, (56) 710.
- phosphorus in, studies, (58) 117.
- physical characteristics, measurement, (58) 513.
- physical condition, effect of calcium sulfate, (55) N.Y.Cornell 517.
- physical properties, (54) 177, 581.
- physical properties, effect of colloids, (53) 816.
- physical properties, effect of lime, (54) 219; (57) Nebr. 511.
- physicochemical investigations, (59) Mich. 417.
- physicochemical processes in, dynamics, (58) 612.
- plasticity, (56) 19.
- plowing resistance, and implement for measuring, (59) 378.
- podsol, *see* Podsol.
- poor in lime, fertilization, (60) 720.
- productive, type of bacteria in, (60) N.Y.State 420.
- properties—
 - and classification, (52) 717.
 - effect of earthworms, (54) 718.
 - effect of tile drainage, (58) 282.

Soils—Continued.

- properties—continued.
 - regression, (58) 631.
 - relation to exchangeable cations, (60) 115.
 - studies, (59) 116.
- protozoa in, (58) 615; (60) 316.
- publications issued by experiment stations, (57) U.S.D.A. 808.
- publications issued by the Department, (57) U.S.D.A. 808.
- reciprocal repression by calcic and magnesian additions, (56) 417.
- red, characterization and classification, (53) 115.
- red, of Moravia, analyses, (51) 721.
- Rendzina, formation, (55) 808.
- replaceable bases in, (52) Calif. 318; (55) Ariz. 713.
- reservoir capacity, (52) Wash.Col. 810.
- resistance to acidification, (52) 116.
- resistance to plowing, maps, (54) 179.
- response to liming, calcium as indicator, (53) 819.
- saturation, (54) 212.
- saturation capacity, methods of determination, (60) 708.
- Scottish, exchangeable bases in, (55) 117.
- Scottish, mineralogical composition, (53) 720; (54) 618.
- semi-arid, improved management, (58) Wash.Col. 415.
- serpentine, bacterial flora of, (56) 719.
- setting free of iodine from, (53) 202.
- shrinkage, (54) 418.
- shrinkage coefficient, physical significance, (54) 117.
- shrinkage on drying, measurement, (54) 15.
- Silesian, action of nitrogen and phosphoric acid, (55) 220.
- sodium alkalies formation in, (55) 811.
- sour, (55) 618.
- sour, modification, R.I., (55) 220; (59) 616.
- sterilization—
 - by antiseptics, (54) 420.
 - by heat for glasshouses, (60) 21.
 - effect, (52) 646.
 - effect on microorganisms, (52) N.J. 720.
 - effect on value of nitrogenous fertilizers, (54) 19.
 - for seedbeds and greenhouses, (58) Colo. 208.
 - for vegetables, (52) Kans. 449.
 - for wheat, (58) 319.
 - in greenhouses, (56) 46, Ohio 513, Kans. 843; (57) Ohio 144; (59) Colo. 236, Ohio 238.
 - partial, effects, (51) 15, 17.
 - studies, (52) 234, 321; (54) 347, 449; (55) 843.
 - value, (54) Ohio 344.
 - with steam, (58) 659.

Soils—Continued.

- sterilization—continued.
 with steam under pressure, (56) Colo. 839.
- sterilized, inoculated with protozoa and fungi, effect, (58) 119.
- studies, (51) Mich. 119, Tenn. 320; (52) Ill. 420, Wash.Col. 814, Wash. Col. 815; (53) Mo. 414, Wis. 415; (54) Tex. 315, P.R. 615, Mich. 616, Mo. 715, Wash.Col. 808; (55) R.I. 220, Iowa 509, Mich. 808; (56) Ill. 212, Utah 508, Wash.Col. 508, Wash.Col. 509, 511, S.Dak. 623, Iowa 811, Kans. 811; (57) Calif. 212, Mo. 411, P.R. 412, Idaho 709; (60) Tenn. 119, Fla. 120, Conn. State 716.
- agrophysical methods, (54) 812.
 at experiment stations, (52) 401.
 at Hood River, (60) Oreg. 719.
 hydrometer method, (59) 509; (60) 18.
- in citrus orchards, (55) Calif. 338.
- in Japan, (60) 507.
- movable lysimeter for, (55) 509.
 relation to field experiments, (55) 618.
- treatise, (59) 608.
- subgrade—
 field tests, (52) U.S.D.A. 184.
 plasticity tests for, (55) U.S.D.A. 583.
 procedure for testing, (53) U.S. D.A. 284.
 studies, (56) Colo. 880; (57) 81.
 studies, economic possibilities, (56) U.S.D.A. 882.
 testing, present status, (59) U.S.D.A. 177.
- suction force, (55) 719; (60) 508.
- suction force, as index of colloid content, (54) 417.
- sulfonation in, (58) Ky. 20.
- sulfur determination in, (51) 10; (52) Wash.Col. 814; (53) 11; (59) 312.
- sulfur oxidation in, (51) 22.
- supporting value as affected by bearing area, (52) 687.
- swamp, *see* Swamp.
- Szik in Hungary, vegetation, (60) 513.
- textural classification, (60) 508.
- texture and structure, effect of chemical agents, (57) 810.
- texture, index, (60) 711.
- thiocyanate colors, pH values and lime requirements, relation, (54) 317.
- tillage experiments, (51) Tenn. 325.
- total surface, effect of temperature on, (52) 117.
- transition from podzolized to forest-steppe, (59) 510.
- treatise, (51) 510; (52) 115; (54) 116; (57) 314.

Soils—Continued.

- treatment with ammonia for sedimentation analysis, (54) 414; (55) 17.
- urea in, decomposition, (51) 818.
- utilization of summer rain, (55) 619.
- vapor pressure of capillary systems in, measurement, (55) 212.
- Vesuvian, nitrogen-fixing bacteria in, (52) 22.
- Vesuvian, streptothrices in, (52) 22.
- volume determination, apparatus, (54) 511.
- volume-weight determination, (58) 811; (59) 509, 809 (60) 315.
- water-holding capacity, (53) Wis. 415.
- water-logged, biochemistry, (59) 812.
- water-logged, orchard injury from, (52) Mont. 450.
- water-supplying power, estimating, (53) 116.
- weathered from parent rock, (55) 319.
- wind-blown, bacterial flora, (55) 621; (58) 18, 515.
- with restricted drainage, colloidal fraction, (60) 510.
- work at Groningen Station, (54) 210.
- Solanaceae—
 chromosome numbers in, variations, (57) 31.
 species, stock poisoning by, (57) 873.
- Solanum—
 chimeras, leaf development, (59) 518.
 elaeagnifolium berries, chymase in, (53) 324.
 leaf disease, notes, (57) 444.
 lycopersicum, germination-inhibiting substances in, (55) 323.
 species, chromosome number in, (57) 122.
 sturtianum poisonous to livestock, (54) 71.
- Solar—
 activity and weather changes, (56) 15.
 activity, 28-month period in, (60) U.S.D.A. 314.
 changes, effect on terrestrial conditions, (55) 806.
 constant—
 measurements, (53) 615.
 values, provisional, (54) 807.
 values, Smithsonian, (54) U.S.D.A. 115.
 values, statistical analysis, (54) U.S.D.A. 115.
 values, variations in, U.S.D.A., (54) 114, 713.
 energy, possible use of, (53) 15.
 energy, utilization by crops, (55) 424.
 phenomena, systematically varying period in, (52) U.S.D.A. 414.
 propagating frame for rooting citrus, (51) U.S.D.A. 538.

Solar—Continued.

- radiation—*see also* Radiation.
 and plant growth, (56) 114, 807.
 and terrestrial radiation, (52) 615.
 and the atmosphere, (53) 316.
 and weather, (54) 12.
 and weather forecasting, (56) 15.
 effect on transpiration in plants,
 (54) 21.
 factors affecting, (56) 114.
 fluctuations in relation to weather,
 (52) 808.
 in forests, portable instrument for
 measuring, (57) Vt. 242.
 intensities, recording, (51) U.S.
 D.A. 809.
 intensities, variation in, (52) U.S.
 D.A. 716.
 intensity, instruments for readings,
 (56) U.S.D.A. 314.
 intensity relation to daylight in-
 tensity, (52) U.S.D.A. 413.
 measurements and interpretation,
 (57) U.S.D.A. 206.
 on land and sea, (60) U.S.D.A.
 506.
 value of pyrheliometric readings,
 (55) 15.
 variation in, (54) U.S.D.A. 713;
 (55) 313, U.S.D.A. 507.
 variation in, measurement, (54)
 614.
 variations and weather, (54) 12,
 508.
 variations and weather forecast-
 ing, (53) 812.

Solarimeters and solarigraphs, (56) U.S.
 D.A. 314.

Solenopsis geminata—

- parasites of, (59) 859.
 rufa, notes, (55) 858.

Solodization of soils, (59) 116.

Solonet, various types, morphological struc-
 ture, (59) 611.

Sols, relative viscosity, (56) 310.

Solubility, monograph, (51) 503.

Solutes—

- absorption, (55) Mich. 817.
 added, effect on soil and plant, (51)
 Calif. 417.
 exuded by root pressure from vines,
 (56) 424.

Solutions—

- H-ion concentration, determination,
 (54) 411.
 nesslerized, cause of turbidity in, (51)
 11.
 nutrient, *see* Nutrient.

Solvents, use in synthetic organic chemis-
 try, (54) 612.

Sonchus arvensis, control, (54) 240.

Sorbitol, isolation from apple juice, (55)
 202.

Sore mouth in lambs, (55) Mont. 578.

Sorghum—*see also* Kafir, Milo, *etc.*

- as indicator of nitrogen availability,
 (51) 624.

Sorghum—Continued.

- bacterial disease, (56) 47.
 bacterial leaf spot, (55) Iowa 541.
 beetle enemy, morphology and biology,
 (59) 860.
 breeding experiments, (52) Kans. 433,
 823; (55) Tex. 332.
 carbohydrate formation in, (51) 626.
 composition, (53) Nebr. 433.
 correlation between yield and other
 characters, (58) 33.
 crosses, seed color inheritance in, (51)
 29.
 culture experiments, (55) Hawaii 526,
 Nebr. 637; (58) U.S.D.A. 532.
 culture experiments in Russia, (52)
 735.
 culture in India, (57) 629.
 diseases, notes, (57) 639.
 downy mildew, notes, (51) 46.
 duty of water for, (54) N.Mex. 680.
 effect of black paper covered soil, (59)
 Calif. 727.
 effect of distribution of rainfall, (56)
 Kans. 823.
 effect of season of maturity, (53)
 Guam 430.
 experiments on Great Plains, (52)
 U.S.D.A. 37.
 fall seeding experiments, (52) 633.
 fertilizer and legume experiments fol-
 lowing, (60) 434.
 fertilizer experiments, (53) Ariz. 733.
 field experiments with, (60) 735.
 forage value, (57) La. 522; (59) 130.
 grain—
 bibliography, (54) U.S.D.A. 635.
 breeding experiments, (59) Tex.
 729.
 club work, (53) 695.
 cultural methods, (53) Okla. 31.
 culture, (53) Ariz. 433.
 culture experiments, (57) Okla.
 226; (59) Tex. 729, Tex. 730.
 feeding value, (54) 864.
 harvesting, (60) U.S.D.A. 226.
 harvesting, root cutting as aid,
 (56) 683.
 improvement, (57) Okla. 226.
 in storage, insects affecting, (59)
 Tex. 759.
 inbreeding, (52) 32.
 inheritance studies, (59) Tex. 729.
 nutritional value, (53) Okla. 66.
 plant characters and yield in, (60)
 434.
 planting dates, (59) Tex. 730.
 preparation for fattening swine,
 (57) 659.
 seed treatment, effect on germina-
 tion, (55) Okla. 247.
 spacing, (57) 37.
 use in silage, (60) S.C. 770.
 v. corn for lambs, (59) Tex. 260.
 varieties, (53) Calif. 430, Mo. 431.
 varieties, new, Okla. Panhandle,
 (60) 735, 795.

Sorghum—Continued.

- grain—continued.
- varieties, yields, (55) Mo. 132.
 - variety tests, (54) Fla. 230; (55) U.S.D.A. 433; (56) Ariz. 731; (57) Okla. 226; (58) Ark. 321, U.S.D.A. 532, Okla. 734, Okla. 828; (59) Miss. 325, Tex. 729, Miss. 824; (60) Miss. 34, Ark. 812.
 - grass, bibliography, (54) U.S.D.A. 635.
 - harvesting and spacing studies, (57) Calif. 225.
 - head smut, effect of soil moisture and temperature, (58) 655.
 - head smut, notes, (51) 46; (57) 443; (60) 150.
 - history and uses, (51) 236.
 - hybrid vigor in, (57) Tex. 432.
 - hybrids, partial sterility in, (58) 131.
 - hydrocyanic acid in, (53) 571.
 - improvement, (56) Kans. 822.
 - in Arizona, (51) Ariz. 236.
 - inheritance studies, (57) Tex. 126.
 - injurious after-effects, (52) 834.
 - injurious effects on following crops, cause, (59) 135.
 - insects affecting, Kans., (52) 452; (56) 856.
 - kernel smut—
 - control, (55) U.S.D.A. 652, 848; (56) Kans. 842; (59) Kans. 243, 345.
 - infecting milo and hegari, (57) 545.
 - strains, (57) 546.
 - studies, (57) 743.
 - leaf spot, notes, (58) 647.
 - midge, control, (60) U.S.D.A. 356.
 - modes of infection by loose kernel smut, (58) 550.
 - planting and spacing experiments, (57) Okla. 125.
 - pollination in, (51) 30.
 - roots, pruning before harvesting, (59) Calif. 727.
 - roots, relation to biological processes, (60) 135.
 - roughage, preparing for calves, (59) Tex. 763.
 - rust, notes, (55) 346.
 - rust pustules, parasite on, (57) 444.
 - seed treatments, effect on vitality, (59) Kans. 243.
 - seed-coat structure and color inheritance, (60) 628.
 - seeding experiments, (53) Nebr. 433; (57) Okla. 523.
 - silage, *see* Silage.
 - smut, control, (52) Kans. 445; (56) Colo. 839.
 - smut infection, factors affecting, (56) 651.
 - smut resistant varieties, (56) 246, Kans. 822.

Sorghum—Continued.

- smuts, varietal resistance, (53) U.S.D.A. 751.
 - smuts, varietal resistance and susceptibility, (54) 250.
 - spacing and yield data, (51) Ga. 133.
 - sugary disease, notes, (54) 246.
 - tests, (59) Hawaii 626.
 - v. corn as forage crop, (53) Nebr. 433.
 - v. corn for grain and forage production, (58) Mo. 428.
 - varieties—
 - for Kansas, (53) 528.
 - forage value, (53) U.S.D.A. 132.
 - improvement, (59) Calif. 727.
 - variety tests, (51) Miss. 134, 636, Hawaii 740, (52) Fla. 224, Guam 226, Kans. 433, Wash. Col. 829; (53) Guam 430, Ariz. 733; (54) Hawaii 131, Fla. 325; (55) Miss. 636; (56) Fla. 821, Kans. 822; (57) Okla. 125, Tex. 126, Okla. 523; (59) N.Mex. 222; (60) Fla. 130, Okla. 435.
 - yields, (51) U.S.D.A. 135.
 - yields of adjacent rows, (59) 829.
 - Yolo, breeding experiments, (52) Calif. 33.
 - Yolo, culture experiments, (52) Calif. 32.
- Sorghumin, definition, (54) 802.
- Sorghums—
- method of crossing, (56) 637.
 - natural cross-fertilization in, (56) 631.
- Sorgo—
- as sugar crop in Russia, (52) 736.
 - breeding experiments, N.C., (51) 832; (55) 228.
 - culture experiments, (53) Ariz. 433, Nebr. 433; (55) Miss. 228; (59) Tex. 729.
 - culture under dry farming, (58) U.S.D.A. 325.
 - fodder as roughage for calves, (59) U.S.D.A. 66.
 - for silage, culture methods, (56) Miss. 731.
 - forage yields, (52) Mont. 435.
 - honey, irrigation experiments, (52) Calif. 33.
 - improvement, (53) N.C. 735.
 - seed coats, relation to water absorption and germination, (55) 828.
 - seed, ground, feeding value, (53) Kans. 377.
 - seeding experiments, (53) Nebr. 433.
 - silage merits, (53) U.S.D.A. 132.
 - sirup, jelling in, cause, (52) 13.
 - sirup manufacture, (51) U.S.D.A. 13.
 - v. grain sorghum as forage crop, (52) U.S.D.A. 37.
 - varietal characters, (55) U.S.D.A. 530.
 - varieties, (53) Okla. 133, Mo. 431; (55) Ark. 30; (57) Tenn. 126.
 - for Kansas, (53) 528.
 - for silage, (53) U.S.D.A. 334, Nebr. 434.

Sorgo—Continued.

varieties—continued.

for three regions of State, (58)

N.C. 828.

sirup production, (60) Ark. 812.

sugar content, (53) Okla. 111.

yields, (52) Fla. 224.

variety, new, (54) 438.

variety tests, (51) 636; (52) Fla.

224, Guam 226, Kans. 433, Wash.

Col. 829; (53) Wyo. 133, N.Dak.

334, Ariz. 733, U.S.D.A. 834; (54)

Fla. 230, Fla. 325; (55) U.S.D.A.

433, Fla. 824; (56) Ark. 332, Ariz.

731, Iowa 821, Kans. 822; (57)

Okla. 125, Okla. 226, Okla. 523;

(58) Ark. 321, U.S.D.A. 532, Okla.

734, Okla. 828; (59) N.Mex. 222,

Miss. 325, Miss. 824, Nebr. 824;

(60) Miss. 34, Okla. 435, Ark. 812.

yields, (51) Nebr. 831.

Sorolpidium betae, notes, (58) 47.

Sorosporium—

paspali, notes, (60) 546.

reilianum, notes, (53) U.S.D.A. 751;

(57) 48, 443, 743; (59) 146; (60)

150.

Sorrel hybrid, mosaic of sexes in, (53) 731.

Sound waves, high-frequency, physical and

biological effects, (58) 812.

Sourwood, fungi affecting, (57) 753.

South America, textbook, (57) 89.

South Carolina—

College, notes, (56) 499; (57) 699.

Station, notes, (53) 499; (55) 398;

(56) 499; (57) 699; (58) 698; (59)

698.

Station, report, (52) 598; (54) 698;

(56) 599; (58) 696; (60) 795.

South Dakota—

College, notes, (54) 599, 797; (55)

300; (56) 197; (57) 397, 699; (58)

300, 600; (59) 399, 599.

Dry-land Field Station, work, (58)

U.S.D.A. 396.

Station, notes, (53) 99; (54) 797;

(55) 300; (56) 197; (57) 397; (58)

300, 600; (59) 399.

Station, report, (51) 495; (54) 197;

(56) 599, 698; (58) 797.

Sow thistle—see also Thistle.

characteristics and control, (55)

N.Dak. 642.

control, Minn., (53) 131; (55) 332.

growth and reproduction, (52) N.Dak.

231.

seed, germination tests, (58) Minn.

828.

seed, notes, (51) Minn. 134.

spread, (59) Iowa 31.

survey of Ontario, (56) 233.

Sows—see also Pigs and Swine.

and litters, feed requirements, (52)

Mont. 371; (57) 659.

and litters, management and feeding,

(56) 71; (60) Wis. 466.

and litters, self-feeding v. hand-feed-

ing, (55) U.S.D.A. 768.

Sows—Continued.

breeding records, (55) N.Dak. 566.

brood—

care, (58) 168.

cost of keeping, (52) Wash.Col.

873.

effect of minerals in ration, (57)

70.

effect of velvet beans, (60) Ala.

171.

feeding experiments, (54) Can.

863.

legume hay for, (58) Ark. 357.

nutritive requirements, (52) Kans.

469.

pulped roots v. beet pulp for, (51)

Can. 376.

rations for, (51) Wis. 470.

velvet beans for, Ala., (59) 67,

664.

winter rations, (52) Pa. 270; (56)

Pa. 165; (58) Del. 464.

cyclic changes in vaginal mucosa, (57)

172.

effect of age, (57) Nebr. 566.

genital organs, nature of secretions

during oestrus, (52) 631.

immature brood, effect of plane of nu-

trition, (51) Mo. 773.

improved Landschwein, composition of

milk, (55) 467.

oestrous cycle in, (55) Mo. 865.

prolificacy, and mortality of pigs, (57)

761.

winter rations for, (52) Wash.Col. 873.

yearling brood, preparation of corn for,

(59) Iowa 69.

Soy bean—

and cowpea wilt fungus, comparison,

(59) N.C. 749.

and Sudan grass mixtures, tests, (56)

Ill. 334.

anthracnose, notes, (53) N.C. 746;

(55) 752.

bacterial blight, studies, (57) 646.

bacterial pustule, studies, (52) 650,

651.

blight, notes, (58) S.C. 646.

brown spot disease, (55) 752.

cake decomposition, factors affecting,

(53) 219.

cake, effect on acidity of a rice field,

(53) 117.

cake, effect on milk, (54) 274.

Cercospora disease, notes, (57) N.C.

245.

chlorosis, prevention, (58) Del. 420.

curd proteins, maintenance values,

(51) 365.

diseases in North Carolina and the

Orient, (55) 752.

disease, notes, Del., (51) 148; (54)

647; (56) 348; (58) 441.

diseases, seed-borne, treatments, (59)

N.C. 749.

downy mildew, new, notes, (55) 348.

flour, fat content, (56) 312.

Soy bean—Continued.

- forage, feeding value, (52) S.C. 569; (53) Iowa 774; (55) S.C. 469.
frog-eye leaf spot, (59) 849.
growth, effect of weight of seed, (59) N.J. 322.
- hay—
chopped, effect, (56) Wis. 772.
cost of production and profit, (58) Ill. 379.
feeding value, (51) Ohio 469; (52) Miss. 275; (55) Iowa 262; (56) Ohio 169, Ill. 263, Ill. 270; (58) Minn. 769.
for breeding ewes, (53) 571.
for draft fillies, (57) Ill. 462.
for milk production, (51) Wis. 474; (52) Pa. 275; (54) Pa. 373; (55) Md. 367, Pa. 571.
ground and chaffed, feeding value, (56) Ill. 375.
net energy value, (57) 562.
seeding and curing, (56) Ky. 132.
stack drying, (57) Ind. 82.
v. alfalfa for heifers, (55) 469.
v. alfalfa hay, feeding value, (54) S.Dak. 67.
v. alfalfa hay for dairy cows, (56) Wis. 772.
v. alfalfa hay for steers, (55) Ark. 59.
v. alfalfa hay for wintering sheep, (59) N.C. 764.
yield, relation to seeding rate, (60) Ill. 262.
yields, (52) Ga.Coastal Plain 225.
- land, erosion from, (55) 581.
leaf spot disease, notes, (54) 148; (59) N.C. 749.
- meal—
digestion experiments, (56) Ill. 368.
feeding value, (51) Ind. 875; (52) Ind. 169, Ill. 466, Ohio 473, Ill. 476; (53) Ind. 175, Ohio 575, Va. 578; (54) 167; (55) Ohio 162, Ohio 674; (56) S.C. 268; (57) N.C. 269; (59) N.C. 773; (60) Ill. 260, N.C. 363.
v. cottonseed meal for beef cattle, (54) Ill. 359.
v. fish meal for pigs, (55) N.C. 263.
v. herring meal for milk production, (60) Wash.Col. 862.
v. linseed oil meal for cows, (55) Ohio 169.
v. peanut meal, (57) Del. 272.
v. tankage, (51) Ind. 873; (55) Nebr. 668.
value for pullets, (53) Ind. 779.
- meals, effect of oil extraction method, (57) 659.
mildew, notes, (53) N.C. 746.
milk diet of an infant, effect, (60) 492.
miso oil, nature, (51) 709.

Soy bean—Continued.

- mosaic, notes, (51) 49, Del. 148, Ind. 845; (56) 349.
mosaic, relation to temperature, (52) 350.
nodules, studies, (55) 244.
oil, composition, (53) 105.
oil, effect on pork quality, (56) Ill. 370.
oil, iodine number, (52) 636.
pasture for pigs, (55) Ohio 163.
products, digestibility, (54) Ill. 361.
products, digestibility and metabolizable energy, (59) Ill. 162.
products for dairy cattle, (55) Miss. 570.
proteins, digestibility, (52) 63.
root rot, description, (55) 753.
seed, effect of mutilating, (57) N.J. 23.
seed, inoculated. effect of fertilizers, (57) Ohio 125.
seed, inoculation, (60) Ky. 223.
seed purple stain, (57) Ind. 638.
seed, vitality, effect of storage and mechanical injury, (60) 226.
seeds with two embryos, (59) 622.
Septoria leaf spot, seed treatment for, (60) Del. 744.
silage, feeding value, (56) Ohio 169.
southern blight in Mississippi, (57) 546.
wilt, cause, (55) N.C. 243.
- Soy beans—
adjacent rows, effect on one another, (56) 233.
- and corn—
culture, (52) Mo. 436.
feeding value, (54) Ill. 326.
for silage, (54) Conn.Storrs 436, (55) Iowa 569.
hogging down, (51) Ohio 469, Mo. 773, Ohio 872; (53) Mo. 70, Minn. 170; (55) N.C. 263.
interplanting, (56) Iowa 822, Kans. 822.
mixture, yield, (55) N.Dak. 528.
value, (54) Ky. 327.
yields, (57) Tenn. 129.
- and cowpeas, comparative yields, (54) Mo. 732.
and products, feeding value, (58) Ill. 355.
as affected by lime, (51) Del. 132, N.J. 639.
as emergency hay crop, (51) Wis. 35.
as forage crop, (51) 34; (60) P.R. 731.
as green manure, (55) 511.
as green manure, effect on corn, (57) Tenn. 128.
as green manure, effect on crop yields, (60) Ark. 803.
as hay v. silage, (53) Ohio 579.
as human food, (57) 192; (59) 591.
as legume crop, (53) Wis. 435.
as protein supplements for pigs, (56) Del. 369.

Soy beans—Continued.

- assimilation-respiration balance, (52) 626.
- breeding experiments, (51) Wis. 434, P.R. 833; (55) N.C. 228, Miss. 527, Miss. 636; (58) Miss. 31; (59) Ga. 221, N.C. 728.
- breeding for oil content, (56) Ill. 232.
- classification, Mo., (54) 732; (57) 425.
- color, effect on hogs, (60) Ala. 170.
- composition, (54) 591; (57) 732.
- cooking for pigs, effect, (60) Ohio 462.
- cost of production, (55) Ind. 79, N.J. 80; (56) Ill. 385.
- cross-pollination, (57) N.C. 226.
- culture, (51) Va. 438; (53) Iowa 636; (54) Miss. 533.
- culture and uses, (51) Pa. 236.
- culture and varieties, (57) U.S.D.A. 131.
- culture, composition, and feeding value, (55) Md. 336.
- culture experiments, (51) Minn. 134, Wash.Col. 136; (52) Alaska 528; (53) Ohio 737; (55) N.J. 31, Miss. 527, Miss. 636; (60) Ohio 636, Mont. 729.
- cytological studies, (56) Del. 327.
- dry weight and nitrogen yields, (59) Ohio 222.
- duty of water for, (54) N.Mex. 680.
- dwarfs in, (57) 822.
- effect of aeration and continuous renewal of nutrient solution, (52) 125.
- effect of iron compounds, (56) 723.
- effect of lime, (55) N.J. 34.
- effect of various lengths of day, (55) 629; (56) 640.
- effect on carcasses of hogs, (58) Ill. 358.
- effect on following crop, (54) N.Y. Cornell 829; (56) Ill. 232.
- effect on milk flavor, (58) U.S.D.A. 69; (60) Ill. 262.
- electrocultural experiments, (54) U.S.D.A. 732.
- fall seeding experiments, (52) 633.
- feeding value, (52) Ind. 169, Ill. 466; (53) Ill. 68, Ind. 176, Ohio 575, N.C. 775; (54) S.Dak. 66, 167, Pa. 366, S.C. 665; (55) Miss. 674, Ohio 674; (57) Ohio 171; (58) Del. 467, Minn. 769.
- field experiments, size of plat and number of replications, (59) 226.
- for baby chicks, Del., (56) 372; (58) 467.
- for hay and seed, time of harvesting, (53) 339.
- germination and growth, effect of eosin and erythrosin, (57) 416.
- germination studies, (60) 27.
- ground—
as protein supplements for laying hens, (56) Del. 372.

Soy beans—Continued.

- ground—continued.
effect on butter, (56) S.Dak. 671.
for poultry, (60) Del. 766.
v. whole, (55) Ohio 160.
- growing, machines used in, (56) Ill. 280.
- growth relation to seed weight, (53) N.J. 23.
- harvesting for seed, (54) 683.
- harvesting methods, (54) Ill. 381; (60) 81.
- harvesting with combines, (56) 282; (58) Ill. 373.
- history and culture, treatise, (52) 636.
- hogging down, (53) 870; (54) S.C. 666, Iowa 860; (57) Mo. 461.
- hybrid vigor in, (51) 828.
- improvement, N.C., (53) 735, 835.
in Canada, (59) 829.
in Connecticut, (53) Conn.Storrs 837.
in mixtures, tests, (55) Minn. 228.
in mixtures, yields, (55) Miss. 228.
- inheritance studies, (57) 822; (58) 219, 424.
- inoculation, (51) Wis. 435; (56) 436, Iowa 822; (60) Iowa 38, 332.
- inoculation, effect, (52) Kans. 434; (58) Ill. 328.
- inoculation, effect of calcium, (59) 328.
- insects affecting, (56) 155.
- insects affecting in Hokkaido, (57) 60.
- linkage in, (54) 825.
- marketing, Ill., (58) 380; (60) 282.
- methods of applying fertilizers, (59) Wis. 34.
- mottling in, cause, (52) 825; (56) Wis. 733; (57) 331.
- natural crossing in, (56) 633.
- nodulation, N.J., (52) 732; (55) 813.
differences in, (53) 328.
effect of bacterial numbers, (53) 327.
effect of fertilizers, (60) 333.
effect of mineral fertilizers, (52) 338, 339.
relation to carbohydrate-forming function, (56) 828.
- nodule bacteria of, (54) 533.
- oil content, inheritance, (60) Ill. 223, phosphorus in, (60) 204.
- planting tests, (53) Ariz. 733; (56) Fla. 821; (57) Mo. 424, Tenn. 628.
- plat tests, (51) Hawaii 740.
- production, costs and profits in, (57) Ind. 383.
- production in Illinois, (59) Ill. 629.
- protein and oil content, factors affecting, (52) 636.
- protein metabolism, (60) 518.
- raw v. cooked, feeding value, (55) Ohio 162.
- recessive glabrous character in, (56) 632.
- response to manganese, (60) N.C. 319.

Soy beans—Continued.

- rôle in soft pork, (60) Ill. 259.
 rotation experiments, (54) Ark. 36;
 (59) N.C. 728.
 salt requirements in water cultures,
 (51) N.J. 630.
 seed-borne diseases, control, (55) N.C.
 243.
 seed weight relation to variability,
 (57) N.J. 23.
 seeding experiments, (53) Minn. 130,
 Md. 332; (56) Minn. 228, Minn. 332,
 Ark. 639; (55) Wis. 732; (58) Ill.
 327; (60) Ill. 223.
 selection experiments, (57) La. 522;
 (58) Ill. 328.
 selection for high oil content, (59)
 N.C. 729.
 selection for quality of oil, (57) 731.
 sources of iron for, (52) N.J. 725.
 sterile character in, (59) 622.
 studies, (53) Wis. 432; (54) Ill.
 332; (56) Ill. 336.
 sunburn and aphid injury, (53) Ariz.
 746.
 thickly planted, for hay, (56) Ill. 271.
 v. alfalfa hay for dairy cows, (53)
 Wis. 473.
 v. cowpeas for seed and hay, (53) Mo.
 431.
 value as soil-building crop, (54) Mo.
 716.
 value in rice fields, (54) U.S.D.A. 36.
 varieties, (54) Minn. 30; (55) Ark. 30,
 N.C. 228; (57) Tenn. 126; (58) Pa.
 324, Ill. 327.
 for fattening pigs, (59) Ohio 261.
 for Kansas, (53) 528.
 for Minnesota, (55) Minn. 132.
 yields, (51) Va. 35; (55) Mo. 132.
 variety for peat land, (55) Minn. 527.
 variety tests, (51) 38, Minn. 133, Minn.
 134, Miss. 134, 199, Tenn. 337, Ohio
 433, 636, N.J. 636, Mo. 741, La. 830,
 N.Dak. 832; (52) Ga.Coastal Plain
 224, Guam 226, Ind. 226, Miss. 226,
 Kans. 433, S.C. 528, N.J. 732, Wash.
 Col. 829; (53) Minn. 130, Minn. 131,
 133, Wyo. 133, Md. 332, N.Dak. 334,
 Wis. 432, La. 528, Can. 530, Ariz.
 733, N.C. 734; (54) Ark. 36, Ga.
 Coastal Plain 130, S.C. 635, Mo. 732,
 W.Va. 736; (55) Miss. 228, Minn.
 332, Md. 526, Miss. 527, N.Dak. 527,
 Miss. 636, Oreg. 637, Minn. 735;
 (56) Md. 132, Ill. 232, Ark. 332, Can.
 432, Ga.Coastal Plain 523, Minn. 524,
 Miss. 731, Fla. 821, Kans. 822; (57)
 Okla. 125, Okla. 226, 227, Mo. 424,
 Okla. 523, Ind. 628, N.J. 727; (58)
 Ark. 321, Mo. 428, Ga.Coastal Plain
 732, Okla. 734, Minn. 828, Okla. 828,
 N.C. 832; (59) N.J. 325, N.C. 728,
 Miss. 824, N.Dak. 825; (60) Miss.
 34, Ga.Coastal Plain 132, Ill. 223,
 Ohio 636, Alaska 728, Oreg. 731, Ark.
 812, Guam 813.

Soy beans—Continued.

- vitamin A in, (52) 65.
 whole, feeding value, (60) Ill. 254.
 whole v. ground, for pigs, (53) Ind.
 172.
 yield and nitrogen in, effect of lime,
 (52) N.J. 735.
 yield, effect of semi-lethal factor, (58)
 28.
 yields, (55) Ohio 528.
 Spacing experiments, method, (53) 230.
 Spaniopterus, new genus, erection, (59)
 257.
 Sparrow, chipping, foot disease of, (60)
 673.
 Sparrows—
 English, in Australia, (57) 853.
 English, in Washington, (52) West.
 Wash. 354.
 in chicken runs, Bacterium pullorum
 isolated from, (59) 476.
 Spanish, as grain pest in Sudan, (53)
 153.
 Spartocera batata, studies, (56) 552.
 Spear grass, varieties, (54) 232.
 Species—
 and area, (51) 820; (59) 27.
 and chromosomes, symposium, (54)
 726, 727.
 concept, symposium, (52) 127.
 idea, recent modification, (58) 627.
 origin, (56) 727.
 origin by large mutations, (53) 126.
 origin, Willis' theory of, (52) 628.
 problem, treatise, (59) 621.
 Species-differences and gene-differences,
 (57) 622.
 Species-differences, origin and inheritance
 of, (52) 128.
 Specific gravity of small quantities of ma-
 terials, determination, apparatus for,
 (58) 112.
 Specification record, (51) 787.
 Spectrophotometer—
 for accurate determination of color,
 (60) 598.
 use in dyestuffs industry, (58) 796.
 Spectroscopy applied to textile industries,
 (58) 898.
 Spelt—
 and rye hybrid, growth anomalies, (53)
 129,
 and rye, sterile hybrid, notes, (52)
 628.
 breeding experiments, (53) 230.
 history, distribution, and use, (52)
 U.S.D.A. 34.
 results of experiments, (51) U.S.D.A.
 435.
 stripe rust, notes, (52) 648.
 variety tests, (53) U.S.D.A. 134; (57)
 Can. 33; (60) Ariz. 133.
 Speltin, definition, (54) 802.
 Speltoid mutations—
 behavior, (57) 121.
 studies, (51) 29.

- Speltoids and other aberrants in wheat, cytological studies, (53) 426.
- Spergularia arvensis*, control, (54) 240.
- Sperm oil, vitamin A in, (51) 565.
- Spermatogenesis—
 adaptation to temperature, (58) 630.
 cytological changes during, (51) 228.
 factors affecting, (55) 823.
 mammalian, studies, (51) 334; (54) 525.
 of albino rats, (59) 623.
 of dogs, (59) 623.
 of domestic mammals, (56) 475.
- Spermatomicros, suggested name, (52) 630.
- Spermatozoa—
 bat, length of life, (57) 724.
 chemotaxis, (51) 335.
 dimorphism in domestic cattle, (57) 820.
 duration of potency in removed epididymis, (56) 522.
 entrance into starfish egg, (51) 128.
 flocculation, relation to surface charge, (52) 826.
 human, and mucin of cervix uteri, (57) 724.
 in male genital tract, longevity, (60) 325.
 nonfunctioning of genes in, (55) 822.
 of fowls in egg-white solution, vitality, (59) 361.
 of mammals, movement and evolution, (57) 424.
 physiology of, (52) 730.
 production by chickens, effect of feeds, (56) 167.
 reproductive capacity, effect of high temperature, (60) 727.
 temperature for maintaining motility, (57) Idaho 770.
 viability, effect of menotoxin, (52) 524.
 vitality in male and female reproductive tracts, (58) 222.
- Spermidine, constitution and synthesis, (58) 503.
- Spermophthora gossypii* n.g. and n.sp., studies, (58) 851.
- Sphacelia sorghi*, notes, (54) 246.
- Sphaceloma—
 ampelinum, notes, (52) 549.
 fawcettii n.sp., description, (57) 852.
- Sphacelotheca—
 cruenta, notes, (59) 847.
 schweinfurthiana, notes, (55) 346.
 sorghi, control, (55) 848.
 sorghi, notes, (51) 46; (55) 245, 346, 546, (57) 145, 443, 545, 639, 743; (59) Kans. 243.
 spp., notes, (53) U.S.D.A. 751; (56) 651; (57) 546.
 spp. on sorghum, comparison, (54) 250.
- Sphaerella—
 caroliniana n.sp., description, (57) 754.
 celtidis, notes, (57) 541.
- Sphaeriaceae, new or critical, (60) 216.
- Sphaeroidaceae, new or critical, (60) 216.
- Sphaeronomema—
 adiposum, notes, (58) 446.
 fimbriatum, notes, (53) 148, 153, 854; (54) 150; (55) 757.
- Sphaeropsidales—
 pathogens, specific reaction, (54) Mich 647.
 precipitins of, studies, (52) Mich. 346.
 pycnidium formation, factors promoting, (55) 24.
- Sphaeropsis malorum—
 achromatic variations in, (60) 642.
 growth on culture media, (52) 216.
 nitrogen metabolism of, (53) 122.
 on apple and pear, (56) 353.
 on apples, (54) 453.
 relation to *Diplodia natalensis*, (58) 53.
 synonymy, (57) 650.
- Sphaeropsis, perfect form, (57) 649.
- Sphaerostilbe—
 musarum, notes, (60) 344.
 repens, notes, (53) 153; (54) 151; (60) 247.
- Sphaerotheca—
 humuli, notes, (56) 748; (60) 345.
 macularis, control, (60) 49.
 mors-uvae, notes, (56) 541.
 pannosa, notes, (51) 46; (55) 346; (59) 641, 842.
- Sphaerulina—
 leaf spot of clover, (53) 849.
 polyspora n.sp., description, (57) 754.
- Sphagnum—
 and tree moss, water-holding capacity, (52) 842.
 bogs of North Pacific coast, (55) 419.
 composition and rate of decomposition, (59) 719.
- Spharagemon aequale*, notes, (53) 756.
- Sphegidae of South Africa, (59) 562.
- Sphenophorus discolor*, life history, (52) 857.
- Sphenoptera gossypii, parasite of, (58) 666.
- Sphenoptera sp., parasite of, (56) 362.
- Spherularia bombi*, notes, (57) 64.
- Spicaria farinosa* var. *verticilloides*, studies, (54) 459.
- Spicaria*, notes, (60) 162.
- Spices—
 determining foreign matter in, (51) 207.
 of British Empire, (51) 896.
 total ash determination, (52) 801.
 treatise, (53) 9.
- Spider—
 bites, poisonous, antitoxin for, (58) 275.
 flower, alternation of sexes, (52) 127.

Spider—Continued.

- hourglass or black widow, studies, (55) 858; (56) 251; (57) 655; (58) 855; (60) 657.
- mite, see Red spider.
- parasite, egg-laying experience with, (53) 154.
- poisoning, studies, (55) 858.
- trap-door, habits and injury from, (58) 855.

Spiders—

- British, handbook, (56) 362.
- of Porto Rico, synopsis, (60) 852.
- venom of, studies, (55) 758.

Spilochalcis—

- albifrons, notes, (57) 62.
- mariae, notes, (59) Ark. 252.
- sp., notes, (52) 858.

Spilocryptus polychrosidis, notes, (54) Mich. 354; (57) 62.

Spilographa electa, notes, (55) N.J. 51.

Spilonota ocellana, life history, (58) 260.

Spilosoma lubricipeda caterpillars, poisons for, (53) 52.

Spinach—

- aphid, control, (51) Pa. 254.
- aphid, life history studies, (51) Pa. 253.
- as supplements to white bread, nutritional value, (60) 191.
- availability of iron in, (56) 494.
- blight resistant strains, (53) 543.
- calcium in, utilization by adults, (58) 191.
- canned, vitamin C in, (53) 764; (58) S.Dak. 794.
- canned, vitamin in, (56) S.Dak. 696.
- canning, value of precooking, (52) U.S.D.A. 459.
- catalase activity, (58) N.Y.Cornell 214.
- chlorosis of, control, (54) 450.
- chlorotic, manganous sulfate for, (53) 819.
- composition and losses of iron in cooking, (60) 190.
- culture experiments, N.J., (55) 38; (57) 40.
- dehydrated, manufacture, handling, and storage, (53) 209.
- disease, notes, (55) Tex. 345.
- disease resistant varieties, (56) 549.
- downy mildew, notes, (55) 346.
- effect of lime, (59) N.H. 231.
- fertilizer experiments, (51) Va.Truck 642, Ind. 837; (53) Va.Truck 640; (54) Ill. 335; (55) N.H. 834; (57) N.J. 40; (58) Ill. 333.
- fresh, antirachitic value, (55) 891; (57) 392.
- Fusarium blight, (52) 351.
- Fusarium disease in Texas, (55) 849.
- Fusarium wilt, new, (56) Tex. 246.
- Fusarium wilt, notes, (54) 49.
- Hawaiian, mineral constituents, (51) Hawaii 765.
- hypoglycemia-producing principle in, (52) 667.

Spinach—Continued.

- iron content, (53) 456.
- leaf miner, control, (58) 560; (59) N.Y.State 56, Ohio 249.
- leaves, new protein from, (52) 708.
- mosaic, studies, (59) 543.
- new pest in Virginia, (57) Va.Truck 857.
- production, relation to soil acidity, (57) Va.Truck 832.
- proteins, studies, (53) 364.
- rust, notes, (52) 351.
- seed germination, stimulation, (57) 415.
- seeds, variation in, (58) 824.
- sex expression in, (54) Calif. 537.
- sex ratio, (57) Calif. 235.
- varieties, (51) R.I. 746; (54) R.I. 38; (55) Calif. 339.
- variety tests, (57) Tex. 136.
- vitamins in, (58) 87.
- vitamins in, effect of preparation, (52) 262.
- winter, antirachitic value, (55) 892.
- Spinacin, new protein from spinach, (52) 708.
- Spirilla, rôle in abortion, (51) 383.
- Spirillum—
 - abortus ovis in sheep, (56) 777.
 - lipoferum, nitrogen fixation by, (55) 326.
- Spirochaeta—
 - cytophaga, notes, (56) 808.
 - laverani, studies, (58) 473.
 - morsus-muris, notes, (52) 761.
 - obermeieri transmission, studies, (57) 759.
 - sogdianum, studies, (60) 657.
- Spirochetosis—
 - avian, outbreak, (51) 786.
 - cutaneous, in British rabbits, (59) 671.
 - in fowls, (55) 677; (59) 175, 370.
 - virus, longevity in Argas persicus, (58) 177.
- Spirogyra permeability for acid dyes, (59) 619.
- Spirogyras, form of tannins in, (58) 524.
- Spirometer for studying gaseous metabolism of man, (55) 207.
- Spiroptera hamulosa in fowls, control, (51) N.C. 884.
- Splenectomy in domestic animals, effects, (57) 77, 872.
- Spodoptera mauritia—
 - difficulties of control, (57) 760.
 - notes, (53) 558.
- Spondias lutea, notes, (51) 46.
- Spondylocladium atrovirens, studies, (52) 847.
- Spongospora subterranea, notes, (55) 843; (57) 545; (59) 536.
- Spore germination, stimulation by carbon dioxide, (53) 423.
- Sporodesmium mucosum pluriseptatum, notes, (59) 536.

- Spronema oxycocci, notes, (51) Wash.Col. 155; (56) 249.
- Sporotrichum—
 citri n.sp., description, (56) 851.
 citri, notes, (60) 344.
 globuliferum, notes, (57) 857; (58) Del. 456.
 gloeosporoides, notes, (56) 552.
 malorum n.sp., description, (56) 849.
- Spragg, F. A., biographical sketch, (53) Mich. 798.
- Spray—
 bulletin, (54) Conn.State 642.
 burn, notes (53) 253.
 coating maintenance on apples, (53) 856.
 developments and insects, survey, (57) 853.
 emulsions, creaming capacity, (57) 49.
 fly, for cows, (57) Ohio 175.
 injury, (53) 856; (56) 47.
 injury to apples, (51) 359; (53) Mass. 446; (55) Va. 48.
 liquids, physics of, (56) 457.
 mixture, dry-mix, tests, (52) N.J. 738.
 mixture, triple, (52) 657.
 mixtures as destroyers of aphid eggs, comparison, (51) 157.
 mixtures, standard, chemical investigation, (55) Conn.State 457.
 New Jersey dry-mix, relation to arsenical injury, (57) N.J. 743.
 oils, highly refined, effect of oxidation, (59) Calif. 755.
 plants, stationary, (51) Wash.Col. 187; (54) 481; (56) Calif. 283; (57) Wash.Col. 82, 847.
 poison in Colorado, (58) 344.
- residue—
 on apples, (59) 854; (60) 640.
 on fruit, (58) 254, 557, 757; (59) N.Mex. 203, 652.
 removal from apples and pears, (59) 552, Oreg. 743. Wash.Col. 836, 837, Wash.Col. 837.
 removal from fruit, (56) 441; (58) N.Y.State 835; (60) 560.
- schedules—
 for apple scab, (51) Mass. 451.
 for fruits, (51) N.J. 144; (53) Mich. 37, N.J. 37; (55) N.J. 38, Ohio 38; (57) N.J. 42; (59) Mich. 42; (60) N.J. 823.
 revised, for western humid section, (53) 148.
- spreaders, development and action, (60) Oreg. 738.
- Sprayers, purchase and use, (51) 790.
- Spraying—*see also* Dusting and special crops.
 and dusting—
 experiments, (51) 56; (52) N.J. 751; (53) 856.
 experiments, cooperative, (52) 646.
 experiments in orchards, (57) 253.
- Spraying—Continued.
 and dusting—continued.
 experiments in orchards, recording results, (55) 548.
 machines, (53) 390.
 and spray equipment for orchards, (59) Va. 85.
 apparatus, (59) 553.
 costs of labor and material, (51) Ohio 748.
 dates, determining, codling moth traps as aid, (59) 552.
 directions, (55) N.J. 439.
 dusting, and fumigating plants, treatise, (59) 536.
 effect on set of fruit, (54) Ill. 350.
 experiments, (51) Del. 148, Ohio 441, 547, 550, Ohio 748; (53) Mo. 437, Ohio 548; (57) N.J. 735; (59) 456.
 experiments in Illinois, (53) 547.
 for codling moth control, (55) N.J. 51.
 machine for alfalfa fields, (52) 888.
 machinery for cranberry bogs, (51) N. J. 685.
 machinery, high pressure, (54) 652.
 machines, cold steam, (57) 856.
- materials—
 and equipment, (52) Mo. 236.
 combined, preparation and use, (52) U.S.D.A. 441.
 efficacy and safety, (60) Mich. 438.
 investigations, (54) Mo. 739.
 newer, (56) Mich. 854.
 physical properties, (57) N.Y.State 655.
 mechanics of, questionnaire on, (54) 551.
 paper on, (59) 551, 552.
 programs for western Washington, (51) West.Wash. 96.
 relation to renovation of orchards, (52) 852.
 stimulation to fruit trees, (52) 850.
 tests with waste sulfite liquor, (56) 712.
 value of spreaders in, (51) 359.
- Sprays—*see also* Fungicides, Insecticides, and specific kinds.
 and sprayers, (55) 544.
 and spraying, (55) 243.
 and spraying, costs, (59) Mich. 42.
 and spraying materials, (57) 345.
 application, (51) 546.
 arsenical, adhesives for, (53) 452.
 arsenical, removal of residue from fruit, (57) Oreg. 43, Wash.Col. 239, 455.
 commercial v. home-mix, (52) Pa. 252.
 composition and properties, (59) 537.
 contact, directions for use, (59) Mich. 556.
 contact, testing, (60) 161.
 dormant, for San José scale, (51) 361.
 dormant, notes, (59) 652.

Sprays—Continued.

- dormant winter, (60) 60.
- dry-mix, tests, (53) Va. 40.
- effect on rest period of fruit trees, (53) 240.
- for scale insects, (55) Calif. 351.
- fungicidal properties, (57) 638.
- improving with a fixative, (53) 856.
- introduction and development, (56) 235.
- lead arsenate and lime-sulfur, chemical studies, (52) N.Y.State 501.
- mixing and compatibility of mixtures, (55) Oreg. 38.

oil—

- effect on apple foliage, (60) Wash. Col. 821.
- effect on fruit trees, (51) 442.
- emulsion, for apple aphids, (59) 857.
- emulsion, place, manufacture, and use, (59) 551.
- inhibiting factor in, (54) 153.
- notes, (54) 551.
- preparation, (51) 697.
- stickers in, (57) N.J. 757.
- strength, determination, (55) 554.
- studies, (54) Wash.Col. 854.
- tests, (56) 254.
- unsulfonated residue in, determination, (57) 206.
- use and effectiveness, (57) 855.

- oils for, (55) Wash.Col. 52.
- physics of, (53) 556; (57) 49.
- poisoning of bees by, (57) Mass. 364.
- polysulfides in, (53) 506.
- preparation, (51) 550.
- preparation and application, (51) 240, W.Va. 240; (55) Kans. 238.
- protective, spreading quality, (53) 348.
- spreaders for, (54) Pa. 352; (55) Oreg. 643.
- spreaders for, value, (53) 253; (54) Ill. 335, 337.
- spreading power and measurability, (52) 554.
- use of skim milk in, (52) 56.
- value of fish oil as adhesive, (56) U.S.D.A. 658.
- winter, mineral oils for, (57) 847.

Springs—

- hot, animal life in, (58) 753.
- large, in United States, origin and discharge, (57) 473.

Springs—

- steel, heat treatment, (52) 488.
- testing, experimental apparatus, (60) 880.

Springtails—

- control, (52) Va.Truck 43.
- notes, (55) Va.Truck 253.
- on cultivated mushrooms, control, (56) Pa. 154.
- on mangels in Great Britain, (54) 258.

Sprout machine, use, (54) Mo. 778.

Spruce—

- Adirondack swamp, ratios of form in, (53) 41.
- aphid, green, notes, (56) 659.
- bark beetle, bionomics, (59) 658.
- beetle, eastern, bionomics, (59) 658.
- beetle, eastern, control in Canada, (53) 557.
- budworm—
 - attack, tissue anatomy due to, (56) 355.
 - biocoenose, (56) 661.
 - defoliation, relation to previous growth of trees, (53) 559.
 - in New Brunswick, (51) 553.
 - injury, (56) 427.
 - notes, (54) 153.
 - outbreak in Canada, (51) 761; (57) 61.
 - studies, (53) 453, 559; (56) 460.
- cellulose, partial hydrolysis, (51) 9.
- cone geometrids, (55) 759.
- cone worm, notes, (52) Mich. 355.
- Engelmann, germination, factors affecting, (52) 541.
- Engelmann, reproduction, (53) 845.
- gall aphid, control, (54) 455; (55) Mass. 254; (57) Conn.State 160.
- gall aphid, studies, (56) N.Y.Cornell 156; (59) Mich. 59.
- height growth, (51) 540.
- in Upper Peninsula, (56) Mich. 838.
- leaf miner, notes, (51) Conn.State 852.
- litter, studies, (55) 854.
- mite, notes, (59) Mich. 455.
- need of conserving, (53) 145.
- new coccid on, (53) 652.
- Norway—
 - age determination, (51) 348.
 - bud expansion and late frost injury, (51) 243.
 - effect of lopping, (51) 348; (57) 143.
 - germination and growth, effect of soil coverings, (57) 836.
 - growth studies, (55) 745.
 - injury from red squirrel, (59) 153.
 - seed years, (51) 243.
 - seeding experiments, (59) 838.
 - spacing experiments, (60) Pa. 342.
 - stomatal opening, relation to carbon dioxide intake, (60) 442.
- pulp digestion, sugar yields in, (53) 810.
- red, measurements, (55) 343.
- red, tracheids, comparative lengths, (53) 42.
- resin fly, notes, (51) 55.
- rot, studies, (60) 58.
- seed dissemination, (57) Calif. 242.
- seedlings, heat-resisting capacity, (52) U.S.D.A. 47.
- seeds, time for sowing, (57) 537.
- Sitka, seeding experiments, (59) 838.
- soils, composition, (52) 511.

- Spruce—Continued.
 tortrix on ornamental trees, (60) Mich. 63.
 trees, effect of calcium chloride, (60) Conn.State 743.
 volume computations, methods, (55) 241.
 white, artificial regeneration, (54) 542.
 white, growth rate, (59) Mich. 45.
 white, sugar produced from, (51) 8.
- Sprue, paper on, (60) 197.
- Squabs—
 disease affecting, cause, (55) 476; (57) N.J. 80.
 production, manual, (51) 177.
- Squash—
 bacterial leaf spot, (55) 753.
 beetle in Arizona, (56) 157.
 borer, control, (57) 453.
 borer, life history and control, (55) Va.Truck 253.
 borer, notes, (51) Iowa 659.
 bug, common, parasite of, (52) 156.
 bug, control, (58) 257.
 bug, notes, (51) Iowa 659; (52) Wash.Col. 852; (59) N.H. 248.
 curly top, notes, (57) 656; (59) 345.
 fertilizer experiments, (53) N.H. 438.
 insects, control, (55) Va.Truck 253.
 ladybeetle, control, (51) Md. 454.
 mildew, control, (56) Guam 245.
 vine borer, control, (51) Mass. 161; (57) 453.
- Squashes—
 breeding investigations, (54) 431.
 chemical composition, effect of age, (58) 641.
 feeding value, (56) Wash.Col. 566; (58) 865; (59) Wash.Col. 68.
 fertilizer experiments, (51) N.H. 142; (55) N.H. 833; (57) 534; (58) Ill. 333.
 fruiting habit, (51) 344.
 growth in artificial light, (51) 25.
 pure line studies, (59) Vt. 219.
 storage rot, notes, (54) 745.
 storage studies, (51) N.Dak. 837; (54) Vt. 835.
 summer, hybridization studies, (58) 425.
 summer, inheritance in, (60) Conn. Storrs 526.
 summer, pollen carriers on, (59) 455.
 systematic study, (58) Iowa 838.
 varieties, (54) R.I. 38.
 variety tests, R.I., (55) 236; (57) 436.
- Squirrel—
 American gray, in Great Britain, (58) 450.
 California ground, control, (54) Calif. 52.
 Columbian ground—
 breeding and development, (53) 756.
 effect of short season, (56) 56.
 storing habit, (56) 657.
 tracking to burrow, (53) 756.
- Squirrels—
 destruction of conifer seeds by, (52) 240.
 ground—
 aestivation and hibernation, (53) 251.
 control with poisoned baits, (60) 162.
 food of, (54) 52.
 hibernation, (54) 550.
 hibernation dens, structure, (55) 757.
 life history and bionomics, (57) 853.
 of Colorado, (53) 153.
 of diverse food habits, alimentary tracts, (53) 551.
 red, damage to conifers, (58) 646; (59) 153.
 red, ecology, (56) 854.
 yellow ground, of Turkestan, (56) 853.
- St. John's wort—
 biological control, (60) 60.
 eradication, (59) Calif. 728.
- Stable fly—
 control, (58) Mo. 458.
 disseminator of surra, (58) 678.
 ingestion of methylene blue by, (51) 57.
 protozoan parasites of, (55) 854.
 studies, (56) 461.
- Stables—
 dairy, ventilation experiments, (59) 481.
 ventilation, natural draft, automatic control, (56) 683.
- Stachys arvensis, effect on sheep, (53) 888; (54) 71; (55) 677.
- Stagers—
 in livestock, cause, (55) 677.
 in sheep, (59) 171.
 in sheep, cause, (54) 71; (55) 677.
 or Pushing Disease of cattle in Natal, (52) 82.
- Stagonospora—
 alchemillae n.sp., description, (60) 29.
 narcissi, notes, (58) 442, 443.
- Stain for microorganisms and tissues, (52) 378.
- Stains—
 bacterial, for soil preparations, (58) 813.
 biological, handbook, (54) 503.
 biological, standardization, (52) N.Y. State 519.
 on fabrics produced by May flies, removal, (60) 599.
 removal from fabrics, (55) U.S.D.A. 898.
- Stalk borer—
 life history studies, N.H., (58) 259; (59) 248.
 notes, (53) Iowa 755, N.H. 451; (57) N.J. 57; (59) Iowa 55.
- Stallions—
 enrollment, Ind., (51) 376; (52) 874; (54) 863; (57) 462; (59) 566.
 toxic effects of Bayer 205 in, (53) 786.

- Standard of living—
and farm income, Ark., (56) 386; (58) 378.
on farms, (56) U.S.D.A. 185, Iowa, 186.
on farms, treatise, (60) 889.
rural, determination, (57) 382.
- Standards of living of upper and middle class Chinese, (58) 86.
- Standardization—
laws of United States and Canada, (51) 296.
progress and problems, papers on, (60) 682.
- Staphylinidae—
data, (56) 358.
distribution, (57) 553.
- Staphylococci—
differentiation, (58) 877.
rôle in epizootic lymphangitis, (52) 483.
- Staphylococcus—
albus, immunization of wax moth caterpillar against, (58) 758.
aureus, rendering Gram-negative, (51) 81.
aureus resistance to disinfectants, tests, (58) 574.
aureus, resistant to soap, (53) 609.
muscae, notes, (52) 558; (57) 63.
pyogenes aureus, cause of abscess in feet of hens, (56) 280.
pyogenes aureus, notes, (58) 678.
spp., notes, (59) 79.
- Starch—
canna, characteristics, (51) Hawaii 740.
chemistry, survey, (59) 202.
determination method, (52) 112; (57) 204.
development in potato tubers, (57) 618.
equivalent of sifted oat flour, determination, (58) 865.
estimation by use of picric acid, (51) 612.
formation, effect of carbon dioxide, (55) 817.
formation in foliage, factors affecting, (58) 624.
formation in leaves, conditions, (55) 728.
formation in plants, (57) 23.
from canna, studies, (59) Hawaii 626.
gelatinization temperatures, (53) 410.
grain size in potato tubers, (59) 428.
grains, development in potato tubers, (53) 421.
hydrolysis by amylases, optimal H-ion activities, (58) 802.
in cereals, genesis, (56) 325.
in fruit tree shoots, seasonal, (58) 37.
in grains, effect of geographical factors, (58) 631.
in plant cells, formation and digestion, (53) 826.
in plant tissue, determination, (53) 108.
- Starch—Continued.
in plants, conversion into sucrose, (59) 123.
in plants in presence of calcium and sodium salts, synthesis, (59) 25.
in red algae, (53) 519.
in sorgo sirup, (52) 13.
industry in Hawaii, (58) 132.
manufacture, (56) 506.
manufacture, monograph, (60) 206.
of wheat, viscosities, determining, (52) 13.
production in potato leaves, (60) 519.
rate of drying, (59) 110.
root and cereal, manufacture, (55) 209.
salivary digestion, effect of halogen salts, (53) 761.
solubility or insolubility, (53) 725.
storage in pear and apricot trees, (52) Calif. 42.
stored in green leaves, physiological rôle, (59) 216.
structural units, (51) 729.
studies, (55) 202.
sugar, manufacture, (56) 506.
swelling, (57) 319.
tree fern, studies, (51) Hawaii 841.
- Starches—
kinds, identification, (59) 795.
rate of digestion by amylase, (52) U.S.D.A. 503.
raw, digestibility, (51) U.S.D.A. 60.
treatise, (52) 609.
- Starfish egg, entrance of spermatozoon into, (51) 128.
- Starling, European—
in Ohio, (53) Ohio 51.
in Ontario, (59) 454.
in United States, (60) U.S.D.A. 555.
spread in North America, (52) U.S.D.A. 749.
- Starlings—
as distributors of gapeworm, (57) 473.
nest-stealing tactics, (57) 853.
- Starters—
and neutralizers, Ark., (56) 376; (58) 365.
quality, effect of milk, (55) Iowa 472.
studies, Iowa, (53) 781; (59) 270.
- Starvation period, effect on hog carcass, (60) Ala. 170.
- Statice latifolia root rot, notes, (59) 535.
- Statistical atlas of Bombay Presidency, (55) 690.
- Statistics—*see also* Agricultural statistics.
elements of, (56) 690.
graphic presentation, circles or bars, (56) 791; (59) 187.
rôle in agronomic experiments, (52) 731.
- Stauronotus maroccanus, notes, (54) 258.
- Steam—
cold, for spraying machines, (57) 856.
engineering, handbook, (55) 781.
soil sterilization with, (58) 659.

- Stearin and oleo oil, vitamin A in, (55) 192.
- Steel—
 and concrete, bond between, (55) 781.
 and timber structures, treatise, (52) 183.
 bars, new billet and rerolled, comparative tests, (52) 287.
 cast, fatigue strength, (57) 474.
 construction, textbook, (57) 776.
 corrosion, effect of rust-film thickness, (58) 374.
 high silicon structural, tests, (57) 187.
 magnetic properties, effect of repeated stresses, (60) 582.
 pearlitic manganese, for harrow disks, (58) 883.
 springs, heat treatment, (52) 488.
 zinc-coated, corrosion test methods, (60) 582.
- Steelwork, constructional, handbook, (60) 376.
- Steer calves, winter rations, (52) Miss. 269.
- Steer carcass contest, analysis, (53) 571.
- Steers—*see also* Cattle.
 changes in body measurements during fattening, (60) Tex. 254.
 composition of urine, effect of fasting, (54) 267; (59) 359.
 cost of fattening, (52) Mont. 467.
 dehorning, (51) 670.
 dehorning, effect, Can., (53) 868; (54) 161.
 effect of age and sex on rate and economy of gain, (55) Nebr. 664.
 effect of feeding on body characteristics, (58) 63.
 fasting experiments, (58) Ill. 354.
 fasting, metabolism, (57) 863; (58) N.H. 763.
 fattening, (55) 59, Ark. 59; (56) Minn. 559; (59) 162; (60) Mont. 760.
 cooperative tests, (57) Tex. 169.
 in Corn Belt, (51) U.S.D.A. 468.
 on dry-land crops, (58) U.S.D.A. 462.
 feeder, nature's scorecard for, (57) 660.
 feeding, (58) S.C. 667.
 different amounts, effect, (60) Ill. 255.
 experiments, (51) Kans. 74, Mich. 171, U.S.D.A. 171, Wash.Col. 171, Wyo. 172, Wis. 468, Idaho 571, Can. 572, Ind. 868; (52) Miss. 169, Mich. 369, Mo. 369, Ky. 466, Mo. 466, N.Mex. 868, Can. 869, Idaho 869, Can. 870; (53) 67, Ind. 465, U.S.D.A. 466, Can. 868; (54) Can. 60, Can. 161, Ky. 359, Ariz. 563, Wyo. 759; (55) 261, S.Dak. 360, Idaho, 862; (56) Ky. 162, S.C. 560, Wash.Col. 560; (57) 67, Okla. 563, N.Mex. 661, Idaho 763; (58) Ohio 353, Miss. 461; (59) Idaho 762, Ind. 762; (60) Ohio 169, S.C. 761, 855.
- Steers—Continued.
 feeding—continued.
 in Alberta, (53) 68.
 in sugar cane belt, (53) U.S.D.A. 271.
 finishing, (52) Miss. 269.
 Friesian, proportions and depth of chest and height of withers, (51) 100.
 mature and immature, carcass comparisons, (60) Mo. 465.
 mineral requirements, (55) Iowa 160.
 nitrogen metabolism on alfalfa ration, (57) 66.
 nutrition studies, (55) N.H. 862.
 of different ages, utilization of feed, (51) N.Mex. 374.
 pasture gains, effect of winter rations, W.Va., (55) 465, 564.
 pasturing experiments, (51) N.Dak. 869; (58) U.S.D.A. 353, U.S.D.A. 566.
 physiological economy, effect of varying feed levels, (51) N.H. 868.
 pulse rate, effect of feeding cellulose, (56) 261.
 selling price, relation to feeding system, (58) Miss. 462.
 two-year-old, finishing, (57) Iowa 266.
 two-year-old, type in, (57) Wyo. 459.
 undernutrition in, (53) 571.
 v. heifers and yearlings, feeding experiments, (52) Calif. 71.
 winter fattening, (53) 574.
 winter feeding, (52) Ind. 168; (54) Can. 60; (58) Ind. 462.
 winter feeding and time of marketing, Ala., (59) 662; (60) 169.
 wintering, (56) Ky. 162, Kans. 364, Oreg. 365; (57) 762; (58) U.S.D.A. 566; (60) Ky. 256.
 yearling, fattening, (53) N.Mex. 169.
- Steffen waste water, potash recovery from, (53) 322.
- Stegomyia, *see* Aedes and Mosquitoes.
- Stegoxyys trilineata, notes, (53) 756.
- Stellaria media, control, (54) 240.
- Stellenbosch-Elsenburg College of Agriculture, (60) 798.
- Stem eelworm, notes, (60) 451.
- Stem rust—*see also* Rust and *specific hosts*.
 control by sulfur dust, (58) 46.
 in Nebraska, (58) Nebr. 44.
 simultaneous surveys for, (56) 350.
- Stemonitis—
 fusca, cultural characters, (54) 255.
 herbatica, notes, (57) 443.
- Stemphylium—
 congestum, notes, (59) Wash.Col. 46.
 inflatum ribis grossulariae, notes, (59) 537.
 parasiticum, notes, (52) 649.
 sp., notes, (53) 750; (59) 534.
- Stenopelmatus fuscus, anatomy and histology, (59) 353.
- Stenothrips graminum, biology and economic importance, (58) 755.
- Stephanidae, data, (56) 358.

- Stephanitis rhododendri*, summary, (58) 160.
- Stephanoderes coffeae*—
control, (54) 58.
in Brazil, (54) 662.
notes, (55) 854.
- Stephanoderes hampei*—
bionomic data, (53) 759.
control, (57) 862; (58) 346, 863.
disinfection of coffee seed attacked by, (58) 164.
in Uganda, summary, (56) 362.
life history and control, (51) 554.
studies, (58) 351.
- Stephanurus dentatus*—
in pigs, (58) 75; (60) Fla. 176.
in urinary bladder and ureters of host, (60) 373.
life history notes, (60) 665, P.R. 774.
- Stereogene as hereditary unit, (60) 428.
- Stereum—
fasciatum resistance to sodium fluoride and zinc chloride, (56) 853.
hirsutum, injury to grapevines, (57) 850.
necator, notes, (58) 249.
purpureum, effect on winter injury of fruits, (51) Wash.Col. 150.
purpureum, enzymes in, (56) 515.
purpureum, notes, (52) Wash.Col. 845; (54) Can. 149, 448, Wash.Col. 841; (56) Kans. 842; (57) 448, 649; (59) 449.
purpureum on rhododendrons, (58) 752.
purpureum, studies, (52) 846.
sanguinolentum, notes, (55) 351; (58) 54.
sanguinolentum on balsam, (56) 355.
- Sterigmatocystis nigra*—*see also* *Aspergillus niger*.
conidia formation in, (53) 519.
infection of European corn borer by, (59) 459.
notes, (51) 52; (57) 345.
pigments of, (59) 322.
respiratory intensity, variations in, (59) 322.
- Sterility—
and vitamin E, (54) 527, 561.
dietary, studies, (56) 664.
gametic, cause, (60) 810.
genetic aspects, (52) 280.
in apples, studies, (60) 340.
in asters due to disease, (60) 837.
in cabbage, (58) 640.
in carnations, (58) 644.
in cattle, (52) U.S.D.A. 583; (56) Fla. 878; (60) 475.
in cattle, relation to nutrition, (57) 377, 772.
in Cloome, intermittent, (58) Mo. 129, 730.
in cows, (57) 182.
in cows, causes, (59) 876.
in cows in South Africa, (60) 574.
in domestic animals, physiology and pathology, (58) 278.
- Sterility—Continued.
in filberts, (57) 738.
in fruit trees in Russia, (58) 642.
in fruits, studies, (58) 642, 643, 644, 739.
in grapes, (58) 741.
in mares, (56) Ky. 172.
in mares, bacteriology of reproductive organs, (60) Ky. 776.
in peaches, (57) 737.
in peonies, (58) 742.
in phanerogamic plants, (60) 810.
in plants, (58) 730.
in plants and recovery from, (59) 28.
in plants, types, (58) 639.
in rats, histological study, (54) 527; (55) 194.
in rats on synthetic diets, (59) 294, 593.
in rice grains, (60) 546.
in roses, (58) 742.
in strawberries, (58) 644.
in vegetables, (58) 640.
relation to vitamin A deficiency, (60) 293.
self, in Veronica, inheritance, (58) 731.
types, (57) 897.
work, better basis for, (55) 70.
- Sterilizer—
electric, for average sized dairy, (53) 590.
for milking utensils, (56) 873.
- Sterol metabolism problems, (57) 91.
- Sterols—
activated, physiologic potency, (59) 495.
amount of photochemical activation for rickets control, (59) 495.
and lipins as sources of error in buttermilk tests for fat, (60) 313.
and vitamin D, (57) 197.
antirachitic properties, effect of irradiation with ultra-violet light, (56) 295.
color tests for, (60) 790.
in grains, (54) N.Y.State 502.
separation of unsaturated from saturated, (52) 709.
- Stethoconus cyrtopeltis* as enemy of pear tingid, (57) 657.
- Stethorus punctum*, notes, (59) 462.
- Sticktight flea—
infestation of baby chicks with, (58) P.R. 574.
life history and bionomics, (54) 556.
origin and spread, (56) 159.
- Stictiocephala—
inermis, notes, (57) Mich. 554.
sp., notes, (53) Ariz. 745.
- Stictopisthus africanus*, notes, (54) 259.
- Stigmas, sensitive, behavior, (55) 24.
- Stigmata in poppy, variation and fluctuation in, (53) 626.
- Stigmatomycosis of fruits, fungi of, (58) 851.
- Stilbella nana*, notes, (55) 249.

- Stilbula cynipiformis*, notes, (54) 558.
Stilpnotia salicis, notes, (52) Wash.Col. 852.
 Stilts, food of, (54) U.S.D.A. 52.
 Stink bug, southern green, *see* Green stink bug, southern, *and* *Nezara viridula*.
 Stinkwood—
 dendrographic experiments with, (58) 842.
 propagation vegetatively, (57) 440.
 Stinkwort feeding tests, (59) 272.
 Stipa—
 North American species, (54) 639.
 South American species, synopsis, (54) 639.
 Stirrer run by compressed air, (51) 711.
 Stitches, seams, and stitching, Government master specifications, (59) 98.
 Stock, *see* Livestock.
 Stock foods, *see* Feeding stuffs.
 Stocks—
 chromosome-mutant types in, (59) 128.
 doubleness in, (51) Md. 335.
 Stomach—
 empty, motor activity, graphic representations, (59) 862.
 oil of Fulmar petrel, vitamins in, (57) 391.
 Stomach worms—
 and nodular diseases of sheep, (53) Ohio 584.
 and nodular worms in lambs, (55) Ohio 176.
 in cattle, (57) P.R. 468, La. 573.
 in cattle and sheep, (52) 280.
 in goats, (54) Tex. 379; (58) 74; (59) Tex. 776; (60) Oreg. 774.
 in lambs, (52) Miss. 283; (57) Ohio 182, Ohio 183, 472; (60) Ill. 272.
 in sheep, (53) 278, Minn. 477, 584, Conn.Storrs 785; (54) Tex. 379; (59) Tex. 776; (60) Oreg. 774.
 in sheep, control, (51) Mich. 80; (52) Ohio 483; (56) Ill. 276; (59) 470, Ohio 475, N.C. 779; (60) Miss. 856.
 in sheep, effect of tobacco and nicotine sulfate, (59) Ohio 276.
 in sheep, iodine solutions for, (54) Mich. 674.
 in sheep, new drench for, (57) 183.
 Stomata—
 effect of chemical substances on osmotic values in cells, (56) 325.
 effect on transpiration, (53) 223.
 movement, mechanism, (53) 25.
 number and leaf structure, relation, (57) 321.
 of conifers, black deposit in, (56) 27.
 regulation, effect of drought, (53) 423.
 rôle in transpiration of plants, (52) 517.
 studies, (59) 428.
 Stomatitis—
 mycotic, of cattle, (52) U.S.D.A. 84.
 Stomatitis—Continued.
 vesicular—
 and foot-and-mouth disease, differentiation, (57) 181, 182, 671.
 causal agent a filter-passing virus, (57) 671.
 of horses, effect of formalin on virus, (59) 676.
 of horses, virus of, (57) 877.
 Stomatoceras pertorvus, parasite of pink bollworm in Hawaii, (58) U.S.D.A. 457.
 Stomatorrhina lunata, egg parasite of locusts, (54) 154.
 Stomoxys calcitrans, *see* Stable fly.
 Stone—*see also* Road materials.
 and gravel, standard abrasion tests, relation, (60) U.S.D.A. 278.
 broken, production costs, U.S.D.A., (56) 177; (57) 581.
 cast, manufacture and uses, (59) 376.
 crushed, standard sizes, (57) U.S.D.A. 186.
 crushed, tests, (52) U.S.D.A. 783.
 permeability, (55) 780.
 removal as phase of land clearing, (56) 779.
 Stoneflies of America, monograph, (54) 53.
 Storage—
 batteries, treatise, (53) 187.
 cellar, bank, construction and management, (53) Pa. 287.
 cellar, bank, ventilation, (54) Pa. 337.
 room, winter, for homes, (52) Mich. 489.
 Storms, tropical, of North Atlantic Ocean, (52) U.S.D.A. 416.
 Stovarsol, action in experimental anthrax, (58) 477.
 Stoves, electric, data, (59) Mich. 98.
 Stoxal, use as larvicide for mosquitoes, (56) 258.
 Strangles—
 and the antiviral of Besredka, (57) 472.
 complement fixation test in, (57) 378.
 prevention, (54) 874.
 relation to pleuropneumonia in horses, (57) 472.
 streptococcus, studies, (58) 675, 774.
 Strategus—
 antaeus, injury to peach trees, (52) 454.
 quadrioveatus, *see* Rhinoceros beetle spp., notes, (54) Kans. 461.
 Straw—
 artificial manure from, (58) 720, 721, Mo. 721, N.Y.State 816; (59) N.Y.State 22.
 better utilization, (51) 34.
 breaking strength, apparatus for testing, (53) 836.
 decay, effect of organic acids, (51) Tenn. 323.

Straw—Continued.

- decomposition in soils, (51) Wash.Col. 118; (53) 418.
 effect on nitrate accumulation, (54) 420; (55) Iowa 515.
 effect on plant growth, N.Y.State, (52) 513; (54) 525, 622.
 effect on soil temperature, (51) 325.
 feeding value for wintering cattle, (56) Oreg. 365.
 fertilization, effect on yield, (55) 815.
 fertilizing value, (51) Minn. 119; (58) 121.
 handling, blowing stackers for, (59) 378.
 humification experiments, (52) Wash. Col. 815.
 hydrolyzation, (56) 69.
 litter for poultry, forced circulation of heated air for, (60) West.Wash. 766.
 lofts for poultry houses, (59) Wyo. 282.
 mulch, effect on nitrate accumulation, (55) 121.
 mulch, value, (59) Nebr. 832.
 physiological and chemical aspects, (56) N.Y.State 212.
 synthetic manure from, tests, (59) 119.
 utilization, (56) Minn. 513.
 v. hay for wintering heifers, (53) Can. 879.
 v. silage, feeding value, (51) Kans. 74.
- Strawberries—
 as affected by sodium nitrate, (51) N.H. 142.
 breeding, and false hybrids of Millardet, (60) 528.
 breeding experiments, (51) 345; (52) 142; (55) 836; (58) Alaska 434; (59) Nebr. 832; (60) 541, Oreg. 738; West.Wash. 740.
 canned, vitamins in, (59) 94.
 characters of progeny and parent, correlation, (57) 834.
 classification according to chromosome number, (55) 130.
 cold storage studies, (58) 535.
 cost of production, (52) Utah 788.
 cost of production and marketing, (52) Ky. 490.
 culture, (51) Wis. 145; (52) Guam 232, Mo. 237, N.J. 738; (54) Kans. 40; (55) Mo. 342; (57) Alaska 532; (59) N.J. 334; (60) Tenn. 140.
 harvesting, and marketing, (55) 646.
 in California, (60) 825.
 in Canada, (57) 437.
 in England, (53) 343.
 in Ontario, (59) 442.
 in Pennsylvania, (54) 838.
 cytological and genetic studies, (60) 125.
 disease resistant varieties, (56) 549.

Strawberries—Continued.

- Dunlap, flower bud formation in, (58) 644.
 effect of time of applying nitrogen, (58) Can. 836.
 Ettersburg, field production, (55) Oreg. 40.
 everbearing, notes, (59) Wash.Col. 40.
 experiments with runner plants, (57) N.J. 40.
 fertilizer experiments, (51) La. 841; (53) La. 536; (54) 243, 643; (55) La. 440, Can. 834, N.H. 834; (57) Tex. 136, Can. 236, N.H. 335; (59) N.H. 230, Miss. 332, N.C. 739; (60) Ala. 139, Can. 540.
 field plot technique with, (58) 644.
 forcing, (58) 437.
 fruit bud initiation in, (60) Pa. 338.
 growth, effect of fertilizer treatments, (58) 238.
 Hautbois, hybrids of, (60) 341.
 inheritance of flower types and fertility in, (51) 736.
 injurious effect of sodium nitrate, (53) N.H. 437.
 insects affecting, Mo., (52) 156; (60) 161.
 Mastodon, new variety, (59) N.Y.State 233.
 mulching studies, (52) Mont. 441.
 new seedling, (59) 833.
 nonvolatile acids in, (54) 7.
 notes, (55) Oreg. 643.
 nutrient requirements, (54) Mich. 339.
 nutritional studies, (59) 838; (60) Can. 639.
 of New York, (55) N.Y.State 39.
 on the market, diseases, (56) U.S.D.A. 454.
 origin, (57) 437.
 overhead irrigation, Ill., (56) 234; (58) 333; (60) 230.
 preparing for market, (59) U.S.D.A. 89.
 preservation by freezing, (52) Calif. 15.
 prices and shipments from Florida, (59) 886.
 production—
 and marketing, (57) Ark. 683; (60) Mo. 678.
 in Florida, (52) 142.
 in Michigan, (60) Mich. 341.
 profits from, (53) Ky. 391.
 protection for, (56) Wash.Col. 533.
 protection from frost by artificial heating, (58) U.S.D.A. 206.
 response to acidity, (57) Mich. 340.
 root and shoot growth, (56) 44; (58) 39.
 rotation experiments, (57) Ohio 135.
 sex in, importance, (53) 536.
 shipments and unloads, (53) U.S.D.A. 293.
 shipping experiments, (60) Fla. 148.
 Sitka hybrid, (52) Alaska 536.

Strawberries—Continued.

- source of plants, test, (57) N.J. 735.
- spray schedules for, (55) Kans. 238.
- spraying, (51) U.S.D.A. 52.
- sterility in, (57) 340; (58) 644.
- strains, variations in, (55) 837.
- studies at Long Ashton Research Station, England, (59) 442.
- systems of planting, (53) Can. 840.
- under refrigeration, Botrytis on, (55) 453.
- varieties, (54) Minn. 37; (60) Fla. 139.
- varieties, behavior, (51) N.Mex. 440.
- varieties, hardy, (55) Ind. 37.
- varieties, new, (55) N.J. 37.
- variety, notes, (58) Ohio 138.
- variety tests, (52) Ga.Coastal Plain 232; (53) Miss. 239; (56) Ga.Coastal Plain 531, Utah 533, Miss. 739, Fla. 832; (57) Tex. 136, N.J. 735; (58) Miss. 37, Ga.Coastal Plain 738; (60) Minn. 140, Alaska 736.
- wild, *Tylenchus dipsaci* affecting, (51) U.S.D.A. 53.
- yield, effect of sodium nitrate, (56) 443.

Strawberry—

- aphid, notes, (58) 152; (59) 53.
- black root, (52) Mich. 53; (56) 354.
- crinkle, notes, (60) Oreg. 745.
- crown borer, notes, (51) Tenn. 357; (60) 651.
- crown borer, summary, (57) Mo. 167.
- crown moth, notes, (60) Oreg. 753.
- disease, Lanarkshire, (58) 249; (59) 545.
- disease new in California, (58) 152.
- disease, notes, (57) 550; (59) 535.
- diseases—
 - and pests in Louisiana, (60) 553.
 - descriptions and control, (54) U.S.D.A. 149.
 - little known, (56) 54.
 - notes, (52) Utah 745; (55) 249.
 - studies, Fla., (56) 840; (60) 148.
- Dry Weather everbearing, notes, (59) N.Dak. 832.
- eelworm, infection experiment, (57) 850.
- fruit rots, notes, (52) 352; (54) 745.
- fruit rots, relation to weather conditions in the field, (58) 657.
- Harpalus, notes, (59) Colo. 248.
- leaf roller—
 - control, (59) Iowa 355.
 - life history and control, (57) 62.
 - notes, (60) Oreg. 753.
 - parasites of, (54) 458; (55) 460.
- leaf scorch, cause and control, (55) N.C. 453.
- leaf scorch, notes, (51) N.C. 846; (53) 754; (55) 850.
- leaf spot, notes, (55) 346; (57) 55, 343, 640; (58) 152.
- leather rot, studies, (52) 150.
- molluscose, notes, (52) 352.

Strawberry—Continued.

- mosaic, notes, (57) 343.
 - pest in Sweden, (58) 348.
 - plant, physiological anatomy, (58) 318.
 - plants, topping, (60) Oreg. 739.
 - products, detection of spoilage in, (53) 807.
 - purple leaf blotch, notes, (52) 748.
 - red plant, studies, (52) 748; (56) 152, 850; (59) 246.
 - root aphid—
 - control, (59) N.J. 354.
 - effect of length of day, (51) 455.
 - notes, (51) Tenn. 357; (52) Tenn. 553; (53) 556; (54) Ohio 155.
 - root disease, notes, (57) 145.
 - root weevil—
 - control, (57) Oreg. 263.
 - notes, (55) Oreg. 659; (58) 256, 351; (60) Oreg. 753.
 - oil barrier for, (60) Oreg. 754.
 - poisoned baits for, Wash.Col., (54) 853; (55) 55.
 - popular account, (51) 554.
 - roots and rooting habits, (60) Can. 638.
 - rootworm on greenhouse roses, (54) U.S.D.A. 556.
 - seedlings, notes, (60) Can. 540.
 - sirup, pasteurized, vitamin C in, (52) Calif. 65.
 - weevil, notes, (51) Tenn. 357, Ark. 858.
 - witches' broom, studies, (59) 851; (60) Oreg. 745.
 - yellow—
 - description, (58) 657.
 - etiology and transmission, (59) 53.
 - notes, (55) Calif. 344.
 - resistant varieties, (57) Calif. 243.
 - transmission by aphids, (59) Calif. 746.
- Strawflower yellows, notes, (57) 343.
- Streams—
- control, retards in, (55) U.S.D.A. 278.
 - flow experiment, (59) U.S.D.A. 477.
 - flow, maximum, (55) U.S.D.A. 479.
- Streams—
- curvature of channels, relation to depth, (58) 880.
 - gaging, treatise, (58) 373.
 - pollution, (54) 483.
 - pollution in New York State, (52) 188.
 - pollution in Wisconsin, (58) 585; (60) 676.
 - sewage-polluted, rate of reaeration, (55) 580.
 - small, farm power from, (52) U.S.D.A. 888.
 - small, power possibilities, (56) Mich. 899.
- Strepsiptera, embryological studies, (57) 554.

Streptococci—

- action on casein, (60) N.Y.State 427.
- biochemical reactions, (60) N.Y.State 427.
- chain formation, effect of medium, (60) N.Y.State 427.
- classification, (60) N.Y.State 428.
- effect on Cheddar cheese flavor, (55) N.Y.State 269.
- from erysipelas, allergic reactions, (58) 278.
- green coloration produced by, (55) 574.
- heat-resisting, in market milk, (55) 471.
- hemolytic, development, relation to pH of medium, (55) 874.
- hemolytic, human type, detection in milk, (59) Wis. 78.
- historical survey of researches on, (58) 877.
- of souring milk, (51) 178.
- preserving, hormone blood agar for, (53) 582.
- rendering Gram-negative, (51) 81.
- scarlet fever type, udder infection with, (59) 674.

Streptococcus—

- bombycis, notes, (57) 261.
- caprinus, notes, (51) 682.
- equi, filtrable forms, (58) 774.
- equi, specificity, (57) 378.
- equi, studies, (58) 675.
- fecalis and Streptococcus lactis, relation, (51) 178.
- galleriae, notes, (56) 758; (59) 354.
- genitalium, notes, (56) Ky. 172.
- hemolyticus resistance to disinfectants, tests, (58) 574.
- lactis—
 - casein splitting ability, (51) 579.
 - effect on ripening of cheese, (51) 179.
 - group, classification, (56) Iowa 571.
 - in curdling milk, relation to ripening of cheese, (53) 581.
 - inhibiting effect on Lactobacillus bulgaricus, (60) 772.
 - studies, (51) 178.
- mastitidis, notes, (59) 79.
- spp. resistant to pasteurizing temperatures, (59) N.Y.State 269.

Streptogyne crinita as weed in Belgian Kongo, (53) 839.

Streptothrices in Vesuvian soils, (52) 22.

Streptothricosis, cutaneous, notes, (59) 471.

Streptothrix corallinus—

- growth as index of vitamin B, (60) 412.
- growth factor for synthesis by Meninococcus, (60) 412.
- growth studies, (60) 411, 412.
- relation to antineuritic vitamin, (60) 412.

Stresses, statically indeterminate, treatise, (56) 780.

Striga—

- hermonthica, notes, (56) 449.
- lutea on rice in Sumatra, (56) 548.

Strigea tarda, life history studies, (54) 172.

Stripe rust in United States, (52) 648.

Stromatinia laxa on apricots, (52) 150.

Strongylidae, oviposition, (58) 474.

Strongylids—

- equine, in South Africa, (52) 85.
- of the horse, (51) 384.

Strongyloides—

- chapini n.sp., description, (55) 73.
- ratti n.sp., description, (55) 73.
- speciation and specificity in, (55) 73.
- stercoralis, life cycle studies, (55) 758.
- stercoralis of man transmitted to animals, (59) 173.

Strongylosis in California cattle, (58) 174.

Strongylus—see also Lungworms and Stomach worms.

- equinus, parasitic life history studies, (60) 669
- spp. in sheep and goats, (59) 475.

Strophostyles helvola host of bean bacterial blight, (56) 351.

Structures—

- indeterminate, use of models in, (57) 186.
- theory of, treatise, (59) 376.

Struma colloides in bovines in Transvaal, (60) 574.

Struts, tapered, studies, (53) 483.

Strychnine—

- amount in poisoned finches, (54) 151.
- determination in poisoned grains, (56) 506.

- resistance of fowls to, (54) 773.

Stubbs, W. C., editorial, (51) 101.

Student's method, limitations of in fertilizer experiments, (54) 720.

Students, related, grades of, (58) 128.

Stumps—

- living, (58) 842.
- removal, costs, (52) Minn. 88.
- removal, devices for, (53) 387.
- removal, equipment and methods, (57) Calif. 282.
- removal, use of explosives for, (56) 681.

Sturmia sericariae, parasite of, (58) 459.

Stylops effect upon infested wasps, (59) 257.

Subgrade studies, present status, (54) U.S.D.A. 76.

Subgrade surveys, field methods, (53) U.S.D.A. 683.

Subirrigation, studies, (55) 582.

Subirrigation systems, (59) 376.

Sublimation—

- as an analytical procedure, (51) 203.
- of plant and animal products, (51) 203.

Sublimed blue lead, use against corrosion of iron and steel, (52) 889.

Subprionomitus sp., notes, (54) 559.

- Subsoil—
 perpetually frozen, of Siberia, (59) 716.
 plows, development, (51) 187.
- Subsoiling experiments, (52) 118; (53) Ill. 17, 214, U.S.D.A. 335; (59) 207.
- Subsoils—
 absorption of nutrients from, (55) 118.
 availability of nutrients in, (53) 319.
 inactive, toxic properties, (53) 320.
- Substructures, pressures under, (60) 779.
- Subulura brumpti, parasite of turkeys in Porto Rico, (58) 481.
- Suburban trend, treatise, (53) 797.
- Sucrose—
 and lactose solutions, solubility relationships, (60) 503.
 crystallization, (51) 507.
 determination in presence of other sugars, (54) 112.
 determination in sweetened condensed milk, (57) 12.
 in stored celery, increase, (55) N.H. 833.
 inversion for determination of acidity, (56) 809.
 inversion in food products, (54) 8.
 modifications, (58) 503.
 propionic fermentation rate, (51) 109.
- Suction tension in plants, (57) 816.
- Sudan grass—
 analyses, (53) 666.
 and legumes, ensiling, (52) 68.
 and soy bean mixtures, (56) Ill. 334.
 and soy beans as emergency hay crop, (51) Wis. 35.
 and soy beans, pasturing with hogs, (55) U.S.D.A. 161.
 and soy beans, seeding experiments, (56) Wis. 732.
 as emergency hay crop, (51) Wis. 35.
 as pasture for heifers, (59) Ind. 772.
 chlorophyll deficiencies in, (53) 27.
 composition, (53) Nebr. 433.
 culture, (52) U.S.D.A. 828; (53) Nebr. 433; (55) Iowa 232, 435; (59) Tex. 729.
 duty of water for, (54) N.Mex. 680.
 fall seeding experiments, (52) 633.
 feeding value, (57) Ind. 627.
 hay v. alfalfa for milk production, (53) Kans. 779.
 hay v. alfalfa hay, feeding value, (54) 267.
 in the Ukraine, (58) 832.
 irrigation experiments, (52) Calif. 33.
 leaf spot, notes, (58) 647.
 pasture tests for pigs, Ark., (56) 369; (58) 357.
 pasture v. alfalfa pasture, Nebr., (54) 366; (56) 564.
 seeding experiments, (51) Mo. 741, Ind. 830; (53) Wyo. 133, Nebr. 433; (56) Wis. 732.
- Sudan grass—Continued.
 v. alfalfa pastures for pigs, (53) Kans. 371.
 yields, (51) Nebr. 831.
- Sufetula grumalis on sugar cane, (58) 57.
- Sugar—
 acids, preparation, (58) 11.
 administration with carbon tetrachloride, effects, (56) 572.
 analysis, estimation of cuprous oxide in, (57) 205.
 as aid in rooting cuttings, (58) 838.
- Sugar beet—*see also* Beet and Beet sugar.
 army worm, control, (55) Calif. 352.
 bacterial pocket disease, (60) 243.
 culture in arid Russia, (52) 736.
 curly leaf in Argentina, (54) 653.
 curly leaf, studies, (53) Calif. 449.
 curly leaf, transmission experiments, (56) 247.
 curly top—
 cytology of root tips, (59) 150.
 disease, extensions of known range, (58) 347.
 disease, studies, (52) 149.
 in Argentina, (59) 850.
 in South Dakota, (58) 258.
 insect transmission, (51) 543.
 possible host plants, (58) 342.
 problem, (57) Utah 558.
 relation to beet leafhoppers, (59) 653, Utah 653.
 relation to blight, (59) Wash.Col. 47.
 relation to *Chenopodium murale*, (56) 51.
 relation to tomato western yellow blight, (59) 244.
 resistance to, (55) U.S.D.A. 654; (56) 247; (58) 550.
 susceptibility of beans to, (55) 748.
 transmission, Calif., (59) 644, 747.
 variations in, (55) 753.
 virus, attenuation, (58) 148.
- diseases and pests in Poland, (58) 749.
 diseases, pocket atlas, (57) 646.
 fertilizer experiments, (57) 732.
 fields, child labor in, (55) 485.
 flowers and seed, development, (57) 26.
 fungus disease, (54) 546.
 heart rot, notes, (58) 442.
 industry in Great Britain, (54) 236.
 industry in United States and Canada, (52) 834.
 industry in United States and elsewhere, (56) 437.
 industry, treatise, (60) 39.
 juice, purification, (55) 806.
 late blight, relation to rainfall, (52) 351.
 leaf spot, control, (59) 642.
 leafhopper, *see* Beet leafhopper.

Sugar beet—Continued.

nematode—

control, (55) 47; (56) U.S.D.A. 548.

control, new method, (54) 848, 849.

cysts, other nematodes inhabiting, (60) 645.

physiology, (59) 52.

studies, (55) Utah 449; (58) 446.

pectin, composition, (55) 407.

Phoma rot, notes, (52) Utah 745.

products, injurious effects, (56) Utah 571.

pulp and slices, (54) 264.

pulp and tops, composition, (52) U.S.D.A. 267.

root aphid, notes, (53) Utah 254.

root diseases, causes and prevention, (53) 248.

root maggot, life history, (52) Utah 752.

root maggot, notes, (53) Utah 254.

roots, myxomycete in, (58) 47.

Sclerotium spot, notes, (57) 546.

seed, (55) Mich. 34.

acid treated, effect of freezing, (54) 439.

balls, disinfecting, (54) Mich. 648. disinfection, (53) 248; (56) 51; (58) 144, 149.

formation, premature, (59) 136.

from selected roots, (52) 339.

production, (52) 834; (55) N.Mex. 434; (56) Mich. 829; (57) N.Mex. 529; (58) U.S.D.A. 832; (59) Mich. 36.

stimulation tests, (58) 149, 625.

yield as affected by source, (51) Mich. 38.

seedling diseases, prevention, (59) 849.

storage rot, studies, (59) 448.

tops as oats substitute for draft horses, (56) 71.

tops, nutritive and manurial value, (59) 661.

tops, nutritive value, (58) 565.

webworm, *see* Beet webworm.

Sugar beets—

analyses, (51) 232; (53) Can. 135; (60) Can. 35.

analysis, use of refractometer in, (59) 13.

anatomy of vegetative organs, (55) 630.

as affected by salt, (51) 36.

bolting in, (57) 230; (60) 538.

bolting in, inheritance, (58) 432.

breeding at Svalöf, (55) 737.

breeding experiments, (51) Mich. 133; (52) Mich. 334; (53) 230; (57) N.Mex. 224; (59) Mich. 432.

breeding for productivity and resistance to storage losses, (58) 636.

breeding in Russia, (54) 133.

Cercospora affecting, (57) 151.

Sugar beets—Continued.

cost of production, (54) 586; (57) 84; (58) 783; (59) 680; (60) 84.

culture, (51) U.S.D.A. 135; (59) Can. 432.

economics of in Great Britain, (59) 382.

experiments, (51) Mich. 533; (52) 339, La. 534; (56) 35, Can.

433; (57) Alaska 522, 732;

(58) Alaska 428, Minn. 828;

(60) 536, Oreg. 731.

in Belgium, (54) 832.

in Germany, (60) 436.

in Tucumán, (51) 341.

on peat land, (55) Minn. 527.

sweet clover rotations in, (55) 233.

treatise, (58) 134.

decrease in production, (51) 688.

desiccation and extraction of sugar, (58) 884.

development, (58) 832.

development during second year, (56) 725.

distribution of sugar and other substances in, (53) 24.

drying, (59) 13.

economy in harvesting, (54) Utah 236.

effect of—

acid soils, (60) 536.

potassium iodide, (55) 222.

preceding crop, (53) U.S.D.A. 335; (54) Nebr. 328; (57) U.S.D.A.

524.

rainfall, (54) 235.

removal of leaves, (60) 637.

rock salt, (53) 516.

sodium nitrate, (52) 834.

effect on flavor and odor of milk, (58) U.S.D.A. 69.

electrocultural experiments, (54) 534.

experiments, (56) Minn. 524; (59) 629; (60) Mont. 636.

experiments at Tucumán, (57) 38.

experiments in Ireland, (56) 637; (58) 33.

fall plowing for, (57) U.S.D.A. 524.

fall seeding experiments, (52) 633.

feeding value, (51) 669; (57) 868.

fertilizer experiments, (51) Mich. 38, 232; (52) Mich. 735; (54) U.S.D.A.

132; (55) Minn. 332, 531, Nebr. 636; (56) 35, Mont. 133, 637; (59)

Wis. 33, 213, 319, 329.

fertilizer requirements, (55) Wis. 122. improvement, (51) 825.

in California, (54) Calif. 640.

in Czechoslovakia, varieties, (51) 236.

in Czechoslovakia, variety tests, (53) 637; (55) 530.

in France, yields and sucrose in, (59) 630.

in Irish Free State, experiments, (60) 435.

in storage, loss of sugar from, (54) 439; (55) 435; (58) 432.

Sugar beets—Continued.

- in Tucumán, composition and yield, (55) 737.
- inoculation, (52) 735.
- insects affecting, (53) Utah 254.
- irrigation and growth, (52) 534.
- irrigation experiments, Utah, (52) 733; (56) 525.
- mechanism of heredity in, (51) 633.
- metabolism, climatic effects, (55) 520.
- moist storage for, (59) 437.
- moisture in, determination by distillation method, (59) 14.
- mother, storage, (54) 439.
- on irrigated farms, yields, (56) Mont. 182.
- optimum soil reaction for, (53) 320; (59) 227.
- Phoma betae affecting, (60) 150.
- pollination, control, (57) 231.
- production—
 - costs and tests, (57) La. 522.
 - in Europe, (60) 436.
 - in Minnesota, (52) 834.
 - under irrigation, (53) N.Dak. 529.
- refractometer selection, (60) 226.
- relation to arable farming, (51) 396.
- response to light and temperature, (56) Wis. 724.
- ring density as character for selection, (57) 732.
- root behavior and yield under irrigation, (54) 130.
- rotation experiments, (52) Mont. 435; (58) U.S.D.A. 531; (60) Mont. 730.
- Russian, variety tests in America, (60) 536.
- seeding tests, (55) U.S.D.A. 132.
- soil preparation and fertilization, (56) Mich. 828.
- spacing experiments, (52) 339; (57) 231, Mich. 628; (58) 134.
- specific gravity selection, (58) 532.
- sporogenesis in, (57) 823.
- storage tests, (57) 631.
- sugar content, (51) N.Mex. 433.
- sugar in, effect of climatic conditions, (55) 415.
- sugar yields from, factors affecting, (59) Mich. 431.
- test garden studies in Ukraine, (58) 430.
- tests, (52) Mich. 834.
- time of planting tests, (51) N.Mex. 433.
- varieties and yields, (54) 435.
- varieties in France, (57) 529.
- variety tests, (51) Minn. 133, N.Mex. 433, N.Dak. 833; (53) Minn. 130, Can. 530; (55) Minn. 332; (56) 35, Can. 432, Minn. 524; (57) 227, 331; (58) Minn. 828; (59) Tex. 729; (60) N.Dak. 34.
- variety tests in Czechoslovakia, (59) 436.
- variety tests, methods, (56) 828.

Sugar beets—Continued.

- washed and unwashed, preservation, (53) 532.
- yield and plant population in, (60) 536.
- yield and quality, factors affecting, (59) 527.
- yield increase from manure, cause, (57) 231.
- yield, relation to spacing, (58) 33.
- yields and returns, (59) 382.
- yields, increasing, (54) 640.
- yields on muck lands, (56) Mich. 823.
- yields under curly top conditions, effect of spacing, (59) 329.

Sugar cane—

- aphid, woolly, parasites of, (58) 266.
- aphid, yellow, notes, (56) 552.
- aphid, yellow, outbreak in British Guiana, (60) 847.
- arrows from barreled stools, (59) 527.
- bagasse, spontaneous combustion in, (53) 522.
- Barbados hybrid and St. Croix, descriptions, (55) 232.
- beetle, studies, (52) U.S.D.A. 256; (59) 352.
- black rot in India, cause, (58) 446.
- borer—
 - and P. O. J. canes, (59) 558.
 - control, (57) La. 261; (58) La. 258; (59) 60.
 - control by airplane dusting, (57) 857.
 - dusting for, (55) La. 456.
 - egg parasites, notes, (60) 656.
 - moths attraction to light, (52) 154.
 - notes, (51) La. 853; (52) 554; (56) Guam 251; (57) 529, 655; (59) 652.
 - on corn, effect of wild grasses, (52) 61.
 - parasite of, (51) La. 854; (59) Guam 555; (60) Fla. 160.
 - parasites and hyperparasites, (58) 266; (59) 562.
 - parasites, introduction into Louisiana, (60) 848.
 - poisoning with sodium fluosilicate, (56) 758.
 - studies, (53) 155; (57) La. 554.
 - tachinid parasite of, (60) 249.
- borers at Soledad, (56) Cuba 858.
- borers, new remedy, (52) 154.
- botany, (56) 389.
- breeding experiments, (51) V.I. 833; (57) 332, P.R. 425; (60) P.R. 731.
- breeding in Hawaii, (56) 633.
- breeding in India, (54) 125, 133.
- breeding technique, (56) 37; (59) 329.
- bud variations and sports in, (52) 735.
- bud variations in, (51) 32.
- buds, effect of cold, (52) 229.
- buds, germination, effect of cold, (53) 838.

Sugar cane—Continued.

- burned, harvesting experiments, (59) 630.
- burning, at harvest, (51) 640.
- burning before cutting, (52) 38; (56) 38.
- chlorosis and mosaic, differentiation, (54) 748.
- chlorosis, description, (59) 150.
- composition, (59) 329.
- cost of production in Cuba, (51) 391.
- crushers and furnaces, (51) 386.
- culture—
 - experiments, (53) 133; (54) 439, P.R. 634; (55) Miss. 228, V.I. 333; (56) 35; (58) 429; (59) V.I. 432.
 - experiments in Philippines, (60) 327.
 - in Dutch East Indies, (55) 232.
 - in India, (57) 628.
 - in Java, nitrogen problem, (59) 227.
 - in Palestine, (53) 34.
 - in Queensland, (52) 439.
 - papers on, (59) 830.
 - treatise, (60) 536.
- cutting back, effect, (52) 38.
- cuttings, hot water treatment, (53) 352.
- cuttings, single point v. double point, (54) 237.
- deterioration between cutting and milling, (53) 34.
- development, (51) 639.
- development, effect of chlorine concentration, (59) 136.
- development, effect of leaf pruning, (57) 829.
- disease, (53) 246.
- disease and soil hygiene, (57) 152.
- disease, new, (58) 655; (60) 834.
- disease resistant, yield tests, (57) U.S.D.A. 546.
- disease situation, 1925–1926, (57) La. 251.
- diseases—
 - and pests, (57) 51, 152, 540, 647, 845.
 - and pests in Cuba, (58) 655.
 - and sugar production, (56) 353.
 - control, (53) 547.
 - in British Guiana, (56) 842.
 - in Mauritius, (55) 547; (56) 848.
 - in 1923 and 1924, (52) La. 548.
 - in Philippines, (54) 449.
 - in Porto Rico, (58) 50.
 - in Queensland, (57) 51, 52, 845; (60) 549.
 - in Tucumán, (55) 248.
 - not known in Cuba, (57) 647.
 - notes, (56) 451; (60) 244, 344.
 - serious nature of, (53) 47.
 - studies, (58) 850.

Sugar cane—Continued.

- districts, flooded, emergency methods for reconstitution, (57) U.S.D.A. 733.
- dry top rot, (51) 847, 850.
- effect of acid salts, (53) 829.
- effect of stripping off dead leaves, (59) 830.
- effect of sulfur, (56) 37.
- entomology, (53) 857.
- experiments, (52) 439; (56) 524; (60) 227.
 - in Barbados, (55) 738.
 - in Hawaii, (51) 534; (58) 833.
 - in Java, (55) 639.
 - in Leeward Islands, (55) 738.
 - in Lesser Antilles and British Guiana, (56) 233.
 - in Mauritius, (59) 437.
 - in Philippines, (55) 434.
 - in Porto Rico, (58) 31.
 - in Queensland, (56) 37.
 - Student's method and tables in, (54) 236.
- eye spot disease, studies, (58) 343, 750.
- eye spot in Porto Rico, (58) 446.
- fertilizer experiments, (51) Hawaii 740, 815, La. 830; (52) 132, 636; (53) 137; (56) 524; (60) 39.
- fiber, extraction of pectinogen from, (51) 310.
- Fiji disease, studies, (51) 450; (54) 449; (57) 845; (60) 838.
- fires, damage and prevention, (57) 231.
- flower, anthesis of, (53) 523.
- flowering, (55) 436.
- flowering in Hawaii, (57) 131.
- flowers and flowering habits, (58) 227.
- flowers, fertility, (52) 735.
- foot rot, notes, (56) 353.
- froghopper, (55) 854.
 - blight, (58) 455.
 - blight in Trinidad, (57) 260; (58) 850.
 - injury, relation to lime status of soil, (60) 623.
- fungus diseases in South Africa, (55) 349.
- genetics, practical, (56) 633.
- germination, (55) 738; (57) 529.
- growth failure, effect of Isotomodes on, (59) 352.
- growth, relation to soil reaction, (57) 315.
- growth, relation to yields, (58) 636.
- gum diseases in Philippines, (54) 748.
- gummosis—
 - in British West Indies, (58) 50.
 - in Porto Rico, (51) 753.
 - notes, (51) 49, 850; (57) 51, 52; (60) 344.
 - varietal resistance, (51) 847.
- hardy varieties, (55) 47.
- head disease, notes, (55) 547.

Sugar cane—Continued.

- Helminthosporium outbreak in Porto Rico, (58) 551.
 high sucrose in, relation to suckering, (58) 833.
 hybrid seedlings, (60) P.R. 731.
 imported varieties, studies, (52) 439.
 improvement, (51) 640; (54) 26; (57) 529, 530.
 in Cuba, papers on, (59) 437.
 in Hawaii, quality ratio charts, (58) 134.
 insect pests and parasites, (60) 60.
 insects—
 affecting, (51) La. 854; (52) 356; (55) 758; (56) 358, 756; (59) 352, 456.
 and mites affecting, (54) 257.
 control, (54) 257.
 in Fiji, (52) 556.
 in Hawaii, parasites of, (59) 352.
 in Louisiana, (53) 358.
 in Negros, (51) 256.
 in Philippines, (54) 449.
 in Queensland, (51) 551; (53) 857; (55) 759; (58) 452.
 of the world, (60) 649.
 investigations at Pusa, (55) 229.
 irrigation experiments, (52) 735.
 Java, loss of sugar after cutting, (55) 531.
 juice—
 and gur, quality, effect of fertilizers, (60) 227.
 clarification, (51) 613; (52) 113; (55) La. 412.
 effect of fertilizers, (59) 224.
 physical examination, (55) 13.
 removal of albumin from, hot v. cold liming for, (52) 412.
 super-defecation, (52) 205.
 juices—
 and sirups, colloids in, (55) 112.
 filtration, effect on microorganisms in, (53) 612.
 pectin and pentosan content, (53) 207.
 Lahaina disease—
 and soil acidity, (53) 829.
 natural control, (57) 152.
 studies, (58) 749.
 Lahaina, effect of combined attacks of *Pythium* and *Isotomodes*, (59) 353.
 leaf reddening and drying disease, notes, (55) 244.
 leaf scald, identity and Java gum disease, (56) 451.
 leaf scald, studies, (56) 353; (58) 149.
 leaf sheath fungus, notes, (58) 850.
 leaf spot diseases in Porto Rico, (54) 547.
 leaf spot diseases, studies, (53) 147, 250.
 leaf stripe, notes, (56) 353.
 leafhopper, studies, (58) 663; (60) Miss. 163.

Sugar cane—Continued.

- lesser cornstalk borer affecting, (59) 460.
 lodging, (51) 342.
 major diseases, (55) 349.
 marketing, (52) U.S.D.A. 294.
 matizado, histology and cytology, (56) 452.
 mealybug, control, (51) La. 854.
 mealybug, new species in Cuba, (56) 156.
 mosaic—
 and chlorosis, differentiation, (54) 748.
 at Soledad, Cuba, (55) 247.
 cause, (53) 47; (54) 748.
 control, (51) 156; (55) 345.
 control in Porto Rico, (53) 352.
 cytology, (57) 251.
 description, (59) 642.
 distribution and hosts, (56) 451.
 effect on cell content, (59) 340.
 eradication, (51) 50.
 eradication campaign in South Africa, (53) 47.
 etiology and control, prize to discoverer, (60) 500.
 fighting propagation, (55) 349.
 free cuttings, selection, (59) 643.
 grass hosts of, (57) 260.
 histology and cytology, (55) 449.
 history in India, (58) 243.
 in Cuba, (51) 546; (53) 249; (58) 655.
 in highly resistant varieties, (55) U.S.D.A. 547.
 in India, (51) 153.
 in Jamaica, (53) 249; (57) 350, 647; (58) 655.
 in Philippines, (54) 449; (57) 647.
 in Porto Rico, (53) 249; (54) 547; (55) 247.
 in South Africa, (51) 45, 246; (54) 250; (57) 152.
 in Trinidad, (57) 350.
 insect transmission of, (56) 858.
 notes, (51) 847; (52) La. 548; (54) 245; (55) 243, 346, 349; (56) 748; (57) 145, 351, 443, 547, 750, 845; (58) 143, 241; (60) 546.
 plant, photosynthetic activity, (58) 447.
 plant, protozoan in tissues, (58) 447.
 problems, (54) 451.
 relation to *Aphis maidis*, (58) 850.
 resistance, leaf adaptation for, (60) 152.
 selection experiments, (57) 251.
 situation, (55) 247.
 status in Reunion, (54) 250.
 studies, (51) 352, 450, La. 845; (53) 47.

Sugar cane—Continued.

- mosaic—continued.
 - tolerance and resistance to, (52) 847.
 - transmission, (51) 49; (53) 649; (55) 248.
- mosaic-like disease in India, (58) 244.
- mosaic-resistant Java, in Tucumán, (54) 748.
- moth borer—
 - control, (51) 553.
 - control by airplane, (60) U.S.D.A. 250.
 - damage from, (56) 460; (58) 347.
 - estimate of loss from, (60) 559.
 - life history and control, (59) U.S.D.A. 156.
 - papers on, (60) 60.
 - parasites, introduction into Louisiana, (59) 458.
 - summary, (53) 51.
- moth borers—
 - egg parasites of, rearing, (60) 252.
 - in British Guiana, (58) 860.
 - studies, (59) 554.
- moth stalkborer, notes, (56) 557.
- mottling disease, *see* Sugar cane mosaic.
- new baridiid weevil affecting, (58) 460.
- parasites, introduction into West Indies, (60) 252.
- pests in western Mexico, (56) 155.
- pink borer, notes, (53) 361.
- planting, (55) 531.
- P. O. J.—
 - and borer resistance, (59) 558.
 - deterioration of sugar in, (59) 630.
 - 234, behavior in Tucumán and elsewhere, (56) 737.
 - 2725, characteristics, (57) 632; (60) 334.
- pollen, germination in culture media, (59) 630.
- pollen, longevity, (60) 817.
- pollen, studies, (57) 132.
- production, economic aspects, (59) 227.
- products, pH value, (55) 112.
- red rot, epidemic, (57) 52.
- red rot, studies, (55) 547; (59) 536, 543.
- red streak associated with top rot disease, (57) 845.
- red stripe disease, studies, (54) Hawaii 849.
- research at Coimbatore, (55) 231.
- resistance to fungi, factor producing, (59) 52.
- rind, coloring matter, (51) Ia. 807.
- ripeness, factors affecting, (54) 439.
- root aphid, notes, (58) 451.
- root borer, notes, (52) 636.
- root borer, West Indian, notes, (51) V.I. 856.
- root disease, (55) U.S.D.A. 148.
- complex, (57) 152.

Sugar cane—Continued.

- root disease—continued.
 - in Cuba, (59) 850.
 - in Java, (51) 154.
 - rôle of snails in, (52) 449.
- root diseases, (60) 244.
 - in British Guiana, (57) 442.
 - in Porto Rico, (55) 248; (56) 51.
- root knot in Porto Rico, (57) 152.
- root parasite, notes, (53) 47.
- root rot—
 - data, (52) 149.
 - in Hawaii and Porto Rico, (54) 546.
 - notes, (52) La. 548; (53) 353; (55) 244; (57) 152, 447.
- root studies in soil drained by tile, (60) 335.
- roots, distribution in soil, (57) 432; (60) 334, 335.
- rots, studies, (58) 850.
- scale, red-striped, outbreak, (57) 856.
- seed, hand stripping, (57) 132.
- seed, hot-water treatment, (53) 22.
- U.S.D.A. 23.
- seed, storage and germination studies, (60) 334.
- seedlings—
 - and their parents, studies, (59) 127.
 - Coimbatore, merits, (51) 36.
 - differentiating, (57) 829.
 - in Mauritius, (58) 636.
 - in Tucumán, (51) 640; (56) 829; (59) 830.
 - optimum growth conditions, (54) 832.
- P. O. J., in Tucumán and Porto Rico, (54) 133.
- production, (55) 640.
- propagation, (54) 236.
- stooling habit, inheritance, (55) 126.
- tests, La., (53) 528; (57) 522.
- seed-piece roots, length of life and growth, (58) 433.
- selection, (55) La. 654.
- sereh disease in Singapore, (54) 49.
- sereh-diseased, microflora in, (53) 353.
- sirup manufacture, (54) U.S.D.A. 207.
- sirups, composition, production, and consumption, (54) 11.
- smut, dissemination, (51) 353.
- smut, notes, (55) 244, 547; (57) 639.
- soils, management, P.R., (51) 815; (57) 412; (58) 508; (60) 719.
- soils of Hawaii, fertilizer practices, (51) 323.
- soils, water-supplying power, (53) 116.
- spacing experiments, (52) 835; (53) 237; (57) P.R. 425.
- sprouting, effect of anesthetics, (60) 28.
- streak disease, studies, (54) 246, 250, 251; (56) 447, 748; (57) 51, 350, 351, 546, 547; (58) 241; (60) 546.

Sugar cane—Continued.

- streak disease, transmission, (56) 649.
 stubble, early cut, conservation, (58) 33.
 studies in Philippines, (55) 229.
 studies in Queensland, (59) 136.
 Super-Cristalina, description, (53) 236.
 Super-Uba, description, (53) 236.
 tasseling, summary, (53) 838.
 tassels, handling for breeding work, (54) 236.
 time of applying ammonium sulfate, (54) 640.
 time of planting, effect on sugar production, (55) 640.
 Toledo, a mosaic-immune variety, (51) 249.
 top rot, studies, (51) 50.
 tops and root system, effect of sub-soil fertilization, (60) 335.
 trash, effect on soil nitrates, (57) La. 512.
 trash, fertilizing value, (55) 725.
 trash in soil, (60) 511.
 treatise, (55) 337.
 Uba, characteristics, (52) 137.
 Uba, deterioration, (52) 735; (53) 838.
 Uba, flowering, (51) Hawaii 740.
 Uba, in Porto Rico, (51) 439.
 Uba, streak disease in, (53) 47, 546.
 varieties, (51) 636, 835; (53) 837; (56) 35; (57) P.R. 425; (59) V.I. 432.
 acreage census, (56) 38.
 at Del Carmen, Pampanga, (54) 237.
 at Pusa, (53) 531.
 cytological studies, (56) 221.
 exotic, in Bombay Deccan, (56) 829.
 flowering habits and characteristics, (58) 636.
 identification, Jeswiet method, (53) 739.
 imported into Tucumán, tests, (58) 833.
 in Cuba, (60) 537.
 in Java, (51) 237; (54) 440; (55) 738; (56) 437; (60) 226.
 in Leeward Islands, (51) 533; (59) 437.
 in Mauritius, (51) 236.
 in Queensland, (55) 738.
 in Tucumán, (54) 37.
 monograph, (58) 636.
 moth borer damage to, (58) 347.
 new, (51) P.R. 833.
 of Bombay Presidency, (56) 829.
 ratios of ash constituents in, (59) 630.
 relation to disease, (57) 647.
 variety tests, (51) 636; (52) 132, Guam 226, 636; (54) Fla. 230; (57) V.I. 326, La. 331, 432; (59) Miss. 325, La. 527, U.S.D.A. 829.
 vegetative organs, anatomy, (53) 324.

Sugar cane—Continued.

- water requirements, (53) 17.
 weevil borer, parasite of, (58) 665.
 windrowing, (51) 38; (53) 533; (55) 232; (57) 231.
 yield factors, (53) 249; (54) 747, 748.
 zonate foot rot, description, (59) 850.
- Sugar—
 cane, rôle in plants, (56) 425.
 colorimeter correction curves for, (56) 204.
 coloring, manufacture, (56) 506.
 corn, recipes for use, (55) 615.
 cost of production, (51) 391.
 costs of production in United States and Cuba, (55) 886.
 crops, culture in arid regions, (52) 736.
 crystallization, (51) 507.
 determination method, (56) 505.
 dust explosions, (51) 789.
 effect on viability and growth of *Bacillus botulinus*, (52) 165.
 excreted in normal urine, type, (52) 861.
 experiment station, Natal, report, (57) 733.
 Experiment Station of Java, report, (60) 135.
 factories—
 chemical control for, methods, (53) 208.
 chemical control, normal juice factor, (53) 506.
 clarification in, (53) 207.
 factory products, surface tension, (52) 315.
 formation in sulfite digester, (53) 810.
 free and hydrolyzable in foods, determination, (56) 111.
 in asparagus, (57) 137.
 in blood and urine, factors affecting, (51) 365.
 in cornstalks, effect of smut, (57) 49.
 in ice cream, effect on quality, (52) Mo. 679.
 in plant tissue, determination, (53) 108.
 in sorgo varieties, (53) Okla. 111.
 in urine, determination, (53) 505; (55) 613, 805; (56) 112.
 in urine, excretion, (55) 792.
 in urine, nature, (52) 806; (53) 63; (57) 91.
 in urine, nature and origin, (58) 388.
 industry and by-products, (53) 137.
 industry by-products as fertilizers, (57) 813.
 industry, color in, (59) 713.
 industry, historical summary, (54) 11.
 industry in Egypt, (53) 34.
 industry in Hawaii, (56) 737; (60) 436.
 industry in Peru, (57) 433.
 industry in Philippines, (60) 385, 436.
 industry in South Africa, (57) 484.
 industry in St. Croix, (54) V.I. 231.

Sugar—Continued.

- industry in United States, (51) U.S. D.A. 743.
- industry of world, (52) 534; (57) 530, 829; (59) 830.
- inversion during jelly making, (51) 412.
- invert, manufacture and uses, (51) 614.
- invert, relative sweetness, (54) 307.
- judging by taste, (58) 611.
- loss in topped beets, (57) 227.
- losses from sugar beets during storage, (54) 439.
- losses in process of defecation-saturation, (59) 507.
- machinery, treatise, (52) 615.
- manufacture—
 - and trade in Great Britain, (55) 412.
 - colloids in, (53) 613.
 - defecation in, (54) 11.
 - effect of sugar in water used for slaking lime for filtration, (59) 13.
 - inversion losses in, (53) 716.
 - papers on, (55) 112.
 - treatise, (53) 411.
 - utilization of lime residues, (59) 13.
- metabolism in plant cells, (53) 826.
- milk, manufacture, analysis, and applications, (59) 203.
- modifications, (58) 503.
- of photosynthesis and rôle of cane sugar, (56) 627.
- place in diet, (54) 691.
- plant, apparatus for continuous diffusion, (59) 507.
- polarization, effect of water-insoluble matter, (51) 411.
- preservative action in catsup, (56) N.Y.State 711.
- producing palms, history and habits, (51) 242.
- production—
 - effect of temperature and rainfall, (55) 715.
 - effect of weather, (56) U.S.D.A. 314.
 - from beets, ultimate limits, (59) 330.
 - graphical data, (59) 527.
 - in Java, relation to climate, (53) 509.
 - of Czechoslovakia, (55) 484.
- products, analysis, iodometric method, (51) 507.
- products, clarification, effect on reducing sugar, (51) 614.
- raw, deterioration in storage, (53) 613.
- raw, deterioration, prevention, (51) 13.
- raw, removing gummy and waxy material, (52) 13; (53) 315.

Sugar—Continued.

- refineries, use of pH determinations, (53) 612.
- refinery furnaces, development, (54) 177.
- refining—
 - basic operations, (52) 114.
 - cold and hot water washing of filter-press mud, (59) 507.
 - crystallization of fill-mass in mixing vats, (59) 506.
 - decolorizing carbons for, (55) 112.
 - indicators in, (53) 507.
 - industry of New York, historical sketch, (52) 114.
 - papers on, (58) 807.
 - progress in, (54) 206.
- relation to tariff, treatise, (51) 690.
- residual, in bread, (54) 503.
- rôle in jelly formation, (51) Del. 411.
- soft, color standards, (54) 206.
- solutions—
 - concentration, effect of filter materials, (53) 110.
 - control of reaction, (51) 411.
 - polarization, effect of salts, (53) 811.
 - saturation, chemistry of, theory, (59) 506.
 - sterilization by Filter-Cel, (51) 411.
 - sulfurous acid in, (57) 611.
- substitutes in ice cream, (52) Mich. 377.
- technology, progress in, (55) 311.
- treatise, (59) 831.
- Sugarhouse products, solids and moisture in, (55) 112.
- Sugars—*see also* Glucose, Sucrose, etc.
 - and derivatives, treatise, (57) 803.
 - determination in leaves, (53) 822.
 - determination, method, (52) 111.
 - determination of sucrose in, (54) 112.
 - effect on insulin convulsions in mice, (52) 567.
 - effect on insulin intoxication, (53) 462.
 - effect on respiration in leaves, (53) 821.
 - estimation by use of picric acid, (51) 612.
 - fermentation products, (54) 7.
 - gamma, biological and chemical significance, (51) 8.
 - hexose, effect of disodium phosphate, (55) 628.
 - in copra meal and coconut water, (54) 7.
 - in Jerusalem artichokes, (55) 737.
 - in soil, (54) Tex. 315.
 - propionic fermentation rate, (51) 109.
 - relative sweetness, (54) 307.
- Sugi fungus diseases, control, (58) 752.
- Sulfate—
 - absorption by cotton seedlings, (60) 425.

Sulfate—Continued.

- formation, effect of lime, (56) 215.
- in leaf tissue fluids of cotton, (54) 522.
- losses from limed soils, (56) 721.
- of ammonia, *see* Ammonium sulfate.
- of iron, *see* Iron sulfate.
- of potash, *see* Potassium sulfate.
- production and use in humid and arid soils, (55) 816.
- production from sulfur, (55) 627.
- water, action on concrete, U.S.D.A., (54) 180; (58) 482.
- water, effect on cements, (59) 178.
- water, effect on high alumina cement, (55) 880.
- water, resistance of Portland cement concrete to, (59) U.S.D.A. 678.

Sulfates—

- effect on determination of phosphorus, (58) 804.
- effect on sulfur oxidation, (56) Del. 318.
- formation in pond soils, (55) 419.
- in rain and snow, (56) U.S.D.A. 321.
- in soil, effect of calcium hydroxide, (51) 321.
- in tissues, determination, (54) 806.
- losses from soil, factors affecting, (56) 214.
- retention by heavily limed soil, (53) 320.

Sulfite—

- liquor as protective colloid, (54) 202.
- liquor waste as spray, (56) 712.
- pulping process, chemistry of, (54) 113.
- waste liquor sludge, effect on plants, (51) 123.

Sulfonation—

- effect on oxidation of organic matter, (53) 820.
- in soils, (58) Ky. 20.

Sulfonal in tablets, determination, (58) 311.

Sulfonphthalein indicators, new, synthesis and properties, (56) 503.

Sulfur—

- action on ewes, (53) Iowa 768.
- action on saline soil, (51) 23.
- and nitrogen metabolism in dogs, (55) 491.
- and nitrogen metabolism, relation, (53) 762.
- and soil organic matter, studies, (52) Wash.Col. 814.
- and superphosphate mixtures, toxicity, (59) 817.
- as fungicide, (53) 148, 847; (59) Tex. 750.
- as fungicide and fertilizer for sweet potatoes, (56) 452.
- as insecticide, (53) 452.
- as plant food, (51) Wash.Col. 122.
- as soil insecticide, value, (58) 858
- as spray material, (51) Ohio 246.
- as sugar cane fertilizer, (56) 37.

Sulfur—Continued.

- as supplementary fertilizer, (51) 22.
- colloidal—
 - as spray material, (56) 47.
 - preparation and toxicity, (55) 651.
 - preparation and use, (52) 859.
- compounds, behavior in cooking vegetables, (59) 389.
- compounds, oxidation in animal organism, (51) 863.
- conservation in soil, Tenn., (51) 320; (57) 615.
- control of wart disease by, (55) 653.
- crop-producing power, (59) 514.
- cycle in soil, (52) 117.
- cycle in soils, plants, and animals, (52) Mich. 24.
- deficiency, effect on tomatoes, (51) N.H. 124.
- deficiency of soils, detection, (60) 511.
- determination in soil and rocks, (51) 10.
- determination in soils, (53) 11.
- dioxide—
 - action on grapevines, (58) 343.
 - determination in dried fruit, (57) 409.
 - effect on plants, (58) 24, 422.
 - effect on soy beans, (54) 36.
 - use in marketing grapes, (53) Calif. 744.
- dust—
 - for apples, (55) 53.
 - for rust control, (56) Minn. 544; (57) 148; (58) 46, 546, Minn. 846.
 - fungicidal value, (55) 544.
 - treatment for oat smut, efficiency, (55) 845.
 - v. spray for orchards, (54) N.Y. State 538.
- dusts, physical properties, (57) N.Y. State 655.
- effect on—
 - alfalfa and clover, (56) Mont. 123.
 - alkali soil, (60) Calif. 318.
 - alkalinity, (53) 723.
 - availability of phosphate, (56) 624.
 - barley, (52) U.S.D.A. 34.
 - biological activities of soil, (55) Oreg. 620.
 - calcium and magnesium in soil, (51) 321.
 - composition and yield of legumes, (54) Wash.Col. 122.
 - crops and soils, (52) 423.
 - loss of nitrogen in compost, (51) Ga. 123.
 - microflora of soil, (56) 122.
 - nitrogen content of legumes, (54) 829.
 - nitrogen loss from composts, (51) 422.
 - nitrogen loss from soil, (56) 509.
 - Palouse silt loam, (53) 516.

Sulfur—Continued.

- effect on—continued.
- permeability of alkali soil, (59) 515.
 - plant growth, (55) N.J. 21.
 - potassium availability, (52) Ky. 421.
 - potato scab, (51) N.J. 653; (54) 747; (55) 750, 751; (59) 848.
 - potato wart, (55) 752.
 - potatoes, (52) Mich. 351, N.J. 732; (57) N.J. 48.
 - soil nematodes, (54) Fla. 345.
 - soils, (57) P.R. 413.
 - soils and crop yields, (59) Md. 425.
 - solubility of potassium, (56) 422.
 - excretion after ingestion, (51) 109.
 - experiments, summarized results, (60) Oreg. 716.
 - extracting from soil, (55) 118.
 - factor in acid phosphate, (53) 724.
 - fertilizers, rate of availability, (59) 516.
 - fertilizing action, (59) 319, 320.
 - fertilizing value, (51) Wash.Col. 728; (54) Minn. 30, P.R. 615; (55) Tex. 321, Oreg. 625; (56) Wash.Col. 513.
 - fineness, relation to oxidation rate, (56) 216.
 - floats composting, oxidation activators, (58) Del. 420.
 - forms, rate of oxidation, (55) 518.
 - fungicidal value, (55) Oreg. 650; (56) 543.
 - fungicides on foliage, determination, (58) 43, 648.
 - in Alberta soils, (59) 813.
 - in animal body, distribution, (58) Mo. 460.
 - in gasoline, effect on wrist-pin corrosion in automobiles, (58) 882.
 - in grains, effect of irrigation water, (53) 735.
 - in insulin, (54) 409, 410.
 - in proteins, (54) 501; (58) 10.
 - in rain from protected and exposed gage, (56) 212.
 - in soil, determination, (59) 312.
 - in soil, effect of ammonification, (57) 811.
 - in sprays, adherence to foliage, (54) N.Y.State 653.
 - in suspensions of activated sludge, oxidation, (60) 122.
 - in wool, variation in, (55) 696.
 - inoculated—
 - and rock phosphate, fertilizing value, (52) Ky. 421.
 - and uninoculated, for potato scab, (52) N.J. 743.
 - effect on crops, (54) Del. 646.
 - effect on potato diseases, (51) Minn. 134.
 - effect on root knot, (55) Miss. 649.
 - for scab control, (51) Idaho 844; (56) 47.

Sulfur—Continued.

- inoculated—continued.
- for soil rot and stain, (51) Del. 147.
 - losses from soils, (51) Tenn. 320.
 - metabolism, (51) 561, 863; (52) 364; (54) 292; (55) 789; (56) 14; (57) 487; (58) 192.
 - metabolism of cows, effect of protein in rations, (52) Mo. 478.
 - metabolism, treatise, (57) 194.
 - organic compounds produced in bacterial cultures, (52) 611.
 - oxidation, (52) 819.
 - as affected by sodium nitrate, (51) N.J. 624.
 - by *Thiobacillus thiooxidans*, (52) N.J. 720.
 - effect of accelerators, (60) 514.
 - effect of sulfates, (56) Del. 318.
 - effect on solubility of minerals, (52) 515.
 - in alkali soil, (57) Calif. 512.
 - in limed and unlimed soils, (59) 720.
 - in Oregon soils, (51) 327.
 - in pond soils, (55) 419.
 - in soil, (51) 22.
 - oxidized, fungicidal value, (58) 343.
 - oxidizing bacterium, physiology, (55) 631.
 - pentathionic acid as fungicidal factor, (58) 745.
 - recovered from gas plants, fungicidal value, (59) Calif. 746.
 - relation to alfalfa production, (53) 735.
 - soil treatment, effect on apple crown gall, (57) 847.
 - sprayed on fruit, cause of swelling of cans, (60) Oreg. 745.
 - sprays, injury to peaches, (60) Tenn. 140.
 - sublimed, fertilizing value, (53) 517.
 - transformation by fungi, new product of, (56) 325.
 - transformation into sulfate, (55) 627.
 - treatment for concrete, (56) 77.
 - utilization by animals, (60) 853.
 - variation in tissues of apple trees, (51) 225.
- Sulfuric acid—
- action on cultivated land, (57) 21.
 - effect on strength of cotton fiber, (52) 227.
 - in wool, estimation, (55) 613.
 - mercerization of cotton by, (60) 496.
 - spray for weed control, (54) 641; (57) 39, 541, 633; (60) Ariz. 437.
 - use against parasites, (57) 39, 541, 633.
 - v. formaldehyde for damping-off in seed beds, (51) 540.
- Sulfur-lead-arsenate-lime dust, chemical changes in during storage, (59) 57.
- Sulfur-naphthalene dust, preparation, (53) 452.

- Sulfurous acid—
 in sugar solutions, determination, (57) 611.
 removal from grape juice, (54) 112.
- Sulphine, fertilizing and disinfecting value, (51) 221.
- Sumac disease, (53) Iowa 746.
- Sumac, poison, geographical distribution, (55) 730.
- Summer fallow tillage, Wash.Col., (52) 620; (54) 316.
- Summers, abnormal, in United States, (58) U.S.D.A. 205.
- Sun scald—
 in plants, conditions for, ((56) 648.
 of trees in winter, (51) 823.
- Sun spots—
 and annual rainfall in New Zealand, (60) 418.
 and Australian rainfall, (55) 806.
 and temperature, (53) 413.
 and tropical cyclones, (52) 114.
 effect on temperature, (52) 208.
 in weather prediction, (59) 808.
 number and tree growth, correlation, (55) U.S.D.A. 115.
 relation to fluctuations in precipitation in Russia, (58) 115.
 relation to lake level, (53) 316.
- Sun suits for children, (59) U.S.D.A. 297.
- Sun, ultra-violet rays of, (53) 569.
- Sun, variations of, relation to weather, (53) 508.
- Sundri, volume tables for, (60) 743.
- Sunflower—
 diseases, (57) 351.
 diseases in Minnesota, (56) 51.
 downy mildew, notes, (60) 645.
 growth, relation to climatic conditions (52) 632.
 head, chimera in, (53) 331.
 oil production in Argentina, (52) 228.
 rust, notes, (54) 144.
 Sclerotinia disease, (55) 547.
 seed cake, effect of hulls on nutritive value, (54) 160.
 seed oil, experiments with, (56) 201.
 seed oil, sulfuric index, (52) 411.
 seed production in Missouri, (51) 534.
 silage, *see* Silage.
 stem rot and wilt, notes, (54) 144.
 stems, tropic reactions, effect of carbon dioxide, (51) 332.
 tissues, pH of, (59) 818.
 wilt, notes, Mont., (54) 343; (60) 52.
- Sunflowers—
 akenes of, (60) N.Dak. 41.
 and sunflower seed, (53) Can. 237.
 as silage crop, (53) Ill. 533.
 blooming, (56) 829.
 breeding experiments, (56) Can. 432.
 characters in, (59) Wash.Col. 32.
 culture, (51) Idaho 830; (53) Ariz. 433.
 culture and value as silage crop, (56) W.Va. 38.
- Sunflowers—Continued.
 culture experiments, (52) Alaska 528; (55) Alaska 433, Minn. 734; (58) Alaska 428; (60) Minn. 132, Oreg. 731.
 culture for silage, (55) Idaho 640.
 cutting tests, (53) Can. 530.
 early strain, (54) Wyo. 733.
 effect of irritation of tissues, (57) 514.
 effect of X-rays, (60) 627.
 fall seeding experiments, (52) 633.
 fertilizer experiments, (60) Oreg. 133.
 for silage, tests, (53) U.S.D.A. 334; (59) 437.
 growth, relation to rainfall and temperature, (55) Minn. 735.
 improving by inbreeding, (55) 233.
 mineral composition, (54) 736.
 production under irrigation, (51) Mont. 534.
 rotation experiments, (51) Minn. 636.
 Sclerotinia on, taxonomy, (54) 748.
 seeding experiments, (51) Mich. 133, Minn. 636, N.Dak. 833; (52) Idaho 828, Wash.Col. 829; (53) Can. 530; (54) Mont. 328; (55) Minn. 527, Idaho 825.
 silage merits, (53) U.S.D.A. 132.
 spacing and yield data, (51) Ga. 133.
 stage of maturity for ensilage, (52) Can. 866.
 varieties, (57) Tenn. 126.
 variety tests, (52) Mont. 435; (53) Can. 530; (54) Mont. 328; (55) Minn. 734; (56) Can. 432.
 water requirements, (58) Can. 223.
 water utilization during growth, (60) 214.
 with corn as silage crop, (55) N.H. 826.
 yields and costs, (59) Wis. 33.
- Sunlight—
 action on undyed and dyed wool fibers, (57) 596.
 and health, (55) 694.
 as factor in pork production, (53) 870.
 December, antirachitic effect, (57) 793.
 December, through Vitaglass and glass, antirachitic effect, (57) 794.
 direct through glass and celo-glass, effect on chicks, (55) Ohio 671.
 effect on—
 animal nutrition, (51) Wis. 472; (53) 867.
 antirachitic value of milk, (53) 177.
 bone development in pigs, (55) 864.
 botulinus toxin, (52) 464.
 calcium equilibrium of cows, (56) 464.
 chemical nitrification, (52) 420.
 Colpoda cucullus, (54) 120.
 egg production, (52) Kans. 475.
 growth and disease resistance in children, (59) 896.

Sunlight—Continued.

- effect on—continued.
 growth of calves, (56) Kans. 871; (57) 370; (58) S.Dak. 769.
 growth of chickens, (54) Ill. 367; (56) Can. 469; (57) Ohio 173.
 hatching quality of eggs, (59) 665.
 health, (54) 392.
 leg weakness in chicks, (53) Ohio 576, 876; (54) Ohio 396.
 mineral nutrition of pigs, (54) 469.
 nitrification, (56) 21.
 nutrition, (53) Wis. 463.
 plants and animals, (58) 116.
 silk taffetas, (60) 598.
 wool, (58) 696.
 wool fibers, (54) 597.
 fading power, estimation, (58) 394.
 inhibitive effect on date palm growth, (54) 446.
 through special glasses, antirachitic value, (58) 495.
 transmission through glass, fading ability, (58) 597.
 tropical and English, fading of dye-stuffs in, (58) 596.
 ultra-violet rays, biologically active, (60) 122.
 v. lime in bone building, (56) Wis. 767.
 winter, effect on egg production, (56) Wis. 767.
 winter, transmitted by glass substitute, effect on chicks, (58) 670.
 Suno sporadic smut, notes, (57) 443.
 Sunshine—
 antirachitic effect, seasonal variation, (58) 495; (60) 694.
 effect on pH of intestinal tract in rickets, (59) 193.
 effect on wheat yield, (55) 716.
 for pigs, (56) Iowa 267.
 seasonal, in Great Britain, (55) 717.
 Superphosphate—
 ammoniated, fertilizing value, (52) 422.
 and calcium cyanamide mixtures, chemical changes in, (53) 713.
 and Rhenania phosphate, effect on soil, (60) 511.
 and sulfur mixtures, toxicity, (59) 817.
 availability in soils, (56) 121.
 effect on—
 composition of cocksfoot, (55) 335.
 lettuce, (54) Mich. 338.
 pastures, (51) 232.
 root development of wheat, (55) 234.
 soil reaction, (55) 815; (56) 22.
 soil reaction and growth of alfalfa, (60) 509.
 squash, (55) N.H. 833.

Superphosphate—Continued.

- effect on—continued.
 tomatoes, (54) N.H. 836; (56) 441.
 fertilizing value, (51) Minn. 119, N.H. 142, 326, Va. 742; (52) 526; (54) Ohio 123; (56) N.Y.Cornell 334.
 in rotations, value, (59) Ind. 626.
 mixing of lime with, effect, (59) 425.
 neutralizing value, estimation, (59) 712.
 paste, effect on germination of cotton seed, (51) 37.
 penetration into soil, (56) 422.
 production, (51) N.J. 625.
 treated with ammonia, fertilizers from, (52) 514.
 treble, cooperative tests, (55) N.Dak. 527.
 treble, effect on alfalfa, (51) Minn. 119.
 v. rock phosphate, (51) Ohio 219.
 Superphosphates—
 analysis, sources of error in, (53) 804.
 fertilizing value, (53) 120; (55) Ark. 18, Minn. 219.
 free phosphoric acid determination in, (53) 804.
 residual effects, (53) 620.
 sulfur factor in, (53) 724.
 Superpower and World Power Conference, (53) 598.
 Suprarenal insufficiency, studies, (60) 326.
 Surface tension and density determination, micro method, (58) 803.
 Surra—
 in a pack of foxhounds, (60) 371.
 in camels, treatment, (56) 678.
 in donkeys, treatment, (53) 183.
 in equines, treatment, (56) 574; (58) 280.
 in horses and cattle in India, (56) 279, 877; (59) 673.
 in horses, diagnosis, (59) 173.
 in horses, treatment, (51) 586; (55) 72.
 in ponies, treatment, (54) 478.
 problem, zoological contributions, (59) 274, 472, 673; (60) 850.
 studies, (54) 277; (60) 475.
 transmission, (58) 262, 678.
 transmission experiments with ticks, (54) 872.
 transmitters, morphology and biology, (58) 560.
 Surveying principles and practice, treatise, (56) 76.
 Swallow bug, studies, (60) 61.
 Swamp fever—
 in horses, (54) Wyo. 773; (55) 371.
 in mules, Tex., (55) 371; (59) 776.
 studies, (51) N.Dak. 882.
 Swamp forests, growth, effect of drainage, (60) U.S.D.A. 47.

- Swarming caterpillars, paddy, summary, (54) 755.
- Sweat fungus, poisonous action in man, (58) 473.
- Sweat glands of mammals, studies, (55) 875.
- Sweating sickness in calves, (52) 84.
- Swede—
- bacteriosis, notes, (56) 541.
 - dry rot, notes, (58) 442; (59) 536.
 - finger-and-toe disease, (54) 547.
 - leaf spot, notes, (56) 145.
 - midge in North Wales, (58) 162.
 - mildew, notes, (58) 442.
 - mosaic, notes, (57) 343.
 - root juice, antiscorbutic value after cold storage, (53) 567.
 - wet rot, notes, (60) 448.
- Swedes—
- breeding experiments, (52) 437; (58) 530.
 - composition, (56) 761.
 - culture experiments, (55) Alaska 433, Minn. 735; (56) Can. 433; (57) Alaska 522, 524.
 - culture in British Columbia, (57) 34.
 - culture on peat land, (55) Minn. 527.
 - dry matter in, (55) 328.
 - feeding value for breeding ewes, (59) Wis. 67.
 - fertilizer experiments, (54) 231; (60) 25, Oreg. 731.
 - nutritive value, (58) 565.
 - optimum soil reaction for, (53) 320.
 - pellagra-preventing action, (57) 295.
 - seeding experiments, (57) Calif. 225.
 - v. corn silage for breeding ewes, (56) Wis. 763.
 - v. silage for milk production, (56) 671.
 - varieties and yields, (54) 435.
 - variety tests, (51) Minn. 133, Oreg. 529, N.Dak. 833; (53) Minn. 130, N.Dak. 334, Can. 530; (54) 530; (56) Can. 432; (58) Minn. 828; (60) Minn. 132.
 - yields, (59) Mich. 524.
 - yields and costs, (59) Wis. 33.
- Swedish Moor Culture Association, work of, (56) 824.
- Swedish Peat Society, organization, (51) 325.
- Sweet clover—
- analyses, (55) Ohio 169.
 - and idle acres, (54) 732.
 - and native pasture, feeding value, (51) Nebr. 869.
 - annual and biennial white, comparison, (54) 534; (57) 422.
 - annual white, seeding test, (51) R.I. 741.
 - Arctic, aberrant forms in, (53) 129.
 - as cover crop, (55) Oreg. 644.
 - as dry-land pasture, (60) Mont. 730.
 - as hay crop, (51) 34.
 - as plant breeding material, (59) 227.
 - bacterial disease, (58) Mo. 442.
 - biennial and annual, (54) Minn. 30.
- Sweet clover—Continued.
- biennial white—
 - composition, (56) 637.
 - green manuring value, (57) Ohio 212.
 - scarified v. unhulled seed, (57) 132.
 - breeding experiments, (52) Mich. 334; (55) Oreg. 637; (59) Mich. 432, N.Dak. 825.
 - composition, at different growth stages, (59) Ohio 222.
 - culture, (52) U.S.D.A. 828; (56) 437. and management, (57) Idaho 38, Tenn. 127. and use, (51) Mont. 139. and value, (55) Mich. 135. experiments, (51) Minn. 134; (52) N.J. 732; (60) Minn. 132. in Alberta, (52) 736. in Canada, (54) 237. in Kansas, (51) 38.
 - cutting tests, (53) Can. 530; (57) Ohio 632; (60) Ohio 636.
 - damaged, (54) 475.
 - disease, (60) 477.
 - dwarfing character in, (58) 824.
 - effect of nurse crop, (55) Idaho 825.
 - effect on following crop, (54) N.Y. Cornell 829; (58) Ill. 327.
 - effect on nitrate production in pastures, (59) N.Dak. 815.
 - establishment in bluegrass pastures, (60) 436.
 - feeding value, (55) Minn. 359.
 - fertilizer experiments, (57) Mich. 614; (59) N.H. 222.
 - for hay, pasture, soil improvement, etc., (57) 231.
 - for soil improvement, (56) Minn. 513.
 - germination of old seeds, (56) 39.
 - green manure, time of plowing under, (60) Ill. 223.
 - green manure value, (57) Ohio 114.
 - growth in artificial light, (51) 25.
 - handling for hay, (59) Wis. 33.
 - handling for nitrification, (56) Ill. 622.
 - hardness and manuring value, (54) 31.
 - hay, continuous feeding, results, (53) Minn. 477.
 - hay, damaged, effect on cattle, (55) N.Dak. 575.
 - hay, disease in cattle caused by, (53) 571.
 - hay, feeding value, (53) Minn. 169.
 - hay, moldy, effect on cattle, Ill., (58) 366; (60) 255.
 - hay or silage, spoiled, effect on cattle, (54) N.Dak. 775.
 - hay, poisonous to cattle, (54) 172; (59) 470.
 - hay production, (52) Mont. 435.
 - hay, spoiled, poisoning of cattle by, N.Dak., (59) 272, 879.
 - hay, studies, (58) Ky. 31.

Sweet clover—Continued.

- hay v. alfalfa, (53) Iowa 779.
Hubam—
and perennial, comparison, (51) Del. 132.
as nurse crop, (56) Conn.Storrs 821.
behavior, (52) Fla. 224.
for hay and nurse crops, (59) Conn.Storrs 431.
honey from, quality, (56) Ariz. 755.
productivity tests, (51) Hawaii 740.
seed treatment, (51) 34.
huller and scarifier, use, (58) Mo. 481.
improvement of bluegrass pastures with, (59) 34.
in old pastures, tests, (56) Conn.Storrs 821.
in pasture mixtures, effect, (59) N.Dak. 825.
in sugar beet rotations, value, (55) 233.
leaflet, (59) U.S.D.A. 330.
meal, feeding value, (54) Can. 862.
moldy, cause of disease in cattle, (51) 383.
natural crossing between white and yellow flowered, (60) 429.
nitrification in soil, (56) 210.
nitrification rates of different parts, (58) 19.
nodule bacteria in, (54) 419.
nurse crops for, (60) Minn. 132.
pasture—
carrying capacity, (51) N.Dak. 869.
for beef herd, Ill., (56) 262, 366.
for cows, (57) U.S.D.A. 570; (58) N.Dak. 353.
for draft fillies, (57) Ill. 462.
for ewes and lambs, (58) U.S.D.A. 567.
for pigs, (55) Ohio 163; (56) Ark. 369; (58) Ark. 357; (59) Kans. 766.
v. alfalfa, (53) Minn. 171.
pasturing tests, (56) Ky. 132; (57) N.Mex. 273; (60) Ill. 255.
planting and spacing experiments, (57) Okla. 125.
pollinating agents, (58) S.Dak. 755.
pollination and cytological studies, (55) 830.
popular discussion, (54) Ind. 832.
production on irrigation projects, (54) Wash.Col. 434.
residual effect of fertilizers on, (51) Minn. 133.
root development, effect of soil types and thickness of stand, (59) Mich. 17.
roots and straw, decomposition studies, (58) 517.
screenings, feeding value, (59) N.Dak. 872.

Sweet clover—Continued.

- second year, effect of close cutting, (56) Ky. 132.
seed—
coat and germination studies, (52) 516; (55) Iowa 531.
fatty oils of, (56) 502.
germination, effect of high pressure, (59) 228; (60) 538.
hard, agricultural value, (58) 534.
hard, germination, (59) 137.
hard, studies, (51) Iowa 433.
impurities and determination of origin, (60) 539.
production, (53) Can. 530; (54) Ill. 330.
scarification, Minn., (53) 131; (55) 332; (58) 828.
scarified and unscarified, longevity, (56) Minn. 524.
studies, (55) N.Dak. 640.
seeding experiments, (53) Can. 530, Ind. 431, Okla. 133; (56) Ind. 132; (57) Okla. 523.
segregation in, (55) 523.
self-pollination, (54) 736.
spoiled, poisoning of cattle by, (59) N.Dak. 272.
studies, (56) Ill. 335; (57) Ohio 733.
time for plowing under, (53) Ohio 599; (54) Ill. 314.
tolerance for alkali, (53) 320.
tops and roots, nitrogen and dry matter in, (55) 531.
types, comparison, (55) 830.
types in Russia, (58) 228.
v. alfalfa, effect on soil, (54) 216.
value for pastures, (51) Wis. 434.
value to farmers, (59) Mich. 99.
varieties—
comparative cytology, (54) 26.
comparison, (51) 640.
for Kansas, (53) 528.
forage value, (53) U.S.D.A. 132.
relative hardness, (59) N.H. 222.
variety tests, (51) Minn. 133; (53) Can. 530, Minn. 130, N.Dak. 334; (55) Minn. 228, Minn. 332, N.Dak. 527, Oreg. 637, Minn. 734; (56) Can. 432, Minn. 524, Wash.Col. 525; (57) Idaho 726; (59) Wash.Col. 31; (60) Ill. 223.
water requirements, (58) Can. 223.
white, annual and biennial, comparison, (54) 534; (57) 422.
white, cytology, (53) 328.
white, disease affecting, (55) 545.
wilt disease, notes, (56) 148.
with timothy, palatability, (59) Wis. 66.
yellow v. white, (53) N.Dak. 334.
yellow v. white blossom, for steers, (55) Minn. 359.
yield, relation to soil management, (54) Ill. 314.

Sweet corn—

- and dent crosses, inheritance studies, Iowa, (56) 519; (59) 39.
- ashing methods, (56) 13.
- bacterial wilt, (51) Ohio 850.
- breeding experiments, (51) Wis. 434, N.J. 636, P.R. 833; (52) 823; (53) Ind. 139, Wis. 432; (54) P.R. 635; (55) Can. 835; (56) Me. 42, Ill. 234, Ill. 343; (57) Can. 236, P.R. 435; (60) Ill. 231, Can. 639.
- canned, determination of field corn in, (58) 807.
- canning, bacteria prevalent during process, (57) 688.
- canning, effect of scalding, (52) U.S.D.A. 460.
- concentrated fertilizers for, (54) Mass. 123.
- cost of production, (59) N.J. 382.
- Country Gentleman, decline in, (58) Ill. 333.
- culture, (57) Mich. 635.
- culture experiments, (60) P.R. 740.
- drying, chemical aspects, (52) Md. 207.
- early, variety tests, (60) Ohio 741.
- effect of sodium nitrate, N.J., (57) 40, 736.
- endosperm, carbohydrate storage in, (53) 421.
- fertilizer experiments, (51) Ind. 837; (52) Ohio 23; (55) N.J. 37; (56) Ill. 343; (57) N.H. 334, Ind. 635; (58) 839; (59) Iowa 39, N.H. 230, N.J. 334, Ohio 835.
- freezing studies, (51) 143.
- Golden Bantam, selection studies, (60) Ill. 230.
- home-grown strains, (56) Iowa 833.
- hybrid, notes, (59) 833.
- improvement, (55) Ind. 37; (59) Wis. 41.
- inbreeding, (59) Conn.State 28.
- injury from high temperature, relation to color in stalks, (52) 139.
- leaf spot, notes, (58) 647.
- liming experiments, (51) 143.
- new strains, (54) Ill. 327.
- planting distance, effect on yields, (59) Ohio 138.
- pollen mother cells, partition wall formation in, (59) 29.
- quality, (55) 836; (56) 534; (57) 337.
- resistance to Stewart's bacterial disease, (51) Ohio 445.
- root rot, control, (53) Conn.State 422.
- seed—
 - effect of ethylene stimulation, (58) 645.
 - factors affecting vigor, (58) 641.
 - grading, (58) 839.
 - quality determination, (57) 832.
 - studies, Iowa, (55) 535; (59) 741.
 - treatment, (56) 150; (58) 549; (59) 242.
 - treatment with mercury compounds, effect, (60) 350.

Sweet corn—Continued.

- sex reversal in, control, (60) 526.
 - sirup from stalks, (52) Minn. 205, 207.
 - size of kernels, effect on resulting plants, (54) 739.
 - size of seed and yields, (51) Ind. 836.
 - spacing experiments, (55) Ohio 138.
 - strains, selection for market demand, (58) Ill. 333.
 - suckering, effect on yield, (60) Can. 540.
 - suckering experiments, (55) N.Y.Cornell 536.
 - Sunshine, description, (56) N.Dak. 740.
 - varieties, (55) R.I. 236; (60) Can. 639.
 - varieties for canning, (52) 140.
 - variety tests, (55) Fla. 824; (57) N.Mex. 236, R.I. 436, Mich. 635; (59) N.Mex. 231.
- Sweet gum and river birch, soil and moisture relations, (56) 346.
- Sweet pea—
- disease, new, (53) 49.
 - fasciation, notes, (59) 247.
 - germination, notes, (52) Can. 639.
 - greenhouse soil, symphilids in, (60) Pa. 355.
 - mosaic, notes, (58) 148.
- Sweet peas—
- as winter cover crop, (59) N.Mex. 231.
 - culture, (51) 243; (55) N.Mex. 439; (57) N.Mex. 235.
 - culture, treatise, (57) 342.
 - hard seeds in, (56) 826.
 - history, development, and culture, treatise, (55) 839.
 - linkage in, (53) 331.
 - mutations in, (53) Can. 810.
 - natural crossing in, (59) 29.
 - notes, (60) Can. 639.
 - paper on, (55) Ohio 97.
 - pollen tube development, effect of pH, (55) 729.
 - variety tests, (58) Can. 836.
 - wild rust of, life cycle, (53) 245.
- Sweet potato—
- bed decay, control, Ga., (53) 246; (58) 343.
 - black rot—
 - effect of soil temperature and moisture, (55) 448.
 - fungus, ascigerous stage, (53) 854.
 - fungus, cytological study, (58) 50.
 - in Egypt, (59) 642.
 - infection and temperature relations, (56) 150.
 - resistant varieties, (59) Ala. 635.
 - seed bed control, (60) Del. 744.
 - varietal susceptibility, (55) 448.
 - bug, studies, (56) 552.
 - certification in Arkansas, (51) 546.
 - disease resistance, (60) Ala. 152.

Sweet potato—Continued.

- diseases, (52) Del. 843; (57) N.J. 47, Tenn. 639; (59) N.C. 749.
- diseases, control, (51) 546; (52) N.J. 744; (60) Tenn. 152.
- diseases, studies, (51) N.J. 653; (55) N.J. 43; (56) Wash.Col. 548.
- flea beetle, notes, (60) Tenn. 161.
- flour, value in bread making, (51) 364.
- foot rot, (57) 845.
- leaf beetle and related Mexican form, (54) 157.
- leaves and shoots, vitamin B in, (59) 192.
- meal, feeding value, (52) U.S.D.A. 78.
- mosaic—
- effect on yields, (58) 150.
 - incubation period, (58) 551.
 - nontransmissibility, (58) 551.
 - notes, (51) 156; (52) Fla. 242; (53) 649; (55) Ark. 42; (56) Ark. 348; (58) Ark. 337.
 - resistant variety, (54) Tenn. 245.
 - transmissibility, (56) Ark. 51.
- mottle necrosis, studies, (54) 49; (57) 251, 648.
- nematode disease, notes, (60) 53.
- pox, cause, (56) Del. 348.
- pox, control, (52) N.J. 744.
- pox, relation to soil moisture, (57) 252; (58) 50.
- pox, residual effects of lime and sulfur, (57) N.J. 742.
- pox, studies, Del., (51) 147; (54) 646; (60) 744.
- pyralid moth, notes, (56) 361.
- Pythium rootlet rot, description, (52) 547.
- Rhizopus infection, relation to humidity, (53) 854; (56) 150.
- root, anatomy, (51) 154.
- rots, control, (52) Kans. 446.
- scurf disease, studies, (57) N.J. 743.
- seedlings, studies, (57) Hawaii 326.
- soil pox, studies, (58) Del. 441.
- stem rot—
- control, (52) Miss. 242; (59) N.J. 338.
 - reducing losses from, (55) N.J. 449; (59) 448.
 - resistant varieties, (57) 252.
 - studies, N.J., (52) 351; (57) 742.
 - susceptible varieties, (57) 648.
- storage house, adobe, (54) Ariz. 78.
- storage houses, heat and ventilation, control, (60) 379.
- storage rot fungi, (53) 753.
- weevil—
- in Jamaica, summary, (52) 559.
 - in Java, (53) 652.
 - in Philippines, (54) 462.
 - in Union of South Africa, (58) 164.
 - notes, (51) 252.

Sweet potato—Continued.

- weevil—continued.
- on islands in Mississippi Sound, (59) 658.
 - summary, (53) 51.
- wilt, notes, (58) Del. 441; (59) 345.
- Sweet potatoes—
- and peanuts, hogging down, (52) S.C. 569.
 - breeding and heredity, (53) 831.
 - breeding experiments, (51) N.J. 636; V.I. 833; (54) V.I. 333; (55) N.J. 31, Miss. 228; (56) Ark. 332, Miss. 731; (57) V.I. 326; (58) Ark. 321; (59) Hawaii 626.
 - bud sports in, (56) 128.
 - canning, effect of precooking, (52) U.S.D.A. 460.
 - changes in composition, (59) Ala. 31.
 - composition, factors affecting, (60) Ala. 130.
 - cost of production in New Jersey, (52) 690.
 - culture, Ga.Coastal Plain, (52) 225; (55) 532.
 - experiments, (53) Miss. 35; (55) N.C. 228, (60) Ga.Coastal Plain 132.
 - in California, (53) Calif. 534.
 - in New Zealand, (56) 334.
 - decay, effect of temperature, (53) 752.
 - duty of water for, (54) N.Mex. 680.
 - effect of fertilizers, (55) 436.
 - effect of length of day, (57) P.R. 435.
 - effect of salts in nutrient solution, (59) N.J. 325.
 - experiments in Philippines, (55) 434.
 - fertilizer experiments, (51) Ga. 133, N.J. 636, V.I. 833; (52) Fla. 224; (53) 142, 398; (54) Fla. 326, S.C. 635, Mo. 732; (55) Ark. 31, N.J. 31, Guam 131, Miss. 228; (56) S.C. 525, Miss. 731; (57) N.J. 32, N.C. 226, Okla. 523, N.J. 727, N.J. 742; (58) Ark. 322, Ill. 333, S.C. 632; (59) Miss. 325; (60) Miss. 34, Ga. Coastal Plain 132, 135, Ark. 813.
 - flowers and seed, (53) 838; (55) 830.
 - growing, (51) 493.
 - hogging down, (56) S.C. 565.
 - in storage, breakdown in, (51) 154.
 - infection by Rhizopus, relation to pectinase, (51) 754.
 - infection by stem rot organisms, (57) 351.
 - insects affecting, (55) 758, (57) Tenn. 654.
 - internal breakdown, (54) 49.
 - irrigation experiments, Wash.Col., (54) 827; (59) 32.
 - manuring experiments, (54) V.I. 231.
 - marketing, (52) Calif. 92; (60) Del. 781.
 - moisture removal, (60) Wash.Col. 815.
 - mutations in, (56) 328.

Sweet potatoes—Continued.

- photoperiodism of, (60) 625.
 physiology, (51) 519; (58) Ala. 421;
 (59) Ala. 617.
 planting and harvesting dates, (54)
 Ga.Coastal Plain 131.
 planting tests, Tenn., (51) 337; (57)
 628.
 pork-producing value, (51) N.C. 871.
 pruning experiments, Ariz., (53) 734;
 (56) 731.
 quality for canning, effect of storage,
 (56) 112.
 response to length of day modifications,
 (58) P.R. 536.
 selection, (53) 628.
 slip-cutting tests, Miss., (55) 636; (58)
 31.
 southern-grown, marketing, (51) U.S.
 D.A. 93.
 spacing experiments, (53) Miss. 131;
 (55) Miss. 228; (56) Ariz. 731,
 Miss. 731; (57) N.C. 226; (59)
 Wash.Col. 32.
 statistics, (53) U.S.D.A. 92.
 storage studies, (53) Miss. 35, U.S.D.A.
 339; (59) Ala. 625, N.C. 729; (60)
 Ga.Coastal Plain 132.
 studies, (52) N.J. 534; (55) V.I. 333;
 (56) Ark. 333, Ga.Coastal Plain
 523.
 sucrose in, before and after storage,
 (55) V.I. 333.
 use of sulfur on, (56) 452.
 varietal resistance to nematodes, (58)
 51.
 varieties, (51) P.R. 833; (54) P.R.
 634; (55) Hawaii 526; (57)
 U.S.D.A. 628; (58) Ga.Coastal Plain
 733; (59) V.I. 432, Guam 524.
 characteristics, (56) 525.
 physiological study, (56) 515.
 resistant to nematodes, (59) N.C.
 750.
 vitamin A in, (59) 492.
 yields, (51) Va. 35.
 variety tests, (51) Tenn. 337, N.J. 636,
 Hawaii 740; (52) 132, Ga.Coastal
 Plain 225, S.C. 528, Utah 732; (53)
 Miss. 131, 133, Ga. 230, Guam 430,
 N.C. 835; (54) Ga.Coastal Plain 130,
 Hawaii 131, S.C. 635, Wash.Col. 827;
 (55) Guam 131, Miss. 228, U.S.D.A.
 433, Miss. 636; (56) Guam 229,
 Ark. 332, Ga.Coastal Plain 523, S.C.
 525, Wash.Col. 525, Ariz. 731; (57)
 Okla. 523, Tenn. 639; (58) Ark. 321,
 Ga.Coastal Plain 732; (59) Wash.
 Col. 32; (60) Ga.Coastal Plain 132,
 Oreg. 731, Guam 813, Wash.Col. 814.
 Yellow Jersey, resistant to surface rot,
 (56) 548.
 yield and shape, effect of fertilizers,
 (51) 342; (52) N.J. 732.
- Sweet Williams, culture experiments, (58)
 Alaska 435.

- Sweetening compounds, synthetic, chemistry
 of, (52) 805.
 Swellhead of sheep and goats, Tex., (55)
 371; (59) 776.
 Swine—*see also* Pigs.
 cryptorchid testes of, (54) 826.
 deficiency disease, pathology, (51) 786.
 disease of bones and joints, (54) Minn.
 777.
 diseases, (51) 180; (52) 674; (56)
 Ill. 379; (57) 181, 377, 673; (59)
 170, 577.
 diseases, control, (53) 78, 179.
 diseases, filterable, etiology and pa-
 thology, (51) 785.
 diseases, hematological studies, (60)
 665.
 effect of vasectomy, (55) 635.
 erysipelas—
 bacillus, effect of bile, (52) 283.
 immunization against, (52) 683,
 781.
 in Algeria, (59) 174.
 notes, (54) 171; (57) 278.
 vaccine, iodized, (57) 378.
 vaccines and serums for, prepa-
 ration, (59) 671.
 fecundity and growth, (51) N.J. 672.
 fecundity in, (54) Mo. 761; (57) Mo.
 461; (58) Mo. 464; (60) 727.
 fever, East African, notes, (60) 475.
 fever, notes, (57) 278.
 husbandry, treatise, (53) 69.
 improvement, Danish system, (57) 762.
 lungs, parasitic nodules resembling tu-
 berculosis in, (57) 876.
 nodular lesions of spleen, (58) 578.
 nutritional diseases, (51) 781.
 parasites of, (52) 688; (54) 578;
 (57) P.R. 468.
 register of performance, (53) 571.
 sanitation—
 effects, (54) Ill. 863.
 paper on, (59) 169.
 project, (57) 762.
 system of Bureau of Animal In-
 dustry, (58) U.S.D.A. 677.
 stomach worm, life history notes, (60)
 665.
 syncephalus thoracopagus monster in,
 (60) 32.
 tuberculosis, (53) 179.
 vaccination, care before and after,
 (51) 180.
- Syagrus—
 calcaratus, notes, (55) 759.
 rugifrons on cotton in Africa, (53)
 258.
- Sycamore—
 anthracnose, notes, (53) 43; (57) 343;
 (60) Mich. 58.
 tree, effect of lightning on trunk, (56)
 518.
- Sylepta derogata in French West Africa,
 (54) 259.

- Sylvinite—
fertilizing value, (54) 20.
sodium chloride in, specific action, (51) 818.
- Symbiosis—
in a deciduous forest, (56) 726.
in animals and plants, (53) 856.
in Orchidaceae, (53) 726.
in plants, (52) 426; (60) 123.
physiological conception, (58) 125.
- Symphalangism, four generations of, (54) 28.
- Symphilids, control, (60) Oreg. 753.
- Sympiesis ancylae, notes, (57) 62.
- Sympiesis spp., notes, (52) Iowa 358.
- Symptomatic anthrax, *see* Blackleg.
- Synanthedon—*see also* Aegeria.
opalescens, studies, (56) 258.
rutilans, notes, (60) Oreg. 753.
spp., notes, (60) 651.
tipuliformis, *see* Currant borer.
- Synapsis, mode of, new conception, (59) 623.
- Synaptomys, revision of genus, (58) U.S.D.A. 56.
- Synchytrium endobioticum—
control, (54) 347.
germination of resting bodies, (54) 546.
immunity to, (52) 148.
infection, conditions, (56) 650.
notes, (55) 653; (56) 541; (57) 447, 545; (59) U.S.D.A. 243.
relation to host, (53) 47.
resting sporangia, parasite of, (54) 546.
resting spores, germination, (59) 642.
Solanaceae as hosts for, (56) 651.
sporangia, duration of rest period, (60) 549.
studies, (55) 751; (57) 151.
winter sporangium, viability, (58) 849.
- Synchytrium spp., notes, (52) 448.
- Synchytrium, studies, (57) 518.
- Synchytrium subterraneum, notes, (59) 536.
- Syndicalism movement in agriculture, (54) 885.
- Syneta albida—
in Oregon, (54) 557.
notes, Oreg., (55) 659; (60) 752.
- Synetaeris sp., notes, (52) 659.
- Syngamus—
laryngeus in the goat, (60) P.R. 774.
spp., notes, (53) 553.
trachea from starling, infection of chickens with, (60) 672.
- Synia melanaria, enemy of Coptosoma ostentum, (54) 754.
- Syrphidae—
American, north of Mexico, (54) 756.
aphidophagous, parasites of, (56) 260, 760.
- Syrphus—
flies as aphid predators, (60) 559.
halteatus pupa, parasite of, (51) 762.
- Syrhaptocus new genus, erection, (60) 649.
- Syzeuctus annulipes, notes, (56) 557.
- Tabanidae—
control, (55) Fla. 855.
in Louisiana, notes, (51) 161.
Indian, papers on, (53) 55; (54) 157.
of Canadian prairie, bionomics, (60) 561.
of Pusa, bionomics and life histories, (54) 556.
- Tabanids—
of Dutch East Indian Archipelago, synopsis, (59) 859.
studies, (51) La. 853.
transmission experiments in Sumatra, (60) 850.
- Tabanus—
fulvus, notes, (51) La. 879.
punctifer, notes, (59) 79.
punctifer, pest of dairy cattle, (59) 357.
rubidus, transmission of surra by, (59) 274.
spp., control, (51) U.S.D.A. 857.
spp., egg parasites of, (59) 472.
spp., notes, (56) 461; (58) Ark. 344.
spp., transmission of surra by, (59) 673; (60) 850.
striatus, development, (58) 560.
striatus, disseminator of surra, (58) 678.
striatus, life history notes, (54) 157.
- Tabardillo in guinea pigs, (60) 371.
- Tachardiinae, systematic monograph, (51) 660.
- Tachina—
fly, red-tailed, biology, (56) Miss. 557.
larvarum, biology, (53) 55.
- Tachinid fly parasites, liberation, (52) 853.
- Tachinidae—
attacking injurious insects in Queensland, (59) 561.
British, (60) 562.
from Federated Malay States, (58) 862.
larvae, studies, (57) 263.
parasitic on crop pests, (55) Miss. 554.
primary larvae, (53) 159.
- Tachycines asynamorus—
carnivorous habits, (51) 260.
notes, (56) 659.
- Tachydromia minuta, notes, (54) 460.
- Tachyptilia populella, parasite of, (57) 168.
- Taenia—
expansa, notes, (59) Colo. 272.
infundibuliformis, notes, (56) 576.
krabbei in deer, (60) Oreg. 774.
krabbei, redescription, (56) 760.
- Taeniasis due to Davainea proglottina, enzootics, (60) Ky. 265.
- Taeniothrips pyri, *see* Pear thrips.
- Tafia—
effect on physical properties of soil, (52) 622.
organic nitrogen in, value, (51) 726.
- Tango disease in Philippines, (51) 246.
- Tania, variety tests, (56) 525.
- Tank waters in Bengal, algal growths in, (54) 382.

- Tankage—*see also* Garbage tankage.
 adulterant in, (57) 661.
 and corn or barley, feeding value, (53) Minn. 171.
 as source of protein, (57) N.J. 69.
 as supplement to alfalfa pasture, (53) Kans. 371.
 digester, feeding value, (59) 861.
 feeding value, (52) Tex. 572; (54) Can. 61, Can. 62, Fla. 367; (56) Guam 265, S.C. 268, Nebr. 564; (59) Ind. 765.
 manufactured, fertilizing value, (55) N.C. 219.
 prices and index, (56) Ohio 285.
 requirements of pigs, (56) S.Dak. 565, Ind. 566.
 v. alfalfa as corn supplement, (51) 774.
 v. alfalfa hay as protein supplement, (53) U.S.D.A. 373.
 v. beef scrap for poultry, (53) Can. 876.
 v. buttermilk for pigs, (52) Can. 873; (54) Minn. 163, Can. 270.
 v. fish meal for pigs, (57) N.J. 764.
 v. meals, feeding value, (54) Ill. 364.
 v. soy bean meal for pigs, (55) Nebr. 668.
 v. soy bean oil meal for laying hens, (51) Ind. 873.
 vitamin in, (53) 571.
 water-soluble nitrogen in, value, (59) Ind. 761.
- Tannery waste, feeding value, (52) Calif. 74.
- Tannin—
 chestnut wood as source, (51) 843.
 formation, effect of light, (59) 518.
- Tanning—
 materials of Australia, (56) 206.
 theory, (57) 708.
- Tannins—
 in Spirogyras, form, (58) 524.
 physiological rôle, (59) 518.
 physiological rôle and importance to grapevines, (58) 23.
- Tapeworm, broad—
 of man in America, (59) 171.
 of sheep, (60) Wyo. 776.
- Tapeworms—
 as cause of paralysis in fowls, (57) 473.
 control, (52) Kans. 481.
 drugs for, tests, (57) 282.
 in dogs, treatment, (52) 886.
 in horses, life history, (51) 384.
 in lambs, (54) Wyo. 773; (59) Colo. 272.
 in poultry, control, (55) 178; (56) Wis. 774; (57) N.J. 773, 775; (58) 481, P.R. 574; (60) 181.
 in poultry, experimental work, (59) N.J. 373.
 in rabbits, (60) 276.
 in Texas swine, (55) 73.
 infestation experiments, (56) Wyo. 574.
- Tapeworms—Continued.
 life history, (58) 252.
 notes, (59) Wyo. 272.
- Taphrina—
 bullata, control, (52) 748.
 coryli, studies, (55) 251.
 spp., studies, (57) 839.
- Tapinoma—
 melanocephalum, notes, (55) 858.
 sessile, biology, (60) 250.
- Tar—
 distillate washes, tests, (56) 57, 658, 854; (57) 258; (59) 352.
 from hard maple, (53) 718.
 in aqueous solution, effect on plants, (58) 422.
 on wool from sheep-marking, (56) 95.
 paper mulch, effect on tomatoes, (57) 336.
 products, fungicidal action, (53) 148.
 vapor, effects on plants, (57) 120.
 water-gas, as preservative for farm timber, (55) Iowa 584.
- Taragama dorsalis, notes, (54) 458.
- Tarantula—
 habits and injury from, (58) 855.
 male, life cycle and mating habits, (58) 855.
- Tarantulas, notes, (55) Ark. 50, 758.
- Taraxacum officinale, control, (54) 240.
- Targionia dearnessi, notes, (56) 460.
- Tarichium punctata n.sp., description, (59) 563.
- Tariff—
 and agriculture, (54) 186; (57) 83; (59) 682.
 and cattle industry, (56) 486.
 information surveys, (53) 240.
 on American dairy products, (54) 186.
 on animal and vegetable oils, (60) 384.
 on wool, treatise, (56) 485.
 problems of United States, (60) 888.
 relation to agriculture and foreign trade, (51) 490.
 relation to sheep industry, (54) 186.
- Tarnished plant bug—
 notes, (56) Ark. 355; (59) N.H. 248.
 on peaches, (53) Ind. 154; (55) 53; (59) Ind. 758.
 on strawberries, (59) 58.
 oviposition habits, (58) 158.
 transmission of virus diseases by, (60) 243.
- Taro—
 culture in New Zealand, (56) 334.
 insects affecting, (52) 356.
 keeping qualities, (57) P.R. 425.
 large tubers, value, (54) P.R. 634.
 new food plants for the South, (52) U.S.D.A. 340.
 nutritive value, (58) 83.
 Penang, cormel size, (60) P.R. 732.
 production tests, (60) Guam 814.
 tests, (59) Hawaii 626.
 varieties, (55) Hawaii 526; (57) 326.
 variety tests, (55) Guam 131.

- Tars, wood, solubility in water, (54) 8.
- Tarsonemus—
 latus on mangoes, (54) 262.
 topidarium, studies, (56) 65.
 univittatus, egg and first-stage larva, (52) 559.
- Tartar emetic—
 anthelmintic value, (52) 777.
 for surra treatment, (53) 183.
 toxicity to cattle and action on liver, (58) 676.
- Tartrate, test to show absence of, (55) 13.
- Tarweeds, hay-field, studies, (55) 325.
- Taste, physiology of, (56) 491.
- Taurine—
 preparation, large scale method, (59) 802.
 replacing cystine in diet of rats, (57) 194.
 substitution for cystine in diet of mice, (51) 100, 767.
 synthesis, (58) 710.
- Tax—
 delinquencies in northern Wisconsin, (60) Wis. 86.
 guide for farmers, (56) Mich. 787.
 revision in Kansas, (52) Kans. 691.
- Taxation—
 and agricultural and rural problems, (54) 285.
 and public finance, (60) S.Dak. 284.
 and the farmer, bibliography, (59) U.S.D.A. 884.
 farm, (54) U.S.D.A. 80; (56) Mo. 585, N.Dak. 586; (60) Pa. 384.
 in New Brunswick, (56) 688.
 in Philippines, (60) 587.
 on rented property, (59) Mich. 87.
 problems, Ark., (58) 378, 785.
 research in, (59) 481.
 for public schools, State systems, Wisconsin plan, (60) 887.
 in Pennsylvania, phases, (57) 884.
 income v. property as source of school revenue, (60) 587.
 land, (59) Wis. 86.
 of Delaware farms, (60) Del. 781.
 of land, European cadastral method, (58) 888.
 of land in Austria, (55) 381.
 of real estate in Kansas, trend, (54) Kans. 483.
 of rented farms, (53) U.S.D.A. 90.
 of unimproved land in Australia, (54) 80.
 problems of agriculture, (56) S.Dak. 685.
 rural, in Ohio, (60) Ohio 184.
 system of New York State, outline, (56) 786.
 system of South Carolina, (56) S.C. 84.
- Taxes—
 and farm income, (55) Ohio 80.
 assessment and collection in Scotland, (54) 183.
- Taxes—Continued.
 farm, in Massachusetts, (57) Mass. 384.
 farm, index numbers, Ohio, (54) 386; (56) N.Y.Cornell 686; (58) 684.
 income, of French farmer, (54) 81.
 on agricultural land, (55) Tex. 80.
 on farm property, collection, (60) N.Y.Cornell 85.
 percentages paid by farm, city, and village classes, (57) Wis. 286.
 rental v. salable value of land, (59) 587.
- Taxonomy, experimental, (53) 824.
- Tea—
 analyses, (53) Conn.State 657.
 and coconut gray blight, comparison, (54) 254.
 as source of vitamin C, (60) 594.
 black rot, cause, (54) 254.
 black rot, studies, (56) 456.
 blister blight in Surma Valley, (60) 354.
 branch canker in Ceylon, (56) 851.
 brown blight, notes, (57) 443.
 Congress, proceedings, (54) 540.
 crown disease, studies, (55) 250.
 cultivation experiments at Borbhetta, (59) 142.
 culture in Dutch East Indies, (54) 540.
 culture, memorial book on Dutch East Indies, (54) 540.
 diseases, notes, (53) 49, 148; (57) 354; (59) 54, 646; (60) 246.
 fertilizer experiments, (54) 42.
 gray blight, studies, (60) 646.
 green fly, studies, (58) 160.
 growth and quality, relation to weather in Assam, (56) 16.
 growth, relation to soil acidity, (59) 141.
 in India, thrips affecting, (52) 854.
 industry, historical sketch, (55) 647.
 industry of Formosa, (54) 540.
 industry of Japan, (51) 346.
 insects affecting in Formosa, (59) 856.
 insects in Ceylon, (58) 159.
 law of United States, (54) 540.
 leaf disease, notes, (56) 851.
 of British Empire, (51) 896.
 pests in Dutch East Indies, (52) 554; (55) 854; (58) 158.
 plant, treatise, (52) 840.
 plants, mites affecting, (57) 761.
 plants, selection, (54) 540.
 plants, spraying experiments, (59) 54.
 prunings, decomposition and nitrification, (60) 718.
 Research Institute of Ceylon, notes, (58) 398.
 root diseases, (55) 350.
 seed oil, sulfuric index, (52) 411.
 shot-hole borer, notes, (59) 249.

- Tea—Continued.
 soils, acidity and use of lime, (54) 422.
 soils, fertilizers for, (55) 220.
 soils, Indian, mechanical analysis, (55) 214.
 termites in Ceylon, (58) 257.
 termites, notes, (56) 462.
 thrips affecting, (54) 455.
 tortrix in Ceylon, status, (58) 61.
 tortrix, life history and control, (59) 253.
 tortrix, studies, (54) 756.
 weevils injurious to, (59) 861.
 witches' broom disease, (54) 549.
 yields, effect of leguminous cover crop, (56) 45.
- Teachers—
 demand for, and the college, (51) 493.
 part-time homemaking, selection and training, (51) 598.
 professional library, list of books, (52) 795.
 rural, training, Iowa plan, (51) 492.
 state training schools for, in Norway, (51) 492.
- Teaching of science and the science teacher, treatise, (56) 488.
- Teak—
 cobweb disease, (57) 652.
 pink disease, notes, (55) 49.
 plantations, studies, (57) 143.
 trees, moisture and regional spread, (51) 444.
 volume tables for, (53) 644.
- Technical Education Act of Canada, (55) 288.
- Tectocoris lineola—
 life history, (56) 459.
 notes, (60) 557.
- Teeth—
 changes in due to diet deficiency, (58) 86.
 decay, factors in, (60) 92.
 decay from experimental diets, (56) 792.
 decay in children, arrest, (59) 893.
 decay in children, effect of diet, (52) 763.
 development and preservation, effects of faulty nutrition, (58) 292.
 effect of diet, (51) 265; (55) 895; (59) 290.
 formation, effect of light and diet, (52) 763.
 growth studies, (57) 92.
 missing, inheritance of, (57) 28.
 structure, effect of diet, (60) 593.
- Teff hay, digestibility for sheep, (57) 866.
- Telea polyphemus outbreak, notes, (53) 856.
- Telenomus—
 alsophilae n.sp., notes, (51) 662.
 cosmopeplae, egg parasite of *Cosmopepla bimaculata*, (56) 862.
 farii, biology, (60) 564.
- Telenomus—Continued.
 farii, parasite of *Triatoma megista*, (58) 562.
 laticulcus, notes, (52) 361.
 megacephalus, an egg parasite of green pumpkin bug, (60) 564.
 sp., studies, (53) 454.
 truncativentris, sex ratios, (52) 333.
- Teleocoma crassipes n.g. and n.sp., notes, (51) 763.
- Teleonomia lantanae, notes, (52) 356.
- Telephone system of national forests, construction and maintenance, (55) U.S.D.A. 683.
- Tellurium salts, indicators of reduction reaction, (55) 520.
- Telmattetix aztecus saussure, inheritance of color patterns in, (54) 428.
- Telsimia—
 emarginata n.sp., description, (56) 759.
 nitida n.sp., description, (56) 759.
- Tempe drainage ditch, (53) Ariz. 789.
- Temperature—see also *Climate and Soil temperature*.
 abnormal, physiological effects, (56) 897.
 and animal heat, (55) 165.
 and anthesis, (55) 727.
 and light, interrelation in plant growth, (53) 222.
 and rainfall, correlation, (52) 207.
 and rainfall in Cuba, (54) 14.
 and sun spots, (52) 208; (53) 413.
 apparatus for controlling, (51) 25.
 cambial, of trees in winter, (51) 823, 824.
 coefficients and efficiency of photosynthesis, (53) 821.
 conditions for soil bacteria, (55) 514.
 conditions in refrigerated holds of ships carrying fruit, (58) 536; (60) 551.
 course of and periods of plant growth, (55) 807.
 curves for cotton in Rhodesia, (53) 317.
 curves, notes, (59) 853.
 daily, normals of, (56) U.S.D.A. 507.
 effect of topography, (59) Can. 416.
 effect on—
 absorption of water by cotton, (52) 533.
 bar eye in *Drosophila*, noninheritance of, (56) 32.
 corn and sunflower growth, (52) 632.
 crop yields, (56) 413, 807.
 development of insects, (51) 551.
 egg production, (55) Nebr. 669.
 fat percentage of milk, (56) 170.
 flax wilt, (52) 348.
 flower and fruit production in plants, (60) 806.
 full-eyed race of *Drosophila*, (51) 57.

Temperature—Continued.

effect on—continued.

- growth rate of bamboo, (58) 240.
- intersexuality in gipsy moths, (51) 635.
- migratory locusts, (56) 360.
- milk production, (55) Ga. 171.
- nitrate production, (53) 512.
- pectinase production, (51) 753.
- plant diseases, (51) Wis. 446.
- plant growth, (56) 807.
- potato yield, (56) Minn. 218.
- protein consumption, (52) 761.
- rabbit pigmentation, (56) 428.
- seed germination, (58) 535.
- tomato wilt, (51) 754.
- total surface of soil, (52) 117.
- vegetation, (56) 15.

for flower seed germination, (51) 124.
forecasts for a week in advance, (59) 508.

high, effect on—

- cell development, (58) 522.
- germination of corn, (53) 623.
- guinea pig testis, (58) 529.
- powder-post beetles, (51) 58.

high environmental, effect on dogs, (53) 658.

- in plants, variations, (54) 627.
- low, effect on plants, (57) 419.
- low, pigment formation by, (60) 220.
- March, and precipitation in southern California, (57) U.S.D.A. 506.
- minimum, for seed germination, (53) 223.

of certain months of the year, relation, (58) 312.

- of destruction of enzymes, (54) 504.
- periodicities in, studies, (57) 807.
- records at Rothamsted, (59) 313.
- region map, (52) 809.
- relation to food requirements of animals, (59) 314.
- requirements of hot spot manifolds, (52) 89.
- soil and atmosphere, interrelations, (56) 620.
- summations for plants, (51) U.S.D.A. 616.

Temperatures—

- critical spring, for apples, (57) U.S. D.A. 208.
- of South America, (55) 617.
- thermocouple method of determining, (59) 550.

Tendrils, leaf-tip, of monocotyledons, (54) 523.

Tenebrio spp., life history notes, (58) 164.
Tenebrioninae larvae, studies, (53) 557.

Tennessee—

- economic and social study, (53) 494.
- Station, notes, (51) 399; (53) 699; (55) 398; (57) 397; (58) 98.
- Station, report, (51) 397; (52) 598; (54) 299; (56) 195; (57) 697; (60) 199.

Tennessee—Continued.

- University, notes, (54) 599; (55) 398; (56) 499; (57) 397; (58) 500, 600; (60) 400.

Tent caterpillar—

- apple, notes, (59) Mich. 455.
- disease bacillus, specificity, (54) 658.
- eastern, summary, N.J., (55) 154; (57) 58, 755.
- forest, control, (59) 552.
- life cycle, chemical changes during, (56) 757; (58) 258.

Tent caterpillars—

- destruction by children in Canada, (53) 856.
- destruction by children in New York, (53) 858.
- notes, (55) Oreg. 659.
- studies, (53) 158.
- wilt of, (58) 346.

"Teopod", new type of corn, (53) 29.

Teosinte—

- abnormal growths, description, (56) 52.
- and corn hybrids, inheritance in, (51) 430.

Teozein—

- definition, (54) 802.
- new amino acid, (53) 802.

Tepary beans—

- as green manure crop, (53) Ariz. 733.
- breeding experiments, (52) 823.
- culture, (53) Ariz. 433.
- digestibility, (52) 663.

Tephrosia—

- candida, photoperiodism, (51) P.R. 833; (52) 126.
- spp. as cover crop, (52) 732; (56) Guam 228.
- spp. as green manure, (52) 732.
- spp., behavior, (56) Guam 228.
- vogelii, insecticidal properties, (55) 852.

Terastia meticulosalis, notes, (53) 654; (57) 857.

Teratology in plants, (52) 519.

Teredo navalis, notes, (51) N.J. 657.

Termes—see also Leucotermes.

- bellicosus, notes, (56) 752.
- obesus ?, notes, (59) 353.

Termite castes, biology, (58) 663.

Termites—

- African, revision, (57) 553.
- and architecture, (60) 846.
- control, (51) Mich. 856; (55) U.S. D.A. 152; (56) 756.
- control in buildings, (57) 359.
- damage to rural electric line poles, (59) 281.
- distribution, classification, and biology, (52) 753.
- experiments, (59) 456.
- habits and control, (57) 163.
- in buildings, control, (60) 61.
- in Canal Zone, damage, (51) U.S.D.A. 659.
- in Ceylon, (58) 159, 257.

Termites—Continued.

- in Hawaii, (59) 661.
- in India and Ceylon, control, (59) 353.
- in Porto Rico, (52) 657.
- injury, effect on building code, (57) 856.
- injury to orchards, (53) 856.
- new, in Canal Zone, Panama, (52) 657.
- notes, (52) Mich. 355; (53) Okla. 155; (59) 554.
- of Belgian Congo and Cameroon, (60) 163.
- of China, new species, descriptions, (54) 455.
- problem in the Pacific, (60) 649.
- protective measures against, (51) U.S. D.A. 660.
- treatise, (57) 163.
- winged, thorax and abdomen of, (59) 456.

Termitoxenia, rearing of larva, (57) 554.

Terpin hydrate, determination in terpin hydrate elixir, (60) 615.

Terraces, Mangum, planning and construction, (52) Ill. 22.

Terracing—

- in Alabama, (56) 316.
- in Mississippi, (55) 879.
- in Oklahoma, (59) 478.
- in Texas, (56) 780.
- notes, (60) Ill. 276.
- of farm land, (53) 387; (60) 481.
- practices, development, (56) Ill. 280.
- value, (59) Tex. 719.

Terrapin scale, studies, (58) Del. 454.

Tessarotoma papillosa, notes, (55) 457.

Testes—

- and scrotum, mammalian, biology, (55) 823.
- compensatory hypertrophy in cockerels, (60) 325.
- cryptorchid—
 - fate of germinal epithelium, (60) 325.
 - of man and animals, (56) 431.
 - scrotal replacement and recovery of normal activity, (60) 325.
- cystic, cause of male sterility, (55) 734.
- degeneration on milk diet, (51) 266.
- degenerative changes, effect of vitamin B deficiency, (60) 196.
- descended, of sex-intergrade pigs, (55) 331.
- displaced, activity, (56) 522.
- effect on metabolism, (55) 766.
- effect on phosphorus metabolism, (56) 664.
- grafts, effect on spontaneous activity, (54) 730.
- grafts, reactions in different environments, (56) 664.
- guinea pig, effect of high temperature on, (58) 529.
- histological changes during scurvy and inanition, (53) 526; (56) 664.

Testes—Continued.

- material injection into the rat, effect on spermatogenesis, (56) 522.
- of birds, intertubular tissue in, (51) 132.
- of pigeons, effect of inanition and vitamin B deficiency, (60) 594.
- quantitative studies, (54) 826; (60) 530.
- sheep, experiments on, (53) 428.
- Testicle, temperature regulation, (55) 823.
- Testicular—
 - degeneration in albino rats, (56) 464.
 - emulsions, effect on metabolism of dogs and rabbits, (55) 765, 766.
 - extract injections into female guinea pigs, effect, (56) 431.
 - grafts in castrated rats, effect on activity, (60) 326.
 - hormone, presence in blood of cocks, (58) 128.
 - hormone, qualitative indicator for, (59) 129.
 - hormone, source, (59) 823.
- Testicularia cyperi, notes, (59) 240.
- Tetanops aldrichi, notes, (53) Utah 254.
- Tetanus—
 - anatoxin, inoculation of horses with, (59) 173.
 - prevention, (52) 480.
 - studies, (54) 873.
 - toxin, iodized, prophylactic value, (57) 378.
- Tetany—
 - and rickets, (60) 494.
 - effect of light treatment, (54) 695, 894.
 - of children and adults, (60) 197.
- Tetrachlorethane for greenhouse fumigation, (59) 654.
- Tetrachlorethylene—
 - a new anthelmintic, (53) 585.
 - anthelmintic value, (54) 73, 675; (55) 70, 271; (57) 80, 775.
 - efficiency in liver rot of sheep, (55) 474.
 - miscellaneous tests, (55) 173.
 - toxicity, (57) 871.
- Tetracnemus n.sp., notes, (60) 455.
- Tetraeurodes aucubae, notes, (60) 559.
- Tetralin as fuel in internal-combustion engines, (52) 784.
- Tetramorium guineense, notes, (55) 858.
- Tetraneura—
 - colophoidea, parasite of, (52) N.Y. Cornell 360.
 - graminis, notes, (54) Ohio 155.
 - ulmi combatorensis n.subsp., notes, (58) 451.
- Tetranychus—
 - altheae on hops, (53) 554.
 - tetarius, studies, (55) Oreg. 659.
- Tetraphosphate, fertilizing value, (53) 120.
- Tetraphyllidea, monograph, (53) 761.
- Tetraploidy in ferns, (58) 525; (60) 529.
- Tetrastichodes platanellus n.sp., description, (52) 663.

Tetrastichus—

- australasiae n.sp., description, (52) 361.
- blepyri, notes, (53) 260; (54) 559.
- carinatus, notes, (59) 62.
- crassinervis, notes, (51) 553.
- diarthronomyiae, notes, (52) Md. 457.
- giffardianus, notes, (55) 558.
- incertus, life history, (54) 462.
- philodromi n.sp., description, (53) 561.
- radiatus, life history, (52) 154.
- radiatus, notes, (53) 859.
- rapo, studies, (53) 656.
- spp., notes, (57) 264.

Tettigidae—

- inheritance in, studies, (52) Kans. 428.
- of India, catalogue, (51) 54.
- parthenogenetically produced, chromosomes of, (55) 819.

Texas—

- College, notes, (51) 498; (52) 399; (53) 198, 500; (57) 397; (58) 397; (60) 499.
- fever, *see* Piroplasmosis, bovine.
- root rot—
 - control, (53) 647.
 - fungus, life history, (53) 544.
 - on cotton and locust trees, N.Mex., (53) 147; (55) 444.
 - studies, (54) Tex. 346; (57) Tex. 146, N.Mex. 245.

Station—

- abstracts of bulletins and circulars, (56) 698.
- bulletins 305-327, abstracts, (55) 197.
- bulletins 347-365 and circulars 43-47, abstracts, (53) 797.
- history and work, (52) 397.
- notes, (51) 198, 900; (52) 700, 900; (53) 500; (54) 400; (55) 99, 398; (56) 197; (57) 397; (58) 798; (59) 199, 500; (60) 499.
- report, (53) 599; (54) 396; (55) 97, 395; (57) 199; (59) 796.

Technological College, opening, (53) 500.

Textile—*see also* Fabrics.

- chemists and colorists association, program, (58) 898.
- color mixing, (59) 897.
- Conference, Empire, proceedings, (53) 530.
- fabrics, action of microfungi on, (55) 598.
- fabrics, finishing, treatise, (56) 596.
- fabrics, humidity-strength coefficient, (59) 496.
- fabrics, treatise, (58) 694.
- fabrics, wearing tests, (55) 296.
- fibers—
 - bacterial decay, (55) 392.
 - changing uses, (60) U.S.D.A. 497.
 - dyeing, (57) 298.
 - effect of washing, (55) 196.

Textile—Continued.

- fibers—continued.
 - moisture content, relation to humidity, (54) 895.
 - physical properties, (53) 531.
 - structure and behavior, (60) 96.
 - textbook, (55) 93.
 - treatise, (51) 337.
- industries—
 - in India, (53) 530.
 - spectrographic analysis in, (58) 898.
 - survey, (59) 693.
- industry, standardization in, (59) 794.
- industry, use of X-rays in, (56) 297.
- information applicable to home and everyday situations, (54) 189.
- materials—
 - A.S.T.M. specifications and methods, (58) 395.
 - strength and unit weight, (54) 296.
 - tentative definitions of terms, (59) 795.
 - tests, Government specification, (55) 93.
- merchandise, directory, (56) 898.
- microscopy, (59) 496.
- microscopy, treatise, (59) 693.
- oils for dyeing and finishing of cotton, (56) 93.
- operations, control of humidity in, (54) 895.
- plants, treatise, (58) 130.
- publications, Government, catalogue, (55) 93.
- recorder yearbook, (57) 199.
- research, (55) 391.
- research, British, coordination in, (55) 195.
- research, fellowship for, (56) 199.
- research plan at Bureau of Standards, (59) 96.
- subjects, papers on, (59) 194.
- Syndicate of Union of Socialistic Soviet Republics, (59) 794.

Textiles—

- absorption and desorption of moisture by, (53) 531.
- and clothing, (54) 189.
 - Government publications, list, U.S.D.A., (53) 299; (58) 94.
- textbook, (56) 790.
- and the new generation, (56) 697.
- asbestos, use, (58) 394.
- cleaning and dyeing, treatise, (53) 507.
- collecting the literature of, (56) 297.
- color, method for measuring, (58) 796.
- dictionary of, (53) 412.
- distribution, treatise, (55) 794.
- dyed, fastness to washing tests, (60) 496.
- dyeing, (55) 598.
- effect of light, (54) 394.

Textiles—Continued.

- effect of perspiration, (57) 899.
 electrical conduction in, (60) 696.
 Government publications, (60) 495.
 impregnation with rubber latex, (54) 298.
 light fastness, standardization of tests, (60) 598.
 light fastness, tests, (56) 396; (58) 393, 394.
 light fastness through various glasses, (59) 693.
 oils in, estimation, (59) 96.
 papers on, (58) 94.
 research on laundering, (54) 393.
 scope of investigations by associations, schools, etc., (58) 898.
 selection and conservation, (54) 796.
 stains on, (54) 299.
 technical research in, (56) 193; (57) 95.
 technical studies, treatise, (57) 795.
 testing, Rejto method, (53) 634.
 textbook, (52) 197; (53) 694.
 treatise, (56) 93.
 wool, trade, statistical review, (54) 888.
- Thamnotettix smithi*, notes, (59) 250.
Thaumatopoea wilkinsoni, studies, (57) 261.
- Theater, country, treatise, (54) 887.
Theatops spinicaudus, notes, (55) Ark. 50.
Thecla basilides, notes, (59) 253.
Thecla spp., notes, (52) 356.
- Theileria*—
 and *Anaplasma*, relation and biology, (58) 875.
 dispar, notes, (59) 173; (60) 575.
 mutans in Palestine, (53) 760.
 ovis, notes, (51) 383; (53) 183, 482.
 parva and *T. dispar*, comparison, (58) 676, 877.
 spp., studies, (52) 583.
- Theileriosis*—
 experimental transmission, (58) 774.
 of bovines, occurrence of blue bodies in, (51) 784.
- Thelazia* infection of man and animals, (57) 181.
- Thelohania ephestiae* n.sp., description, (60) 652.
- Theobaldia incidens* larvae, effect of feeding period on sex ratio and size, (60) 458.
- Theophylline, ingestion, effect on uric acid excretion, (60) 193.
- Theresia ampelophaga* in Crimean vineyards, (56) 360.
- Thereva plebeia*, economic importance, (53) 257.
- Thermocouple method of determining temperatures, (59) 550.
- Thermometer, new type for soil and air temperature, (56) 620.
- Thermometers, recording, (57) 666, 667.
 Thermometers, soil, description, (53) 815.
- Thermoviscometer, Saybolt, conditions of flow in, (59) 502.
- Thieghemella glauca*, Manoilov reaction, application, (59) 722.
- Thielavia basicola*—
 culture, (54) Conn.State 247.
 isolation, improved method, (58) 655.
 notes, (55) Fla. 849; (56) 52; (57) 548; (59) 535.
 on watermelon, (52) 352.
 parasitism of ascospore strains, (53) Conn.State 441.
 resistance of tobacco to, (60) 550.
 studies, (54) Fla. 348, Ky. 349; (60) 153.
- Thielavia* spp., notes, (57) 540.
- Thielaviopsis*—
 basicola, notes, (55) Conn.State 345.
 ethaceticus, notes, (54) 144.
 paradoxa, notes, (53) 147; (55) 244; (57) 443, 639.
 paradoxa on coconut palm, (52) 353; (53) 251.
 sp., notes, (52) 545; (54) 246; (55) 245.
- Thigmotropism of roots, (54) 724.
- Thiobacillus thiooxidans*—
 nitrogen nutrition, (55) 631.
 physiology, (55) 631.
 studies, (52) N.J. 720.
- Thiocresol behavior in animal organism, (51) 864.
- Thioglycolic acid as color test for iron, (58) 714.
- Thiophenol behavior in animal organism, (51) 864.
- Thiosulfate bacteria, biology of, (52) 117.
- Thiourea—
 effect on bud growth in potato, (57) 26.
 effect on plants, (54) 816.
- Thistle butterfly, notes, (56) Wis. 756.
- Thistle, Canada—
 carbohydrates in roots, (59) Iowa 31.
 control, (57) Ohio 125.
 eradication, (53) Ohio 740; (60) 41.
 root system, (55) Iowa 534.
 studies, Ohio, (55) 132; (58) 434.
- Thistle—see also Sow thistle.
 oil production in Argentina, (52) 228.
 Russian, control, (56) Mont. 134.
 Russian, seed, effect of heat, (56) 433.
 rust, biological researches in, (55) 552.
 rust, studies, (55) 251.
- Thlaspi arvense*—
 control, (54) 240.
 in grain seed, (53) 36.
- Thomas slag, see Phosphatic slag.
- Thorn leaf aphid, notes, (54) Ohio 155.
- Thorpe, C. E., paper on, (59) Ohio 196.
- Thossea unifascia, studies, (54) 659.
- Thraustothecae unisperma*—
 litoralis n.var., notes, (58) 208.
 n.sp., notes, (58) 208.
- Thread—
 blight, description, (57) Fla. 839.
 blights, systematic account, (54) 449.

Thread—Continued.

cotton sewing, data, (59) 497.
viscose, properties, (55) 597.

Thresher—

adjustments, notes, (56) Ill. 280.
and separator, miniature, description,
(51) 88.
for plant breeder and cereal chemist,
(57) 779.
self-cleaning, for single plants, (60)
781.
stationary, static electricity in, (54)
Wash.Col. 879.

Threshing—

effect on wheat, (54) 878.
losses from types of harvester-thresh-
ers, (52) Utah 785.
machine for single heads of grain,
(54) 878.
machines, belt and pulley speeds for,
(52) 289.
machines, vibrating and shovel shak-
ers in, (59) 378.
of seed grain by machinery, effect, (51)
389.
reducing grain losses in, (55) Ill. 481.
ring management, (53) Ill. 489.
with electric power, (60) 882.

Thrips—

affecting blackberries, (56) 659.
affecting *Lilium* spp., (53) 858.
affecting tea in Darjeeling, (54) 455.
attacking pinks, (59) 553.
Australian, records, (59) 250.
blood-sucking, from British West In-
dies, (58) 454.
control in cauliflower seed bed, (52)
N.Y.State 553.
control, spraying v. dusting in, (58)
347.
greenhouse, in Sweden, (51) 762.
in greenhouses, (59) Ohio 249.
injuries, paper on, (58) 158.
injurious to apples in Pacific North-
west, (58) 558.
injury to snap beans, (52) Fla. 251.
on bananas, (60) 559.
on cauliflower, control, (54) N.Y.State
552.
pollination of flowers by, (55) 660.
popular account, (51) 359.
red-banded, notes, (56) 552.
tabaci, *see* Onion thrips.
tritici, notes, (52) Mich. 355.
yellow, on cotton, studies, (60) S.C.
755.

Thryptocera pilipennis, notes, (56) 361.

Thurberia weevil, papers on, (59) 249.

Thurberiphaga diffusa, life history and
habits, (55) Ariz. 357.

Thymi of parasitized fowls, (58) 581.

Thymol—

blue, dissociation constant, determina-
tion, (53) 714.
effect on urea determination, (60) 416.

Thymus—

as affected by castration in rats, (52)
480.

feeding, effect on feathers and pigmen-
tation of chicks, (60) 532.

Thyridaria tarda, notes, (55) 249.

Thyridopteryx spp., notes, (60) Tex. 164.

Thyroid—

activity during pregnancy, (54) 91.
activity in rats, relation to tryptophan,
(54) 491.

administration, effect on plumage of
poultry, (55) 166.

and parathyroid removal, effects, (53)
572.

apparatus, rôle in growth, (55) 859.

apparatus, rôle in growth of reproduc-
tive system, (56) 819.

apparatus, studies, (52) 866, 867.

enlargement endemic in Massachusetts,
(57) 296.

feeding, effect on—

chicks, (54) 865; (55) 65.

fowl plumage, (51) Wis. 473;
(52) 675; (59) Wis. 28; (60)
532.

fowls, (54) 470; (58) 669.

insect metamorphosis, (60) 247.

oestrous cycle, (56) 465.

gland—

as affected by castration in rats,
(52) 480.

in experimental rickets, (51) 771.

in pigeons, differences, (57) 220.

iodine in, estimation, (55) 411.

secretion, relation to specific dynamic
action, (54) 91.

size in pigeons, seasonal variation,
(53) 834.

survey of—

Cincinnati school children, (52)
165.

Minnesota school children, (52)
166.

Montana school children, (52) 166.

surveys in 40 States, (56) 697.

weight and body weight, correlation,
(52) 368.

Thyroidectomy, effect on oestrous cycle of
rats, (55) 331.

Thyroids—

and gonads, reciprocal size changes in
pigeons, (54) 730.

diminished in size, effect on calf, (53)
369.

Thyroparathyroidectomy, effect on rats,
(52) 866, 867; (55) 860.

Thyrospora sarcinaeforme n.g. and n.sp.,
description, (58) 47.

Thyroxine—

effect on nitrogenous and respiratory
metabolism, (58) 892.

nature and effect on basal metabolism,
(54) 110.

synthesis, (59) 802.

- Thysanoptera—
 Australian, records, (59) 250; (60) 61, 650.
 in Canada, list, (51) 455.
 in Europe, (56) 857. *
 in India and Ceylon, list, (54) 754.
 in Italy, list, (52) 753.
 in North America, additions and correction, (53) 52.
 in south India, collection, (57) 163.
 injurious to oats, (55) 854.
 new species and notes, (58) 757.
 on cotton, biology, (58) 453.
 on tobacco, (55) 759.
- Thysanosoma actinoides—
 infestation experiments, (56) Wyo. 574.
 notes, (59) 881; (60) Wyo. 776.
- Thysanura of France, (58) 257.
- Thysanus elongatus, notes, (54) 559.
- Thysanus niger, notes, (53) 260.
- Tibey, feeding experiments with, (51) 881.
- Tick—
 bite, typhus-like fever following, (56) 277.
 commonest Indian, morphology and binomics, (53) 260.
 fever outbreak in foxhounds, (58) 575.
 paralysis, (54) 676.
 in Australia, (56) 476.
 in pigs, (56) 678.
 in sheep, (59) 276.
 of sheep in Crete, (51) 682.
- Ticks—*see also special hosts.*
 and lice in sheep, (57) 181.
 and related disease of lambs, (58) 279.
 Australian, hosts and distribution, (59) 462.
 destruction in Jamaica, (56) 65.
 eradication, (51) 781; (52) 881; (53) 179.
 eradication in Georgia, (53) 80.
 eradication, papers on, (53) 78; (57) 180, 377; (59) 170.
 in horses, control, (55) U.S.D.A. 578.
 in native cattle and deer in Panama, (52) 778.
 infection with Rocky Mountain spotted fever, (53) 58.
 infesting domestic animals in Rhodesia, (59) 777.
 microorganisms transmitted hereditarily in, (53) 783.
 monograph, (55) 859.
 of Australia, classification and description, (57) 863.
 of South America, studies, (58) 562.
 parasitic on cattle and horses in Japan, (57) 863.
 surra transmission experiments with, (54) 872.
 winter or moose, outbreak in Saskatchewan, (60) 657.
- Tiger lily, capsules, seed, and seedlings, (55) 839.
- Tikitiki extract, vitamin B in, (54) 90.
- Tilachlidium cinnabarinum n.sp., description, (56) 849.
- Tile, hollow, and concrete, bond between, (58) 779.
- Tillage—
 and weeds, (53) 791.
 by scarification, value, (54) 814.
 deep, use of dynamite for, (58) U.S.D.A. 374.
 effect, (55) 18.
 experiments, (51) Wis. 421; (55) Tex. 332; (56) Wash.Col. 509, Utah 525.
 experiments at North Dakota Station, (53) U.S.D.A. 333.
 for spring seeding, (54) 582.
 implement design, relation to soil properties, (60) Ala. 182.
 implements, types, (56) 282.
 machinery, draft of, (55) 580.
 mechanics of, station work on, (55) U.S.D.A. 882.
 physicochemical factors affecting, (53) 589.
 problems, (60) Wash.Col. 877.
 rotary, paper on, (59) 585.
 summer fallow, Wash.Col., (52) 620; (59) 32.
- Tillantin B and C for wheat stinking smut, (58) 46.
- Tilletia:
 caries in France, (57) 541.
 horrida, notes, (59) 540.
 laevis and T. tritici distribution, (59) 844.
 laevis, notes, (53) 647; (55) 346.
 laevis, varietal susceptibility of wheat to, (56) 448.
 secalis, threatening development in Russia, (52) 646.
 spores, germination conditions, (57) 120.
 spp. in Kansas, studies, (55) 844.
 spp., life history and physiology, (56) 648.
 spp., notes, (55) 545.
 spp. on wheat, (51) Ariz. 48.
 spp., physiologic specialization, (59) 844.
- tritici—
 and T. laevis distribution, (59) 844.
 control, (51) Wash.Col. 149; (57) 840, 841.
 cytological studies, (53) 647.
 germination temperatures, (51) U.S.D.A. 447.
 notes, (56) 448; (57) 247, 747.
 spores, effect of copper sulfate, (53) 542.
 spores, toxicity to animals, (56) 648.
 violent spore discharge in, (56) 726.
- Timber—*see also Lumber and Wood.*
 and concrete in flexure, studies, (56) 680.

Timber—Continued.

- and timber products of British Empire, (51) 896.
- and underwood industries, treatise, (56) 487.
- as valuable farm crop, (60) Mich. 442.
- beetles injurious to, summary, (59) 460.
- borers of Australia, (58) 159.
- brown stain, prevention, (55) 49.
- cottages for rural districts in England, (57) 779.
- damage by wood borers, (51) 554.
- decay, studies, (51) 53.
- decayed, heat treatment, (52) 55.
- defects caused by insects, (58) U.S.D.A. 57.
- depletion, prices, and concentration of ownership, (60) U.S.D.A. 48.
- deterioration and preservative treatment, (52) 585.
- enemies of, (57) 552.
- estimating, accuracy of methods, (56) 646.
- farm, preservative treatment, (55) Iowa 584.
- for crossties, results of semitreatment, (57) 158.
- growing and logging practices, U.S.D.A., (58) 40; (59) 143.
- harvesting and sale in national forests, (56) U.S.D.A. 239.
- hemicelluloses, constitution, (60) 416.
- in farm woodlots, estimating, (51) 245.
- measurement, treatise, (58) 646.
- Nigerian, results of examination, (51) 44.
- of small landowner, utilization and conversion, (60) 828.
- roofs, primary stresses in, (57) 677.
- scaling and measurement, instructions for, (59) U.S.D.A. 534.
- seasoning and preservation, treatise, (53) 684.
- seasoning, effect on fungi, (52) U.S.D.A. 249.
- seasoning, relation to moisture movements, (57) 677.
- slash decay, studies, (59) U.S.D.A. 533.
- standing, volume tables, (56) Minn. 143.
- strength tests, (51) 586.
- surveys in national forests, instructions, (54) U.S.D.A. 143.
- trees, commercial, of Malay Peninsula, (60) 343.
- utilization in farm buildings, (52) 887.
- v. concrete for bridge floors, (56) U.S.D.A. 177.
- volume tables, construction of taper curves for, (53) 541.
- volume tables, form class percentile taper system, (58) 441.
- yarding, cost, (51) Calif. 44.

Timber—Continued.

- yield tables, alignment chart form, (58) 542.
- yield tables, preparing, (55) 144.
- Timberland tax act, Pearson, operation, (60) Mich. 442.
- Timbers—
 - Australian, grown in South Africa, (60) 827.
 - Dutch East Indian, mechanical properties, (57) 677.
 - Far Eastern, properties and value, (51) 485.
 - structural, standard tests in India, (54) 76.
 - structure and identification, treatise, (54) 245.
- Time, use in home making, (59) R.I. 679.
- Timothy—
 - and sweet clover, palatability, (59) Wis. 66.
 - breeding experiments, (58) 530.
 - cost of production and profit, (58) Ill. 379.
 - cover, effect on seed tobacco, (54) Mass. 832.
 - effect on tobacco as following crop, (59) 243.
 - energy value for sheep, (56) Ill. 367.
 - experiments at University of Alberta, (57) 332.
 - fertilizing, financial returns, (51) 34.
 - hay, chopping for work horses, Wis., (56) 766; (59) 70.
 - hay, digestibility by steers and sheep, (60) Ill. 256.
 - hay, energy value for sheep, (60) Ill. 659.
 - hay, United States grades for, (52) U.S.D.A. 92.
 - hay v. alfalfa hay for heifers, (55) 68.
 - hay v. alfalfa hay for horses, (52) N.Y.Cornell 772.
 - improvement, (53) 729.
 - life history, (57) U.S.D.A. 332.
 - methods of covering, (51) 139.
 - optimum soil reaction for, (53) 320.
 - ration, protein and mineral metabolism and digestibility, (59) N.Y.Cornell 365.
 - residues, effect on nitrate depression, (55) N.Y.Cornell 120.
 - rotation experiments, (59) Ind. 728.
 - rust resistant varieties, (56) 353.
 - seed, hulled, germination, (53) 237.
 - seed, impurities and determination of origin, (60) 539.
 - seed production, (52) 334; (53) Can. 530.
 - seeding experiments, (53) Can. 530.
 - selection experiments, (51) N.H. 135.
 - self-fertilization in, (57) 422.
 - smut spores, germination, (53) 649.
 - strains, comparison, (54) R.I. 30.
 - v. alfalfa hay, net energy value, (60) Ill. 258.

- Timothy—Continued.
 variety tests, (51) Ohio 434, N.J. 636;
 (52) N.J. 732; (53) Can. 530; (55)
 N.J. 31; (57) N.J. 727; (59) N.J.
 325.
 yields and duration, (51) 637.
- Tin—
 determination in canned foods, (51)
 713.
 determination in its alloy, (56) 804.
- Tinea—
 pellionella, *see* Clothes moth.
 spp., notes, (52) 554.
- Tineae of horses and immunity, (58) 879.
- Tingis pyri, capsid attacking, (57) 657.
- Tinning and toys, (51) 12.
- Tiphia—
 autumnalis n.sp., description, (51) 260.
 inornata, notes, (52) U.S.D.A. 256.
 koreana n.sp., description, (57) 64.
 popillivora n.sp., description, (51)
 260.
 popillivora, parasite of Japanese
 beetle, (60) 563.
 sp., selective parasitism by, (52) 62.
 spp., hibernation studies, (59) 159.
 spp., notes, (56) U.S.D.A. 860; (60)
 563.
 vernalis n.sp., description, (51) 260.
- Tiphodytes gerriphagus, life history and
 bionomics, (60) 656.
- Tipula sp., notes, (60) 161.
- Tipulids in nun moth areas, outbreak, (52)
 554.
- Tire cord—
 studies, (57) 597.
 tentative specifications, (59) 795.
 twist in, effects, (54) 297.
- Tires—
 low pressure, studies, (53) 483.
 pneumatic, coefficients of friction, (60)
 583.
- Tischeria malifoliella, studies, (52) Iowa
 357.
- Tissue—
 culture, treatise, (54) 72.
 juices, toxicity for cells of the tissue,
 (60) 521.
 transplants, susceptibility to, genetic
 basis, (55) 731.
- Tissues—
 and cells, physical chemistry of, (56)
 108.
 arginine determination in, (56) 710.
 calcium determination in, (55) 311.
 iron determination in, (55) 613.
 respiratory capacity and vitamin B
 content, (52) 65.
- Titanium, effect on plant production, (53)
 22.
- Titration—
 electrometric, electrodes in, (54) 111.
 electrometric, electrostatic voltmeter
 for, (58) 803.
 principles, (54) 8.
- Titration—
 acidimetric and alkalimetric, (57) 804.
 polarized platinum electrode in, (59)
 14.
 potentiometric, electrode for, (57) 310.
 potentiometric, monograph, (55) 712.
- Tmetocera ocellana, *see* Bud moth, eye-
 spotted.
- Toad bug, life history, (51) 551.
- Toad, giant, notes, P.R., (51) 855; (58)
 556.
- Toad, spadefoot, tadpole, enemy of mos-
 quito larvae, (58) 861.
- Toast, protein of, digestibility and effi-
 ciency, (51) 861.
- Tobacco—
 acreage, (60) N.C. 783.
 American, type classification, (54)
 U.S.D.A. 640.
 analyses, (59) Conn.State 734.
 angular leaf spot, notes, (51) La.
 845; (54) 49; (60) Ky. 239.
 aphids, control, (57) 759.
 arsenic in, (58) 713.
 bacterial leaf spot, longevity of or-
 ganisms, (56) Ky. 144.
 bacterial leaf spot, notes, (52) Fla.
 247, Ky. 446; (54) Ky. 349.
 bacterial wilt, control, (53) N.C. 847.
 barns, design, (51) 389.
 barns, fire curing, construction, (55)
 683.
 barns, plan and construction, (59)
 179.
 beetle, control by fumigation, (52) 359.
 black fire, notes, (53) Wis. 443.
 black root rot—
 cause, (55) Conn.State 345.
 control, (55) Ky. 149.
 relation to soil reaction, (55)
 Conn.State 249; (58) 750; (59)
 Conn.State 36.
 studies, (60) 153.
 black shank—
 control, (51) 156.
 resistant varieties, (60) Fla. 153.
 studies, Fla., (52) 247; (54) 348;
 (55) 654, 849; (56) 848.
 Blakeslea trispora affecting, (59) 850.
 blue mold, notes, (56) 848; (57) 48.
 breeding, effect of hybridization, (55)
 127.
 bright—
 culture, (51) Ga.Coastal Plain
 534.
 experiments, (51) Va. 35; (57)
 Ga.Coastal Plain 433.
 fertilizer experiments, (57) 530.
 production, (53) 238.
 brown root, cause, (56) Ky. 143.
 brown root rot, effect of timothy in-
 fusions, (59) 243.
 brown root rot, studies, (55) U.S.D.A.
 547.
 bud worm—
 control, (57) U.S.D.A. 559.
 parasite of, (55) 561.

Tobacco—Continued.

- bud worm—continued.
- seasonal history and food habits, (56) 157.
- Burley, ash analyses, (52) Ky. 434.
- burn tests, (59) Conn.State 733.
- chlorine in, effect, (56) 437.
- colonial, market surplus problems, (59) 384.
- commercial, and cured leaf as source of mosaic disease, (60) 53.
- concentrated fertilizers for, (54) Mass. 123.
- cooperative marketing, (54) U.S.D.A. 784.
- cooperative marketing associations, (56) U.S.D.A. 587.
- cost of production, (52) Ky. 490; (57) Va. 383, Ky. 479; (59) Conn. Storrs 482.
- costs, returns, and profits, (56) Ky. 181.
- culture, (60) Fla. 136.
 - and harvesting, (54) Can. 737.
 - and manufacture, (55) 739.
 - and preparation in southern Africa, (56) 737.
 - experiments, (52) Ga.Coastal Plain 225; (58) 429.
 - experiments in Philippines, (60) 327.
 - for nicotine extraction, (52) Calif. 33.
 - in Bulgaria, (54) 134; (57) 530.
 - in France, (57) 232; (59) 330.
 - in India, (57) 629.
 - in Mexico, (55) 831.
 - in Nyasaland, (57) 733.
 - in Ontario, (57) 232; (58) 833.
- curing tests, (52) S.C. 528; (53) 335.
- cutworms affecting, (59) 656.
- cutworms control, summary, (56) U.S.D.A. 258.
- damping-off, notes, (55) 244.
- declining yields and quality, causes, (58) Mass. 736.
- Deli, culture, (54) 534.
- Deli, diseases, (59) 643.
- Deli, fertilizer experiments, (60) 136.
- Deli, stack fungus of, (54) 251.
- denicotinized, (59) Conn.State 831.
- developmental conditions for, (57) 518.
- disease due to potash deficiency, (58) 20.
- disease in Hungary, new, (60) 550.
- diseases, (55) Conn.State 248; (57) 838; (58) Ky. 51.
 - and injuries, new and unusual, (59) 149.
 - cause and control, (52) U.S.D.A. 247.
 - in Deli, (55) 547.
 - in Mauritius, (60) 350.
 - in Philippines, (59) 544.
 - new and unusual, (57) 152.

Tobacco—Continued.

- diseases—continued.
- studies, (52) Fla. 246, Can. 846; (54) Fla. 348, Ky. 349; (55) Fla. 849; (56) Fla. 848; (59) 636; (60) Fla. 153.
- double-flowered mutants, (57) 623.
- dust, aphiscidal properties, (56) N.Y. State 253.
- dust, nicotine evolution, increasing, (58) 58.
- dust, notes, (53) Calif. 477.
- dust, preparation of nicotine extracts from, (60) N.Y.State 453.
- dusts, chemical testing, (57) 655.
- dusts, physical properties, (57) N.Y. State 655.
- effect of—
 - fertilizer salts, (56) Ky. 132.
 - preceding crop, (54) 31; (58) 433.
 - radium treatment, (60) 338.
 - soil moisture, (53) U.S.D.A. 339.
 - timothy cover crop, (54) Mass. 832.
- Experiment Station, report, (60) Fla. 152.
- experiments in Philippines, (55) 434.
- experiments in Quebec, (59) Can. 136.
- export shipments, routing, (53) 295.
- extracting nicotine from, (52) 535.
- farms, causes of profit or loss, (55) Va. 79.
- feeding for stomach worms in sheep, (59) Ohio 276.
- fermentation, biology, (56) Can. 639.
- fertilizer experiments, (51) Va. 35, Tenn. 743, N.C. 832; (52) Ga. Coastal Plain 225, Ky. 434, 736; (53) N.C. 835; (54) Ga.Coastal Plain 131, Conn.State 134, S.C. 635; (55) Ohio 132, 831; (56) 35, Ga. Coastal Plain 524, Miss. 731, Wis. 733, Ky. 812, Fla. 821; (57) Conn. State 333, Tenn. 628; (58) Ky. 30, Pa. 324, S.C. 632; (59) Conn.State 36, N.C. 735; (60) Ga.Coastal Plain 132, Tenn. 133, Pa. 327, S.C. 732.
- fertilizer experiments in Java, (59) 527.
- fertilizer requirements, (55) Wis. 122.
- fertilizers for, (58) 636.
- fla beetle—
 - control, (52) Va.Truck 44.
 - in dark fire-cured tobacco district, (52) U.S.D.A. 61.
 - life history studies, (52) 856.
 - studies, (51) 55; (56) Ky. 64.
- flue-cured, fertilizer experiments, (58) U.S.D.A. 328.
- flue-curing, heating appliances, (53) 892.
- frenching—
 - infection experiments, (53) N.C. 746.
 - relation to nitrates, (57) 515.
 - studies, (60) Ky. 53.
- from Palestine, Nigeria, and Mauritius, merits, (56) 339.

Tobacco—Continued.

- giant mutant in, (53) 831.
- grades, chemical constituents in, (53) Ky. 739.
- Growers Cooperative Association—
 - growth and failure, (60) 683.
 - organization plan, (54) 588.
- growing areas, child labor in, (55) 485.
- Havana, assimilation of fixed nitrogen, (58) 135.
- Havana seed, topping and suckering, (60) Conn.State 736.
- high-nicotine strains, (52) N.Y.State 534; (58) Pa. 324.
- historical studies, (53) 133.
- hornworm moth, bait for, (59) 59.
- hybrids in France, (51) 32.
- hybrids, increase in chromosome number, (59) 219.
- improvement, (53) N.C. 735; (57) 232.
- in Philippines, papers on, (58) 136.
- in sand cultures, salt requirement, (57) Md. 416.
- industry—
 - in Great Britain, (51) 237.
 - studies, (60) Conn.Storrs 586.
 - treatise, (54) 237.
- infection from potato virus, (57) 252.
- infection with white-pickle mosaic of cucumber, (60) Conn.State 743.
- inheritance in, (51) 826, 827; (54) 129; (57) 622; (59) 223; (60) 126.
- inoculation with potato mosaic virus, (54) 451.
- insects affecting, (55) Conn.State 253, 759; (56) 553; (57) Conn.State 333.
- insects in Rhodesia, (58) 663.
- irrigation experiments, (56) 35.
- land, fallow, vegetation of, (55) 547.
- leaf bases, formation, (60) 126.
- leaf carbohydrate metabolism, (57) 23.
- leaf constituents, relation to burning qualities, (59) 831.
- leaf diseases, (56) 452.
- leaf, effect of distancing, (53) 238.
- leaf miner, notes, (51) 855.
- leaf, nicotine and ash constituents, effect of fertilizers, (54) 134.
- leaf, stocks of, (57) 88.
- leaves, fresh, nicotine in, (59) 831.
- leaves, metabolic assimilation, (57) 518.
- marketing, (52) U.S.D.A. 294; (54) Ky. 387; (56) Ky. 182; (60) Ky. 784.
- marketing, cooperative, (60) Ky. 888.
- microanalytical studies, (60) 416.
- mildew, control, (58) 551.
- mosaic—
 - active agent, cultivation, (57) 447.
 - and mosaic of *Nicotiana glutinosum*, identity, (56) 52.
 - and related disease, (51) 546.
 - causal agent, cultivation, (53) 547.

Tobacco—Continued.

- mosaic—continued.
 - control, (60) Ky. 54.
 - cytological studies, (56) 52, 652.
 - disease, studies, (52) Ky. 446.
 - disease, transfer by *Pseudococcus citri*, (54) 457.
 - effect on cell content, (59) 340.
 - effect on plant cells, (58) 443.
 - effect on yield and quality, (60) 53.
 - in Southern Rhodesia, (56) 452.
 - infection from use of chewing tobacco by men, (56) Ky. 144.
 - infection, inhibition, (58) 552.
 - notes, (51) 847; (55) 753; (58) 647; (59) Wis. 53, Conn.State 735.
 - temperature studies, (53) 646.
 - transfer from potatoes, (53) Wis. 443.
 - transmission, (54) 346.
 - transmission by citrus mealybug, (55) 754.
 - transmission by slugs, (60) 646.
 - types, (60) Ky. 239.
 - types of patterns in leaves, (59) 449.
- mosaic virus—
 - cultivation, (54) 452; (59) 150.
 - inactivation by plant juices, (55) 655.
 - multiplication in detached leaves, (59) 345; (60) 645.
 - nature of, (59) 144, 149.
 - precipitation, (58) 447.
 - properties, factors affecting, (57) 744.
 - quantitative and purification methods, (57) 745.
- nematodes and root knot infesting, control, (58) 733.
- nematodes, notes, (53) 148.
- new hybrid varieties, (53) 835.
- nicotine determination in, (57) 410.
- nicotine in—
 - differences in, (54) N.Y.State 534.
 - effect of topping, (58) N.Y.State 828.
 - factors affecting, (52) 138; (54) 535; (56) Pa. 134.
 - increasing, (56) N.Y.State 233.
- nitrogen sources, (59) Conn.State 734, N.C. 735.
- of British Empire, (51) 896.
- Olpidium brassicae* affecting, (54) 649.
- parthenocarpy and parthenogenesis in, (52) 522.
- pests in Jamaica, (51) 55.
- Phytophthora* disease, Fla., (55) 654, 849.
- Phytophthora* resistant, notes, (56) 52.
- plant, dry weight and ash content, (51) 520.
- plants growing under sterile conditions, (59) 322.

Tobacco—Continued.

- plants, healthy and diseased, analyses, (52) Conn.State 537.
- plants, mycetozoan found in, (58) 551.
- plants, young, virus mixtures in, (59) 150.
- powder and lime dressing, test for ox warbles, (52) 359; (53) 584.
- powdery mildew in Crimea, (60) 54.
- production—
- in Porto Rico, (58) 636.
 - in South Africa, treatise, (54) 237.
- labor used in, (57) Ky. 284.
- pure line breeding, (59) Conn.State 28.
- quality—
- and color, factors affecting, (57) 632.
 - and yield, factors affecting, (54) 832.
 - as affected by curing conditions, (51) Wis. 439.
 - chemical factors in, (53) 637.
 - of products, factors affecting, (55) 831.
 - studies, (55) U.S.D.A. 831.
- rack curing, (53) 531.
- relation to soil reaction, (57) Conn. State 333.
- research activities of world, (55) 739.
- research at institute at Krasnodar, (60) 436.
- Research Institute, German National, (56) 499.
- resistance to *Thielavia basicola*, (60) 550.
- response to phosphorus fertilizers, (57) 530.
- Rhizoctonia disease, (57) 750.
- ring-spot disease, studies, (59) 850; (60) 645.
- roll. industry in South Africa, (55) 437.
- root rot—
- effect of soil acidity, (55) Mass. 450.
 - effect of temperature, (51) Wis. 446.
 - notes, (52) Ky. 434.
 - resistance, (56) 52; (59) Wis. 52.
 - resistant strains, (52) Ky. 446; (53) Pa. 753; (55) Fla. 849; (56) Wis. 733.
 - studies, (54) Fla. 348, Ky. 349.
- rotation and harvesting tests, (53) N.C. 835.
- rotation experiments, (51) Va. 35; (54) 31; (55) Va. 35, Md. 233.
- sand-drown, control, N.C., (51) 831; (53) 854.
- scab, notes, (54) Fla. 349.
- seed beds—
- covering, (55) N.Mex. 434.
 - disease control, (53) 147.
 - disinfection, (56) 118; (57) 252; (59) 544.

Tobacco—Continued.

- seed beds—continued.
- dusting and spraying experiments, (56) 52.
 - infection by spitting, (51) 353; (56) 52.
 - injury by flea beetles, (56) Wis. 755.
- seed—
- buried in soil, viability, (58) 833.
 - disinfection against wildfire, (56) 52.
 - germination, effect of age, (53) Wis. 435.
 - germination, relation to light, (57) 718.
 - germination, response to light, (58) 525.
 - stimulation tests, (58) 625.
 - strains, (57) Conn.State 333.
- shade cloth, preserving, (57) 297; (59) Conn.State 37.
- shade tent poles, preservatives for, (58) Conn.State 680.
- situation, survey, (55) Fla. 849.
- smoke, effect on activity of rats, (55) 657.
- soils and fertilizers, (58) 834.
- soils, old, phosphorus requirements, (57) Conn.State 333.
- soils, organic matter in, (59) Conn. State 734.
- solution for spraying, preparation, (52) 657.
- standard sizes, (56) U.S.D.A. 688.
- stem burn due to Pythium, (59) 643.
- stem injury, Fla., (55) 753; 849.
- strains resistant to root rot, (51) Ga. 148.
- studies, (55) Conn.State 233; (56) Can. 638; (57) N.C. 226; (58) Can. 135.
- in Canada, (55) 738.
 - in Nyasaland, (54) 833.
 - in Sumatra, (57) 632.
- sun-cured, sources of nitrogen, (55) Va. 35.
- topping and suckering experiments, (59) Conn.State 37.
- topping tests, (56) S.C. 525.
- Turkish, supposed disease of, cause, (51) 249.
- varieties, (57) Tenn. 126.
- and hybrids, studies, (53) Can. 340.
 - for South Carolina, (58) 833.
 - for three regions of State, (58) N.C. 828.
 - inheritance studies, (54) 823.
- variety tests, (53) Can. 530; (56) Ga.Coastal Plain 523, Fla. 821; (57) N.Mex. 224, 227; (58) Ga.Coastal Plain 732; (59) N.Mex. 222; (60) Ga.Coastal Plain 132.
- virus disease, cytological studies, (58) 444.

Tobacco—Continued.

- virus disease, new, (58) 551.
- virus diseases, studies, (60) Ky. 239.
- white, cause, (60) 834.
- white spotting, notes, (58) 647.
- wild, as source of nicotine for sprays, (54) 497.
- wild, poisonous to livestock, (58) U.S.D.A. 874.
- wildfire—
 - and blackfire, notes, (57) Tenn. 639.
 - bacteria, overwintering, (56) 248.
 - control, (51) 45, Conn.State 653; (54) Wis. 251, Fla. 348; (56) 52, 248.
 - control in seed bed, (53) 854.
 - in Greece, (57) 547.
 - in South Africa, (51) 246.
 - in Wisconsin, (51) 50.
 - notes, (54) 49; (56) 748; (59) 644; (60) 546.
 - resistant varieties, (57) 846.
 - studies, (51) Wis. 450; (52) Fla. 247; (60) Pa. 344.
 - wintering over, (55) Fla. 849.
- wilt in Philippines, (51) 246.
- winter cover crops for, (59) Conn.State 735.
- wrapper, culture in Philippines, (53) 835.
- X-rayed sex cells, progenies from, (58) 626.

Toda grass, notes, (54) Fla. 230.

Toheroa, canned, vitamin A in, (60) 93.

Toluene treatment of soil, effect, (51) 17.

Tolycoporium penicillariae, notes, (55) 245.

Tolyposporium filiferum, notes, (55) 346, 546.

Tomaspis—

- liturata, notes, (55) 854.
- posticata, notes, (56) 155.
- saccharina, studies, (57) 260; (58) 455; (60) 650.

Tomato—

bacterial—

- blight, resistant strains, (54) P.R. 642.
- canker, notes, (59) U.S.D.A. 345; (60) West.Wash. 746.
- disease, (60) Oreg. 745.
- disease, new, (54) 451; (58) 52; (59) N.Y.State 50.
- soft rot, (56) 452.
- spot, name for causal organism, (54) 148.
- wilt, studies, (59) Ohio 238.
- black stem-end rot, notes, (53) Ind. 146.
- blight—
 - control, (52) Idaho 844.
 - early, cooperative control, (59) Ind. 748.
 - early, notes, (57) 343.
 - early, studies, (59) Va.Truck 244.
 - in Queensland, (57) 52.
 - late, notes, (59) 45.

Tomato—Continued.

blight—continued.

- late, relation to potato late blight, (56) W.Va. 549.
- resistant strains, (51) Tenn. 349; (55) Calif. 338.
- blight, western yellow—
 - and evaporation, correlation, (58) 52.
 - factors affecting, (56) 247.
 - 1924 outbreak, (57) 252.
 - relation to beet curly top, (59) Calif. 747.
 - relation to transpiration, (59) 150.
 - resistant varieties, (55) Idaho 842; (56) Calif. 52; (59) N. Mex. 231.
 - studies, (59) 244.
- blights, control, (57) 649.
- blossom-end rot, studies, (59) Miss. 544.
- blossoms, blighting, (52) 60.
- buckeye fruit rot, studies, (56) Fla. 143.
- catsup, fermentation in, (52) N.Y. State 503.
- chimera, spontaneous, notes, (59) 521.
- crown gall, studies, (54) 842.
- cuttings, growth responses to food materials, (56) 25; (57) 41.
- cuttings, regeneration of roots and tops, (53) 240.
- damping-off, notes, (59) 535, 842.
- disease from Mexico, (54) 748.
- disease resistant varieties, (56) 549.
- disease, studies, (60) 834.
- diseases—
 - control, (51) 152, 353; (56) Tenn. 549; (59) N.Y.State 50.
 - in Canada, (56) 353; (60) 153.
 - in Florida, causes and control, (56) Fla. 549.
 - in Indiana, (56) 547.
 - in North Caucasus, (58) 647.
 - studies, (52) Calif. 48, N.J. 744; (55) Tex. 345; (56) Utah 540; (57) Tenn. 639, 640; (59) Ohio 238.
- flower, anatomy and development, (57) 534.
- flowers, opening and pollination, (57) 831.
- foot rot control in seed beds, (58) Del. 441.
- foot rot, notes, (54) Del. 647; (57) 548.
- fruit rot in hothouse, (56) 549.
- fruit rot, studies, (51) N.J. 654; (55) 346.
- fruit worm—
 - control, (60) S.C. 755.
 - cooperative studies, (57) La. 556.
 - notes, (52) Va.Truck 44; (56) S.C. 553.
- fungus wilt, notes, (58) S.C. 646.

Tomato—Continued.

- Fusarium blight, notes, (58) N.Y. State 844.
- Fusarium blight resistant strains, (51) Tenn. 354.
- Fusarium wilt—
 notes, (51) Ga. 148, Calif. 755.
 relation to pH value, (51) 755.
 relation to soil moisture, (51) 755.
 relation to temperature, (51) 754.
 resistance to, nature, (57) Ohio 145.
- Grand Rapids disease, notes, (60) Wash.Col. 830.
- greenhouse streak or winter blight, notes, (53) Ind. 146.
- houses, fumigation, (58) 557.
- industry, (59) Ark. 680.
- inoculation with potato mosaic virus, (54) 451.
- Isaria rot, notes, (51) 154.
- juice, vitamin C in, effect of fermentation, (55) 503.
- leaf mold, relation to humidity and ventilation, (59) Ohio 449.
- leaf mold, studies, (57) 547; (59) Ohio 238; (60) 344.
- leaf roll, transmission, (53) Ind. 154.
- leaf spot—
 control, (52) U.S.D.A. 548; (55) N.J. 444.
 notes, (55) 242; (56) 647; (57) 343; (58) N.Y.State 844.
 relation to temperature and humidity, (56) 247.
- leaves, dehydration, relation to hardness, (51) 126.
- mildew, notes, (57) 540; (59) 535.
- mosaic—
 abnormalities produced in fruit by, (53) 753.
 causal agent, cultivation, (53) 547; (57) 447.
 chloroplasts in, destruction, (58) 552; (59) 850.
 control, (51) Ind. 845; (54) 653.
 effect on carbohydrate and nitrogen content in the plant, (59) 150.
 filtration and inoculation experiments, (60) 448.
 hyperplastic crushing of tracheal tubes in, (58) 150.
 inoculation experiments, (57) Ohio 144.
 insect factor in, (57) Ind. 654.
 notes, (58) 647; (60) Fla. 147.
 organism of, (57) 351, 352.
 overwintering, (51) 51.
 protozoa associated with, (53) 646.
 relation to temperature, (52) 350.
 separation of fernleaf from mottling in, (59) 345.
 streak type, notes, (59) Ind. 749.

Tomato—Continued.

- mosaic—continued.
 studies, (55) 243; (59) Ind. 752.
 transfer by *Pseudococcus citri*, (54) 457.
 transmission, (53) Ind. 154.
 transmission by citrus mealybug, (55) 754.
 transmission by flea beetle, (56) 349.
 virus, attempts to cultivate, (59) 150.
 virus, rate of spread, (58) 447.
- nailhead rust, notes, (51) 156; (56) Fla. 840; (60) Fla. 147.
- nailhead spot, development during transit, (59) 346.
- Phytophthora rot, notes, (52) 548.
- plant, blooming and fruiting period, (56) 42.
- plants—
 chemical analyses, (51) Mo. 745.
 composition, effect of phosphorus, (57) 41.
 hardening, effect, (59) Mich. 334.
 ionizable constituents, effect of pH of soil, (60) 208.
 treatment prior to transplanting to field, (58) 839.
 water requirements, (59) N.J. 337.
- premature fruit drop, (58) 150.
- products, gaseous fermentation, (53) N.Y.State 412.
- psyllid, control, (59) Calif. 756.
- Rhizoctonia foot rot, notes, (59) 535.
- root rot, notes, (57) 540, 548.
- rootlet tips, water molds on, (57) 153.
- rust, notes, (58) 442.
- rust resistant varieties, (54) Fla. 342.
- seed, extracting, (55) 237.
- seed improvement studies, (57) Ind. 635.
- seed selection, (53) Mo. 446.
- seed-borne diseases, fungicides for, (56) Fla. 840.
- seedlings, growing, (57) Okla. 533.
- "sleepy disease", notes, (52) 549.
- soft rot, cause, (56) 452.
- spotted wilt, notes, (60) 153, 350, 834.
- stem-end and center rot, (56) 549.
- stem-end disease, description, (54) 548.
- stem rot, notes, (57) 252.
- stocks, differences between strains, (56) Utah 533.
- strains, selection for market demand, (58) Ill. 333.
- streak or winter blight in Quebec, (58) 656.
- streak, studies, (58) 448; (59) Ohio 238.
- stripe disease, control, (58) 244.
- stripe disease, cross inoculations, (52) 52.
- stripe or streak disease in Quebec, (56) 248.
- sun scald, studies, (57) 352.

Tomato—Continued.

- Thielavia root rot, notes, (59) 535.
 Verticillium wilt, (57) Calif. 243, 846;
 (58) 656.
 weevil, Australian, notes, (57) 655.
 weevil, buff-colored, notes, (51) 662.
 wilt—
 as affected by pH value, (51) Mo.
 51.
 cause, (60) 444.
 control, (52) Ark. 247; (53) Mo.
 442; (59) Kans. 753.
 description, Kans., (55) 450; (59)
 753.
 fungus, two strains, pathogenicity,
 (59) 752, 753.
 in Philippines, (51) 246.
 resistance to, (55) Fla. 849.
 resistant varieties, (52) Miss. 242;
 (53) Calif. 446, 543; (55)
 Miss. 541; (56) 247, Kans. 842;
 (57) 52, 846; (58) 150, Ill. 334;
 (59) Ohio 231; (60) Ill. 231.
 resistant variety, (54) Tenn. 245.
 spread by infected seed, (52) 351.
 studies, (51) Mo. 751, La. 845,
 847; (52) Kans. 446; (55)
 Calif. 344; (57) 48, 153, P.R.
 442; (58) Mo. 441; (59) Miss.
 544.
 winter blight, control, (58) 51.
 witches' broom, (59) 849.
 worm, mosaic transmission by, (53)
 Iowa 748.
 worm moth, parasite of larva, (57)
 362.
 yellow blight resistant varieties, (57)
 Calif. 234.
 yellows—
 description, (59) U.S.D.A. 53.
 studies, (52) Wash.Col. 845.
 transmission, (59) Calif. 644.

Tomatoes—

- abnormal growths in, (57) 123.
 addition to milk ration of calves, (52)
 678.
 arsenical injury to, (56) 641.
 Baltimore-Indiana, notes, (53) Ind.
 139.
 Basidiospore gallarum affecting, (51)
 50.
 breeding experiments, (51) Hawaii
 744; (53) U.S.D.A. 141; (55) Can.
 835; (56) Pa. 139; (57) Can. 236;
 (59) 833; (60) Can. 639, Wash.Col.
 821.
 breeding for disease resistance, (60)
 Tenn. 153.
 breeding, use of statistical data in,
 (52) 235.
 can-house, cost of production, (57)
 N.J. 783.
 can-house, production, (51) N.J. 688.
 canned—
 and tomato products, (51) 765.
 bulletin on, (59) 389.

Tomatoes—Continued.

- canned—continued.
 quality, effect of fertilizers, (59)
 439.
 canning—
 diseases, (52) Utah 745.
 industry, (52) Calif. 441.
 quality, effect of fertilizers, (60)
 Pa. 338.
 studies, (57) Ind. 688.
 value of scalding, (52) U.S.D.A.
 460.
 carbohydrate-nitrogen ratio in, effects
 of pruning, (60) 232.
 carrying quality, effect of fertilizers,
 Tex., (57) 136, 534.
 catalase activity, relation to soil re-
 action, (60) 823.
 chilling, (51) U.S.D.A. 747.
 chromosomal chimeras in, (55) 27.
 cold storage studies, (58) 535; (60)
 541.
 cross-pollination, (51) 643; (57) 618.
 crosses, yields, (60) Guam 820.
 culture, (51) Mo. 643; (55) N.Mex.
 439; (56) 441, Ga.Coastal Plain
 531, Utah 834; (60) Mont. 737.
 and marketing, (57) N.Mex. 42,
 V.I. 385.
 effect of carbon dioxide, (58) 138.
 experiments, (51) P.R. 838; (54)
 Ga.Coastal Plain 136; (55) V.I.
 339, Can. 835; (58) Miss. 37;
 (59) Ohio 232; (60) Tenn. 141.
 experiments and trial shipments,
 (59) V.I. 439.
 experiments in New South Wales,
 (60) 232.
 for canning factory, (52) Ind. 837.
 in greenhouse, studies, (57) 830.
 in Michigan, (51) Mich. 441.
 under glass, treatise, (53) 842.
 determinate growth in, (57) 833.
 dusting by airplane, (56) 57.
 duty of water for, (54), N.Mex. 680.
 early ripening in, (55) N.H. 834.
 early set, effect of frost protectors,
 (53) Mich. 341.
 effect of—
 altering length of day, (55) 629.
 boron, (59) 323.
 carbon dioxide, (52) 234; (53)
 640.
 cultivation, (54) 137.
 growing in same soil, (53) 639.
 increased carbon dioxide, (60) 320.
 increased length of day, (60) Ark.
 820.
 modifying nutrient solution, (51)
 N.H. 124.
 overhead irrigation, (58) Ill. 334.
 phosphorus, (54) N.H. 836; (56)
 Ill. 234.
 pinching leaders, (52) Can. 537.
 potash on carrying quality, (59)
 Tex. 740.

Tomatoes—Continued.

- effect of—continued.
 potash on ripening, (59) Iowa 39.
 pruning, (57) 137.
 pruning and staking, (54) 537.
 sodium chloride, (57) 416.
 sodium nitrate, N.J., (57) 40, 736.
 tar paper mulch, (57) 336.
 English, vitamin C in, (52) 863.
 fertilizer experiments, (51) N.H. 142;
 N.J. 643, Mo. 745; (52) Ohio 23,
 233, Ill. 440, S.C. 537, N.J. 738;
 (53) Miss. 37, Miss. 342, N.H. 438,
 639; (54) Ill. 335; (55) Miss. 235,
 Miss. 236; (56) 41, 42, Ill. 343, 441,
 Miss. 739, Miss. 740, Colo. 831, Fla.
 832; (57) N.J. 40, Pa. 436, Ind.
 635; (58) Ky. 36, Ark. 332, Ill. 333,
 Ga.Coastal Plain 738; (59) N.Y.
 State 233, Miss. 332, N.J. 334, R.I.
 633, Tex. 740, Ohio 742, Nebr. 832,
 Miss. 833, Pa. 834, Ohio 835; (60)
 Ala. 139, Fla. 139, N.Y.Cornell 141,
 Ark. 820.
 fertilizer requirements, (52) Pa. 233.
 from pure line selections, yields, (52)
 Mont. 441.
 frost protector for, (55) Mich. 38.
 fruitfulness, relation to nutrition, (58)
 738.
 fruiting habit, (56) 42.
 Fusarium resistant varieties, (55)
 Miss. 649.
 genetic linkage between size and color
 factors, (52) 729.
 grading, (59) Ind. 742.
 grading and packing, (51) 193.
 green, bacterial disease, (56) Colo. 839.
 green, ripened in warehouses, anti-
 scorbutic value, (53) Wis. 459.
 green, storage, (59) Calif. 737.
 greenhouse, fertilizer experiments, (55)
 R.I. 644; (56) Ill. 641.
 greenhouse, pollination, effect, (55)
 Oreg. 643.
 greenhouse, production, (52) U.S.D.A.
 640.
 growth in artificial light, (51) 25.
 growth, relation to nitrogen and car-
 bohydrates in organs, (60) N.J. 438.
 haploid mutant in, (60) 527.
 hybrid, seed production, (56) Colo. 831.
 improvement, (55) Calif. 836; (59)
 Colo. 228.
 inheritance in, (52) Pa. 522.
 inheritance of fruit shape in, (54)
 428; (57) 623.
 inheritance of plant type, (52) Pa.
 233.
 lightning injury, (54) 50.
 liming experiments, (51) 143.
 line selection and breeding, (59) Ga.
 236.
 linkage in, (60) 527.
 manganese in, (59) 708.
 Marglobe, notes, (60) Ill. 231.

Tomatoes—Continued.

- natural crossing in, (56) 833.
 nematodes affecting, (52) Calif. 50.
 number of blossoms per cluster and
 dropping, effect of nutrition, (56)
 140.
 nutrient requirements, (52) N.Y.Corn-
 nell 44.
 nutrition, (60) 339.
 Olpidium brassicae affecting, (54) 649.
 paper mulch experiments, (54) 537;
 (57) 40; (60) Can. 639.
 pectic constituents, relation to canned
 product, (58) Md. 712.
 pellagra-preventive action, (57) 295.
 pollination studies, (51) 144; (54)
 757; (60) Oreg. 738.
 potassium requirement, (59) N.H. 231.
 preservatives for, (54) 141.
 prices and shipments from Florida,
 (59) 886.
 processing, (53) 209.
 pruning, (51) Can. 239; (53) Ohio
 535, Can. 840; (60) Mont. 737, 823.
 pruning, effect on ripening, (60) Pa.
 337.
 pruning, value, (54) V.I. 240.
 quality and effect of temperature on
 storage losses, (58) 231.
 quality, effect of soil moisture, (60) 10.
 recessive mutant form, (59) 725.
 reproduction and metabolic efficiency,
 (56) Mo. 440.
 ripe, preservation tests with salt, (51)
 239.
 ripe, radioactivity, (52) 519.
 ripened on vine and in ethylene gas,
 comparison, (57) Calif. 234.
 ripening—
 and storage, (58) 231.
 effect of ethylene, (60) 822.
 effect of sunshine and fruit shape,
 (60) 439.
 effect of sunshine and fruit shape,
 correction, (60) 741.
 rotation experiments, (54) Pa. 337.
 seed production, (55) Calif. 339.
 seed selection, (53) Mont. 742.
 selection, (51) Can. 239; (59) 738
 shipments and unloads, (53) U.S.D.A.
 293.
 size and color characters in, inheri-
 tance, (55) Iowa 429.
 size of seed, relation to growth and
 yield, (54) 241.
 spacing, (51) N.Dak. 837.
 spraying and dusting experiments, (51)
 N.J. 654; (52) Va.Truck 44; (55)
 N.J. 43.
 strain tests, (52) Utah 739.
 superior strains, (58) Pa. 335.
 transmission of potato witches' broom
 to, (58) 342.
 triploid, study of progenies, (58) 728.
 triploidy in, (52) 628.
 under Vita glass, (60) 232.

Tomatoes—Continued.

- varieties, (51) N.Dak. 837; (57) N.H. 335; (60) N.Dak. 41, Pa. 337. at Newlands, (53) U.S.D.A. 840. cytological studies, (55) 327. for canning, (59) N.Y.State 233. for forcing, (59) Mich. 530. for greenhouse, (54) R.I. 38.
- variety and strain tests, (51) Ind. 836.
- variety tests, (51) Mich. 96, N.H. 142; (52) Ga.Coastal Plain 232, Kans. 441, S.C. 537, Idaho 836; (53) Miss. 37, Miss. 342, Ariz. 741; (55) Miss. 536; (56) Miss. 740; (57) R.I. 436; (58) Ga.Coastal Plain 738; (59) N.Dak. 832, Miss. 833.
- vegetative growth, effect of fruit, (53) 142.
- vitamin C in, (59) Wis. 94.
- wilt-resistant, testing, (58) Mo. 436.
- wilt-resistant, yields, (56) Ill. 343.
- winter crop, (55) R.I. 236.
- wrapping, effect, (58) Ill. 334.
- Tomocera californica*, notes, (54) 59.
- Tonka bean extracts, solvents for, (51) 610.
- Tonsils, enlarged, operation for, results, (51) 366.
- Tool and nail box, construction, (54) 482.
- Tools, farm, grinding, (57) 477.
- Tooth abnormality in rats, (54) 226, 821.
- Top minnow, spermatogenesis, (52) 433.
- Torrubiella, notes, (60) 162.
- Tortrix—**
- alieniana*, notes, (53) 155, 859.
- citrana*, life history, (52) 756.
- citrana*, life history and control, (59) Calif. 757.
- citrana*, notes, (55) Calif. 352; (59) 655.
- flight breaks and anti-tortrix fluids, (59) 249.
- franciscana*, life history and control studies, (59) Calif. 754.
- franciscana*, notes, (57) Calif. 256.
- pallorana*, notes, (53) 652.
- podana*, notes, (60) 248.
- pronubana*, life history and habits, (52) 855.
- pronubana*, parasites of, (60) 656.
- viridana—*
- control, (57) 361.
- life history studies, (54) 659.
- notes, (57) 359.
- parasites of, (53) 760.
- Torula—**
- lactis*, notes, (60) 864.
- ligniperda* in wood tissue, (52) 353.
- rosea*, vitamin B synthesis by, (60) 294.
- Torulin—**
- concentration, use of Norite charcoal in, (58) 89.
- notes, (60) 94.
- Torymus—**
- abbreviatus*, notes, (59) 255.

Torymus—Continued.

- abbreviatus*, parasite of *Ferrisia pyri*, (60) 657.
- nigricornis*, parasites and hyperparasites, (59) 562.
- Tosca*, value as building material, (60) P.R. 779.
- Toumeyella scale on loblolly pine, control, (54) 554.
- Tourist camps, (53) Mich. 94.
- Town and country—
- interdependence, (54) 588.
- population, social and economic relations, (56) 890.
- service relations, (53) Wis. 487; (60) Mich. 488.
- Towns, little, rural relations, (57) 786.
- Townsend Valley, Montana, geology and ground water resources, (53) 281.
- Toxascaris limbata* eggs, viability, (57) 379.
- Toxicity and antagonism in salt solutions, (57) 24.
- Toxicology—**
- of food, (51) 12.
- veterinary, treatise, (55) 776.
- Texins, decomposition by soil organisms, (56) Ala. 21.
- Toxocara canis* ova, survival, (60) 874.
- Toxoptera—**
- aurantia*, notes, (60) 649.
- graminum, *see* Green bug and Grain aphid, spring.
- Trachelus tabidus* and *Cephus pygmaeus*, morphological differences, (59) 861.
- Tracheo-laryngitis in poultry, (53) 786.
- Trachykele blondeli*, studies, (58) U.S.D.A. 862.
- Trachysphaera fructigena* n.g. and n.sp., description, (52) 249.
- Traction dynamometer for plowing, (59) 480.
- Tractor—**
- and truck survey, data, (51) N.J. 688.
- breakpins, substitutes for, (60) 80.
- cultivators, drivewheel equipment, efficiency, (54) 583.
- cylinder sleeves, finishing, (55) 782.
- drivewheels, torque dynamometer for, (60) 379.
- engine air cleaners, tests, (52) 586.
- fuel consumption, effect of carburetor adjustment, (52) Calif. 86.
- lug, studies, (59) Ala. 84.
- lug studies on sandy soil, (56) 282; (57) 475.
- plowing in stony ground, (60) 81.
- wheel equipment, tests, (60) 280.
- wheels, effective weight, effect of drawbar pull, (60) 80.
- Tractors—**
- care on farms, (59) 585.
- catalogue, (53) 891.
- cost of operation, (54) Ill. 385; (56) Ill. 386, U.S.D.A. 785; (57) Mo. 477.

Tractors—Continued.

general-purpose—

design, (59) 585.

engineering progress in, (53) 187.
operation, (60) Ill. 276.kerosene burning, crank case dilution
in, (55) 881.mapping dust concentration around,
(55) 179.

notes, (55) Ark. 75.

on California farms, (56) Calif. 579.
on Ohio farms, Ohio, (53) 688, 790.

on rice farms, data, (58) Ark. 373.

operation costs, (53) Mich. 392.

power take-off for, (54) 282; (55)
379.

recent changes in, (59) 378.

requirements governing use, (51) 187.
rotary plow attachment for, experi-

ments, (58) Mo. 482.

testing and rating code, A.S.A.E., (54)
282.

tests, Nebr., (52) 288; (55) 279.

tests in India, (55) 178, 179.

tests, rules and law, Nebr., (57) 678;
(59) 281.units in farm investment, (51) Mich.
191.use in winter wheat belt, (51)
U.S.D.A. 389.

wheel, traction, (60) Ala. 182.

wheel type, kinematics and dynamics,
(56) 682; (58) 583.

yearly use and costs, (56) Ill. 285.

Trade—

and commerce of Chicago, (51) 298.

area, rural, analysis, (53) Mo. 494.

foreign, in agricultural products, sta-

tistics, (55) U.S.D.A. 787.

foreign, of corn and corn products,
(60) U.S.D.A. 485.international, in staple commodities,
treatise, (60) 589.relations, European, farmer's interest
in, (58) 890.

South American, character and dis-

tribution, (55) 484.

statistics, (59) U.S.D.A. 486.

yearbook statistics, (51) U.S.D.A. 795.

Traffic—

control and safety, (52) U.S.D.A. 184.
counter, mechanical, in Denmark, (60)
481.signals, colors and forms, (53) U.S.
D.A. 790.Trama erigeronensis, life history, (53)
Ohio 555.

Trametes—

pini, notes, (60) 48.

radiciperda, notes, (59) 537.

serialis, notes, (54) 255.

spp., notes, (52) 55.

spp. resistance to sodium fluoride and
zinc chloride, (56) 853.

subrosea, studies, (56) 152.

Transpiration—

and ascent of sap in plants, (56) 424.
and water requirement of *Bidens pi-*
losa, (57) 218.control by stomata in leaves, (53) 223.
effect on leaf temperature, (58) 123.
experiments of crops, (56) Kans. 813.
experiments, weighing device for, (51)
227.

in arid plants, studies, (56) 812.

in coniferous seedlings, studies, (52)
345.

in drying leaves, (60) 425.

in *Eccelia farinosa*, seasonal changes
in, (54) 23.in fruit trees, effect of oil sprays, (58)
232.in genus *Triticum*, morphological-phys-

iological studies, (60) 524.

in leaves, variation in, (57) 616.

in plants—

effect of solar radiation, (54) 21.

in shade and sun, (57) 418.

of arid South Australia, (54) 821.

of Australia, (57) 320.

rôle of stomata in, (52) 517.

studies, (57) 118, 516.

in trees, seasonal variation, (57) 320.

in wheat, (58) 821.

in white pine, factors affecting, (52)
625.

physics of, (59) 428.

rates of leaves of different apple stocks.
(56) 43.

ratio of farm crops, (60) 430.

ratio of wheat, (57) 733.

relation to salt concentration of cul-

ture solution, (56) 628.

rhythm in *Festuca sulcata*, (57) 418.

Transpiring power and habitat differentia-

tion of plants, (53) 123.

Transportation—

of materials, (54) U.S.D.A. 580.

on Connecticut State roads, (55)
U.S.D.A. 683.on Ohio State highways, survey, (58)
U.S.D.A. 680.survey, Cook County, (55) U.S.D.A.
76.

Traumatropism in plants, (57) 119.

Travassosius americanus from stomach of
beaver, (53) 553.

Tree die-back or twig blight, notes, (53) 50.

Tree fern—

as commercial source of starch, (51)
Hawaii 841.

growth rate, (51) Hawaii 744.

Tree growth—

and climatic cycles, (53) 825.

and climatic interpretations, (55) 209.
and reversible variations, (53) 625.and sun spot number, correlation, (55)
U.S.D.A. 115.dendrographic records, (53) 822; (54)
21; (55) 627.

Tree growth—Continued.

- effect of meteorological factors, (52) 809; (55) 23.
- in Forest of Dean, relation to rainfall, (60) U.S.D.A. 17.
- records, (53) 517.
- relation to fruitfulness, (55) 743.

Tree—

- leaves, variations, during autumnal yellowing, (59) 217.
- mycorrhiza, studies, (56) 753.
- products, effect on bacteriological activities in soil, (58) 516.
- repair work, examination and licensing for, (52) Conn.State 841.
- seedlings, newly germinated, descriptions, (56) 347.
- seedlings, relative resistance to excessive heat, (52) U.S.D.A. 47.
- seedlings, South African, use as phytometers, (56) 217.
- seeds, distribution, (59) 142.
- seeds, fumigating and sterilizing, (53) 243; (57) 157.
- surgery, papers on, (52) West.Wash. 397, Conn.State 841.
- trunks, gases in, composition, (59) 124.
- trunks, positive and negative pressure, (57) 816.
- volume, errors in measurement, (54) 743.
- wounds, natural healing, (60) 322.

Treehoppers—

- injury in orchards, (59) Utah 653.
- mutilation of twigs by, (57) Mich. 554.

Trees—

- affected with brown bast, census, (52) 151.
- and forestry practices, treatise, (57) 142.
- and shrubs—
 - for roadside planting, (55) U.S.D.A. 442.
 - handbook, (56) 443.
 - hardy, in North America, manual, (57) 142.
 - of California gardens, treatise, (56) 346.
 - of Mexico, (52) 444.
 - of Panama Canal Zone, handbook, (53) 540.
 - of Rocky Mountain region, identification, treatise, (57) 142.
 - of Yellowstone National Park, (52) 240.
 - ornamental, treatise, (53) 41.
 - propagation, treatise, (58) 142.
- annual rings—
 - effect of forest fires, (58) 240.
 - formation in Tropics, (60) 213.
 - relation to climate and solar activity, (60) 417.
 - role in climatic study, (52) 809.
- ascent of sap and transport of food materials, (54) 521.

Trees—Continued.

- at Mandan, N.Dak., tests and culture methods, (53) U.S.D.A. 145.
- autumnal yellowing, movement of nitrogen during, (58) 523.
- bacterial diseases, fatal, (60) 354.
- bleeding and exuded sap of, studies, (57) 818.
- cambium temperature, relation to color of bark, (51) 824.
- Chinese, and tree products, (54) 447.
- chlorosis of, (57) Idaho 750.
- Christmas, plantations, (53) Mich. 345.
- classification for selection forests of Sierra Nevada, (59) 840.
- Clitocybe root rot on, (59) 348.
- common names and synonyms, (51) 444.
- coniferous, *see* Coniferous and Conifers.
- cultivated, mistletoes attacking, (53) 148.
- defoliation, results, (53) 453.
- distribution under Kinkaid Act, (53) U.S.D.A. 846.
- drought injury, (55) Ga. 143.
- dying, entomological analyses, (57) 263.
- East Indian, cultural requirements, (54) 646.
- East Indian, distribution, habits, and common names, (54) 646.
- eccentric growth in, cause, (53) 243.
- effect of girdling, topping, and defoliation, (55) 628.
- endemic, of Monterey Peninsula, (53) 823.
- evergreen, *see* Evergreen.
- field manual, (56) 240.
- flowering, of India, treatise, (53) 243.
- for farmers and ranchmen, (59) Wyo. 534.
- for green manure in Bombay, (59) 513.
- for Minnesota, lists, (51) Minn. 141.
- for roadside planting, (56) U.S.D.A. 142.
- for Washington farms, (60) Wash. Col. 342.
- forest—
 - adaptability to Kansas conditions, (56) Kans. 833.
 - apparatus for measuring solar radiation, (57) Vt. 242.
 - breeding possibilities, (54) 645.
 - carbon dioxide nutrition, (60) 343.
 - diseases and pests in seed beds, (60) 354.
 - effect of calcium arsenate, (60) 843.
 - free distribution in Pennsylvania, (54) 141.
 - fungi injurious to, (57) 157.
 - identification in Florida, (54) 541.

Trees—Continued.

- forest—continued.
 in Japan, substances of value in, (58) 202.
 measurement of physical factors in, (60) 236.
 of India, yield tables, (55) 648.
 of Lake States, classification, (54) 141.
 of Mississippi, identification, (55) 241.
 of Ontario, identification, (55) 745.
 of United States, check list, (57) U.S.D.A. 342.
 photosynthetic activity and soil moisture, (56) Vt. 443.
 planted by Ohio sportsmen, (56) Ohio 195.
 planting, (51) 842; (58) Minn. 743.
 planting in Michigan, (58) Mich. 40.
 planting on the farm, (55) 443.
 planting, value, (59) U.S.D.A. 745.
 protection against diseases, (57) 157.
 staining on the stump, (60) 442.
 tolerance, Vt., (58) 743; (60) 144.
 treatise, (55) 342.
 volume tables, form class percentile taper system, (58) 441.
 yields, estimating, (55) 40.
- fruit cast in, (57) 321.
 gas distribution and composition in, (57) 815.
 germination studies, (52) 516.
 girdling effect, (53) Guam 436.
- growth—
 factors affecting, (59) 122.
 ring measurement, value, (58) 843.
 zone and annual ring formation in Tropics, (60) 213.
- handbook, (57) 46.
- hardwood—
 effect of thinning, (59) U.S.D.A. 532.
 girdling to release young conifers, (57) 837.
 increment growth after thinning, (60) Mich. 48.
- hardy in British Isles, (53) 243.
 hardy in Ottawa, (57) Can. 237.
 heights, measuring on slopes, (58) 240.
 hybrid species, vigor and disease resistance, (57) 821.
 hydrostatic system, (56) 725; (57) 814.
 identification, treatise, (51) 146; (53) 243; (58) 143.
 in wet seasons, fungus diseases of, (60) Mich. 58.
 in winter, internal temperatures, (51) 823.

Trees—Continued.

- injection of chemicals for control of diseases and pests, (53) Calif. 421; (54) 454; (57) 451; (59) 348.
 injury from zinc and lead refineries, (51) 348.
 insects affecting, (59) 652.
 insects affecting in Pennsylvania, (56) 458.
 insects affecting in Vermont, (54) 455.
 Japanese, decolorizing carbons from products, (58) 203.
 living, Polystictus affecting, (54) 51.
 log rules, relative merits, (57) Mich. 837.
 measurements, tape and caliper, (51) 842.
 mineral nutrients, intake and translocation, (54) 741.
 mycorrhizas on, in forests of Rocky Mountains, (60) 525.
 native, identification, (52) 444.
 new, from Chekiang, (54) 840.
 nutrition, rôle of nitrogen in, (52) 236.
 obtaining sap from, (59) Calif. 737.
 of Arkansas, guide, (53) 41.
 of Belgian Kongo, (53) 644.
 of British Columbia, age and growth rate, (54) 524.
 of British Columbia, identification and uses, (55) 241.
 of California, description, (53) U.S.D.A. 243.
 of extra-tropical Australia, (57) 46.
 of Great Britain, treatise, (56) 646.
 of Guatemala, (55) 648.
 of Honduras, (57) 243.
 of Kenya Colony, (57) 243.
 of Massachusetts, (58) 646.
 of North America, (55) 540.
 of Northern Nigeria, (55) 41.
 of Siam, list, (51) 243.
 of Wisconsin, (58) 143.
 on the farm, (57) Wyo. 637.
- ornamental—
 care, handbook, (59) 443.
 culture, (58) 142.
 diseases and other injuries, (52) Conn.State 849.
 parasitic fungi affecting, (56) 752.
 planted, effect of position of roots, (58) 541.
- planting—
 at Belle Fourche, (53) U.S.D.A. 345.
 in East Griqualand, (51) 44.
 in South Africa, (58) 646.
 stock for Michigan sand plains, (60) 443.
 propagation by cuttings, (57) 137.
 pruning, treatise, (55) 539.
 repair, treatise, (54) 245.
 resiniferous, tumors of, (57) 720.
 reversible variations in volume, pressure, and sap movements, (53) 624

- Trees—Continued.
 roadside, growth, (51) Mich. 96.
 rodent enemies, (52) 353.
 rôle of carbohydrates in, (54) 741.
 sap movement, pressure, and extrac-
 tion, (55) 628.
 shade—
 and forest, insects affecting, (59)
 Conn.State 56.
 at Yale University, studies, (56)
 799.
 blooming data, (51) N.J. 643.
 insect outbreaks and control, (59)
 456.
 insects affecting, (52) Kans. 452,
 Conn.State 854; (55) Ark. 50;
 (56) Kans. 856; (59) Ark. 252.
 insects affecting in Canadian
 prairies, (53) 857.
 pests, control, (54) 454.
 size, relation to scion and rootstock,
 (59) 439.
 slime-fluxes of, (56) 753.
 southern woodland, identification, (51)
 493.
 spraying, paper on, (52) West.Wash.
 598.
 spring revegetation, effect of leaf lit-
 ter, (60) 426.
 structure and growth, treatise, (58)
 239.
 transpiring power and conductivity,
 seasonal variation, (57) 320.
 treatise, (51) 842.
 upward movement of sap in, (57) 516.
 use of water by, (55) 878.
 variations in volume and movements
 of liquids in, (54) 520.
 water conductivity in, relation to leaf
 fall, (55) 728.
 western forest, identification, (51)
 842.
 wholly liberated, alteration in form,
 (57) 538.
 windbreak—
 as farm assets, (51) U.S.D.A. 146.
 effect on growth and yield of
 crops, (59) Idaho 745.
 for Minnesota, (54) Minn. 42.
 species, (58) U.S.D.A. 336; (60)
 Mont. 742.
 wound dressing for, (58) 542.
 young, root development, (54) 138.
- Trematode parasites of man and Primates,
 (58) 256.
- Trematodes—
 Brazilian, catalogue, (53) 357.
 Brazilian, life history, (53) 357.
 from domestic animals, (60) P.R. 774.
 life history studies, (54) 171.
 new species in birds, (59) 677.
- Trembles and acidosis, (56) 572.
- Tremetol, toxicity, (58) 367; (60) 176.
- Trench fever—
 cause, (53) 553.
 prevention, (52) 480.
- Trench silt, test, (52) Can. 866.
- Treparsol, action in experimental anthrax,
 (58) 477.
- Treponema—
 crociduræ transmission by ticks, (57)
 160.
 cuniculi in British rabbits, (59) 671.
 morsus muris, notes, (60) 267.
- Trialeurodes vaporariorum, *see* Whitefly,
 greenhouse.
- Triatoma—
 egg parasite of, biology, (60) 564.
 megista eggs, parasite of, (58) 562.
- Tribolium—
 confusum, toxicity of insecticides to,
 (58) Minn. 756.
 confusum, vitamin requirements, (59)
 593.
 ferrugineum, resistance to high tem-
 peratures, (58) 159.
 in flour, fumigation experiments, (60)
 840.
- Tribulus cistoides as weed in Cuba, (54)
 239.
- Tricalcium phosphate—
 assimilability, (51) 220.
 solubility, effect of sodium bisulfate,
 (54) 213.
 use of acid salt with, (55) 626.
- Trichacis remulus, notes, (53) 860.
- Trichinae, nonviable, in meat fed to ani-
 mals, effects, (54) 773.
- Trichinella spiralis, notes, (59) 274.
- Trichiniasis, experimental, precipitin test,
 (59) 274.
- Trichioampus viminalis, paper on, (55)
 659.
- Trichloris pluriflora, striped grass looper
 affecting, (52) 61.
- Trichodectes scalaris on cattle, control,
 (58) Ala. 450.
- Trichodectidae, new, from South African
 mammals, (60) 574.
- Trichoderma—
 koningi, decomposition of proteins by,
 (53) 310.
 lignorum, notes, (55) Calif. 344.
- Trichogramma—
 evanescens—
 importance, (57) 358.
 life history and morphology, (57)
 359.
 notes, (51) 55; (53) 57.
 minutum—
 life history and bionomics, (60)
 656.
 notes, (52) U.S.D.A. 456; (53)
 555, 653; (56) 361, 557; (57)
 Conn.State 161, La. 554; (58)
 162, Del. 456; (59) Conn.State
 61, 354, 461; (60) Md. 841.
 parasite of corn borer, (51) 160;
 (58) 265.
 parasite of sugar cane borer eggs,
 (60) 656.
 rearing, (60) 252.
 production, developments in, (59) 853.
 sp., notes, (60) S.C. 755.

- Trichogrammatomyia tortricis*, notes, (56) N.Y.State 252.
- Trichogrammidae on Orthoptera, (56) 760.
- Tricholesterol, properties, (56) 10.
- Tricholyga—
sorbillans, notes, (56) 61.
sorbillaria, notes, (53) 558.
- Trichomonads in blood of fowls, (59) 677.
- Trichomonas suis, notes, (58) 176.
- Trichopoda pennipes—
biology, (52) 156.
notes, (56) 552.
- Trichosoma columbae, notes, (52) 361.
- Trichostrongylosis in calves, (58) 878.
- Trichostrongylus—
affinis n.sp., description, (53) 552.
pergracilis in birds, (59) U.S.D.A. 54.
retortaeformis in hares, (59) 550.
spp., life histories, (57) 77, 875.
spp. parasitizing equines, (52) 85.
- Trichothecium—
roseum, notes, (57) 345.
sp., notes, (59) 535.
- Trichuris—
crenatus, viability, (58) Ill. 368.
ovis in cattle, (57) P.R. 468.
trichiura eggs, development and viability, (58) 475.
trichiura, regularity of egg production, (59) 171.
trichiura, synonymy, (55) 776.
- Tridax procumbens as weed in Cuba, (54) 239.
- Trifolium—
chromosome numbers and morphology, (59) 429.
cytological studies in, (56) 28.
lupinaster, culture experiments, (52) Alaska 528.
medium, breeding experiments, (59) N.Dak. 825.
- Trimerotropis monticola, notes, (53) 756.
- Trimorphism in *Lythrum salicaria*, inheritance, (57) 123.
- Trinidad Cotton Research Station, genetic investigations, (60) 628.
- Triodontophorus tenuicollis, life history, (53) 280.
- Trionymus—
danthoniae n.sp., notes, (54) 456.
diminutus, notes, (54) 457.
polyporus, description, (53) 653.
trifolii, internal anatomy, (54) 457.
- Trioxymethylene, use as larvicide for mosquitoes, (56) 258.
- Trioxys, oviposition, (53) 652.
- Trioza—
buxtoni n.sp., description, (52) 357.
diospyri, studies, (58) 452.
- Triphleps australis n.sp., description, (56) 555.
- Tristachya rehmani, rust on, (53) 246.
- Tristeza—
studies, (54) 276.
tick transmission and immunity, (57) 672.
- Triticum—
aegiloides, occurrence and habitat, (57) 633.
and Aegilops, comparison, (57) 633.
and Aegilops, hybrids, (53) 730.
dicoccum dicoccoides, genetic relation and synthetic form, (52) 223.
monococcum aegilops and T. monococcum cereale in Taurida, (53) 138.
monococcum as admixture to cereal crops, (55) 137.
vulgare ferrugineum, systematic botanical study, (53) 138.
- Tritoxa flexa, notes, (57) 362.
- Trogoderma granarium, biology and control, (55) 258.
- Trombicula—
akamushi, transmission of tsutsugamu shi disease, (55) 457.
hylae, life history and biology, (56) 760.
irritans, see Chiggers.
- Tropic excitation, conduction, (56) 126.
- Tropism and growth, (51) 825.
- Tropisurus fissispina in fowls, (59) N.J. 372.
- Trout—
nutrition, factor H in, (59) 192.
steelhead, analyses, (51) 608.
- Truck crop—
diseases, studies, (52) Pa. 243; (54) Fla. 342, Pa. 344; (56) Fla. 840; (58) Colo. 241, Pa. 339; (60) Fla. 147.
experiments, (60) Ohio 741.
pests, control, (52) 753.
plants, treatise, (58) 640.
- Truck crops—
aphids affecting, (53) 255.
culture, electrical heating of soils, (59) 179.
dusting experiments, (51) Md. 543.
effect of liming, (51) 143; (60) Ohio 140.
fertilizer experiments, (52) Ohio 23; (53) 142; (56) Ill. 343; (60) Ill. 230.
gall midges of, (56) 758.
in Connecticut, insects affecting, (57) 258.
in rotation, fertilization, (57) Pa. 436.
insects affecting, (53) Ill. 555; (55) Oreg. 53; (57) La. 556.
manuring experiments, treatise, (52) 421.
plant lice affecting, (52) Pa. 252.
soil-nitrate levels for, (60) 119.
statistics, (59) U.S.D.A. 185.
wireworms affecting, (55) 55.
- Truck—
farming in Florida, (57) 478.
farms, agricultural labor on, (53) U.S.D.A. 291.
farms, child labor on, (51) 690; (52) 492, 591.
- Trucks, see Motor trucks.

True, A. C., necrology notes, (60) 797.

Trypanblue—

- action in treatment of piroplasmoses, (56) 877.
- experiments with, (59) 673; (60) 266.
- injections in foot-and-mouth disease, (51) 83.
- value in treatment of piroplasmosis, (58) 773.

Trypaneidae—

- of South African museum, (52) 855.
- South African, biological notes, (59) 456.

Trypanosoma—

- americanum and complement fixation tests, (53) 679.
- congolense-pecorum in pigs, (53) 888.
- cruzi, discovery, (51) 260.
- cruzi, new invertebrate host of, (56) 362.
- equinum infection, function of spleen in, (58) 877.
- equinum, notes, (51) 83.
- equiperdum, infection of rats, changes in acid-base equilibrium of blood, (60) 665.
- equiperdum penetration experiments through skin or mucous membrane of animals, (58) 877.
- evansi of horses and cattle in India, (56) 877.
- soudanense, detection, (60) 869.
- soudanense in camels, treatment, (53) 583.
- spp. in mice, control, (58) 474.
- spp., notes, (60) 177.
- theileri, crithidial forms, (54) 73.
- theileri, notes, (51) 681.

Trypanosomes—

- action of Bayer 205 on, (53) 886.
- diseases caused by, (57) 77, 873.
- drug resistance of, (51) 181.
- of water buffalo, prophylactic action of Bayer 205 against, (58) 473, 474.
- parasitic in fowls, (55) 177.

Trypanosomiasis—

- North African, (55) 273.
- research on, (59) 471.

Trypanosomiasis—

- American, discovery, (51) 260.
- and tsetse fly, notes, (55) 173.
- effect of dipping in arsenic solutions, (57) 672.
- experimental, tests of new arsenical drugs for, (60) 178.
- host resistance and types of infection, (55) 678.
- in Argentina, (51) 681.
- inoculation of cattle against, (60) 177.
- notes, (54) 171; (59) 471; (60) 475.
- of animals, experimental, (60) 73.
- of animals, treatment, (52) 779.
- of camels, (51) 681; (60) 869.
- of cattle in Uganda, (60) 177.
- of horses, pathological anatomy, (58) 473.

Trypanosomiasis—Continued.

- treatment with antimony potassium tartrate, (60) 372.

Tryparsamid—

- excretion, (51) 679.
- use against mal de caderas, (51) 83.

Trypeta florescentiae, notes, (58) 434.

Trypetidae, data, (56) 358.

Trypsin—

- action on insulin, (55) 307.
- digestion of proteins in vitro, effect of fat, (56) 694.
- separation from enterokinase by ultrafiltration, (58) 611.

Tryptophane—

- chlorimetric determination, (53) 715.
- deficient diet, indole derivatives in, (57) 487.
- determination in caseinogen, (51) 505.
- determination, methods, (55) 207.
- effect on activity of pancreatic amylase, (55) 10.
- effect on thyroid activity, (54) 491.
- in proteins, (52) 802; (56) 13.
- of jack bean, globulin content, (54) 309.
- synthesis, (53) 657.

Tsetse flies—

- digestion in, (60) 249.
- food supply, (58) 278.
- guide to study, (53) 257.
- notes, (59) 471.
- relation to diseases of men and animals, (55) 559.
- transmission of trypanosomiasis by, (55) 173; (60) 177.

Tsetse fly disease, prevention, (52) 480.

Tsetse in Africa, historical review, (51) 57.

Tsetse in the Transvaal, (52) 82.

Tsutsugamushi disease virus, studies, (55) 456.

Tuart bud weevil, studies, (53) 56; (56) 362.

Tuba, investigations, (54) 552.

Tuba root pink disease, (53) 148.

Tuber tissue, isoelectric point for, (52) 124.

Tubercle bacilli—

- avian, excretion in goat's milk after subcutaneous inoculation, (58) 774.
- avian, in swine, (53) Wis. 479.
- avian, injection into cattle, (51) 284; (54) Wyo. 577.
- avian, pathogenicity, (60) 669.
- bile-treated, for vaccination of cattle, (52) 282.
- concentration, (52) 380, 381.
- filtrable forms, studies, (60) 270.
- human and bovine, ingestion by fowls, (51) 782.
- in feces of healthy cows, (58) 878.
- in milk, effect of electric current, (54) 572.
- in milk, effect of pasteurization, (51) 78; (59) 668.
- in organs of rabbit, fatc, (60) 668.

Tubercle bacilli—Continued.

- in rabbits, relation to monocytes and clasmatoocytes, (58) 172.
- methods of cultivating, (52) 682.
- natural resistance of rabbits to, (56) 777.
- of bovine type and BCG cultures, comparison, (60) 178.
- old cultures, loss of acid fastness and granular disaggregation, (51) 284.
- rendering nonacid-fast and Gram-negative, (51) 80.
- resistance to disinfectants, tests, (58) 574.
- sterilizing milk bottles against, (60) 663.
- thermal death points, (51) 582; (52) 177.

Tuberculin—

- and spread of tuberculosis, (53) 383.
- crystallized protein from, (55) 374.
- derivatives, diagnostic and sensitizing properties, (52) 180.
- human, bovine, and avian, skin tests, (60) 75.
- hypersensitiveness in guinea pigs, (51) 284, 480.
- intradermal, studies, (55) 371.
- intradermic reactions, (57) 771.
- lethal power, relation to skin-reacting power, (58) 173.
- old, sensitiveness to, (52) 483.
- potency, effect of adsorbents, (57) 771.
- reaction and anaphylaxis, (53) 382; (56) 777.
- reactions, no-lesion, (57) 182.
- standardization, (51) 481; (53) 382; (58) 576.
- susceptibility of infected rats, (60) 477.

test—

- cause of failures, (53) 384.
 - effect on milk supply, (53) 580.
 - in cattle, intradermal, results, (60) 578.
 - intradermal, studies, (51) 583; (53) 679; (59) 170.
 - intradermal-palpebral, value, (51) 284.
 - no-lesion and skin-lesion cases in, (53) 383.
 - of milk, papers on, (57) 372.
- tests, (51) 577, 781.
- in cattle, (53) Minn. 477; (54) 171.
 - notes, (59) Wis. 78.
 - technique, (59) 470.

Tuberculina—

- maxima, effect on blister rust colonies, (58) 155.
- persicina, notes, (57) 444.

Tuberculosis—

- and tuberculin test, (53) 383.
- among underweight children, (56) 495.

Tuberculosis—Continued.

- avian, (54) 74.
 - and swine, relation, (51) Nebr. 879; (57) 180.
 - communicability to swine and calves, (54) Ill. 378.
 - control, (54) 873; (55) 177; (56) 176.
 - dangers to calves, (58) Ill. 366.
 - eradication, (57) 771.
 - in a marsupial, (53) 80.
 - in animals other than swine, (57) 771.
 - in cattle, (53) Wyo. 680; (56) 476.
 - in farm animals, Nebr., (57) 573; (59) 875.
 - in mammals, (55) 175; (57) 377.
 - in man, (59) Nebr. 875; (60) 179, 371.
 - in ruffed grouse, (54) 74.
 - in swine, (52) Ill. 483; (56) Ill. 275; (59) 676.
 - relation to other animals, (60) 669.
 - relation to tuberculosis problem, (55) 776.
 - spread, (60) Ill. 273.
 - studies, (57) 773; (59) 170, 375; (60) 582.
 - transmission, (55) N.Dak. 574.
 - transmission and sensitization experiments, (59) N.Dak. 880.
 - transmission through eggs, (52) 582; (53) 384; (60) 581.
 - transmission to calves, (56) Ill. 379.
 - tuberculin test in, (53) 786.
 - BCG vaccination studies, (59) 79; (60) 179, 371.
 - BCG vaccine of avian origin for, (59) 472.
- bovine—
- and avian, danger to man, (60) 179.
 - eradication work, papers on, (59) 170.
 - in Canada, prevalence, (60) 668.
 - in Victoria, (59) 171.
 - notes, (52) 280.
 - relation to man, (51) 577.
 - summary, (51) 182; (60) 478.
- chronic, prevention, (52) 381.
- control, (52) U.S.D.A. 583; (58) 472.
 - control in Canada, (57) 771.
 - control, legal phases, (59) 170.
 - (?), cutaneous, in buffaloes, (56) 777.
 - diagnostic value of tests, (53) 80.
 - dietary factor in treatment, (60) 786.
 - dissemination, (51) 781.
 - effect on poultry industry, (53) Minn. 477.
 - eradication, (52) 881; (55) 70.
 - Eastern States Conference on, (52) 885.

Tuberculosis—Continued.

- eradication—continued.
 in Pennsylvania, (57) 666, 667.
 in United States, (51) 383.
 in Wisconsin, (54) 498.
 outlines, (54) 172.
 papers on, (51) 781; (53) 78;
 (59) 470.
 progress, (54) 873; (55) 471;
 (59) 779.
 segregation method, (59) 675.
 experimental, in rats, (53) 866.
 extent and eradication, (57) 771.
 immunization—
 of birds with avian type of BCG,
 (60) 275.
 of cattle against, (52) 282; (56)
 279; (59) 675, 876.
 of children against, (53) 80, 886.
 studies, (52) 180; (53) 583; (56)
 476.
 with bile-treated bacilli, (52) 282,
 683.
 in a goat in South Africa, (60) 574.
 in animals and man, relation, (57)
 377.
 in animals, prevention, (58) 279.
 in calves, (58) 173.
 in captive wild animals, (60) 669.
 in cattle, control in Japan, (55) 875.
 in cattle, papers on, (53) 179, 270;
 (60) 867.
 in dogs, leucocyte content of blood in,
 (54) 174.
 in domestic animals, (51) 481; (60)
 270.
 in domestic Carnivora, (56) 677.
 in guinea pigs, value of Dreyer anti-
 gen, (53) 279.
 in hogs, cause of increase, (53) Nebr.
 384.
 in hogs, source, (54) Nebr. 379.
 in hogs, tattooing, as aid to eradicat-
 ion, (59) 170.
 in livestock, (51) Nebr. 84; (57) 372.
 in poultry, (51) West.Wash. 397; (52)
 Ill. 86, 485; (53) Mont. 279; (54)
 Wyo. 579; (57) 180, 184; (59) 170.
 in range cattle, (53) 179.
 in sheep, (54) 477; (60) 372.
 lesions produced in guinea pigs vac-
 cinated with BCG, (60) 271.
 of the skin, studies, (53) 785.
 order of 1925, (55) 72.
 present knowledge, (53) 381.
 prevention, (52) 480; (59) 674, 675.
 pulmonary bovine, inoculation experi-
 ments with chickens, (52) Calif. 81.
 pulmonary, in animals and man, (59)
 170.
 relative susceptibility of Indian cattle,
 (55) 273.
 research in Canada, (56) 774; (58)
 472.
 skin, studies, (55) 574; (59) 778.
 studies, (57) 180, 181, 278, 377; (59)
 779.

Tuberculosis—Continued.

- subcutaneous, (60) 178.
 vaccination by ingestion in laboratory
 animals, (52) 180.
 vaccination of calves and pigs against,
 (59) Calif. 775.
 Tuberculous milk, concentration of bacilli
 in, (54) 577.
 Tuberin, nutritional value, (59) 291.
 Tubercinia cepulae, control, (53) 44.
 Tuckahoes on roots of corn and pine, (57)
 748.
 Tudor economic documents, treatise, (53)
 93.
 Tularemia—
 agglutination and agglutinin in, (55)
 474.
 experimental, in birds, (60) 673.
 fatal case in Washington, D. C., (55)
 776.
 in man, (60) 371.
 in meadow mice, (59) 275.
 in Montana, (58) 451.
 in sheep, (60) 872.
 in wild rats, (55) 852.
 infection, hereditary transmission by
 wood tick, (56) 261.
 infection in ticks, (51) 657.
 microscopic changes in ticks and bed-
 bugs, (58) 576.
 notes, (57) 278.
 primary, of the eye, (54) 262.
 rapidly fatal case, (60) 271.
 ruffed grouse susceptible to, (59) 472.
 studies, (53) 651.
 susceptibility of coyotes to, (56) 56.
 transmission experiments with chick-
 ens, (60) 480.
 Tule billbug, life history, (52) 857.
 Tulip—
 aphid, notes, (58) 59.
 blight, notes, (54) 745.
 blossom blight, description, (53) Ill.
 355.
 bulbs, culture and varieties, (54) 446.
 disease known as fire, (59) 646.
 disease, notes, (59) 535.
 diseases, control, (58) 752.
 fire, effect of roguing, (60) Oreg. 745.
 fire, notes, (58) 443.
 gray bulb rot, control, (53) N.Y.Cornell
 355; (55) 851.
 Tulips—
 aphids infesting, (58) 663.
 culture, (58) N.J. 40.
 early, rapid flowering, (58) 644.
 experimental variation in, (57) 326.
 propagation and culture experiments,
 (58) Alaska 435.
 Tulp poisoning, (60) 574.
 Tumor—
 formation in Bryophyllum, (56) 541.
 incidence and ovarian secretion, (59)
 325; (60) 430.
 subcutaneous, in baboon caused by
 tapeworm larvae, (58) 253.

Tumor—Continued.

susceptibility and heredity, (51) 633.
transplantable, genetic study, (56) 225.

Tumors—

and hybrid vigor in mice, (56) 522.
hereditary, in *Drosophila*, (53) 28.
in domestic animals, (56) U.S.D.A. 278.
in kale, (58) 341.
in kidneys of chickens, (60) 874.
in plants, and chemical stimulation, (59) 341.
in swine, histopathology, (59) 276.
of resiniferous trees, (57) 720.
on equines in Samoa, (58) 281.
Rous, leucotic, and allied, in fowls, (60) 375.
spontaneous, in fowls, (58) 180.
transplantable, effect of heat on growth, (58) 473.

Tung oil—

nuts, Chinese, composition, (54) Fla. 308.
press cake, fertilizing value, (56) Fla. 811.
trees, fruit-bearing habits, (54) Fla. 334.
trees in Florida, Fla., (51) 539; (55) 832.

Turbidimeter, description, (52) 310.

Turbidiscopes, description, (52) 11.

Turgor pressure, mechanism in plant cells, (59) 724.

Turkey—

disease, new, (60) Mont. 773.
diseases, (58) 180.
eggs, hatching artificially, (52) Calif. 75.

Turkeys—

care and management, (53) 578, 672.
causes of loss in California, (53) Calif. 787.
chemistry of, (57) 687.
Collyricium as parasites of, (51) 385.
color inheritance in crosses of breeds, (54) Mo. 728.
cooperative marketing, (59) 363.
crooked breastbones in, Wyo., (59) 264; (60) 768.
diseases and parasites, (60) 876.
dressing shrinkages in, (59) N.Dak. 266.
feeding experiments, (59) Ind. 769.
parasitic disease of the esophagus, (55) 778.
production, (59) Nebr. 870.
production and marketing, (60) 471.
raising, (51) U.S.D.A. 378; (54) Mo. Poultry 273; (55) Nebr. 669; (56) 73, Nebr. 168; (58) 169, 869; (59) 363, 570; (60) N.J. 173, 567, 861.
in California, (51) 577.
in partial confinement, (57) 665.
in Philippines, (53) 72.

Turmeric paper, double-reacting, preparation, (53) 805.

Turnip—

aphid outbreak, (58) 158.
bacterial rot, notes, (58) 442.
clubroot resistant varieties, (58) 52.
dry rot, notes, (58) 442.
flavor in milk, cause, (53) 880.
flea beetle, control, (59) 860.
gall weevil, control, (56) 63.
greens, composition and losses of iron in cooking, (60) 190.
greens, vitamins in, (57) Ga. 293; (59) 191.
juice, effect on polyneuritis, (58) 89.
leaf blight, notes, (55) 346.
mosaic, control, (51) 152.
mosaic, notes, (59) 536.
mud beetles, studies, (60) 851.
seed from small and large seed roots, (54) 737.
seed production, (55) Idaho 536.
seed, steeping in turpentine, (51) 39.
soft rot, notes, (57) 846.
weevil in California, (58) 164.

Turnips—

analyses, Can., (53) 135; (60) 36.
as trap crop for cabbage maggot, (59) Wis. 56.
breeding experiments, (52) 437.
culture experiments, (56) Can. 433; (57) Alaska 522; (59) Can. 432.
culture in British Columbia, (57) 34.
culture on peat land, (55) Minn. 527.
feeding value, (53) Can. 878.
fertilizer experiments, (54) 231; (58) Ill. 333; (60) 25.
notes, (52) Alaska 536.
optimum soil reaction for, (53) 320.
proteins of, (56) 709.
seed production, (53) Can. 530.
seeding experiments, (53) Can. 530; (57) Calif. 225.
value for milk production, (53) Can. 674.
variety tests, (51) Minn. 133, Oreg. 529; (54) 530; (56) Can. 432; (57) Tex. 136; (60) Minn. 132, Oreg. 731.
yields, (59) Mich. 524.

Turpentine—

anthelmintic value, (52) Ohio 84.
beetle, red, on pine and cypress, (52) Calif. 58.
industry in Italy, (53) 244.
oil as attractant of wheel bug, (59) 455.
spruce, borneol in, (54) 708.

Turpentinings—

pine trees, methods, (52) U.S.D.A. 444.
studies in Greece, (52) 742.

Turtle, box, as host for chiggers, (54) 758.
Tuskegee Institute, agricultural training in, (52) 298.

Tussilago farfara, control, (54) 240.

Tussock moth—

antique, notes, (52) Wash.Col. 854.
control, (60) Wash.Col. 846.
small, life history notes, (56) 61.

- Tussock moth—Continued.
 western, notes, (57) 854.
 white-marked, poison and poison ap-
 paratus of, (51) 456.
- Twinning in humans, effect of nutrition,
 (57) 224.
- Twins—
 biological investigations, (57) 28.
 diagnosis of identity in, (58) 128.
 hereditary predispositions to among
 Norwegian peasants, (55) 430.
 human, studies, (60) 635.
 in horses, inheritance, (60) 725.
 resemblance in, (56) 131.
 single and double ovum, studies, (56)
 331.
 single-ovum, in the pig, (53) 525.
 sole patterns of, (56) 131.
- Twist testing and twist-testing apparatus,
 (58) 695.
- Tylenchulus semipenetrans, notes, (55)
 556.
- Tylenchus—
 cylindricaudatus n.sp., description,
 (57) 749.
 devastatrix, studies, (53) 49; (56)
 541; (58) 659.
- dipsaci—
 affecting wild white clover, (55)
 749.
 control, (59) 45.
 importance in America, (56) 54.
 in New Jersey, (60) 556.
 in seeds of composites, (52) 152.
 notes, (53) Colo. 154, 155; (56)
 Utah 540; (57) 51, 642; (59)
 Mich. 456.
 on alfalfa, (53) N.Mex. 147.
 on narcissus, (56) 456.
 on oats, notes, (58) 442.
 on wild hosts, (51) U.S.D.A. 53.
 on wild strawberry, (52) 352.
 outbreak, (55) 455.
 musicola, description, (58) 753.
 pratensis, description, (58) 753.
 tritici, notes, (51) 848; (55) 246, 545;
 (57) 247.
- Tyloses, formation in amputated plant
 stems, (59) 123.
- Typha spp., nature and cause of secondary
 sexual states, (57) 26.
- Typhlocyba—
 lethieryi, notes, (56) 58.
 malini in Ohio, (55) 556.
 pomaria, notes, (58) 257.
 revision of genus, (56) 59.
 rosae, see Rose leafhopper.
 solani, transmission of virus diseases
 by, (60) 243.
 sp., notes, (56) 756.
 ulmi, carrier of leaf roll, (51) 352.
- Typhoid—
 avian, in Algeria, (51) 286.
 avian, in Argentina and France, cause,
 (54) 176.
 avian, transmission method, (55) 679.
 bacilli, viability in oysters, (54) 92, 93.
- Typhoid—Continued.
 epidemic in Chicago due to oysters,
 (53) 267.
 fever, milk-borne, and rôle of human
 carrier, (57) 667.
 fever, milk-borne, relation to water,
 (54) 71.
 fever prevalence, relation to toilet
 type, (58) 683.
 fever, prevention, (52) 480.
- Typhoid-paratyphoid bacteria, identifica-
 tion, (58) 172.
- Typhus—
 and cholera in poultry, vaccination
 against, (55) 177.
 avian, and avian cholera in Italy, (59)
 370.
 cause, (53) 552.
 endemic, in southern United States,
 (56) 58, 573.
 fever, mild, in lower Rio Grande
 Valley, (53) 360.
 fever, prevention, (52) 480.
 Mexican, pathology and etiology, (60)
 371.
 organism, cultivation, (55) 252.
 virus in the louse, (51) 456.
- Typhus-like fever following tick bite, (56)
 277.
- Typophorus viridicyaneus and T. viridi-
 cyaneus sturmi, comparison, (54) 157.
- Tyramine—
 antineuritic action, (51) 562.
 effect on nitrogen metabolism, (55)
 260.
- Tyroglyphus—
 lintneri, notes, (58) 158.
 muscae, mite infesting Sturmia seri-
 cariae, (58) 459.
 spp. in flax seed, (56) 662.
- Tyrosinase, insoluble, of velvet beans, (58)
 Ala. 411.
- Tyrosine—
 activation by ultra-violet irradiation,
 (59) 395.
 determination, (51) 712.
 in jack bean, globulin content, (54)
 309.
 in proteins, (55) 306, 310; (56) 13;
 (60) 501.
 solutions, effect of Roentgen radiation,
 (60) 502.
- Udamostigma tessmanni, notes, (60) 649.
- Udder—
 cocci, characteristics, (56) 473.
 development in cows, (54) 265.
 diseases of the cow and related sub-
 jects, (59) 581.
 infection, studies, (57) Idaho 770.
 infection with scarlet fever type of
 streptococci, (59) 674.
 lesions in tuberculin reacting cows,
 (54) 677.
- Udders—
 bacterial flora, S.Dak., (54) 167; (55)
 369.

Udders—Continued.

insufflation, cholesteremia following, (58) 878.

micrococci in, (59) N.Y.State 269.

Ulcers, rôle of vitamins and etiology and cure, (60) 596.

Ulex europaeus, control by gorse weevil, (59) 658.

Ultrafilters, coarsely porous, preparation, (60) 411.

Ultra-violet—

irradiation—

activation of sterol fractions by, (58) 195.

antirachitic properties imparted by, (52) 762, 763, 862; (53) 865; (56) 190.

irradiation, effect on—

basal metabolism in children, (58) 496.

blood calcium, (53) 763.

cows, (57) N.J. 767.

Demodex, (58) 475.

fading of dyed fabrics, (58) 597.

metabolism, (60) 898.

pigs, (58) Iowa 465.

poultry, (58) 268.

resistance to infection, (57) 793.

rickets, (52) 565; (53) 763.

rickets in negroes, (58) 496.

scurvy, (54) 92.

seed germination and growth, (57) 617.

serum calcium, (59) 597.

sexual stage of fungi, (59) 519.

tetany, (54) 894.

vitamin A, (57) 92.

irradiation—

effects, (53) 568, 767.

excessive, effect on rats, (57) 393. for prevention of respiratory troubles, (58) 896.

for treatment of animal diseases, (54) 171.

in veterinary medicine, (56) 175.

of antirachitic substance, (54) 92.

of cod-liver oil, effect on antirachitic factor, (56) 503.

of cows, effect on milk properties, (55) 65, 90.

of ergosterol, antirachitic activity, (57) 693, 792, 794.

of foods, antirachitic activation, (54) 92, 489; (55) 387, 594, 794; (56) 797.

of infants, effect, (56) 91.

of milk, antirachitic properties, (57) 692.

of mother, effect on properties of milk, (56) 295; (57) 793.

of sawdust, effect on rats, (56) 295.

of sterols, effect on antirachitic properties, (56) 295.

of tyrosine, (59) 395.

of various materials, antirachitic value, (57) 792.

Ultra-violet—Continued.

irradiation—continued.

relation between antirachitic activity and dielectric constant, (59) 596.

light—

action on cholesterol, (57) 197. and antirachitic vitamin in eggs, (55) 266; (56) 768.

and irradiated air, comparison for rickets prevention, (53) 877. and vitamin C, (55) 594.

light, effect on—

anemia in avitaminous animals, (52) 67.

avitaminoses, (52) 366; (55) 695. bone calcification in rats, (58) 391.

calcium and phosphorus equilibrium, (53) 379.

carb amino acids, (54) 23.

cotton cellulose, (55) 393.

cows, (60) 863.

egg production, (52) Kans. 475; (53) 274; (54) 670; (57) Ohio 173.

growth of animals, (58) 63.

growth of chicks, (54) Ill. 367; (56) 868; (57) N.J. 71.

growth of rats, (53) 264; (55) 386.

leg weakness in chicks, (54) 670. metabolism in rats on rachitic diet, (54) 893.

mineral metabolism of lactating animals, (54) 274; (56) 73.

nuclear divisions of plants, (53) 423.

nutrition in poultry, (53) Me. 375.

oxygen consumption and on total metabolism, (57) 93.

phosphorus and calcium metabolism on deficient diets, (58) 689.

poultry production and growth, (52) 797.

production, hatchability, and fertility of eggs, (55) 867.

rabbits, (51) 766.

strength properties of fibers, (57) 694.

textiles, (54) 394.

vitamin A in milk, (56) 88.

vitamin C in milk, (59) 92.

yeast cells, (51) 25.

light—

in poultry industry, (59) 362.

intensity, photometer for gaging, (55) 695.

of the sun, (53) 569.

penetration through skin, (60) 898.

physiological action, (59) 314.

reduction of carbon dioxide by, (53) 26.

Ultra-violet—Continued.

light—continued.

- sources, review of literature, (57) 693.
- standardization, (55) 11.
- transmission, special window for, (59) 896.
- transmission through fabrics, (58) 94; (59) 693; (60) 497.
- transmission through fabrics, measurements, (60) 398.
- transmission through glass substitutes, (57) 792; (59) Wis. 70, Iowa 71, 495.
- transmission through satin and voile weave, (57) 694.
- transmission through window glass and substitutes, (57) 792; (59) 495.
- transmitting glass, amount of ultra-violet radiation through, (60) 493.
- use in judging grain, (60) 538.
- use in textile chemical investigations, (59) 96.

radiation—

- action on zoospores, (58) 422.
- and actinotherapy, treatise, (58) 297.
- of sunlight, biologically active, (60) 122.
- oxy-products, photolysis, (52) 668.
- radiations, monochromatic and regional, antirachitic value, (57) 792; (58) 92.
- sources, clinical, quantitative study, (58) 896.
- spectroscopy of engine-fuel flames, (56) 883.

Umatilla Field Station, work of, (57) U.S.D.A. 696.

Uncinaria—

- spp., synonymy, (53) 552.
- stenocephala, notes, (52) 182.

Uncinula—

- spiralis, notes, (53) 152.
- spp., notes, (53) 43.

Undernutrition—

- and fasting, treatise, (52) 564.
- effect on function of sex glands, (51) 566.
- in children, classes for, (55) 789.
- in children, studies, (56) 395.
- insulin treatment for, (55) 295.

Undulant fever—

- agglutination test in, (59) 174.
- and abortion germ, immunologic identity, (51) 81.
- as public health problem, (56) 677; (59) 471.
- diagnosis, technique, (58) 575.
- epidemic in Phoenix, Arizona, (58) 478.
- immunization against, with *Bacillus abortus*, (51) 181.
- in Canada, (59) 580.
- in Iowa, epidemiology, (60) 576.

Undulant fever—Continued.

- in Michigan, (58) 675.
 - in Netherlands, (59) 274; (60) 478.
 - in New York State, (58) 675; (60) 267.
 - in Ontario, (60) 871.
 - in South Africa, cause, (56) 877.
 - in Southern Rhodesia, serological study, (58) 875.
 - notes, (57) 278; (59) 580.
 - of goats, immunization, (59) 276.
 - of man, (60) 478.
 - of man, bacteria associated with, (58) 273.
 - organism injection into pregnant heifers, (57) 772.
 - organism, relation to *Bacillus abortus*, (51) 479; (53) 279; (54) 872; (55) 575; (56) 174; (57) 182; (58) 276, 675; (60) 75, 267.
 - organism, studies, (60) 870.
 - prevention, (52) 480.
 - rôle of flies in transmission, (59) 254.
 - status of knowledge, (58) 673.
 - studies, (51) 283; (53) 381; (54) 746; (60) 667.
 - treatment with Burnet's melitin, (60) 478.
 - use of term, (59) 673.
- Union of proprietors and women farm workers in Poland, (51) 299.
- United States Bureau of Education, monograph, (51) 395.
- United States Department of Agriculture—
- annual reports, (51) 494.
 - appropriations—
 - 1924-25, (51) 1.
 - 1925-26, (52) 302.
 - 1926-27, (54) 601.
 - 1927-28, (56) 301.
 - 1928-29, (59) 301.
 - 1929-30, (60) 601.
 - bibliographical aid to research, (53) 101.
 - bureaus of, *see* Bureau.
 - educational work, (51) 896.
 - laws relating to, (53) U.S.D.A. 299.
 - list of publications, (58) 696.
 - manuscript bibliographies and indexes, (55) U.S.D.A. 299.
 - motion pictures, (52) U.S.D.A. 97.
 - organization list, U.S.D.A., (54) 85; (55) 887.
 - organization list and functions of major divisions, U.S.D.A., (58) 288; (60) 387.
 - publications, (57) U.S.D.A. 599.
 - Weather Bureau, *see* Weather Bureau.
 - work of, (53) 598.
 - workers, foreign recognition, (51) 200.
 - yearbook, (51) 797; (54) 84, 96; (55) 796; (57) 696; (59) 498.
- United States—
- Government disseminating agricultural information, (54) 887.
 - Government publications useful to teachers, (52) 397.

United States—Continued.

Livestock Sanitary Association, proceedings, (51) 781; (53) 78, 178; (57) 377; (59) 169.

Range Livestock Experiment Station, establishment, (51) 498.

Warehouse Act, purpose and benefits, (55) U.S.D.A. 588.

Warehouse Act, relation to farmer, (54) U.S.D.A. 586.

Upo anthracnose in Philippines, (60) 57.

Uranium compounds, effect on wheat, (54) 515.

Uray babae, vitamin B in, (57) 94.

Urea—

and ammonium sulfate, comparison, (53) 119.

as nitrogenous fertilizer, action, (52) 722; (54) 19, 516.

as protein substitutes for milk goats, (53) 275.

availability of nitrogen in, (55) 516.
chemical reactions in manufacture of, (54) 19.

chemistry of, (51) 9.

decomposition in soil, (51) 818.

detection when added to nitrogenous material, (57) 9.

determination, effect of sodium fluoride and thymol, (60) 416.

determination in small amounts of blood, (54) 10.

determination, new colorimetric method, (51) 506.

effect on phosphate and potassium availability, (60) Ala. 120.

effect on plants, (54) 816.

effect on soil bacteria, (52) 514.

feeding value, (52) 171.

fertilization, absorption and leaching of nitrogen from, (54) 19.

fertilizers from cyanide, comparison, (55) 723.

fertilizing value, (51) 623; (52) 120, 123, 422; (53) 322; (54) 218; (56) Fla. 811; (60) N.C. 719.

in blood, determination, (60) Pa. 313.
in plants, (60) 724.

in soil, properties, (54) 218.

manufacture from calcium cyanamide, (54) 613.

manufacture on tonnage basis, (55) 221.

micro determination, (53) 10.

mixtures with phosphatic and potassic fertilizers, (56) 321.

nitrification, (60) 718.

phosphate, fertilizing value, (60) N.C. 719.

photosynthesis from ammonium carbonate, (59) 802.

production by microsiphones, (54) 120.

substitution for protein, (53) 672.

synthetic, fertilizing value, (53) 724.

toxicity to wheat sprouts, (53) 21.

Urease—

in legume nodules, (52) 28; (53) 722.
variations in diastatic activity, (53) 422.

Uredinales—

of Iowa, list, (57) 146.

of Washington, list, (57) 819.

terminology, (56) 543.

Uredineae—

biology, (53) 43.

production and liberation of spores in, (54) 46.

Uredo—

fici, notes, (51) 46; (55) 346; (57) Tex. 651.

gossypii, notes, (51) 248; (53) 351; (60) 241.

ochracea, notes, (55) 245.

vialae, notes, (52) 545.

Uredospores, viability, (56) 445.

Urephos, fertilizing value, (52) 422.

Urginea macrocentra, toxic effects on ruminants, (57) 77.

Uric acid—

concentration in blood, effect of sodium chloride, (52) 860.

determination, Benedict's method, (53) 207.

determination in blood, (55) 192.

determination in urine, (52) 412.

excretion, (52) 668.

excretion, effect of methyl xanthines, (60) 193.

excretion in avitaminosis, (51) 463.

in blood, cyclic variations in, (56) 193.

in blood of children, (51) 265.

in poultry excreta, determination, (53) 503.

problem, (52) 667.

reagent for blood analysis, preparation, (52) 614.

Urinalysis of sheep, (59) 475.

Urinary calculi and vitamin A deficiency, (58) 493, 792; (59) 492; (60) 596.

Urine—

acidity, studies, (51) 64.

ammonia determination in, (52) 412.

cattle, conservation of nitrogen in, (54) 422, 720, 810.

constituents of horses and calves, (58) 473.

creatinin determinations in, (51) 165.

cystine determination in, (56) 14.

excretion of organic acid in, (51) 164.

iron determination in, (55) 613.

normal, sugar in, (52) 806; (53) 63.

of hens, nitrogenous constituents, (58) 569.

of infants, effect of acids and alkalis in diet, (59) 392.

of steers, effect of prolonged fasting, (54) 267; (59) 359.

organic phosphorus in, (52) 807.

ovarian hormone extraction from, (59) 726.

Urine—Continued.

- pH determination in, (55) 615.
- sugar determination in, (53) 505; (55) 613, 805; (56) 112.
- sugar, effect of different substances, (51) 365.
- sugar in, estimating small amounts, (51) 318.
- sugar, relation to blood sugar, (52) 860.
- sugars, nature of, (57) 91; (58) 388.
- uric acid determination in, (52) 412.
- vitamin A in, (51) 460.

Urocytis—

cepulæ—

- control, (51) 152; (53) 44; (56) 847; (57) 749.
- description, (57) 749.
- life history, (53) Mass. 445; (57) 349; (58) 549.
- nuclear phenomena, (57) 349; (58) 549.
- on *Allium* species, tests, (54) 347.
- spore germination and growth, effect of temperature, (54) 843.
- temperature relations, (55) 844.
- coralloides, morphology, (60) 152.
- coralloides, notes, (58) 143.
- oculta, notes, (59) 536.
- tritici, notes, (55) 545; (56) 448.
- tritici, parasitism of, (51) 447.
- tritici, studies, (54) 50; (55) 845; (58) U.S.D.A. 46.
- violæ, transmissibility, (56) 752.

Uromyces—

- aloes, life history notes, (55) 44, 445.
- appendiculatus, notes, (58) 647; (59) 635.
- appendiculatus on leaves in solutions, (57) 149.
- betae, notes, (58) 442.
- erythronii, notes, (60) 646.
- fabae, notes, (57) 639.
- sp., biology, (53) 43.
- sp., notes, (55) 346, 545.
- vignae, studies, (56) 245.

Urophlyctis alfalfae, notes, (56) Utah 540; (57) 48; (58) 146.

Uropygial gland in pigeons, inheritance, (57) 625.

Urosigalphus eulechriopis n.sp., description, (55) 663.

Uspulun—

- action on seeds in germination, (52) 347.
- seed treatment data, (55) 649.
- use against cereal smut, (54) 247.
- use against damping-off of cotton seedlings, (52) 747.

Ustilaginales—

- new tendencies in study, (57) 641.
- South African, (58) 42.

Ustilaginoidea virens, notes, (57) 639, 640; (59) 540.

Ustilago—

- avenae, infection and susceptibility, (56) 448.

Ustilago—Continued.

- avenae spores, effect of hot water on, (57) 840; (58) 747.
- betonicae, notes, (54) 255.
- bromivora, notes, (58) 656; (60) Wash.Col. 830.
- cynodontis, mode of infection and perenniality, (55) 46.
- cynodontis, notes, (57) 444.
- eleusines, notes, (55) 445.
- hordei infection, factors affecting, (55) 544.
- hordei, notes, (57) 247.
- hordei nuda, notes, (59) 49.
- hordei, physiological specialization, (56) 447.
- hordei, studies, (57) 445; (58) 746.
- levis, control, (51) Wash.Col. 149.
- levis, notes, (56) 651.
- levis spores, germination, effect of changes in pH, (58) 544.
- maydis spores, germination, effect of reaction of medium, (60) 722.
- nuda and *Ustilago tritici*, physiologic specialization, (59) 145.
- nuda, notes, (57) 747.
- nuda strains and host relations, (59) 342.
- nuda, variants in (57) 641.
- reiliana, notes, (55) 546; (53) 449.
- sacchari, notes, (55) 547.
- scitaminea, notes, (57) 540.
- sp., control, (54) 47.
- sp., development and sex, (57) 120, 441.
- sp., life history and physiology, (56) 648.
- sp., notes, (55) 346; (57) 639, 840.
- sp., on barley, (51) 47.
- sp., studies, (57) 743; (58) 746.
- sp., varietal resistance and susceptibility of oats to, (53) U.S.D.A. 149.
- striaeformis, life history, (54) 850.
- striaeformis, notes, (56) 647.
- striaeformis, spore germination, (53) 649; (56) 244.
- tritici and *U. nuda*, physiologic specialization, (59) 145.
- tritici, control, (54) 845.
- tritici germinability, pH and action of heat on, (57) 839.
- tritici, notes, (55) 545; (56) 448, 541; (58) 145.
- tritici, susceptibility of summer wheat to, studies, (57) 446.
- zeae chlamydo-spores, germination, effect of carbon dioxide, (57) 49.
- zeae in corn, inheritance of reaction to, (59) Minn. 241.
- zeae, notes, (55) 245, 546; (56) Kans. 842.
- zeae, physiologic specialization and mutation, (59) 145.
- zeae, reaction of selfed lines and crosses in corn to, (58) 48.
- zeae, studies, (55) 146.

Ustulina—

- maxima, studies, (55) 250.
- sp., notes, (59) 637.
- vulgaris and U. zonata, comparison, (55) 249.
- zonata, notes, (51) 45; (54) 151; (57) 639; (58) 156.
- zonata on rubber trees, (60) 838.

Utah—

- College, notes, (51) 399; (52) 700; (53) 699; (54) 97, 797; (55) 600; (56) 97, 798; (57) 497; (59) 100, 698.
- Station, aims and work, (60) 899.
- Station, notes, (51) 399; (52) 600, 700; (53) 699, 799; (54) 97, 797; (56) 798; (57) 497; (59) 100, 500, 698.
- Station publications, summary, (52) 497; (54) 299; (55) 599; (57) 599; (59) 898.
- Station, report, (52) 796; (56) 599.

Uteri—

- isolated, spontaneous contractions, effect of female sex hormone, (55) 823.
- of mice, distribution of fetuses in, (57) 724.

Uterine grafts, (58) 630.

Uterus—

- and ovaries, reciprocal effect, (52) 730.
- bovine, pathological processes, (54) 172.

Utethusa bella outbreak, (51) 361.

V factor and vitamin B, differentiation. (52) 681.

Vaccaria parviflora in grain seed, (53) 36.

Vaccination—

- of poultry, (57) 184.
- troubles subsequent to, (51) 781.

Vaccine—

- BCG culture, technique, (58) 875.
- ovinized, paper on, (58) 474.
- virus and epithelioma contagiosum virus, relation, (58) 281.
- virus and foot-and-mouth disease virus, relation, (58) 477.
- virus, effect of glycerin and carbolic acid, (60) 72.
- virus immunizing action, effect of chloroform, (59) 580.
- virus, susceptibility of fowls and reptiles, (59) 375.

Vaccinia and fowl pox viruses, cytological studies, (59) 175.

Vaccinia virus—

- antigenic properties, (59) 580.
- strain, evolution, (57) 878.
- studies, (58) 880.
- transformation of sheep pox virus into, (58) 474.

Vacuole extraction from leaf cells, (51) 309.

Vacuome—

- in pollen grains of gymnosperms, (53) 520.
- of Erysiphe graminis, (58) 522.

Vacuum—

- cleaners, operating costs, (59) 585.
- extractor, description, (56) 12.
- use for insect control, (54) 753.

Vaginitis, infectious granular, of cows, (57) 79.

Vahlkampfia mellifica n.sp., notes, (56) 856; (59) 461.

Valdensia heterodoxa n.g. and n.sp., notes, (57) 159.

Valence in heredity and evolution, hypothesis, (52) 521.

Valipora, new genus, erection, (57) 863.

Valsa—

- leucostoma, perithecial and pycnidial formation in, (54) 145.
- mali, studies, (55) 548.

Vanessa—

- cardui, notes, (56) Wis. 756.
- cardui, outbreak, (54) Mich. 655.
- io and parasites, (59) 654.
- io, notes, (56) 58.

Vangueria pygmaea poisonous to sheep, (52) 84.

Vanilla—

- bean extracts, solvents for, (51) 610; (54) 110.
- culture, (55) 441.
- extract, analyses, (53) Conn.State 657.
- extract, effect of vacuum distillation, (57) 309.
- extracts, distinguishing grades, (52) 202.
- extracts, lead number, (52) 713.
- extracts, sources of, identification, (53) 808.
- fungus diseases, history, (60) 646.
- Fusarium disease, (58) P.R. 542.
- root disease, notes, P.R., (51) 847; (54) 648; (57) 442.
- root rot, description, (59) 54.
- soft rot, notes, (52) 151.
- true and artificial, flavoring powers, (55) 208.

Vanillin—

- decomposing organisms, decomposition of organic toxins by, (53) 215.
- manufacture, review of literature, (52) 615.
- solubility in alcohol and glycerol, (53) 608.

Vapor pressures of capillary systems, measurement, (55) 212.

Variation—

- and chimeras in Matthiola, (55) 523.
- and variability, (57) 820.
- geographical, genetics of, (52) 824.
- in Kherson oats, (53) 830.
- in man, unilateral, inheritance of, (55) 225.
- in plants associated with changes of water level, (57) 26.

Variations, origin, symposium, (53) 329.

Variegation—

- genetic analysis, (53) 27.
- in fern, genetics, (53) 330.
- in plants, (57) 818.

- Variola, avian, and cowpox, (57) 574.
 Variola, avian, studies, (52) 284.
 Varnish, spar, water-resisting, master specification, (56) 576.
 Varnishes—
 and colors, treatise, (53) 891.
 and components, treatise, (51) 716.
 and paints, analysis, (56) 313.
 cellulose ester, (54) 707.
 resins, paints, and pigments, (57) 203.
 Vasa efferentia in rats, ligation, (56) 431.
 Vasectomy on swine, effect, (55) 635.
 Vasey grass, behavior, (52) Fla. 224.
 Veal—
 roasting, standard methods, (59) N.Dak. 891.
 statistics, (58) U.S.D.A. 81.
 Vegetable—
 and fruit family budget, (55) 592.
 and fruit industry, relation to other types of farming, (55) U.S.D.A. 784.
 ash, physicochemical analysis, (53) 314.
 diseases—
 and pests, (55) U.S.D.A. 741.
 control, (59) 446.
 in North Caucasus, (58) 647.
 manual, (53) 246.
 seed-borne, (59) Ohio 238.
 fats, *see* Fats.
 foods, nitrogenous substances in, (60) 291.
 juices, effect of storage on antiscorbutic value, (53) 567.
 oils, *see* Oils, vegetable.
 products, analysis, (51) 12.
 products of commercial importance, textbook, (52) 794.
 proteins, *see* Proteins.
 seed, packet, quality, (54) N.Y.State 643.
 seed production, Idaho, (52) 836; (55) 536.
 seeds for home and market garden, (51) U.S.D.A. 441.
 seeds, germination, (52) 737.
 seeds, germination standards, (59) Conn.State 42.
 seeds, soaking before sowing, effect, (55) 237.
 seeds, test for trueness to name, (55) Can. 835.
 shippers, operations of, (56) N.Y.Cornell 584.
 tissues, proteins of, (56) 708.
 waste, digestion in sewage treatment plants, (59) 379.
 weevil in California, (58) 164.
 Vegetables—
 analyses, (59) Hawaii 633.
 and fruit, distribution, alleged combine in, investigation, (54) 285.
 and fruits, effect of paper wrappers, (59) Mich. 41.
 aphids affecting, (53) 255; (54) N.J. 554.
- Vegetables—Continued.
 behavior of sulfur compounds in cooking, (59) 389.
 breeding experiments, (56) Pa. 139; (59) 833.
 California standards for, (60) 682.
 canning, manual, (54) 87.
 canning methods, (54) 890.
 canning, rôle of acidity in, (54) Calif. 507.
 carload shipments and unloads, U.S. D.A., (53) 293; (60) 485.
 carload shipments of, U.S.D.A., (53) 91; (57) 88.
 cause of spoilage en route to market, (58) Ill. 334.
 changes in quality, measurements, (59) Mich. 41.
 clearing house plans, (60) 682.
 cold storage studies, (58) 535, 536; (60) 541.
 Connecticut market demand for, (55) Conn.Storrs 286.
 cooking, use of salt in, (57) Ohio 890.
 cultivation experiments, (58) N.Y.Cornell 137.
 cultural requirements, (55) V.I. 236.
 culture, (52) Can. 341, Alaska 536, Can. 537, Can. 639; (53) Can. 340, Can. 840; (54) V.I. 240; (55) 236, Minn. 741, U.S.D.A. 741; (59) Mo. 529, 833.
 and preparation for exhibition, (57) 336.
 and use, treatise, (53) 640.
 experiments, (53) Minn. 139; (55) Alaska 438; (58) Alaska 435, Minn. 835, Can. 836, Can. 837, Can. 838; (60) Ga.CoastalPlain 140, Can. 539, Can. 540, Alaska 541, Alaska 736.
 in Canada, (54) 537.
 in England, (54) 240.
 in England, treatise, (57) 534.
 in Pennsylvania, (54) 536.
 on irrigation projects, (54) Wash. Col. 434.
 relation of lime to, (51) Ohio 441.
 statistics, (59) U.S.D.A. 185.
 textbook, (54) 240.
 treatise, (52) 341; (53) 40; (56) 833; (58) 142, 738.
 under glass, (60) 822.
 disease resistant, (53) 543; (56) 549.
 disinfection methods, (54) 753.
 dried, packaging, (52) Calif. 14.
 drying, (54) U.S.D.A. 12; (57) 89.
 drying, air velocity and temperature in, (58) 486.
 drying and canning industries, (55) U.S.D.A. 787.
 drying in Canada, (59) 379.
 effect of cultivation, (54) 137.
 effect of fertilizers on plant tissue and tissue content, (55) Mich. 425.

Vegetables—Continued.

- effect of irrigation, (56) Iowa 833.
 extension work with, (53) U.S.D.A. 695.
 fertilizer experiments, Ill., (54) 335; (58) 333.
 for home garden, (51) 239.
 from all parts of world, (51) 441.
 frost blister of, (57) 50.
 geographical distribution in Indiana, (55) 742.
 green, effect on blood regeneration, (53) 867.
 green, irradiated, antirachitic properties, (52) 763.
 growth, effect of cold temperature, (55) 237.
 Hawaiian, minerals and nutrients in, Hawaii, (51) 765; (54) 137.
 hotel markets for, (59) N.H. 284.
 hypoglycemia-producing principle in, (52) 667.
 improvement, rôle of sterility in, (58) 640.
 in greenhouses, soil sterilization for, (52) Kans. 449.
 in market gardens, winter-killing, (56) 140.
 in storage, ammonia injury, (58) 542.
 insects affecting, (59) 553.
 insoluble pectic substances in, (56) 613.
 loss of constituents by cooking, (55) 87.
 losses in transit, reducing, (60) Ill. 231.
 maggots attacking roots, control, (56) 63.
 manganese in, variations, (59) 708.
 marketing, (55, U.S.D.A. 785.
 marketing in lower Rio Grande Valley, (59) Tex. 285.
 marketing in Minneapolis and St. Paul, (58) 589.
 marketing, retail margins in, (58) Minn. 384.
 new, notes, (54) Minn. 38; (60) Can. 639.
 non-acid, canning, Fla., (56) 894; (60) 190.
 notes, (53) Miss. 239.
 nutrients in, relative cost, (60) 891.
 nutritive value, (55) U.S.D.A. 788.
 overhead irrigation, (59) Nebr. 832.
 paper on, (54) 732.
 passage of solutes into, (60) 724.
 penetration by bacteria and disinfection, (54) 590.
 Philippine, preservation, (57) 193.
 Philippine, vitamin B in, (57) 94.
 planting dates and rates, (57) Tenn. 126.
 planting outlines for Arizona, (54) Ariz. 38.
 preservation for home use, (57) 193, 890.

Vegetables—Continued.

- preservation methods, manual, (56) 893.
 prices, factors affecting, (59) 482.
 raw and cooked, manganese content in, (59) 191.
 Rhizopus affecting, (51) 354.
 ripening, effect of ethylene, (60) 822.
 standard containers for, (52) U.S.D.A. 296.
 standard descriptions, (57) 736.
 storage diseases, (57) Mich. 642.
 storage studies, (58) Ill. 738.
 suited to New Jersey, list, (52) N.J. 738.
 supply for fifteen cities, (60) 385.
 thrice-cooked, for diabetics, (53) Mo. 462, 768.
 transplanting, studies, (53) N.Y. Cornell 36.
 transportational diseases, cause, Mich., (51) 149; (54) 544; (57) 642.
 trial shipments to Philippines, (60) Guam 820.
 tropical, recipes of Porto Rico, (55) 291.
 tropical, standardized recipes for, (57) 192.
 under transit and market conditions, decay of, (54) 544.
 varieties for New York State, (60) 822.
 varieties for North Dakota, (53) N.Dak. 239.
 varieties for Porto Rico, (58) P.R. 536.
 varieties, yields, (60) Minn. 140.
 variety and strain tests, (59) Tex. 740.
 variety tests, (51) Can. 238, Can. 239; (53) Okla. 141; (54) Can. 443; (55) Minn. 339, Hawaii, 535; (56) Minn. 531; (57) Alaska 532; (58) Can. 836; (60) Can. 539.
 vitamin B losses in cooking, (56) Wis. 794.
 vitamins in, (56) Kans. 894.
 wholesale market preferences for, (55) R.I. 81.
 yield, factors affecting, (54) Guam 739.
- Vegetation—*see also* Flora, Plants, *etc.*
 British, abstracts of publications on, (59) 700.
 depth limits in Lake of Annecy, (58) 524.
 destruction, factors affecting, (53) 117.
 distribution in United States, (60) 710.
 effect of temperature and rainfall, (56) 15.
 experimental, (54) 25, 820.
 in drainage ditches, effect on capacity, (58) 582.
 inhibitory effects of fruit on, (53) 142.
 natural, of United States, (52) U.S.D.A. 520.
 of arid portions of southern Africa, (52) 616.

Vegetation—Continued.

- of British Empire, aims and methods in study, (57) 513.
- of Natal, (54) 223.
- of northeastern Arizona, (56) 744.
- of salt marshes, changes in due to draining, (57) N.J. 776.
- of Santa Lucia Mountains, (54) 24.
- of southwestern desert region, (52) 328.
- of Tooele Valley, physicochemical properties of tissue fluids, (51) 821.
- red as protective color in, (52) 640.
- relation to humidity of climate, (54) 807.
- sand ridge, ecological study, (59) N.C. 721.
- strand, of Pacific coast, (53) 823.
- types in semiarid regions, (51) 821.
- types, relation to insect devastation, (58) 754.
- vertical distribution, (53) 823.
- water loss from, measurement, (53) 17.
- zonation in South Australia, (54) 820
- Vejovis spinigerus*, notes, (55) Ark. 50.
- Veld management, (57) 34.
- Velvet bean caterpillar, notes, (54) Fla. 257; (56) Fla. 152, 155.
- Velvet bean-and-pod meal, feeding value, (52) Miss. 169.
- Velvet beans—
 - as cover crops, (59) Guam 523.
 - as forage crop, (60) P.R. 731.
 - as green manure, effect on crop yields, (60) Ark. 803.
 - breeding experiments, (51) P.R. 833; (52) S.C. 528.
 - effect of lime, (54) Fla. 326.
 - enzymes of, (58) Ala. 411.
 - feeding value, (52) S.C. 567; (53) U.S.D.A. 466, 570; (54) S.C. 664, S.C. 665; (55) 767; (58) Ala. 463; (59) Ala. 67, Ala. 664; (60) Ala. 171.
 - Georgia, proteins of, nutritive inadequacy, (51) 62.
 - in corn, variety tests, (55) La. 433.
 - in mixtures, yield, (55) Miss. 228.
 - nonprotein nitrogen of, (59) Ala. 11.
 - problems in feeding, (57) 762.
 - varieties, (51) V.I. 833.
 - varieties as cover crop, (56) Guam 228.
 - variety tests, (51) La. 830; (52) Fla. 224, Ga.Coastal Plain 224, Guam 226; (53) 133; (54) Ga.Coastal Plain 130; (56) Ga.Coastal Plain 523, Fla. 821; (58) Ga.Coastal Plain 732; (60) Ga.Coastal Plain 132.
 - vitamin B in, (54) 560; (59) Ala. 661.
- Vent gleet, notes, (52) Kans. 481; (53) 279.
- Ventilation—
 - and heating, treatise, (60) 380.
 - dairy stable, experiments, (59) 481.
 - in trickling filters, (57) 187.

Ventilation—Continued.

- of animal shelters, station work on, (53) U.S.D.A. 686.
- of stables, automatic control, (56) 683.
- studies, (56) 397.
- systems for dairy stables, plans and construction, (56) 884.
- test data, analysis, (54) 283.
- value of automatic control, (60) Mich. 482.
- Ventilators, automatic, tests, (54) 683.
- Venturi flume—
 - improved, (54) 280; (55) Colo. 276.
 - studies, (53) Colo. 184.
- Venturia—
 - dendritica, control, (51) 548.
 - inaequalis—
 - ascigerous stage, development, (58) 553.
 - ascospore discharge, (57) 751.
 - ascospore discharge and dispersal of conidia, (58) 648; (59) 144.
 - control, (51) Va. 354; (52) 848; (53) 754; (58) Ohio 248.
 - cytology and physiology, (55) 246.
 - life cycle, (57) Ohio 253.
 - notes, (53) Mass. 446; (57) 53, 54, 449; (58) 442; (59) Me. 544.
 - spore dissemination, (53) 548.
 - studies, (57) 848.
 - oxydendri n.sp., description, (57) 754.
 - pomi, notes, (54) 448.
 - pyrina, control, (59) 245.
 - pyrina, notes, (57) 353.
 - spp., notes, (56) 747, 849; (57) 649.
- Vermicularia—
 - and Colletotrichum, comparison, (58) 550.
 - capsici, notes, (53) 147; (57) 145; (60) 644.
 - herbarum on pinks, (53) 49.
 - sp., notes, (54) 246.
 - spp. in South India, (59) 537.
 - varians, biology, (52) 645.
 - varians culture, saltation in, (55) 147.
 - varians, notes, (52) 549, 847.
- Vermillion River area, entomological survey, (54) 752.
- Vermin, protection of buildings against, (55) 852.
- Vermiodin, description and use, (51) Mich. 80.
- Vermont—
 - Station, bulletins, (55) 197; (56) 698.
 - Station, notes, (52) 200; (54) 97; (57) 798; (58) 500, 699; (59) 799.
 - Station, report, (54) 698; (56) 599; (58) 899.
 - Universitit, notes, (51) 498; (55) 497; (56) 197; (57) 497, 798; (58) 500, 699.
- Vertebrates—
 - infection by insect flagellates, (51) 54.
 - land and fresh water, manual, (51) 656.

Verticillium—

- alboatrum, growth, (52) 147.
- alboatrum, notes, (52) N.Y.State 543, N.J. 744; (53) 546; (54) 149, 250; (55) 148, Oreg. 448; (57) 846, 850; (58) 656, 849; (60) Oreg. 745.
- alboatrum spores, germination, effect of reaction of medium, (60) 722.
- caulophagus, notes, (53) 43.
- lycopersici, notes, (57) 845.
- ovatum n.sp., description, (57) 253.
- ovatum, proposed name, (59) 152.
- sp., notes, (55) U.S.D.A. 454; (57) 540; (58) 448; (60) 553.
- sp. on maple, (51) 52.
- spp. affecting plants, (57) 442.
- spp., notes, (56) 549, 748; (60) 162.
- tracheiphilum, notes, (57) 645.
- vinosum, notes, (60) 29.
- wilt of herbaceous and woody plants, (55) 445.
- wilt of maple and elm seedlings, (58) 854.
- wilt of potatoes, (55) Oreg. 650.
- wilt of tomato, (52) 549.
- wilt, paper on, (52) 645.

Vespa—

- arctica parasite of *V. diabolica*, (51) 764.
- cincta, life history notes, (52) 155.
- communis attacking fall webworm, (52) 560.
- crabo, *see* Hornet, European.
- infernalis, control, (52) 454.

Vespermima sequoiae, notes, (60) 651.

Vesuvius, gas emitted by, electric conductivity, (53) 828.

Vetch—

- and oat hay, ground and unground, digestibility, (60) S.C. 770.
- as cover crop, (60) S.C. 718.
- as fall sown crop, (52) West.Wash. 97.
- breeding experiments, (55) Oreg. 637.
- chickling, Indian types, (60) 40.
- culture, (53) Oreg. 638; (58) Miss. 33.
- culture experiments, (52) Alaska 528; (54) V.I. 231; (55) Miss. 228, Alaska 433, Oreg. 637; (57) Alaska 522; (60) Oreg. 731.
- culture methods, (56) Miss. 731.
- effect on following crop, (54) N.Y. Cornell 829.
- fall inoculation, (52) Mich. 97.
- fertilizer experiments, (51) Oreg. 529.
- flowered, seed analyses, (52) Calif. 71.
- for green manure, seeding and turning, (59) 437.
- green manuring value, (57) Calif. 225; (60) Oreg. 719.
- growth, relation to soil acidity, (58) 17.
- hairy, as cover crop, (54) Can. 442.
- hairy, green manuring value, (57) Ga. 414.
- hairy, hardiness and manuring value, (54) 31.
- in rotations, value, (59) Miss. 824.

Vetch—Continued.

- plat tests, (51) Hawaii 740.
 - proteins of, (56) 708.
 - purple, as cover crop, (52) Calif. 39.
 - purple, culture experiments, (55) Hawaii 526.
 - purple, poisonous to cattle, (58) 878.
 - purple, value, (53) Calif. 430.
 - rotation experiments, (59) N.C. 728.
 - seeding experiments, (51) Oreg. 529; (52) Kans. 440.
 - solar energy used by, (53) 508.
 - species, differentiating seed, (51) 237.
 - spray irrigation for, (52) 287.
 - top and root growth in, (55) N.J. 31.
 - varieties, (55) N.C. 228; (57) Tenn. 126.
 - varieties, classification, (52) U.S.D.A. 535.
 - varieties, winter hardiness, relation to yielding ability, (60) 327.
 - variety tests, (51) Oreg. 529; (52) Ga. Coastal Plain 225, Idaho 828; (53) N.C. 735; (54) Ga.Coastal Plain 130; (55) Oreg. 637, Idaho 825; (56) Ga. Coastal Plain 523; (57) Alaska 522, Idaho 726; (58) Alaska 427, Ga. Coastal Plain 732; (59) Wash.Col. 31, N.C. 728; (60) Ga.Coastal Plain 132, Alaska 728, Oreg. 731.
- Vetches—
- annual, morphological characters, (56) 38.
 - important forage, determination, (56) 38.
- Veterinarian and accredited herd work, paper on, (51) 180.
- Veterinary—*see also* Animal diseases.
- anatomical names, (53) 77.
 - Corps, Royal Army, history, (58) 273.
 - diagnosis and treatment, treatise, (54) 673.
 - education and research in Union of South Africa, reports, (60) 573.
 - education in Scotland, (52) 898.
 - education, notes, (52) 280.
 - encyclopedia, Black's (60) 573.
 - hygiene, treatise, (52) 480; (53) 278, 884.
 - laboratory in Japan, report, (57) 377.
 - materia medica and prescriptions, (53) 380.
 - Medical Association of Wisconsin, proceedings, (51) 179.
- medicine—
- and therapeutics, treatise, (51) 678.
 - biological diagnosis, treatise, (53) 884.
 - laboratory diagnostic methods, (53) 77.
 - progress in, (52) 881.
 - surgery, and obstetrics, encyclopedia, (52) 280.
 - officers in India, meeting of, (53) 79.
 - parasitology, treatise, (57) 179.
 - prescriptions, handbook, (52) 881.

- Veterinary—Continued.
 profession, paper on, (59) 470.
 research in Europe, (57) 467.
 science, growth, (58) 273.
 science in Japan, (59) 577.
 science principles, textbook, (52) 197.
 toxicity, treatise, (55) 776.
- Vibrio—
 comma growth, effects of salt and pH, (56) 350.
 fetus, cause of abortion, (54) 476; (59) Calif. 775.
- Vibrio septique—
 action on involuntary muscle in vitro, (60) 870.
 comparison with other anaerobes, (54) 172.
 cultivation, new medium for, (57) 670.
 immunization against, (52) 378.
 infectious in animals, (52) 778; (53) 677.
 notes, (53) Wis. 478.
- Vibrios from calves, (56) 777; (57) 673.
- Vicia—
 cytological studies, (58) 823.
 faba cells, effect of X-rays, (54) 626.
 faba irradiated with X-rays, changes in, (56) 26.
- Viereckiana ellopiae n.sp., description, (60) 847.
- Vigna—
 angustifolia, rust on, (53) 246.
 oligosperma as green manure and cover crop, (52) 732.
 oligosperma, Rhizoctonia disease of, (56) 848.
- Vigor, studies, (54) 229, 730; (55) 227, 860.
- Village—
 communities, leaders in, (59) 590.
 communities, treatise, (58) 385.
 farm, type in Utah, (60) 387.
 life in China, reconstruction, (58) 890.
 life, papers on, (56) 889.
 merchants, business, effect of automobiles, (60) 387.
 planning, (53) U.S.D.A. 193.
 populations, (54) 886.
 studies, American, (53) 394.
- Villages—
 American, census analysis, (54) 886.
 American, treatise, (55) 690; (57) 88.
- Vine crops, dusting, (51) Iowa 452.
- Vine moths, European, control, (58) 261.
- Vinegar—
 as aid in rooting cuttings, (58) 838.
 cider, making in the home, (52) Ohio 413.
 from honey, home manufacture, (55) Mich. 114.
 furfural in, (57) 408.
 home production, (51) Iowa 809.
 making, studies, (52) U.S.D.A. 15; (55) U.S.D.A. 787; (56) Ill. 206.
 manufacture, fermentation processes in, (52) 315.
 manufacture, treatise, (55) 806.
- Vinegar—Continued.
 studies, (54) Ill. 311.
 total solids in, determination, (58) 310.
- Vines—
 for Minnesota, lists, (51) Minn. 141.
 insects affecting, (59) Conn.State 56.
 ornamental, (58) Fla. 239.
 phosphoric acid and nitrogen in leaves, (58) 523.
 pruning systems, (52) Calif. 237.
- Vineyards—*see also* Grapes.
 French, use of arsenicals in, (59) 853.
 selection of planting stock, (55) Calif. 440.
- Viola—
 arvensis, control, (54) 240.
 chromosome number and relation of species, (58) 423.
 inheritance and chromosome constitution in, (57) 122.
 non-Mendelian inheritance in, (57) 121.
- Violet—
 hybrids of North America, (52) Vt. 629.
 leaf mold, notes, (55) 244.
 root rot on tea plants, (60) 247.
 sawfly, notes, (54) Mich. 655.
 smut, transmissibility, (56) 752.
- Violets—
 culture, (57) 142.
 culture in greenhouses, (54) 42.
 disease in Holland, (55) 250.
 North American, studies, (59) Vt. 218.
- Vipioninae, notes, (59) 660.
- Vireos, food habits, (54) U.S.D.A. 256.
- Virescence in Delphinium, (56) 517.
- Virgin Islands Station, report, (51) 899; (54) 299; (55) 395; (57) 394; (59) 498.
- Virginia—
 College, notes, (57) 497; (59) 100, 698; (60) 499.
 Crop Improvement Association, organization and functions, (55) 740.
 Institute of Public Affairs, notes, (57) 498.
 Station, notes, (51) 99, 498; (52) 399; (53) 300, 698; (54) 798; (55) 399; (57) 497; (58) 98; (59) 100, 698, 799; (60) 499, 900.
 Truck Station, notes, (51) 399, 498; (54) 599; (55) 99, 300, 497; (57) 600; (58) 900; (59) 199; (60) 600
- Viroses, use of term, (59) 537.
- Virus disease, South African, of pigs, (60) 574.
- Virus diseases and grafting of hops, (58) 652.
- Viruses—
 antigenic properties, (59) 580.
 filtrable, (56) 775; (57) 181.
 filtrable, critical review, (58) 274.
 filtrable, pathological conditions caused by, (59) 273.
 filtrable, symposium on, (56) 676.
 filtrable, treatise, (60) 370.

Viruses—Continued.

- polyhedral, visibility, (59) 671.
- quantitative studies, dilution method for, (58) 551.
- ultra-microscopic, (56) 676.

Viscera—

- edible, of meat-packing animals, composition, (52) 158.
- hereditary abnormalities of, (55) 27.

Viscosimeter—

- Ostwald, use for flour suspensions, (59) 111.
- standard liquids for, (59) 203.

Viscum spp., notes, (53) 148.

Vital registration in Europe, (60) 590.

Vitality among individuals, distribution of differences in, (58) 629.

Vitamin A—

- absorption spectrum, (59) 792; (60) 689.
- and antirachitic vitamin, differentiation, (51) 68; (54) 194.
- and B in pumpkin, (52) 762.
- and chlorophyll, relation, (53) 10.
- and copper, relation, (53) 865.
- and D, differentiation, (57) 293, 392, 791.
- and fat, metabolism, (51) 67.
- and phytol, (53) 10, 408.
- antimony trichloride as test for, (59) 92.
- assay, (60) 689.
- assimilation in presence of mineral oil, (58) 88.
- association with greenness in plant tissue, (57) 895.
- availability when injected, (53) 265.
- bodily store, effect of age, (56) 87.
- chemical nature, (55) 711.
- color reaction for, (55) 307, 712; (56) 10, 313; (57) 690.
- color tests, effects of various agents, (56) 410.
- deficiency—
 - and metaplasia, (60) 292.
 - and urinary calculi, (58) 493, 792; (59) 492; (60) 596.
 - disease, blood counts in, (55) 489.
 - effect of light treatment, (55) 388.
 - effect on blood platelet count, (51) 768; (55) 294.
 - effect on heifers, (60) Pa. 365.
 - effect on nitrogen metabolism, (55) 489.
 - effect on reproduction, (59) 688.
 - effect on resistance against infections, (53) 459.
 - effect on teeth of rats and dogs, (56) 792.
 - effect on tissues, (54) 294, 891.
 - in Denmark, (53) 660.
 - in guinea pigs, (60) 393.
 - in poultry, (52) Calif. 77, 782; (53) Calif. 477.
 - in rats, effect of iodine and iron, (60) 853.

Vitamin A—Continued.

- deficiency—continued.
 - in rats, effect on kidney, (60) 689.
 - relation to anemia, (56) 293.
 - relation to sterility, (60) 293.
- destruction of ferrous sulfate, inhibitive substance, (58) 295.
- destructive action of fats on, (58) 493.
- detection and estimation, (59) 95.
- determination, (54) 89; (60) 194, 894.
- determination, technique, (52) 804; (56) 411; (57) 195.
- effect of irradiation, (57) 92.
- effect on disease resistance, (60) 791.
- effect on follicular atresia, (51) 635.
- effect on quantity and quality of goats' milk, (53) 275.
- estimating, error in technique, (55) 893.
- evaluating, (60) 93.
- excess, effect on basal metabolism, (56) 592.
- excessive in mother's diet, effect on young, (53) 263.
- Fearon pyrogallol test for, (56) 112, 410, 411.
- for poultry, succulent feeds as source, (56) Calif. 373.
- formation in alfalfa plants, factors affecting, (60) Fla. 195.
- formation in plant tissues, (57) 294.
- free diet, preparation, (53) 561.
- growth-promoting properties, (56) 592.
- identity, (54) 695.
- in absence of light, synthesis, (60) 688.
- in bananas, (53) 162; (56) 894.
- in butter, effect of different feeds, (56) 472.
- in butter, inactivating action of fats on, (53) 62, 377.
- in butterfat, (53) 864; (56) 490.
- in butterfat, oxidation, (53) 765.
- in canned toheroa, (60) 93.
- in cheese, (56) 794.
- in Chinese litchi nut, (58) 691.
- in cod-liver—
 - meal, (59) 465, 792.
 - oil, (51) 566, 864; (55) 13; (56) 490.
 - oil, durability, (52) 462.
 - oil, effect of heat and oxidation, (57) 487.
 - oil, effect of light, (57) 894.
 - oil, hardened, stability, (52) 461.
 - oil, potency, (55) 386.
 - oil variously produced, (53) 864.
- in collards, (59) 191.
- in corn endosperm, (60) Ill. 291.
- in corn, relation to yellow endosperm, (59) Ind. 761; (60) 810.
- in diet of Finland, significance, (55) 191.
- in dogfish liver oil, (53) 864; (58) 294.

Vitamin A—Continued.

- in egg yolk, (57) Ohio 174, 463, 791.
- in eggs, (57) Ohio 174.
- in eggs, effect of prolonged storage, (52) 664.
- in evaporated milk, (58) 294.
- in foods, relative values, (54) 614.
- in fresh eggs, (52) 664.
- in frozen pork, (51) 268.
- in Georgia foods, (57) Ga. 292.
- in grapefruit rind, (56) 409.
- in green plant tissues, (57) 293.
- in haddock and herring, (60) 189.
- in horseflesh, (53) 764.
- in human milk, studies, (57) 390.
- in Indian foods, (52) 64.
- in Indian fruits, (59) 492.
- in Japanese summer orange, (59) 594.
- in lecithin, (51) 368.
- in liver, (60) 195.
- in liver, antimony trichloride test for, (58) 390.
- in meats, (54) 390.
- in milk—
 - destruction by ultra-violet light, (56) 88.
 - effect of cow's ration, (60) Ohio 472.
 - effect of diet and sunlight, (59) 573.
 - irradiated, potency, (58) 295.
 - of different breeds, (55) Nebr. 675.
 - variations, (52) U.S.D.A. 562.
- in mung bean sprouts, (59) 192.
- in oleo oil and stearin, (55) 192.
- in oysters, (59) 594.
- in pecan nuts, (54) 90.
- in *Phaseolus radiatus*, synthesis, (55) 192.
- in pineapple, (51) 167.
- in plant tissues, persistence, (55) 293.
- in plants, stability, (60) 291.
- in poultry flesh and fat, (55) 593.
- in roasted nuts, (51) 367.
- in salmon oil, (57) Calif. 271.
- in shad body oil, (57) 894.
- in skim milk, (57) 894.
- in South African oils, (51) 565.
- in spinach, (58) 87.
- in stomach oil of Fulmar petrel, (57) 391.
- in sweet potato varieties, (59) 492.
- in the body, effect of food, (54) 89.
- in turnip greens, (59) 191.
- in urine, distribution, (51) 460.
- in wheat oil, (60) 293.
- in whole-wheat and patent flour, (60) 393.
- in wool fat, (55) 294.
- in yautia and plantain, (57) 690; (60) 291.
- in yeast, (60) Pa. 393.
- in yeast fat, (53) 502.
- in yeast fat, effect of irradiation, (59) 595.
- inactivation by rancid fat, (54) 793.
- occurrence, (55) U.S.D.A. 386.

Vitamin A—Continued.

- physiological significance, (51) 864; (53) 660.
 - properties, (55) 593.
 - relation to growth and infection, (60) 194.
 - relation to growth, reproduction, and longevity, (54) 488.
 - requirements of—
 - calves, (56) 169.
 - chickens, (52) 173; (57) 368; (58) 268.
 - pigeons, (51) 866.
 - pigs, (51) 671; (52) Ill. 469; (53) 571; (59) Kans. 768.
 - review of literature, (57) 487.
 - sources in poultry feeds, (52) Calif. 875.
 - sources of supply, (58) 293.
 - storage, quantitative study, (56) 88.
 - summary, (51) 565.
 - synthesis by fresh water alga, (53) 765.
 - synthesis in etiolated wheat shoots, (58) 87.
 - synthesis in plants, (57) 789.
 - testing for, technique, (55) 308.
 - treatment for xerophthalmia, (51) 566.
 - xanthophyll as source, (57) 392.
- Vitamin—
- antiberiberi, requirement of animals, (51) 370.
 - antineuritic—*see also* Vitamin B.
 - and vitamin B, differentiation, (56) 294.
 - concentrated, from brewers' yeast, (55) 609.
 - concentrates, curative pigeon test, (59) 294.
 - concentrates, preparation, (58) 89.
 - concentrates, purification, (60) 94.
 - concentration, (55) 409.
 - experiments on pigeons and fowls, (58) 195.
 - in corn germ, (54) 272.
 - in poultry flesh and eggs, (52) 161.
 - in red beans, (59) 594.
 - in rice bran, (56) 410.
 - in yeast, preparing concentrates, (52) 462.
 - isolation, (57) 489, 490.
 - methods of determining, (56) 203.
 - present conception, (57) 488.
 - separation from yeast, (51) 312.
 - stability toward heat, (60) Ala. 168.
 - antirachitic—*see also* Vitamin D.
 - action of *n*-butyl nitrite on, (55) 308.
 - and vitamin A, differentiation, (51) 68.
 - in eggs, relation to ultra-violet light, (55) 266.
 - resistance to reagents, (54) 8.
 - stability to saponification, (51) 267.

- Vitamin B—*see also* Vitamin, antineuritic, and antineuritic vitamin, identity, (55) 409; (56) 294.
 and bios, significance of terms, (52) 110.
 and carbohydrates, interdependence, (52) 863; (53) 265.
 and diet of lactating rat, (55) 694.
 and factor P-P of pellagra, (55) 890.
 and lactation, (53) 163.
 and proteins, relation, (60) 895.
 and V factor, differentiation, (52) 681.
 antineuritic and growth-promoting factors, new differentiation, (59) 594.
 as factor in nutrition, (51) 267.
 balance of food by, (58) 88.
 color test for, (51) 503.
 complex of wheat, proportions of F and G in, (59) 689.
 complex, physiological functions, (60) 897.
 composite nature, (56) 895; (57) 488, 594, 789; (58) 295, 691, 894; (59) 92, 394, 493, 688.
 composite nature, third factor in, (59) 688; (60) 293, 690.
 concentration, (51) 609; (52) 709; (54) 611, 805; (56) 11.
 concentration and separation of components, (60) 690.
 concentration, index of, (60) 412.
 crystals from mung beans, (53) 503.
 deficiency—
 acquired immunity to, term for, (58) 792.
 and rheumatism in children, (60) 594.
 basal metabolism in, (52) 262.
 effect on adrenal glands, (60) 594.
 effect on blood sugar level, (55) 489.
 effect on composition of blood, (51) 70.
 effect on nursing young, (59) 894.
 effect on oxidative processes, (52) 65.
 effect on reproduction, (54) 262; (59) 593.
 effect on resistance to parasites in chickens, (56) Kans. 875.
 effect on testes, (60) 196, 594.
 in birds, gaseous metabolism in, (56) 696.
 in dogs, gastric motility in, (57) 595.
 in infants, symptomatology, (60) 195.
 manifested in second generation, (56) 90.
 relation to atony of the stomach, (59) 493.
 rôle in anorexia, (60) 195.
 symptoms, (59) 594.
 deficient diet—
 effect on a pony, (60) 73.
- Vitamin B—Continued.
 deficient diet—continued.
 effect on heat production, (54) 892.
 effect on rats, (59) 894.
 effect on resistance of chickens to parasitism, (58) 481.
 destruction by age, (51) 269.
 destruction by heat, (51) 461.
 determination, (57) 895.
 determinations, technique, (56) 203; (58) 793.
 effect on—
 Azotobacter, (53) 25.
 digestive enzymes, (54) 892.
 oxidative processes, (51) 563.
 quantity and quality of goats' milk, (53) 275.
 wheat seedlings, (55) 323.
 excessive amounts, effect on basal metabolism, (55) 794; (56) 592.
 ferric ferricyanide reaction for, (52) 805.
 free diet, basal, note, (55) 309.
 in bananas, (56) 894.
 in barley, malt, and beer, (52) 564.
 in cereals, (51) 266; (55) 294; (58) 390; (60) 394.
 in Chinese litchi nut, (58) 691.
 in cold storage meat, (51) 268.
 in collards, (59) 191.
 in commercial egg albumin, (56) 491.
 in corn, distribution, (54) 793.
 in corn germs, (51) Ind. 874.
 in corn products, (58) Ill. 390.
 in ethylene bleached celery, (60) 294.
 in evaporated milk, (52) 201; (56) 190; (58) 692.
 in excreta of rats, (54) 794.
 in excreta of rats on diet low in this factor, (59) Ala. 65.
 in Georgia foods, (57) Ga. 292.
 in German proprietary foods, (56) 895.
 in German war bread, (51) 368.
 in glutinous rice and adlay, (55) 294.
 in grapefruit rind, (56) 409.
 in green feeds, detection, pigeon feeding tests, (59) 493.
 in green plant tissues, (57) 293.
 in human milk, studies, (57) 390.
 in lemon rind, (55) 593.
 in liver, effect of diet, (51) 268.
 in malt and malt extract, (56) 894; (60) 94.
 in meat and eggs, (53) 570; (54) 90.
 in meat residue, (56) 491.
 in milk, effect of cow's ration, (56) Pa. 169; (60) Ohio 472.
 in molasses, (53) 660.
 in mung bean sprouts, (59) 192.
 in oat kernel, distribution, (60) Ill. 294.
 in orange juice, (51) 564.
 in peanuts, distribution, (59) N.C. 761.
 in peas, effect of cooking methods, (51) Wis. 462.

Vitamin B—Continued.

- in pecan nuts, (54) 90.
- in Philippine fruits and vegetables, (51) 666; (57) 94.
- in pineapple, (51) 167.
- in plant products, (59) Ala. 661.
- in potatoes, (56) 89.
- in prune pits, (59) 595.
- in pumpkin, (52) 762.
- in rice kernel, (58) Ill. 390.
- in roasted nuts, (51) 367.
- in sweet potato leaves and shoots, (59) 192.
- in tikitiki, (54) 90.
- in turnip greens, (59) 191.
- in vegetables, losses in cookery, (56) Wis. 794.
- in velvet beans, (54) 560.
- in vitamin patent foods, (56) 895.
- in water-soluble milk solids, (60) 94
- in wheat, effect of fertilizers, Ohio, (53) 566; (57) 168; (58) 534; (59) 258.
- in wheat embryo, relation to reproduction, (51) 861.
- in wheat germ, extraction, (56) 11.
- in white bread, (51) 567.
- in wort, effect of fermentation, (53) 204.
- in yautia and plantain, (57) 690; (59) 793.
- in yeast extract, standard, (57) 195.
- in yeast extracts, variation, (57) 196.
- in yeast, fresh and dried, (56) 794.
- in yeast, measurement, (55) 204.
- metabolism, (55) 694.
- nomenclature of factors in, (59) 689; (60) 492.
- occurrence, (55) U.S.D.A. 386.
- of feed eaten and of the milk produced, (58) 269.
- physiological rôle, (56) 694; (58) 193, 893.
- pigeons and rats as test subjects for, (56) 12.
- quantitative relation to growth and storage in pigeons, (55) 89.
- rate of destruction on heating, effect of pH, (56) 803.
- relation to—
 - fertility in rats, (57) 65.
 - food assimilation, (56) 795.
 - gastric motility, (56) 795.
 - growth factor for a *Streptothrix*, (60) 412.
 - infection and immunity, (59) 894.
- requirement—
 - during lactation, (54) Mo. 758; (57) 897; (58) 791; (59) 491; (60) Ill. 294.
 - formula, (55) 295.
 - of calves, Pa., (54) 373; (56) 168; (58) 363.
 - of dogs, (54) 194.
 - of nursing young, (58) 195.
 - of pigeons, (57) 488.
 - of poultry, (51) 376.

Vitamin B—Continued.

- requirement—continued.
 - relation to protein intake, (57) 895.
 - relation to size of animal, (53) 566.
 - rôle in metabolism, (53) 566.
 - secretion in milk, studies, (59) 490, 491.
 - significance in anthrax immunity, (51) 282.
 - solubility in benzene, (55) 802.
 - stability on drying, (57) 196.
 - starvation, basal metabolism in, (58) 494.
 - starvation, creatine metabolism in, (59) 394.
 - studies in Japan, (57) 790.
 - studies, technique, (51) 368, 460; (55) 593.
 - studies, use of rat for, technique, (53) 766.
 - supplement to mixed grain ration for chicks, value, (57) 664.
 - synthesis by—
 - acid-fast bacteria, (51) 768.
 - Bacillus coli*, (53) 163.
 - bacteria in rumen of cattle, (58) Pa. 363.
 - intestinal bacteria, (52) 64.
 - microorganisms, (60) 294.
 - synthesis in corn, (59) 594.
 - test, effect of bacterial flora, (54) 594.
 - testing, revised, (58) 692.
- Vitamin C—
- and ultra-violet light, (55) 594.
 - Bezssonoff test for, value, (51) 714.
 - chemical nature, (56) 311.
 - color test for, (51) 269, 714.
 - crystalline form, (53) 608.
 - deficiency—
 - during pregnancy, effects, (60) 895.
 - effect on intercellular substances, (54) 294; (55) 388.
 - effect on resistance to bacterial infection, (52) 179.
 - sensitization of organism to, (52) 365.
 - destruction in silage and sauerkraut, cause, (55) 503.
 - diffusibility, (52) 711.
 - estimation, preparation of reagent, (56) 12.
 - immediate physiological action, (60) 295.
 - in bananas, (56) 894; (57) 690.
 - in barley, malt, and beer, (52) 564.
 - in bergamot juice and lemon juice, (60) 595.
 - in canned and cooked apples, (53) 566.
 - in canned foods, (51) 462.
 - in canned spinach, (53) 764; (56) S.Dak. 696; (58) S.Dak. 794.
 - in Chinese fruits, (60) 595.
 - in citrus fruits, (57) 690.
 - in collards, (59) 191.

Vitamin C—Continued.

- in concentrated orange juice, (53) Calif. 458; (56) 296.
 - in egg yolk, (55) 594.
 - in English tomatoes, (52) 863.
 - in foods, determination, Höjer's method, (60) 691.
 - in fresh and canned pears, (57) 392.
 - in fresh and canned pineapple, (55) 89.
 - in fresh and frozen raw winter milk, (60) 691.
 - in fresh grass, (58) 90; (60) 95.
 - in green plant tissues, (57) 293.
 - in green tomatoes ripened in a warehouse, (53) Wis. 459.
 - in Japan sand pear and other fruits, (57) 197.
 - in lemon juice, (51) 503; (52) 710.
 - in lemon juice, chemical nature, (57) 790; (58) 391; (60) 595.
 - in lemon juice, precipitation of anti-scorbutic factor, (57) 488.
 - in lemon rind, (56) 696.
 - in liver, (53) Wis. 459.
 - in liver of chickens on scorbutic diets, (53) 671.
 - in liver of guinea pigs, (51) 866.
 - in liver of rats, persistence, (53) 866.
 - in malt and malt extract, (56) 894.
 - in milk—
 - effect of copper, (51) 568.
 - effect of cow's ration, (57) 94, 869.
 - effect of formaldehyde, (51) 580.
 - effect of silage, (51) S.Dak. 474.
 - effect of ultra-violet light, (59) 92.
 - factors affecting, (52) 877.
 - in Berlin, (53) 265.
 - in mung bean sprouts, (59) 192.
 - in pasteurized strawberry sirup, (52) 65.
 - in potatoes, effect of storage, (60) Mont. 792.
 - in poultry nutrition, (56) 166.
 - in radishes, (59) 594.
 - in tea, (60) 594.
 - in tomatoes, (59) Wis. 94.
 - in turnip greens, (59) 191.
 - inactivated, regenerated by reduction, (56) 12.
 - isolation from lemon juice, (54) 194.
 - occurrence, (55) U.S.D.A. 386.
 - reducing properties, (52) 711.
 - requirements of—
 - chickens, (56) 768.
 - pigs, (51) 671; (59) Kans. 768.
 - poultry, (51) 377.
 - rats, (51) 569.
 - synthesis by germination, (53) 9.
- Vitamin D—see also Vitamin, antirachitic.
- absorption from the skin, (57) 492.
 - and A, differentiation, (57) 293, 392, 791.
 - and cholesterol, (59) 690.
 - and irradiated ergosterol, spectra of, (60) 691.
 - and peroxidation, relation, (56) 109.

Vitamin D—Continued.

- and sterols, (57) 197.
- assay of, (60) 95.
- assimilation in presence of mineral oil, (58) 88.
- color reaction, (60) 792.
- containing substances, (57) 197.
- deficiency, effect on resistance to disease, (59) 493.
- deficiency, effect on respiratory quotient of chicks, (59) 870.
- detection, absorption test in, (58) 895.
- detection and estimation, (59) 95.
- determination, technique, (56) 411; (57) 195; (59) 293.
- distribution and origin, (57) 294.
- effect on blood phosphate and calcium, (60) 596.
- effect on phosphorus, calcium, and pH in intestinal tract, (58) 91.
- ergosterol as precursor, (57) 487, 492; (60) 596, 896.
- estimating, error in technique, (55) 893.
- examination of irradiated zymosterol for, (60) 692.
- formation in germinating seeds, (55) 695.
- from different extracts of yeast, (57) 791.
- growth-promoting properties, (56) 592; (59) 689.
- in a marine diatom, search for, (57) 492.
- in butterfat, (56) 296, 490.
- in cod-liver—
 - meal, (59) Wis. 71, 465, 792.
 - oil, (56) 490; (58) 90.
 - oil, determination, (60) 296.
 - oil, inactivation, (56) 503.
 - products, (59) N.H. 771.
- in egg yolk, effect of storage, (59) Wis. 96.
- in egg yolk, factors affecting, (57) 791.
- in eggs, relation to ultra-violet light, (56) 768.
- in fish meal, (59) N.H. 771.
- in grass grown in dark on nutrient solutions, (60) 96.
- in haddock and herring, (60) 189.
- in human milk, (59) 690.
- in irradiated orange juice, (56) 91.
- in irradiated sterols, (56) 295.
- in large doses, effects, (60) 692, 693.
- in milk, effect of diet and sunlight, (59) 573.
- in mothers' milk, effect of cod-liver oil in diet, (56) 796.
- in puffer fish oil, (56) 296.
- in rations, effect of irradiation, (56) 190.
- in raw and canned oysters, (56) Wis. 794.
- in rickets control, amount necessary, (59) 495.
- in salmon oil, (57) Calif. 271.
- in spinach, (57) 392; (58) 87.

Vitamin D—Continued.

- in stomach oil of petrel, (57) 391, 896.
- in yeast fat, effect of irradiation, (59) 595.
- irradiated ergosterol as source, (60) 896.
- line test for, diet during, (54) 295.
- line test for, technique, (58) 795.
- minimum requirement for antirachitic effect in line test, (60) 898.
- mode of action, (60) 196.
- nature of, (60) 692.
- occurrence and functions, (54) 794.
- optical detection, (57) 792.
- photosynthetic formation, (58) 794, 795.
- production by irradiation of ergosterol, (58) 794.
- properties of summer- and winter-produced dry milk, (57) 491.
- quantitative determination, (59) 689.
- relation to cholesterol, (57) 393.
- review of literature, (57) 487.
- significance of term, (52) 110.
- sources of supply, (58) 293.
- substances containing, (56) 10.
- summary, (56) 393.
- sun's rays for, (59) Ind. 769.
- synthesis by *Bacillus coli*, (53) 163.
- synthesis in food by ultra-violet light, (56) Wis. 797.
- test for, (56) 412.

Vitamin—

deficiency—

- and immunity, (59) 394.
- diseases, pathogenesis, (51) 565.
- diseases, studies, (58) 86.
- diseases, treatise, (60) 197.
- effect on organs of rats, (51) 369.
- in poultry rations, (56) Ill. 270.
- relation to muscle fatigue, (53) 767.
- studies, (60) 291.

deficient diet, deciduomata in rats on, (59) 862.

destruction by heat, (54) Mo. 794.

Vitamin E—

- and dietary complex in vegetable oils, (55) Ark. 89.
- and iron, relation, (57) 296.
- and reproduction, (56) 664.
- and reproduction and lactation, review of literature, (60) 493.
- deficiency and male sterility, (54) 527.
- deficiency, effect on rats, (55) 194; (56) Mo. 559.
- deficiency of mother, effect on young, (58) 791.
- destructive action of fats on, (58) 493, 494.
- distribution, (60) 196.
- effect on growth, (58) 492.
- existence of, (57) 898.
- experiments, new purified diet for, (57) 791.
- in animal tissues and plants, (54) 561.
- in bananas, (58) 387.

Vitamin E—Continued.

- in butterfat, (57) 897.
- in cod-liver oil, (57) 897; (60) 395.
- in diets rich in fats, effect, (57) 197.
- in food products and reproduction, (54) 561.
- in hydrogenated cottonseed oil, (55) 594.
- in wheat oil, (56) Ark. 363; (57) 897.
- monograph, (58) 595.
- occurrence and functions, (54) 794.
- properties, (54) 562.
- relation to fertility in rats, (57) 65.
- relation to growth and vigor, (60) 196.
- requirements for reproduction in poultry, (60) Ill. 260.
- review, (56) 895.
- solubility, (53) 565.
- studies, (53) 62.
- suggested term, (51) 564.
- synthesis by plants, (57) 595.

Vitamin F—

- and G deficiency, differentiation, (60) 493.
- deficiency, effect on testes, (60) 594.
- destruction in evaporated milk, (58) 693.
- distribution in foods, (59) 92.
- effect of irradiation with mercury vapor arc, (60) 293.
- in milk, (60) 694.
- sparing action of fat for, (60) 791.
- studies, (58) 692, 894.

Vitamin factor in tuberculosis, (53) 866.

Vitamin G—

- biological assay, (60) 690.
- deficiency, effect on rats, (60) 690.
- deficiency, effect on testes, (60) 594.
- distribution in foods, (59) 92.
- effect of irradiation with mercury vapor arc, (60) 293.
- in milk, (60) 694.
- studies, (58) 692, 894.

Vitamin—

- hypothesis, establishment, (59) 494.
- patent foods, vitamin B in, (56) 895.
- pellagra-preventive and pellagra, (56) 296.
- pellagra-preventive, in cowpeas and wheat germ, (58) 297.
- preparations, stimulating value on growth, (54) 263.
- requirements of animals, (53) Ind. 167.
- requirements of chicks, (51) 473, Ind. 874; (52) Can. 570.
- requirements of poultry, (52) 273.
- research, insects as test animals in, (59) 593.
- research, recent progress in, (54) 194.
- streptococcus, synthesis by *Bacillus coli*, (53) 163.
- studies, summary, (52) 463.
- studies, technique, (51) 460; (59) 394.
- supplements for orphan pigs, (53) Iowa 777.

Vitamin—Continued.

synthesis in plants, effect of light source, (58) 893.

Tsukiye, synthesis by coli bacillus, (53) 163.

Vitamin X—

distribution in natural foods, (53) 661.

effect on fertility, (52) 864.

effect on milk production in rats, (52) 176.

studies, (51) 167; (52) 262; (53) 62.

Vitamins—

action, (51) 367.

and high energy chemistry, (54) 793.

and minerals in stock feeding, (54) 561.

as factors in health and food values, (59) 394.

association with manganese, (51) 459.

chemical aspects, (55) 488.

chemistry and physiology, (55) 89.

color test for, (52) 313; (60) 790.

destruction in canned food, and corrosion, (59) 94.

discussion, (51) 667.

distribution and function, (53) 367.

effect on—

development and weight of gipsy moth, (59) 648.

egg production, (51) 673, Idaho 873.

growth and resistance to coccidiosis of chicks, (51) 576.

growth of bacteria, (54) 90.

hatchability of eggs, (51) Ind. 874.

poultry, (57) 72.

weak chicks at hatching time, (53) 669.

yeasts and molds, (55) 24.

fat-soluble—

determination methods, (56) 411.

estimating, error in technique, (55) 893.

experiment station work on, (52) U.S.D.A. 462.

new facts concerning, (55) 503.

resistance to hydrogenation, (57) 294.

studies, (51) 68, 267; (52) 862; (53) 264, 865, 870; (54) 489, 490, 491; (56) 490, 771; (57) 392.

studies, standardized breed of rats for, (55) 893.

for chicks, (54) Can. 667.

for pigs, (56) Ariz. 764.

general discussion, (53) 660.

immunologic significance, (52) 179; (53) 381.

in canned foods, (55) 793.

in clams, (59) 688.

in cod-liver oil—

and malt extract, (51) 565.

effect of heat, (55) 490.

Vitamins—Continued.

in cod-liver oil—continued.

effect of hydrogenation, (51) 312; (53) 765.

potency, (55) 694.

in concentrated orange juice, (60) 93.

in eggs, effect of preservation on stability, (55) 594.

in foods, (52) 64; (55) 293; (59) Iowa 92.

in fruits and vegetables, (56) Kans. 894.

in Georgia grown foods, (59) Ga. 293.

in grain sorghums, effect of ensiling, (53) 67.

in heat-sterilized food, (57) 92.

in honey, (52) 64.

in labeled preparations, (54) 793.

in lemon juice and peel, (57) 489.

in lemon rind tincture, (57) 790.

in lentils, (51) 665.

in livestock feeding, (51) Ill. 771.

in milk, (55) 193; (57) 391, 687.

in nutrition of mice, (55) 293.

in orange juice, (59) 93, 94.

in oysters, (56) 793; (59) 95.

in papaya, (56) 87.

in poultry foods, (55) 166.

in preserved eggs, stability, (53) 459.

in preserved milk, (52) U.S.D.A. 562.

in rations of pigs, (57) Ohio 462.

in spinach, effect of preparation, (52) 262.

in wheat and rye germs, (58) 87.

maintenance factors, (51) 563.

papers on, (57) 391; (60) 786.

physiology of, (54) 194; (56) 795.

proposed new nomenclature for, (54) 194.

relation to—

disease resistance, (51) Iowa 466.

medical supplies, (56) 593.

nutrition, (51) 825.

production and hatchability of eggs, (52) Kans. 475.

ulcers in gastrointestinal tract, (60) 596.

research in past decade, (55) 694.

review of literature, (55) 593; (60) 194.

rôle in bacterial growth, (51) 667; (52) 162.

storage for lactation, (59) 491.

studies, (51) 269; (53) 62, 566, 764; (55) 387; (56) 190, 795; (57) 92.

water-soluble, and bacterial growth, (53) 162.

water-soluble, studies, (52) 805; (57) 488.

Vitamite, tests, (56) Can. 513.

Vitamont, feeding value, (60) Mont. 763.

Vitasterin D, studies, (60) 96.

Vitasterol, use of term, (54) 194.

Vitavose as source of vitamin B, value, (59) 492.

Vitula edmandsii, notes, (57) 64.

Viviparity in *Phytodecta rufipes*, (59) 658.

- Vocational—
 education—*see also* Agricultural education, vocational.
 in Mexico, progress, (51) 396.
 schools, evening, homemaking courses, (51) 195.
 training in Indiana, (51) 195.
- Volcanoes, eruptive gases, effect on vegetation, (53) 828.
- Volck, use against external parasites, (60) 266.
- Volck's oil spray for fireworm control, (56) Wash.Col. 553.
- Voles—
 and field mice, (59) 553.
 control, (53) 551.
 life history studies, (56) U.S.D.A. 55.
- Volutella—
 epicoccum, notes, (60) 162.
 fructi, notes, (56) 647.
- Volvox aureus, rate of reproduction, factors affecting, (56) 517.
- Volvulus in a calf, (57) 77.
- Vomeersiekte in sheep, cause, (60) 573.
- Vuilleminia comedens on oak, (52) 646.
- Vulvovaginitis in pigs, (60) Ill. 273.
- Wagon—
 and elevating grader, (53) U.S.D.A. 483.
 wheels, design, (52) 288.
- Wagons, draft—
 effect of height of wheel and width of tire, Mo., (54) 778, 780.
 studies, Mo., (51) 787; (53) 482.
- Wahi disease in cattle, (58) 474.
- Waite Agricultural Institute, notes, (51) 500; (52) 798.
- Wales, social and agrarian study, 1284-1415, (53) 393.
- Walking disease of horses, cause, (51) Wash.Col. 180.
- Wall papers, resistance to insects, (60) 844.
- Wall plaster, ingredients, preparation, and properties, (51) 189.
- Wallace, H. C.—
 editorial, (51) 701.
 memorial address, (53) 597.
- Walls—
 heat loss through, (52) 688.
 hollow-tile, strength tests, (56) 77.
 interlocking-rib tile, strength tests, (59) 478.
 new, tests, (54) 681.
 outer, moisture given off by, (59) 83.
 rammed earth, durability, (56) 479.
 thermal conductivities, (60) 583.
- Walnut—
 and apple trees, incompatibility, (55) Va. 48.
 antagonism in certain plant associations, (58) 153.
 bacterial leaf spot, notes, (60) 831.
 black, for timber and nuts, (52) U.S. D.A. 240.
 caterpillar affecting shade trees, (59) Ark. 252.
 caterpillar, notes, (58) Ark. 344.
- Walnut—Continued.
 crown rot, studies, Calif., (53) 449; (55) 344; (57) 244; (59) 747.
 dehydrators, studies, (57) Calif. 283.
 disease, cause, (60) 246.
 diseases, (57) 354.
 fruit blotch, notes, (56) 748.
 growers associations of California, (60) 681.
 kernels, shriveling, (60) 441.
 mottle leaf, studies, (57) Calif. 215.
 root rot, studies, (57) 551.
 roots, effect of hydroxyl-ion concentration, (52) Calif. 27; (55) 22.
 rot, notes, (52) 749; (55) U.S.D.A. 551; (58) 251, 555.
 seedlings, absorption of ions by, Calif., (56) 219; (59) 721.
 timber, black, selling, (54) U.S.D.A. 143.
 tree diseases, (54) 46.
 trees, borax injurious to, (60) Calif. 628.
 trees, growth and composition, effect of certain ions, (52) Calif. 820.
 trees, young, dying out, (53) 50.
- Walnuts—
 black, cause of death of apple trees, (60) 55.
 black, grafting experiments, (53) Mo. 436.
 breeding experiments, (56) S.Dak. 641.
 culture, (55) N.Mex. 439.
 culture in California, (52) Calif. 344.
 drying, (52) Calif. 14; (55) Oreg. 643; (60) Oreg. 738.
 drying and packing, (58) Oreg. 142.
 English, culture experiments, (51) N.Mex. 440.
 in Turkestan, (58) 841.
 insects affecting, (56) 555.
 interplanted with cedar, (59) Mich. 533.
 Manchurian, distribution, botany, and uses, (58) 841.
 moldy and black-meated, cause, (52) Calif. 39.
 moldy, studies, (51) Calif. 42.
 Persian, culture in California, (52) 143.
 Persian, yields, (59) N.Mex. 231.
 spraying and dusting experiments, (52) Calif. 56.
 standardization, (60) 682.
 sun-drying and dehydration, (51) Calif. 647.
 varieties, (58) Ill. 333.
 varieties, food and timber value, (56) Iowa 833.
 varieties, variation in blight susceptibility, (52) Calif. 53.
- Wapiti, Manchurian, notes, (56) 551.
- War chemicals, insecticidal value, (55) 658.
- War orphans of Italy, farm colonies for, (54) 589.
- Warajiococcus corpulentus, anatomy, (60) 650.

- Warble flies—*see also* Cattle grubs, Hypoderma, Ox warble, *etc.*
 arsenical dip for, results, (56) 758.
 in Denmark, extermination, (57) 166.
 in North Wales, (53) 758.
 in Switzerland, (53) 758.
 life history and control, (57) 560.
- Warble maggots, destruction, (53) 584.
- Warblers, hybrid, Mendelian inheritance in, (56) 521.
- Warbles in livestock, (55) 856.
- Warehouses, fumigation, (51) P.R. 855.
- Warehouses, special requirements, (54) 883.
- Washburn Crosby Co. flour, Gold Medal, history, (55) 137.
- Washing—
 agents, effect on linen and cotton, (54) 597.
 effect on textile fibers, (55) 196.
 machines, electric, (53) 486.
 machines, future development, (58) 598.
 powders for dairy use, (60) Mass. 174.
 solutions, tests, (59) 297.
 tests for dyed fabrics, machine for, (60) 496.
 with electricity, cost, (59) 585.
- Washington—
 College, notes, (52) 400; (53) 198; (54) 400; (55) 399; (56) 600; (57) 397, 498; (58) 699, 900; (59) 399, 599, 900; (60) 600, 699.
 College Station, notes, (51) 697, 900; (52) 400; (53) 198; (54) 400, 498; (55) 399, (57) 397, 498; (58) 699, 900; (59) 399, 599; (60) 699.
 College Station, report, (51) 197; (52) 899; (54) 899; (55) 197; (56) 599; (59) 99; (60) 899.
 Station, western, bimonthly bulletin, (51) 96, 397, 694; (52) 97, 397, 598.
 Station, western, report, (60) 795.
- Wasmannia auropunctata, notes, (52) 257
- Wasp nests, atypical, (57) 553.
- Wasp parasites of codling moth, (56) Del. 357.
- Wasps—
 and bees, life of, treatise, (53) 56.
 ants, and bees, treatise, (52) 854; (56) 862.
 as pest of grapes, (59) 553.
 attacking fall webworm, (52) 561.
 Bacillus pluton affecting, (59) 659.
 bees, and ants, treatise. (52) 854; (56) 862.
 braconid, from India, catalogue, (52) 155.
 infested by Stylops, (59) 257.
 intestinal bacteria, (56) 362.
 mutillid, studies, (59) 660.
 North American, revision, (51) 764.
 of central Europe, (57) 659.
 of Chile, (59) 855.
 of family Sphegidae, synopsis, (59) 562.
- Wasps—Continued.
 parasitic, inheritance of eye color in, (56) 223.
 parasitic, inheritance of sterility and other defects, (53) 525.
 parasitic, revision, (57) 562, 863.
 parasitic, revision of genus Microbracon, (53) 861.
 parasitic, wing mutations in, (56) 223
 practical account, (54) 462.
 tropical, hosts and associates, (58) 761.
- Waste disposal, cell fermentation system, (51) 423.
- Waste materials, uses, treatise, (51) 318.
- Wastes, household, of Germany, use as fertilizers, (54) 815.
- Wasting sickness, notes, (54) 171.
- Water—*see also* Irrigation water.
 absorption—
 and desorption by soda-boiled cotton, (52) 532.
 by barley seeds, (57) 617.
 by corn seeds, and germination, (52) 335.
 by corn seeds, effect of temperature, (52) 624.
 by pear wood, (54) 539.
 by potato tuber tissue, (51) Mo. 751.
 analysis, (51) 12.
 applicability of benzidine method for determination of sulfuric acid, (58) 204.
 standard methods, (55) 410.
 technique, (59) 203.
 and uses for spraying purposes, (59) 638.
 as growth factor, (55) 581.
 bacteria in, methods of study, (57) 622.
 bacteriology, treatise, (51) 889.
 bacteriophage and self-purification, (52) 389.
 bearing materials, physical properties, tests, (59) 280.
 buffalo and zebu hybrid, possibility, (59) 726.
 buffalo milk, cost of production, (52) 894.
 buffalo milk, fat content from each quarter, (51) 579.
 buffaloes, albino, occurrence, (54) 27.
 capillary rise in soils, (53) 419.
 capillary rise through soil columns, effect of size, (56) 280, 415.
 carbonates and bicarbonates in, (58) 610.
 chemistry of, (60) 204.
 clarification, dose of alum for, effect of pH, (54) 383.
 clarification, relation to iron compounds, (53) 633.
 coastal ground, of Connecticut, (53) 281.

Water—Continued.

- conduction in apple trees affected with crown gall, (57) 154.
- conductivity in trees, relation to leaf fall in India, (55) 728.
- conservation district No. 1, description, (53) Utah 483.
- conservation in insects, (60) 556.
- content of butter, (52) 775.
- content of moor soils, effect, (53) 118.
- cross stem miner, studies, (60) 64.
- current meters, rating apparatus, (53) 682.
- cycle in plants, (53) 824; (54) 25.
- deficit in lemons, (58) 250.
- deficit in living cells, significance, (57) 816.
- displacement of soils and soil solution, (54) 15.
- distilled in metallic vessels, toxicity, (56) 323.
- distribution in animal body, (56) 501.
- drainage, seasonal variation in salinity, (55) 780.
- duty of, *see* Irrigation water, duty of.
- economy in plants, (54) 627.
- economy of corn, studies, (56) 30.
- evaporation from soil, (55) 809.
- extracts from soils, composition, (55) 626.
- extracts of soil, reaction, (55) 316, 317.
- fecal pollution, effects of storage, (52) 685
- fecal pollution, lactose fermenters as test, (54) 482.
- films, function in soil granulation, (52) 418.
- filters, sand bed studies, (51) 186.
- finder, automatic, tests, (54) 280.
- finder work in Bombay, (60) 375.
- flow—
 - in channels, charts for, (54) 280.
 - in drainage ditches, (58) 778.
 - in 54-in. concrete conduit, (56) 76.
 - in irrigation channels, analysis, (58) 778.
 - interference in vascular diseases, measuring, (56) 446; (57) 246.
 - resistance in St. Francis River floodway, (59) 376.
 - through culverts, (51) U.S.D.A. 287; (56) 383.
 - through garden hose, (58) 680.
 - through sluices and scale models, (51) 185.
 - through soil to underdrains, (60) 513.
- for cows, (56) 872.
- for poultry, purification, (53) 681.
- freezable in soils, U.S.D.A., (52) 719, 783.
- friction in pipes, effect of temperature, (52) 887.
- gardening, treatise, (52) 741.

Water—Continued.

- grass control in rice fields, Calif., (51) 638; (55) 332.
- ground—
 - and soil, movement, (60) 508.
 - fluctuations, factors affecting, (60) 582.
 - in Mesilla Valley, cause of rise, (55) N.Mex. 479.
 - in New Haven area, (60) 183.
 - of the New Jersey coast, (54) 212.
 - plants as indicators, (56) 679; (59) 376.
- hard, softening, (54) 697.
- hardness, effect on bleaching wood pulp, (53) 210.
- heaters, electric, for poultry, (57) Oreg. 477.
- heaters in California, domestic, (54) 299.
- heating—
 - electric, recommendations for, (60) 380.
 - residential, (58) 599.
 - solar, studies, (60) Ala. 182.
 - systems, (56) 384.
- hyacinth, eradication experiments, (53) 32.
- hyacinth, relation to breeding of Anopheles, (54) 459.
- hydraulic gradient and discharge, effect of backwater, (60) 513.
- ice, separation of cane sugar from, (57) 769.
- ices, bacterial content, (60) 573.
- ices, manufacture, (56) N.Y.State 189.
- imported bottled, composition, (54) 711.
- in Coastal Plain soils, effect of drains, (60) 513.
- in crankcase oils, (52) 186.
- in decolorizing carbons, (54) 412.
- in Montana, base exchange in, (52) 685.
- in Ordovician rocks near Woodstock, Virginia, (59) 280.
- in plant life, (57) 321.
- in Tropics, fecal organisms in, (54) 383.
- in United States, analyses, index, (54) 779.
- infiltration rate in soil, (57) Idaho 775; (59) 584, Idaho 782.
- intake by cuttings, (60) 639.
- iodine content, in Utah and goiter, (53) 369.
- iodine determination in, (52) 712; (58) 507.
- level and downward penetration of corn roots, (53) 18.
- level, changes in, effect on plants, (57) 26.
- level, constant, device for maintaining, (53) 106.

Water—Continued.

- level in Everglades soils, control, (60) Fla. 183.
- lifts, (54) 177.
- lilies, insects and pests of, (58) 858.
- lime treated, pH value, (51) 386.
- loss by plants during wilting, (57) 617.
- loss from vegetation, direct measurement, (53) 17.
- movement in—
 - irrigated soils, (51) 683.
 - soil and drainage, (59) 83.
 - soil in fall and in spring, (56) 19.
 - soils, (51) 513; (55) Calif. 315.
 - vascular plants, dynamics, (53) 624.
- of Colorado River, quality, (59) 280.
- of condensation from agar slant tubes, (56) 573.
- of New Mexico, alkalinity, (59) N.Mex. 203.
- of New Mexico, iodine in, (59) N.Mex. 203.
- of northern Great Plains, chemical characters, (54) 779.
- of Pecos River in Texas, quality, (59) 280.
- of Yakima and Klamath reclamation projects, (60) Wash.Col. 376.
- optimum quantity, effect on different growth periods, (54) 220.
- oxygen-consuming power and pH value, relation, (51) Mich. 186.
- percolation through soils, (52) Calif. 19.
- pipe plugs, lead joints in, holding power, (51) 788.
- pipes, frozen, thawing with electricity, (53) 85.
- pipng systems, (51) 188.
- plants, photosynthesis in, (57) 817.
- power—
 - and flood control of Colorado River, (54) 177.
 - data of Canada, (53) 789.
 - engineering, treatise, (55) 878.
 - in Jefferson River basin, Montana, (57) 81.
 - in Madison River basin, Montana, (54) 780.
 - in United States, (59) 179.
 - investigation of Deep River, (53) 587.
 - of Great Salt Lake basin, (52) 286.
 - plants, small, design, (56) 881.
- problems, interstate, (58) 887.
- purification—
 - by chlorination, (51) 885.
 - by lime in Dutch East Indies, (52) 389.
 - technique, (51) 889.
- quality, relation to industrial development, (56) 382.
- radioactive, effect on germination and development of plants, (55) 520.

Water—Continued.

- rain, *see* Rain.
- relation to crop yield, (56) Mont. 177.
- relations of—
 - cell wall and protoplasm, (51) 426.
 - desert plants, (51) 822.
 - Natal plants, (57) 218.
 - plant growing point, (51) 329.
 - Yakima Valley soil, (60) 277.
- requirements of—
 - crops, (58) Can. 223; (60) 214.
 - plants, (58) 622.
 - plants of Colorado, (57) 616.
 - plants, relation to fertility, (58) 721.
 - plants, relation to potash in soil, (58) 722.
 - sugar cane, (53) 17.
- resources of—
 - Arizona, character, (56) Ariz. 177.
 - California, (54) 75.
 - Mississippi, (59) 677.
 - Montana, (51) 885.
 - Mud Lake basin, (54) Idaho 778.
 - Tennessee, (55) 878.
- run-off, loss of soluble salts in, (56) 118.
- run-off, losses, relation to crop production, (59) Tex. 782.
- separation from plant cells, mechanics, (58) 23.
- still, electric, description, (54) 204.
- suitable for livestock, (52) 671.
- supplies—
 - development and sanitary control, (56) 881.
 - development for irrigation, (59) Nev. 881.
 - for Enid, Oklahoma, (51) 885.
 - in goitrous regions, iodine in, (58) 497.
 - in Illinois, (56) 76.
 - iodizing, value, (57) 693.
 - of Michigan, iodine content, (53) 86.
 - of Ohio, (55) 580.
 - small, protection, (53) 892.
- supply—
 - artesian, in North Dakota, (52) 685.
 - farm, and sewage disposal, (56) W.Va. 81; (58) 184.
 - for pigs, Iowa, (56) 266, 267.
 - of Colorado River basin, (53) 281.
 - 788; (57) 474, 579.
 - of Columbia River and Pacific slope basins, (52) 286; (53) 788; (57) 579.
 - of Florida, composition, (59) 280.
 - of Goose Creek basin, (53) Idaho 83.
 - of Great Basin, (56) 576; (57) 186.
 - of Hawaii, (51) 885; (52) 87; (56) 382; (57) 474.

Water—Continued.

supply—continued.

- of Hudson Bay and upper Mississippi basins, (52) 485; (53) 682; (54) 75; (56) 576; (59) 678.
 - of lower Mississippi River basin, (54) 177; (59) 376.
 - of Michigan, iodine in, (52) 265.
 - of Missouri River basin, (53) 682; (60) 877.
 - of New Jersey, quality, (59) 280.
 - of New-Kanawha River basin, (53) 83.
 - of New Mexico, (56) 778.
 - of North Atlantic slope basins, (52) 286, 783; (54) 778.
 - of Northern Pacific slope basins, (56) 177, 478.
 - of Ohio River basin, (51) 586; (53) 83.
 - of Pacific slope basins in California, (53) 83; (57) 776; (59) 678; (60) 277.
 - of Pacific slope basins in Washington and upper Columbia River basin, (52) 685.
 - of plants in arid regions, (57) 419.
 - of St. Lawrence River basin, (54) 75; (56) 382.
 - of Santa Clara Valley, (52) 783.
 - of Snake River basin, (52) 886; (54) 177; (59) 280.
 - of South Atlantic and eastern Gulf of Mexico drainage basins, (53) 683; (59) 677.
 - of United States, (54) 875; (55) 75; (57) 579, 880; (60) 376, 778.
 - of Utah and goiter, (53) 463.
 - of west-central Montana, (53) 281.
 - of western Gulf of Mexico basins, (54) 75; (57) 474.
- supplying power of soils, estimating, (53) 116.
- systems—
- electric, types, (54) Ill. 382.
 - farm electric, (51) 889; (58) 498.
 - for farm homes, (51) Mich. 889; (53) 487; (54) U.S.D.A. 283, Ill. 684; (55) Ark. 75, 394; (56) 779; (57) W.Va. 187, 582.
 - for Florida rural homes, (56) 483.
- table experiments, (56) Fla. 811.
- table fluctuations in Kearney Vineyard, (53) Calif. 788.
- table, ground, effect of pumping from deep wells, (57) 473.
- table, relation to flow line of drains, (53) 588.
- tank, in Bengal, algal growths in, (54) 382.
- tanks, masonry, construction, (55) Iowa 579.

Water—Continued.

- temperature, for industrial use, (55) 277.
 - translocation in fruits, (58) 318.
 - utilization by trees, (55) 878.
 - utilization by trees, (55) 878.
 - v. buttermilk for breeding hens, (54) Can. 272.
 - vapor, adsorption by soils and soil colloids, (60) 508.
 - vapor of atmosphere, source, (60) U.S.D.A. 79.
 - weeds, control, (53) 239.
 - works practice, manual, (56) 280.
- Waterbug, giant—
- habits and injury from, (58) 855.
 - notes, (51) Conn.State 852.
- Waterfowl—
- British, treatise, (53) 651.
 - migratory, banding, (54) U.S.D.A. 655.
 - ornamental, raising, (51) 675.
- Water-gas tar as preservative for farm timbers, (55) Iowa. 584.
- Watering places on ranges in Southwest, (54) U.S.D.A. 559.
- Watermelon—
- anthracnose, control, (55) 548; (56) Fla. 143; (58) 851.
 - blossom-end decay, notes, (53) 854.
 - diseases, notes, (55) 548; (57) Tenn. 639.
 - internal browning, (57) 846.
 - pulp and rind, analyses, (52) Calif. 71.
 - seed treatment, (55) 548.
 - wilt infection studies, (59) 346, Iowa 754.
 - wilt resistance, studies, (52) Utah 739; (54) Ill. 336.
 - wilt resistant strains, (53) 543; (56) Ill. 234.
 - wilt, seed treatment for, (56) Fla. 143.
- Watermelons—
- culture, (51) Ga. 40; (56) Ga.Coastal Plain 531, Ariz. 642.
 - culture experiments, (52) Ga.Coastal Plain 232; (54) Ga.Coastal Plain 136; (58) 641.
 - fertilizer experiments, (51) Ga. 141; (60) Ala. 139.
 - flower types in, inheritance, (59) Calif. 633.
 - fumigation injury, (58) 52.
 - growing in United States, (51) U.S.D.A. 441.
 - in transit, chemical injury, (58) 552.
 - injury from crows, (56) 456.
 - limiting number to hill, effect, (60) Ga.Coastal Plain 140.
 - marketing, (52) Calif. 92.
 - pectic compounds, (58) 839.
 - pollination and fruiting habit, (56) 441.
 - prices and shipments from Florida, (59) 886.
 - prices at Los Angeles, factors affecting, (59) Calif. 683.

Watermelons—Continued.
 production, economic aspects, (59) Calif. 183.
 Thielavia basicola on, (52) 352.
 trial shipments to Philippines, (60) Guam 820.
 variety tests, (58) Ga.Coastal Plain 738.

Waterproofing—
 canvas, materials used for, (59) 497
 material, testing, (55) 683.
 materials, master specification, (53) 388.

Waters, H. J., biographical sketch, (54) 1.

Waters—
 mineral, *see* Mineral.
 of great Australian artesian basin, composition, (53) 281.
 South Carolina, minerals in, (60) S.C. 708.

Waterways—
 general formula for, (54) U.S.D.A. 780.
 Great Lakes-to-ocean, survey, (58) 786.

Wattle disease of fowls in Victoria, (57) 281.

Wattles, inheritance of in goats, (56) 224.

Wax determination in cotton, (51) 716.

Wax extractor, solar, notes, (59) N.J. 351.

Wax moth—
 caterpillars, immunization, (58) 758.
 control, (56) 61; (58) 758; (59) 858.
 fumigation against, (57) N.J. 758.
 immunization against Bacterium gal-
 leria No. 2, (60) 63.
 larvae, infectious disease fatal to, (56) 758.
 microbe infection and immunity in, (58) 758.
 microbe pathogenic in, (59) 354.
 parasite, (54) 159.
 parasites in United States, (60) 65.
 passive immunity in, (58) 759; (60) 63.
 transmission of spores of Bacillus lar-
 vae by, (60) 655.

Waxes—
 analysis, (55) 207.
 and fats, industrial chemistry, treatise, (58) 201.
 fats, and oils, studies, (57) 203.
 in plants, (59) 608.
 insulating, effect of moisture, (57) 777.
 melting points, determination, (54) 111.
 of cottons of different origin, (55) 208.
 production and utilization, (57) U.S.D.A. 8.

Weather—*see also* Meteorological observa-
 tions and Meteorology.
 and agriculture, (54) U.S.D.A. 13.
 and agriculture, treatise, (55) 715.
 and boll weevil in Cotton Belt, (60) U.S.D.A. 357.

Weather—Continued.
 and corn maturity in Iowa, (58) U.S.D.A. 808.
 and forest fires, (54) U.S.D.A. 342; (55) 539; (57) 14, U.S.D.A. 506.
 and forest fires in central Massachu-
 setts, (59) U.S.D.A. 715.
 and growth of grain crops, graphic representation, (58) 512.
 and hay in New York State, (56) U.S.D.A. 714.
 and maple sugar production, (52) Mich. 416.
 and peach leaf curl, (57) 849.
 and potatoes in Wyoming, (55) 15.
 and solar variations, (54) 12, 508.
 as affected by moon, (52) 114.
 Bureau and agriculture in Southwest, (55) 616.
 Bureau, fruit spray service, (53) 112.
 Bureau, report, U.S.D.A., (51) 114; (52) 714; (55) 413; (57) 806; (58) 809.
 change on west coast of South Amer-
 ica, (54) 615.
 changes, long-period, and solar activ-
 ity, (56) 15.
 conditions—
 and crops, Minn., (53) 113; (55) 313; (56) 507; (58) 808.
 at Newlands Experiment Farm, (53) U.S.D.A. 812.
 at Wooster, (53) Ohio 509.
 forecasting crops from, (52) 892.
 in England, 1924, (53) 15.
 in Minnesota, (51) Minn. 115.
 in south Mississippi, (53) Miss. 211.
 of Belle Fourche Project, (53) U.S.D.A. 316.
 of Umatilla Project, (53) U.S.D.A. 316.
 relation to potato blight, (58) 342.
 crop data, analysis (54) 130.
 effect of sun spots, (59) 808.
 effect on—
 apple scab, (56) 550.
 corn production, (52) 114.
 crops, (54) 510.
 crops, difficulties in study, (56) 113.
 distribution of citrus canker and scab, (54) 852.
 fires, (59) 808.
 fruit industry of United States, (53) 111.
 phenology of apple and rye, (55) 209.
 plant behavior, (55) 715.
 sugar production, (55) 715; (56) U.S.D.A. 314.
 weight of colony of bees, (54) U.S.D.A. 356.
 white pine blister rust spread, (53) 550.
 yields, (56) 207.

Weather—Continued.

- European, periodicities in, (57) 807, 808.
- forecasting—
- and solar radiation, (54) 614; (56) 15.
 - and solar variation, (53) 812.
 - for California, seasonal, (54) U.S.D.A. 714.
 - long-range, (51) 509, 717; (55) 616; (58) U.S.D.A. 412.
 - seasonal, (53) 412.
 - seasonal, and monthly pressure variations, (54) U.S.D.A. 713.
 - treatise, (51) 14.
 - value of pyrheliometric readings, (55) 15.
 - value to farmer and tourist, (55) 15.
- forecasts—
- as prevention of forest fires, U.S.D.A. (53) 211, 718.
 - for a week in advance, (59) 508.
 - popular long-range, accuracy, (56) 616.
 - weekly, of Argentine and solar radiation, (53) 812.
- guide for Akkra, Gold Coast, (54) 510.
- in arid regions, effect on crops, (56) U.S.D.A. 15.
- in Australia, periods in, (55) 807.
- in Ohio for 1922, (51) Ohio 414.
- insurance, developments, (53) 615.
- monograph, (54) 807.
- of mid-latitudes, effect of tropical cyclones, (52) 808.
- of 1924, (52) U.S.D.A. 714.
- of 1926, (56) U.S.D.A. 713.
- of 1927 in United States, (58) U.S.D.A. 809.
- of 1927, relation to solar changes, (58) 312.
- of Scotland in 1925, (56) 16.
- of the season, (53) Minn. 113.
- periodicity, (55) 209.
- phenomena, treatise, (52) 315.
- records, world, (57) 612.
- relation to—
- abundance of parasites, (55) 354.
 - cotton yield, (53) 813.
 - crops in plains region, (60) Mont. 16.
 - cutworm outbreaks, (54) 554; (59) U.S.D.A. 760.
 - potato blight epidemic, (57) 545.
 - potato planting date, (56) Ohio 337.
 - solar changes, (53) 508.
 - solar radiation, (52) 808.
 - wheat rust, (58) 747.
- reports, Alaska, (55) 413; (60) 709.
- reports, Pacific radio-telegraphic, (52) 100.
- seasonal variations, correlation, (54) 208.
- spring, forecasting, (56) 414.

Weather—Continued.

- systematically varying period in, (52) U.S.D.A. 414.
- technical control, (56) 806.
- types in Hawaii, (56) U.S.D.A. 314.
- unusual, crop losses from, (56) 207.
- wet and dry, periodicities in, (55) 313.
- world, (54) 208; (60) 16, U.S.D.A. 16.
- world, and Nile flood, (56) 807.
- Weathering effect on exchangeable bases in soil, (60) 509.
- Webworm—
- fall, affecting shade trees, (59) Ark. 252.
 - fall, attacked by wasps, (52) 561.
 - fall, notes, (55) Miss. 555; (58) Ark. 344; (59) N.H. 248.
 - garden, notes, (53) 559.
 - larger sod, studies, (58) U.S.D.A. 455.
- Wedelia sp., notes, (57) 444.
- Weed—
- communities, relation to soil characteristics, (57) 812.
 - legislation, relation to seed analyst, (52) 737.
 - new in United States, (55) 832.
 - pest, new, in California, (53) 238.
 - rye, distribution, (56) 640.
 - seed impurities in agricultural seed and determination of origin, (60) 539.
- seeds—
- dissemination by irrigation water, (57) 233.
 - feeding value, (57) 762.
 - identification, (54) 732.
 - in alfalfa, effect of dry heat, (53) 135.
 - in flaxseed of Turkestan, (55) 137.
 - in seeds of Argentina, (55) 534.
 - in seeds of Saratov Province, (53) 36.
 - longevity, (53) Iowa 734.
 - manual, (57) 39.
 - microscopy, (57) 733.
 - notes, (51) N.Y.State 39.
 - nutrient value, (54) 160.
 - Philippine, characters, (51) 535.
 - poisoning, tests, (56) 439.
 - tree in Cuba, problem of, (57) 734.
- Weeds—
- and tillage, (53) 791.
 - and weed seeds, (57) 734.
 - as indicators of acid soil, (57) 134; (59) 210.
 - British, dissemination and control, (54) 738.
 - control, (51) 36; (52) Idaho 828; (53) S.Dak. 436; (54) 635, Can. 834; (55) 740, 832; (56) Mont. 134, Wash.Col. 525, Can. 640, Colo. 821, Iowa 831; (57) 160, Tenn. 628; (59) 632, Calif. 736; (60) Wash. Col. 814.
 - in California, (60) 437.
 - in cereals, (57) 334.

Weeds—Continued.

control—continued.

- in conifer seed beds, (59) 839.
- in flax fields, (53) 235.
- in Idaho, (56) 40.
- in Sweden, (54) 239.
- in wheat, (59) Mont. 37.
- in Wisconsin, (54) 640.
- treatise, (55) 235.
- with chemical sprays, (54) 240.
- with sulfuric acid, (54) 641; (57) 39, 541, 633; (60) Ariz. 437.
- with thermogen paper, (57) Can. 830.
- destruction, modern methods, (59) 331, 332.
- economic importance, (52) 794.
- effect of cultivation, (54) Tex. 329.
- effect on crop production, (51) Iowa 433; (55) Iowa 534; (58) Can. 229.
- effect on transpiration of cereals, (55) Iowa 726.
- eradication, cooperative experiments, (51) 542.
- eradication in New Zealand, (54) 641.
- grassland, extermination, (57) 734.
- identification and control, (56) 41.
- important in Germany, control, (54) 641.
- in California, relation to weeds in other States, (59) 832.
- in cotton fields, control by geese, (53) N.Mex. 840.
- in cultivated crops of Buenos Aires, (56) 40.
- in field, garden, and lawn, (54) 238.
- in Indiana, (51) 641.
- in lawns, (55) Colo. 534.
- in New South Wales, (52) 39, 830.
- in Pennsylvania, (55) 740.
- in rice fields, effect, (54) 834.
- in southwestern England, control, (54) 834.
- in Wisconsin lakes, control, (59) 439.
- introductions from Old World, (57) 733.
- light requirement, (60) 522.
- losses from and control, (59) Utah 438.
- new in Indiana, (55) 740; (56) 640; (60) 138.
- nitrogen content, (52) 536.
- of cranberry bogs, (52) N.J. 737.
- of Cuba, (54) 239.
- of cultivated crops in Northern Caucasus, (58) 638.
- of Iowa, control, (54) Iowa 37; (57) 532.
- of New Jersey, (51) N.J. 744.
- of New Zealand, control, (57) 532.
- of Pennsylvania, control and eradication, (58) 534.
- of ponds, watercourses, and undrained lands, (56) 831.
- on garden paths, herbicides for, (59) 438.
- on Prince Edward Island, (57) 634.

Weeds—Continued.

- perennial, control, (56) Colo. 40.
- poisons for, (57) 135.
- relation to soil reaction, (60) 713.
- spraying and dusting experiments, (56) 40.
- spread and behavior, (57) 233.
- subdued by crops, (56) 40.
- suppression through insect attack, (57) 655.
- susceptible to curly leaf, (53) Calif. 449.
- systematic laboratory studies, (60) 327.
- types and eradication methods, (58) 638.
- value, (51) 39.
- water, control, (53) 239.
- Week as phenological time unit, (59) 313.
- Weevil borer, notes, (56) 358.
- Weevil root borer larvae, control, (54) 53.
- Weevils—
 - breeding for insecticide tests, (60) 158.
 - in wheat, (54) 757.
 - injurious Neotropical, (51) 59.
 - studies, (55) 854.
- Weighing machine, chart-recording, description, (58) 666.
- Weight—
 - control, treatise, (60) 193.
 - normal, maintaining, (56) 693.
- Weir—
 - control section, discharge measurements, (51) 788.
 - measurements, (58) 180.
- Weirs for measuring irrigating streams, construction, (58) Ariz. 582.
- Weirs, semicircular, tests, (52) 584.
- Weirs, suppressed, analysis of weir coefficient, (53) 282.
- Welding cast iron pipe, (58) 779.
- Wells—
 - artesian, in North Dakota, (52) 685.
 - artesian, leaky, exploring and repairing, (59) 281.
 - artesian, potential source of danger, (52) 886.
 - boring in India, (55) 178.
 - construction, (51) U.S.D.A. 483.
 - deep, pumping from, effect on water table, (57) 473.
 - drilling, California method, (54) Ariz. 780.
 - irrigation and drainage, capacity, (54) Mont. 876.
 - pollution via ground water, experimental, (58) 184.
 - protection, (53) 86.
- West Virginia—
 - Station, biennial report, (59) 99.
 - Station, notes, (51) 498; (53) 600; (54) 599, 900; (55) 600; (56) 198; (57) 498.
 - Station, report, (60) 398.
 - Station, work and tentative plans, (53) 96.

- West Virginia—Continued.
 University, notes, (51) 498; (53) 600;
 (54) 599, 798, 900; (56) 198; (57)
 498; (58) 397.
- Western Society of Farm Economics, notes,
 (57) 399.
- Whale—
 meat and bone, analyses, (52) Calif.
 71.
 muscle, anaerobe isolated from, (57)
 378; (58) 474.
 oil, composition, (51) 313.
 oil, vitamin A in, (51) 565.
- Whales, acute gangrenous infection, (55)
 876.
- Wheat—
 aberrants and speltoids, cytological
 studies, (53) 426.
 acreage and production in United
 States since 1866, (55) 687.
 Aegilops and rye hybrid, notes, (58)
 320.
 Alabama Bluestem, behavior, (51)
 N.C. 832.
 albinos, studies, (60) 629.
 Alternaria affecting, (55) 445.
 American, buying for export, (53) 593.
 American, disposition since 1896, (59)
 588.
 American, selling abroad, (53) 594.
 analyses, (53) 666; (55) Mich. 825.
 anatomical structure, effect of climate,
 (57) 718.
 and Aegilops hybrids, (53) 138, 332;
 (55) 226, 633; (58) 525.
 and Aegilops hybrids, chromosome be-
 havior, (54) Me. 325.
 and Aegilops hybrids, morphology and
 cytology, (56) 633.
 and flax mixtures, tests, (51) Minn.
 436, N.Dak. 438, (53) Minn. 131,
 N.Dak. 334, N.Dak. 529; (54) S.
 Dak. 34; (55) Minn. 332, N.Dak.
 527; (56) Mont. 133, Minn. 524;
 (57) 528; (58) Minn. 828; (59)
 Ohio 824; (60) Mont. 729.
 and flax mixtures under irrigation,
 (57) Mont. 429.
 and flour, studies, (53) 311, 802; (56)
 502.
 and rye hybrids, (51) Wash.Col. 128;
 (55) Ga. 131; (56) 633; (58) 825;
 (60) 429.
 chromosome behavior in, (56) 634.
 cytological studies, (56) 31.
 fertile, segregation in, (56) 634.
 hairy neck in, (52) 223.
 and rye relations, (59) 589.
 and spelt crosses, behavior, (55) 127.
 and vetch as cover crop combination
 for raspberries, (60) West.Wash.
 740.
 areas, State, (56) Ill. 386.
 Argentine, costs of transportation and
 handling, (55) 886.
- Wheat—Continued.
 baking quality, (51) N.Dak. 834.
 effect of fertilizers, (51) 530.
 effect of storage, (52) 258.
 effect of time of nitrogen fertiliza-
 tion, (57) 434.
 behavior and adaptation, (52) Calif.
 33.
 belt, harvest labor in, U.S.D.A., (51)
 295, 489.
 belt, trends in agriculture, (60) 884.
 black chaff in Russia, (55) 748.
 black chaff, notes, (57) 347.
 black point, fungi causing, (53) 750.
 black point, pathological morphology,
 (53) 749.
 black point, studies, (55) N.Dak. 542;
 (57) 841; (58) 846.
 black rust, studies, (51) 46; (54) 145.
 black stem rust, history, (55) 544.
 black stem rust in Denmark, (54) 544.
 Blackhull, merits, (57) Kans. 433.
 blossom midges, differentiation, (60)
 850.
 bran—
 and pollards, composition and
 feeding value, (52) 167.
 cellulose, digestibility by fowls,
 (53) 172.
 digestibility, (51) 273.
 feeding value, (53) 666; (55) 163.
 laxative action, (56) 291; (58)
 387.
 proteins of, (54) 309; (56) 188.
 tryptophan and cystine in, (52)
 802.
 v. coffee bran for cows, (58) 68.
 v. rice bran, feeding value, (56)
 Ark. 375.
 breeding—
 and selection, (51) Ga. 132.
 experiments, (51) Mich. 133,
 N.Dak. 832; (52) Calif. 33,
 Mich. 334, Utah 732, 823; (53)
 Okla. 133, 230, Mo. 431; (54)
 231, Mo. 732; (55) 223, Tex.
 332, N.Dak. 527; (56) Ark. 332,
 Utah 525, Wash.Col. 525, 830;
 (57) Ohio 125, Tex. 126, Mo.
 424, Okla. 523; (58) Ark. 321,
 Ill. 322, Mo. 428, 828, U.S.D.A.
 834; (59) Ga. 221, 430, Mich.
 432, Calif. 727, Tex. 729, N.Dak.
 825; (60) Ill. 222, Oreg. 731,
 Wash.Col. 814.
 for high protein content, (56) 430.
 in England, (57) 133.
 objectives in, (59) 631.
 papers on, (59) 832.
 work and genetic studies, (58)
 218.
 brown rust, studies, (54) 145.
 bulb fly, life history and bionomics,
 (60) 653.

Wheat—Continued.

- bulb fly, notes, (59) 657.
- bunt, *see* Wheat smut, stinking.
- Burbank, characteristics and behavior, (55) 739.
- by-products, feeding value, Minn., (53) 170, 469, 575.
- Canada as producer and exporter, (54) 185.
- Canadian—
 - American importation, (56) 486.
 - excellent quality, (60) 336.
 - marketing, (53) 594.
 - transportation to the sea, (58) 81.
- carbon dioxide output, effect of anesthetics, (56) 125.
- characteristics in Italy, (51) 232.
- chromosome number, relation to morphological and physiological characters, (52) 220.
- cold resistance in, (60) 214.
- combined, moisture in, (60) Okla. 437.
- commercial protein test, (56) 340.
- composition, effect of geographical factors, (58) 631.
- composition, effect of soil temperature and moisture, (53) 748.
- Conference in North Dakota, report, (59) 831.
- correlated inheritance in, (56) 520.
- correlation between quantitative characteristics, (54) 127.
- correlations and yields in, (56) 830.
- cost of production, (52) W.Va. 589; (53) U.S.D.A. 489; (54) Mo. 782; (56) Ohio 82, U.S.D.A. 784.
- effect of yield, (56) Ky. 181.
- in South Africa, (55) 285.
- in United States and Canada, (52) 191.
- pre-war and post-war, (54) 78, 79.
- covered smut, control, (59) N.Dak. 841.
- cracked, feeding value, (55) Minn. 362.
- crinkle joint, studies, (60) Mont. 744.
- crisis in Northwest, (51) 90.
- critical moisture periods, (58) 734.
- crop, 1925, quality, (58) Ill. 323.
- crop, 1927, protein and test weight, (58) N.Dak. 433.
- crop, 1928 North Dakota, survey, (60) N.Dak. 818.
- crop, world, of 1924, (53) 593.
- cross, linkage in, (56) 130.
- cross, segregations in, (59) 622.
- crosses—
 - genetics of, (57) 822; (60) 525.
 - inheritance in, (55) 224.
 - inheritance of awns in, (59) 127.
 - inheritance of rust resistance, (56) 544; (57) 147.
 - segregation and correlated inheritance in, (52) 521.
- culms, number of nodes in, (56) 230.

Wheat—Continued.

- cultural and planting tests, (56) Kans. 822.
- culture, (57) S.Dak. 530.
- continuous, (52) N.J. 721.
- continuous, with and without legumes, (55) N.J. 18.
- experiments, (51) 36, P.R. 833; (52) Kans. 433, Alaska 528, Nebr. 529; (53) U.S.D.A. 333; (54) 531; (56) 35, Md. 132; (57) Okla. 226, Alaska 522; (58) 828; (60) Ga.Coastal Plain 132, 133, Ohio 636, Ore. 731, Wash.Col. 814.
- in Canada, history and status, (59) 137.
- in India, (57) 628.
- in Kansas, relation to Hessian fly, (53) 361.
- in Kenya Colony, (55) 437.
- in New South Wales, (53) 740.
- in Rumania, (54) 441.
- in Saskatchewan, (57) 531.
- in the world, ecological bases, (60) 136.
- intertilled crops v. fallow, (54) 833.
- under dry farming, (58) U.S.D.A. 324.
- with duck-foot and lister drill, (55) Colo. 219.
- with green manure crop, (51) N.J. 622.
- cultures, changes in pH values, (56) 324.
- cutting, optimum stage, (52) 230.
- cutting tests, (53) Can. 530; (58) Minn. 828.
- dead, milling and baking qualities, (55) 533, 534.
- degeneration, (53) 55.
- delayed germination in, (52) 737.
- density, factors affecting, (57) 133.
- Denton, new variety for north Texas, (60) Tex. 537.
- deterioration, studies, Tenn., (51) 349; (52) 544; (57) 639; (60) 148.
- development, effect of seeding date, (56) Wis. 732.
- disease—
 - caused by *Pseudomonas tritici*, (56) 749.
 - in Idaho, (54) 650.
 - resistance in, inheritance, (58) 43.
 - resistance, relation to pentosan content, (59) Wis. 47.
 - resistant strains, (59) 239.
- diseases—
 - and control in Egypt, (52) 745.
 - near Nanking, control, (57) 640.
 - notes, (51) 48; (55) 747; (56) 448.

Wheat—Continued.

- dockage in, (51) N.Dak. 394.
 downy mildew, notes, (57) 50.
 drill calibration, relation to stand and yield, (52) 828.
 dry-farmed, injury from false wire-worms, (56) Idaho 63.
 durum, geographical center of origin, (53) 138.
 durum, selection, (58) 638.
 duty of water for, N.Mex., (54) 680; (55) 478.
 dwarfing in, (52) 220; (56) Minn. 222.
 earliness, effect of environment, (52) Calif. 25.
 Early Baart, for western agriculture, (57) 133.
 Early Baart, improvement, (54) 136.
 early, of Eastern Siberia, (56) 136.
 effect of—
 acid soil, (54) 213.
 delayed seeding, (54) Wash.Col. 827.
 fallow, (56) Wyo. 825.
 formaldehyde, (51) 28.
 irrigation, (53) 531.
 mulching, (59) Ohio 223.
 nitrates, (54) Nebr. 314.
 preceding crop, (52) Ky. 434, Utah 733, Wash.Col. 829; (59) Wash.Col. 32.
 weed growth in, (55) Iowa 726.
 Einkorn, (54) 640.
 electroculture experiments, (51) 232; (54) 633, U.S.D.A. 732.
 embryo, factor essential for reproduction in, (53) 62.
 embryo, vitamin E in, (54) 561.
 endosperm, phytosterols of, (52) N.Y. State 708.
 endosperm, proteins of, (54) 309.
 English, digestibility, (60) 659.
 ergot, notes, N.Dak., (51) 848; (55) 542.
 experiments in Canada, (53) 534.
 export shipments, routing, (53) 295.
 export trade of Canada, price spreads and shipment costs, (55) 382.
 exports from Pacific Northwest, (55) Wash.Col. 483.
 exports from United States, future, (52) 694.
 expression of awns in, genetic recombination for, (60) 324.
 fall v. spring plowing, (52) Wash.Col. 829.
 fallowing for, value, (54) 440.
 farm, Government, at Jacobabad, (51) 699.
 farmers of Kansas, more profit for, (52) U.S.D.A. 690.
 Federation, characteristics, (51) Idaho 534.
 feeding value for pigs, (54) Nebr. 365.

Wheat—Continued.

- feeds, composition and digestibility, (51) 273.
 fertilizer experiments, (51) Minn. 119, 232; (52) 121, 230, Kans. 434; (53) Can. 530, Ariz. 733; (54) Ohio 123, 531; (55) Nebr. 636; (56) Ky. 132, Ohio 138, Utah 525, Ariz. 731, Kans. 822; (57) Ohio 125, Okla. 125, N.C. 214, Mo. 411, Pa. 436; (58) 224; (59) 319, Idaho 728; (60) 25, Ariz. 133, Oreg. 133, Alaska 728.
 fertilizer experiments, triangular, (53) Ga. 230.
 fertilizer nutrients required by, (53) 216.
 flag smut—
 cause, (51) 447.
 organism, studies, (54) 50.
 resistance, breeding for, (56) 845.
 studies, (55) 845; (58) U.S.D.A. 46.
 flour, *see* Flour.
 flowers, blooming, (51) 342.
 flowers, pistillody in, (51) 825.
 foot rot—
 control, (52) Kans. 445.
 effect of tillage, fertilizers, and rotations, (58) 545.
 fungus associated with, (55) 846.
 in Kansas, (57) 149.
 notes, (51) Wash.Col. 149; (52) Wash.Col. 845; (54) U.S.D.A. 452; (56) Kans. 841; (58) 143, 545.
 spread in tillage plats in Kansas, (55) 846.
 for grain and forage, culture experiments, (60) Wash.Col. 136.
 forage and seed yields after other crops, (59) Wash.Col. 32.
 forage yields, (52) Mont. 435.
 forecasts in Punjab, (52) 692.
 foreign and domestic, milling and baking tests, (56) 39.
 foreign import duties on, (53) 595.
 freaks in, (58) 429.
 French, baking tests, (57) 233.
 frosted, feeding value, (58) 868.
 frosted, seed value, (60) 818.
 frozen, at various stages of maturity, germination, (54) 737.
 frozen, germination tests, (56) Mont. 133.
 Fulhio, for Ohio farms, (56) Ohio 137.
 furrow-drilled, yields, (52) Mont. 435.
 Fusarium affecting, (52) 747.
 future, 1926 May, transactions in, (57) U.S.D.A. 86.
 future, 1926 December, transactions in, (60) U.S.D.A. 285.
 futures, fluctuations in, (56) 686
 Garnet, behavior, (58) 34.
 Garnet, characteristics, (54) 833.

Wheat—Continued.

- gasoline color value, determining, (55) 611.
- genetic and cytological studies, (54) 223.
- genetic characters, effect of physiological conditions, (51) 738.
- genetics of, (56) 430.
- germ—
 - commercial, pellagra-preventive action, (58) 297.
 - extract, production and value, (53) 865.
 - oil, effect on egg hatchability, (60) Ill. 260.
 - oil, effect on oxidation of animal fat, (58) 494.
 - oil, phytosterols of, (56) 310.
 - vitamin B extraction from, (56) 11.
 - vitamins in, (58) 87.
- germination—
 - and growth, effect of eosin and erythrosin, (57) 416.
 - period of toxicity of fertilizers, (54) 516.
 - relation to after-ripening conditions, (52) 132.
 - tests, (52) Mont. 435; (57) 232; (60) 27.
- gliadin, preparation, (56) 202.
- glume blotch, notes, (52) 448.
- glutelins of, (58) 110.
- gluten content, effect of climate, (57) 718.
- gluten quality in, (57) 111.
- gluten, studies, (51) 806.
- grades and quality, (56) 39.
- grades, relation to protein content, (55) 382.
- grading, Federal system, (53) 314.
- grain moth affecting, (51) 157.
- grains, texture and weight, effect of soil moisture, (60) 335.
- green manuring experiments, (59) N.J. 319.
- growers, price responsiveness, (53) 393.
- grower's problem in readjustment, (54) 184.
- Growing Experiment Station in Sicily, (59) 800.
- growing in winter by artificial light, (57) 38.
- growth—
 - acidity changes, (51) 651.
 - effect of depletion of phosphorus, (52) 426.
 - in artificial light, (51) 25.
 - in sand and solution cultures, (52) 28.
 - periods, effect of optimum water supply, (54) 220.
 - relation to proportions of nutrients, (52) 123.

Wheat—Continued.

- growth—continued.
 - salt requirements at different phases, (56) 515.
 - studies, (52) Calif. 25.
- hard, in alfalfa, germination, (52) 737.
- hard spring, ash of, (57) 112.
- hard spring, correlation studies, (55) 503.
- hardiness and strength tests, (56) Ill. 229.
- harvesting with combine, (59) Ohio 223.
- harvesting with combine, losses in, (56) 282.
- hay, feeding value, (54) Calif. 373.
- hay production, (54) Calif. 329.
- hay yield, (60) Ga. 815.
- heat drying process for, (60) 137.
- heat-damaged, tests, (58) U.S.D.A. 34.
- Helminthosporium blight, studies, (51) N.Dak. 847.
- heritable characters and capacity for high-protein grain, (54) 323.
- high-protein, marketing, (60) Mont. 87.
- high-protein, production and marketing, (53) Kans. 534.
- Hope, immunity from stem rust, inheritance, (59) 128.
- hybrid —
 - correlated inheritance in, (59) 821.
 - genetic and cytological studies, (58) 423.
 - rare, (51) 432.
 - seeds, method of producing, (58) 527.
 - selections of Marquis and Kota, (56) N.Dak. 437.
 - tetraploid, cytology, (57) 520.
- hybrids—
 - anomalies in, (56) 521.
 - biennial cropping, (53) 832.
 - chromosome behavior in, (58) 525.
 - correlation of characters in, (54) 631.
 - cytological studies, (57) 822; (58) 26.
 - genetic and cytological studies, (52) 429.
 - inheritance of leaf rust resistance, (55) 128.
 - inheritance of winter hardiness and growth habit, (58) 228.
 - new wild-cultivated, (58) 527.
 - nitrogen content, (58) 229.
 - preponderance of characters of one parent, (57) 31.
 - rare, (58) 525.
 - studies, (59) 136.
 - triploid, chromosome behavior, (56) 633.
- hylogenetic investigations, (58) 525.
- Illinois soft, baking qualities, (57) Ill. 591.

Wheat—Continued.

- immature, germination tests, (55) Alaska 433.
- improvement, (53) N.C. 735, N.C. 835; (56) Kans. 822.
- in the Northwest, (54) 185.
- in 3500 B.C., (57) 233.
- in various culture solutions, studies, (51) Mich. 124.
- in water culture, salt requirement, (52) Mich. 518.
- India as producer and exporter, (57) 784.
- Indian, improvement, (59) 438.
- Indo-Abyssinian emmer, coleoptile bundles, (57) 232.
- infection by *Ophiobolus graminis*, phenomena attending, (60) 747.
- inheritance—
 - of disease resistance in, (57) 246.
 - of earliness, (52) 728.
 - of grain color in, (53) 128.
 - of winter hardiness, (51) Wash. Col. 128.
 - studies, (52) Wash.Col. 825; (54) Wash.Col. 822; (55) 224; (59) 223.
- insect survey in Ohio, Ohio, (51) 453; (52) 456.
- insects affecting, Iowa, (55) 554; (59) 55.
- insects and mites affecting, (54) 257.
- international trade in, (55) 185.
- international trade, rôle of cooperative organizations in, (58) 686.
- Iobred, behavior and characteristics, (51) Iowa 432.
- iron availability in nutrients, (52) 123.
- irradiated, antirachitic properties, (52) 763.
- irradiated, effect, (53) 568.
- irrigation experiments, (55) U.S.D.A. 433; (56) 35, Utah 525; (60) Oreg. 132.
- irrigation, optimum time for, (57) 132.
- jointworm parasite, behavior and longevity, (58) 165.
- jointworm parasite, biology, (57) 562.
- jointworm, studies, (60) Oreg. 757.
- Kanred, in Argentina, (55) 739.
- Kansas, marketing, Kans., (52) 489; (56) 885.
- Kansas, movement to market, factors affecting, (58) Kans. 786.
- Kansas, quality, Kans., (52) 439; (56) 830.
- kernel—
 - development, (53) Can. 138; (59) 330.
 - hardness, relation to protein in, (58) 533.
 - layers, nutritive value, (55) 57; (56) 68.
 - texture, effects, (55) U.S.D.A. 641.

Wheat—Continued.

- Kota, adverse views on value, (54) 441.
- Kota and Marquis, comparison, (54) 441.
- Kota, qualities, (54) 441.
- leaf anatomy and rust resistance, (59) 639.
- leaf rust—
 - effect on seed production, (59) 343.
 - inheritance, (59) Ind. 748.
 - physiologic specialization in, (58) 651.
 - resistance, (56) Wis. 746, Kans. 841.
 - resistance, inheritance, (55) 128.
 - strains, (53) 646.
- length of head and other characters, correlations, (54) 26.
- liguleless durum, from Cyprus, (56) 39.
- linkage phenomena in, (57) 29.
- lodging, effect of sulfuric acid, (60) 150.
- lodging in, (59) 326.
- loose smut, control, (59) N.Dak. 841.
- loose smut, popular description, (55) N.Dak. 446.
- marketing, (58) Ill. 380.
 - in Maryland, (51) 192.
 - judging price risks in, (59) 885.
 - protein test in, (55) Mont. 739.
- Marquis—
 - and Turkey crosses, genetics of, (54) 822.
 - comparison of strains, (58) 136.
 - composition and baking quality, effect of stage of maturity, (60) 227.
 - grown in central Montana, mixtures in, (60) 336.
 - variations with different spacing, (60) 537.
- McNary-Haugen plan applied to, (56) 787.
- Mesopotamian, baking qualities, (55) 832.
- Mesopotamian, milling and baking tests, (52) 835.
- middlings—*see also* Middlings.
 - coarse, digestibility for pigs, (54) 467.
 - digestibility, (51) 273.
- mildew resistant varieties, (56) 48.
- mildew, susceptibility, effect of salt nutrition, (60) 446.
- milling—
 - and baking qualities, effect of tillage, (55) Kans. 234.
 - and baking tests, (51) Oreg. 739, Nebr. 803; (52) Calif. 33; (53) Okla. 133, Ariz. 734; (54) Ill. 327, Nebr. 333; (55) N.Dak. 532; (56) Ariz. 731; (57) Can. 33; (58) 136.

Wheat—Continued.

- milling—continued.
 - and flour disposition since 1879, (59) 484.
 - industry, relation to ergots, (59) 541.
- Mindum, supernumerary spikelets in, (51) 525.
- minimum fertilizer requirement, (54) R.I. 30.
- Minnesota, protein survey, (54) 536.
- moisture—
 - and protein tests before combining, (60) 137.
 - determination in, (53) 715, 807; (55) 805.
 - in, effects, (54) 833.
 - in, under varying humidity, (54) 636.
- monopoly in Switzerland, (58) 788.
- Montana, larger markets for, (58) Mont. 81.
- mosaic—
 - description, (54) U.S.D.A. 146.
 - development, factors affecting, (59) 343.
 - soil relationships, (59) 49.
 - studies, (58) 43.
- Nabob, characteristics, (59) Ohio 222.
- natural hybridization studies, (58) 737.
- nematode disease, notes, (52) S.C. 544; (55) 545; (59) 640.
- new coecid affecting, (59) 354.
- new mutation in, (51) 428.
- New Zealand-grown, tests, (52) 230; (55) 437; (59) 736.
- nitrogen and gluten in, variations, (55) 337.
- nitrogen percentage, converting into that of protein, (56) 111.
- normal and frosted, comparison, (60) Mont. 228.
- North Dakota, protein in, (53) N.Dak. 838.
- North Dakota, quality and protein content, (54) 536.
- nutrient requirements, (53) R.I. 325.
- nutrient solutions for, (52) Mich. 325.
- nutritive value, (51) Wash.Col. 169; (52) Wash.Col. 866; (54) 357; (57) 889.
- nutritive value, effect of fertilizers, (53) Ohio 566.
- O.A.C. No. 104, yields, (58) 498.
- of Crimea, (53) 35.
- of Khiva, (55) 136.
- of Stavropol, (53) 138.
- of Tunis, composition, (53) 134.
- oil—
 - as source of vitamin E, (56) Ark. 363.
 - lactation-promoting factor in, (57) 897.
 - studies, (55) 407.

Wheat—Continued.

- oil—continued.
 - v. cod-liver oil, as sources of vitamin E, (57) 897.
 - vitamin A in, (60) 293.
- on fallow, yield, (60) Wyo. 733.
- optimum soil reaction for, (53) 320.
- orange rust, (51) 46.
- pedigreed, inheritance of fluctuating characters, (58) 729.
- periodicity of growth, (52) Wash.Col. 829.
- Persian—
 - hybridological analysis, (54) 824.
 - in Transcaucasia, (53) 35.
 - milling and baking qualities, (54) 640.
 - racess of, (54) 825.
- phosphorus in, (60) 204.
- physiological functions, effect of smut infection, (60) 150.
- pickling machine, description, (53) 350.
- pickling to prevent ball smut, (56) 845.
- pickling with carbonate of copper, (56) 350.
- plant—
 - development from seminal roots, (51) 237.
 - haploid, studies, (56) 330.
 - moisture usage, (51) Wash.Col. 136.
 - normal root flora and soil sterilization, (58) 319.
 - nutritive value, (54) 570.
- planting and spacing experiments, (57) Okla. 125.
- planting tests, (60) Mont. 730.
- plowing and seeding tests, (51) Ohio 433.
- pool, Canadian, yearbook, (55) 784.
- pool cost and price comparisons, (59) 89.
- pools, Canadian, (53) 594.
- pools, organizing and operating, (53) 594.
- predisposition to seedling blight, (55) 844.
- preparation for hog feeding, Okla., (53) 171; (58) 268.
- preparing fallow for, (60) Mont. 730.
- price differentials between Minneapolis and Winnipeg, (58) 588.
- price series, world, (60) 386.
- prices, Ill., (56) 386; (58) 380.
- changes in, reactions to, (58) 81.
- compared with prices of flour and bread in Great Britain, (54) 82.
- comparisons between United States and Canada, (57) 385.
- forecasting, (56) 688.
- index numbers, (54) Ohio 184; (59) N.Dak. 885.

- Wheat—Continued.
- prices—continued.
 - relation to transportation costs, (53) 593.
 - seasonal fluctuations, (54) Kans. 687.
 - stabilization during the war, (54) 82.
 - production—
 - and marketing in America, (51) 892.
 - European, and import requirements, (54) 82.
 - in France, (55) 338.
 - in Maryland, (60) Md. 637.
 - labor used in, (57) Ky. 284.
 - of world, treatise, (51) 641.
 - on irrigation projects, (54) Wash. Col. 434.
 - power and labor requirements, (60) 79.
 - products, effect of aging, (53) 311.
 - properties, effect of severe weathering, (59) 331.
 - protein—
 - and ash in, converting to uniform moisture base, (52) U.S.D.A. 312.
 - and ash percentage, (59) Mich. 432.
 - in, (52) Calif. 38; (55) Nebr. 636.
 - in and yield, effect of nitrate nitrogen, (54) 737.
 - in, factors affecting, (52) 440; (55) 234, N.Dak. 528; (60) Mont. 729.
 - in, relation to physical characteristics, (53) 839.
 - in, testing, (54) 505; (56) U.S. D.A. 614.
 - survey, (58) N.Dak. 34.
 - survey in Minnesota, (56) 437.
 - proteins—
 - biological value, (52) 762; (56) 290.
 - effect of nitrogen fertilizers, (57) 829.
 - effect of time of irrigation, (57) 132.
 - in, price factor, (57) Nebr. 633.
 - relation to baking quality, (57) Nebr. 523.
 - relation to dark hard kernel, (57) 38.
 - quality, effect of cropping systems, (56) 39.
 - quality, effect of delayed harvesting, (59) 330.
 - quality, factors affecting, (52) Kans. 410; (58) 136.
 - quantitative attributes, variability, (60) 817.
 - quantitative characters in, inheritance, (58) 525.
- Wheat—Continued.
- rate of manuring experiments, Minn., (51) 119, 120; (53) 119.
 - ration, balanced, cause of failure, (53) Wis. 473.
 - ration, effect of variation of sodium in, (54) 357.
 - Red Fife, quality, (52) 638.
 - Research Conference, notes, (60) 400.
 - Research Conference, report, (60) 817.
 - research in Russia, (57) 531.
 - residual effects of different irrigation treatments, (58) 223.
 - respiration and evaporation, effect of smut, (57) 420.
 - respiration, effect of lactic acid, (52) 626.
 - Ridit, description, (51) Wash.Col. 136.
 - Ridit, production, (51) 697.
 - root—
 - development, (52) 736.
 - development, effect of superphosphate, (55) 234.
 - grub, biology and control, (59) 658.
 - hairs, protoplasm of, effect of pH, (52) 124.
 - rot in Idaho (52) 347.
 - rot, studies, (60) Tenn. 148.
 - rots, (52) Minn. 648.
 - roots, fungus flora, in Manitoba, (60) 149.
 - roots, growth in salt solutions, (56) 425; (57) 24; (60) 27.
 - rosette disease, control, (52) U.S.D.A. 347; (53) Ill. 349.
 - rosette disease, intracellular bodies of, (53) 848.
 - rosette resistant varieties, (51) Ind. 845.
 - rotation experiments, (51) N.Dak. 832; (52) 230, Oreg. 435, N.Y.Cornell 526, Utah 732, U.S.D.A. 827; (53) Wyo. 133, U.S.D.A. 528; (54) 31, Calif. 230, 530; (56) Idaho 339; (57) Ohio 125, N.C. 213; (58) U.S.D.A. 30, U.S.D.A. 531; (59) Mont. 37, Ind. 728, N.C. 728, N.C. 823.
 - rust—
 - control, (52) Kans. 445; (59) N.Dak. 841.
 - cytological study, (59) 541.
 - development, relation to climate, (52) 645.
 - differential reaction of strains to, (57) Nebr. 148.
 - in Australia, (55) 348.
 - infection at different stages, (53) N.Dak. 334.
 - infection, effect on water requirement, (51) 48.
 - infection, relation to time of maturation, (52) 846.
 - infection source in Amur region, (60) 50.

Wheat—Continued.

rust—continued.

- notes, (51) N.Dak. 847; (57) 639.
 nursery, (51) N.Dak. 849.
 problem in New South Wales, (51) 247.
 problems, (54) Can. 744.
 relation to barberry, (55) Ill. 446.
 relation to climate, (53) 543.
 relation to cytological conditions, (57) 148.
 relation to weather, (58) 747.
- rust resistance—
 and acidity, (56) 544.
 and leaf anatomy, (59) 639.
 in spring wheat, (57) 842.
 inheritance, (56) 544; (57) 147.
 morphological and physiological studies, (51) 448.
 studies, (59) 639.
- rust—
 resistant, development, (57) Can. 33.
 resistant varieties, Ind., (51) 844; (55) 42; (57) 638.
 situation in Colorado, (55) Colo. 242.
 studies, (53) Ga. 246; (57) N.C. 245; (59) 49, N.C. 749.
 varietal susceptibility, (53) Minn. 150; (59) Mich. 432.
 yellow, susceptibility, (57) 542.
- rusted, cutting tests, (58) Minn. 828.
 rusted, effect of harvesting early, (59) 330.
- rusts—
 at Bellevue, France, (58) 446.
 control by sulfur dust, (58) 544, 546.
 in the Far East, (60) 50.
 international study, (57) 542.
 leaf and stem, control, (57) 148.
 notes, (55) 346.
 yellow and brown, in India, (57) 542.
- scab—
 growth, relation to pH, (51) 543.
 in Minnesota, susceptible varieties, (59) 343.
 relation to preceding crop, (51) 752.
 resistant varieties, (54) Mo. 744.
 studies, (51) Minn. 350 N.Dak. 846.
 varietal resistance, Mo., (51) 751; (57) 442.
 varietal resistance and susceptibility, (59) Mo. 240.
- screenings, effect on lamb flavor, (60) Mont. 761.
 screenings v. wheat, feeding value, (60) Mont. 762.
 seasonal water requirements, (55) 337.

Wheat—Continued.

seed—

- and seedling diseases, (51) N.Dak. 847.
 bed preparation, (54) 440; (55) Ohio 528.
 cleaners for, (57) U.S.D.A. 82.
 coats, gradient of permeability to iodine, (52) 29.
 effect of formalin on vitality, (56) 749.
 embryoless, (59) 518.
 germinating, respiration, effect of previous temperature, (57) 319.
 germination, effect of prussic acid, (59) 517.
 impurities and determination of origin, (60) 539.
 Kanred, detecting mixtures in, (52) 138.
 large and small, effect of continuous selection, (60) 227.
 modified hot water treatment, effects, (51) 849.
 production, effect of leaf rust, (59) 343.
 protection from insects, (53) 156.
 treated with formalin, germination, (51) 150.
 treatment, (58) 828.
- seeding experiments, (51) Minn. 133, Minn. 134, Nebr. 831, N.Dak. 833; (52) Ga.Coastal Plain 225, Nebr. 529; (53) Minn. 130, U.S.D.A. 134, Can. 530, N.C. 735, Iowa 754, N.C. 835; (54) U.S.D.A. 31, Ga.Coastal Plain 130, 531, Wash.Col. 827; (55) Ark. 30, Minn. 332, U.S.D.A. 433, Ohio 528, W.Va. 529, Idaho 825; (56) Minn. 524, Utah 525, Wash.Col. 525, 825; (58) S.Dak. 325; (60) Wyo. 733.
- seeding experiments in western United States, (55) 532.
- seedling blight, studies, (51) Wis. 446; (53) 748.
- seedling, translocation of food materials, (54) 521.
- seedlings—
 absorption of phosphorus and potassium by, effect of pH, (58) 213.
 as affected by aluminum salts, (52) N.J. 726.
 composition in early stages, (57) 24.
 effect on reaction of nutrient solution, (51) 126.
 etiolated, lipochromes, (52) 610.
 resistance to low temperatures, effect of soil moisture, (58) 822.
 root development, (51) 224.
- segregation relative to awning in, (57) 120.

Wheat—Continued.

- selection experiments, (51) 232.
- selection in, (57) 727.
- shoots, etiolated, feeding to rats kept in darkness, (60) 688.
- shoots, etiolated, vitamin A formation in, (58) 87.
- "shot," germination tests, (57) 50.
- situation, (51) U.S.D.A. 794.
 - December, 1926, to March, 1927, (57) 384.
 - April to July, 1927, (58) 81.
 - August to November, 1927, (59) 484.
 - December, 1927, to March, 1928, (59) 885.
 - April to July, 1928, (60) 590.
- developments in, (53) 796.
- in 1925, developments in, (54) 287.
- international, (53) 492.
- world, (54) 884; (55) 483, 786; (56) 486; (59) 485.
- world, bibliography, (55) 786.

smut—

- control, (51) Wash.Col. 149, Minn. 150, 650, 651; (52) Ohio 448, Idaho 844; (53) Minn. 149; (54) 46, 449, Ohio 746, Wash. Col. 841; (55) 348, N.Dak. 542, Oreg. 651; (56) 350, Wash.Col. 540, 845; (58) Tenn. 43, U.S.D.A. 650, 845; (59) N.Dak. 841; (60) Va. 149, 240, Wash.Col. 830.
- control, equipment for treating seed, (55) 180.
- control, hot water treatment, (52) 546; (53) 647; (55) U.S.D.A. 45.
- dry treatment of seed, (52) 148; (56) 749.
- dusting machine for, (53) 486.
- effect on respiration and evaporation, (57) 420.
- infection, cytological studies, (53) 647.
- infection, effect on physiological functions, (60) 150.

smut, loose—

- control, (58) 145, 545.
- control, breeding for, (56) 653.
- in Indiana, (56) 653.
- studies, (57) 247, 446.
- susceptible varieties, (58) 545.

smut—

- new white, in Quebec, (59) 540.
- notes, (55) 346; (56) 541; (57) 639.
- resistance, notes, (51) Wash.Col. 136.
- species, distribution and specialization, (59) 844.

Wheat—Continued.

smut, stinking—

- control, (51) Ariz. 48, Mich. 148, 247, Ohio 247, Ohio 445, Idaho 844; (52) Kans. 50, Mich. 50, Mich. 346, Kans. 445; (53) Ohio 541, 647; (54) 146, 248, Utah 845; (55) Calif. 348, 544, U.S.D.A. 652; (56) U.S.D.A. 48, 350, Colo. 839, Iowa 841; (57) Ohio 144, 446, Nebr. 523, Ohio 641, Idaho 740, 747, U.S.D.A. 747, 748, 840, 841; (58) 43, 146, 649, 747; (59) Wash.Col. 46, Colo. 49, 146, 640, Idaho 748; (60) 345, 347, Del. 744.

- control, breeding for, (56) 653.
- effect of external factors, (59) 49.

- high grade of copper carbonate for, (60) Mont. 747.

- in Indiana, (56) 653.
- in Kansas, (55) 844.
- inheritance, (59) Wash.Col. 32.
- inheritance of resistance to, (55) 129.

- mercury preparations for, (58) 648.

- occurrence in rye, (54) 130.

- physiologic races, (60) 643.

- physiology and control, (51) U.S.D.A. 446.

- relation to soil moisture and temperature, (51) 543.

- resistance to, Calif., (52) 50; (57) 247.

- resistant varieties, (52) U.S.D.A. 545; (57) 347; (58) 244.

- resistant variety, (59) Mich. 445.
- studies, (56) Kans. 841.

- summary, (51) U.S.D.A. 350.

- Tillantin B and C for, (58) 46.
- varietal susceptibility, causes, (59) 639.

smut—

- studies, (52) Wash.Col. 844; (53) 647; (55) 545.

- susceptible varieties, (57) 247.

- soft, classification, (53) 138.

- solar energy used by, (53) 508.

- Sonora, genetics, (59) 622.

- sources of information, (53) 593.

- spacing experiments, (53) 527.

- species, chromosomes of, (58) 125.

- species, reduction division in, (52) 824.

- speckled leaf blotch, notes, (52) 448.

- speltoid chimeras in, (57) 121.

- speltoid, cytology, (60) 525.

- spike development, factors affecting, (58) 228.

- spikes, coefficients of compactness, (55) 739.

- spikes, density, instrument for study, (58) 830.

Wheat—Continued.

spring—

- and winter types in, (56) 728.
- breeding experiments, (56) Ill. 333.
- correlation studies, (55) 137; (59) 38.
- cost of production and profit, (58) Ill. 379.
- culture, (56) Ill. 639; (59) Ohio 824.
- culture and utilization, (55) Ohio 36.
- culture experiments, (53) U.S.D.A. 132; (54) U.S.D.A. 132; (55) Alaska 433, Oreg. 637; (56) Mont. 737; (58) Ill. 323.
- culture methods, (59) Mont. 37.
- factors for yield and quality in Montana, (56) U.S.D.A. 127.
- fall seeding experiments, (52) 633.
- inheritance of earliness in, (58) 825.
- movement, (55) Minn. 283.
- percentage returns, (51) Ind. 830.
- planting tests, (57) Idaho 726.
- region of North America, (60) 382.
- root behavior and yield under irrigation, (54) 130.
- root system, (60) 537.
- seeding experiments, (52) Idaho 828; (53) Wyo. 133; (55) Nebr. 229.
- size of seed experiments, (57) 826.
- time of plowing, (52) Kans. 434.
- varieties, (51) Idaho 830; (52) U.S.D.A. 827; (58) 33; (60) Mont. 729.
- varieties, characteristics, (57) 826.
- varieties for North Dakota, (58) N.Dak. 330.
- varieties susceptible to stem rust, (54) U.S.D.A. 844.
- variety tests, (51) Minn. 133, Minn. 134, N.Mex. 433; (52) Mont. 435, Utah. 732, Idaho 828, Wash.Col. 829; (53) Minn. 130, Minn. 131, N.Mex. 131, U.S.D.A. 134, N.Dak. 334, Wis. 432; (54) 530, Wash.Col. 827; (55) U.S.D.A. 132, Minn. 227, Minn. 228, Minn. 332, Nebr. 636, Nebr. 637, Oreg. 637, Minn. 734, Minn. 735, Idaho 825; (56) Mont. 133, Ill. 229, Ill. 333, Minn. 524, Utah 525, Wash.Col. 525, Kans. 822; (57) Can. 33, Tex. 126, N.Mex. 224, Minn. 226, Okla. 226, U.S.D.A. 524, Idaho 726, N.J. 727; (58) U.S. D.A. 532, Minn. 828; (59) Wash.Col. 31, N.Mex. 222, Idaho 728; (60) N.Dak. 34, Minn. 132, Oreg. 132, Wash.Col. 814.

Wheat—Continued.

spring—continued.

- weed-free culture, (60) Mont. 730.
- yields, (51) U.S.D.A. 135, Nebr. 831; (55) Ohio 528.
- yields after fallow, (52) Oreg. 435.
- yields and agronomic data, (52) Can. 733.
- yields under dry farming, (54) U.S.D.A. 30.
- standards, Canadian and United States, (58) 638.
- starch determination in, (52) 112.
- starches, viscosimetric study, (52) 13.
- State testing mill of Minnesota, report, (52) 736; (55) 532, 533.
- statistics, (54) U.S.D.A. 888.
- stem break disease, (57) 443.
- stem maggot—
 - control, (54) S.Dak. 152.
 - life history and habits, (51) S.Dak. 453.
 - summary, (54) S.Dak. 555.
- stem nodes, hypertrophy of cortical parenchyma in, (60) 835.
- stem rust—
 - and barberry eradication, (57) Colo. 445.
 - Berberis fendleri as alternate host, (58) 651.
 - control, (56) Minn. 544, Mont. 544; (58) Minn. 846.
 - differential reactions of strains, (57) Nebr. 539.
 - effect of fertilizers, (51) 448.
 - effect of sulfur dust, (58) 546.
 - epidemic, climatic conditions, (56) 244.
 - factors affecting development, (55) Nebr. 44.
 - in Manitoba, epidemiology, (59) 146.
 - inheritance of resistance to, (58) 45.
 - notes, (57) 444.
 - physiologic forms, (58) Nebr. 44, 45.
 - reaction in wheat hybrids, (59) 146.
 - reduction due to barberry eradication, (60) Mont. 745.
 - relation to barberry, (55) Mich. 45; (58) U.S.D.A. 747.
 - resistance, breeding for, (58) 846.
 - resistance, inheritance in Hope variety, (59) 128.
 - resistance, studies, (51) 651.
 - resistant varieties, (54) U.S.D.A. 844; (58) 45.
 - 3 forms, cytological studies, (55) 146.
 - urediniospore germination, (52) 347.
 - urediniospores, overwintering tests, (55) Nebr. 650.

Wheat—Continued.

- stem rust—continued.
 - varietal resistance and acidity, (56) 652.
- stem sawfly, studies, (54) 855.
- stems, insects affecting, N.Dak., (53) 652, 857.
- sterility in, cause, (54) Del. 633.
- storage, shrinkage and damage in, (56) Kans. 885.
- storage studies, (51) 834; (59) 626.
- straw—
 - as fertilizer, (53) Minn. 119.
 - effect on nitrate accumulation, (54) 420.
 - fertilizing value, Minn., (51) 120; (56) 513; (57) 213.
 - mulching, effect on potato wilt, (52) Pa. 243.
 - production of artificial manure from, (58) 721.
 - worm, reappearance in Utah, (56) 260.
- strength, effect of heat, (56) 710.
- strength of culms, factors affecting, (57) 327.
- stripe rust, notes, (52) 648; (57) Calif. 247.
- supplies, American, disposition, (55) 185.
- supply, potential, (55) 82.
- surplus dispensability in United States, (53) 594.
- take-all—
 - fungus, changing of name. (57) 842.
 - in Canada, (56) 350; (58) 546.
 - in South Australia, studies, (57) 842.
 - studies, (51) Ind. 845, N.C. 846; (53) N.C. 747; (54) 649; (55) 445; (57) N.C. 245, 748; (58) 46.
- tariff in France, (54) 287.
- threshing effect, (54) 878.
- tillage studies, (53) 528; (54) Kans. 440.
- tillering, (51) 237; (55) N.Dak. 528.
- time of cutting tests, Minn., (51) 133; (53) 131.
- time of maturation, effect on rust, (52) 846.
- tolerance for alkali, (52) 812.
- trade, ex-European, (60) 386.
- transpiration in, (57) 733; (58) 821.
- treated with copper carbonate, effect on mice, (56) 457; (58) 845.
- treated with copper carbonate, feeding value, Wash.Col., (54) 861; (60) 858.
- trials, cooperative rod-row, results, (59) 631.
- Trumbull, for Ohio farms, (56) Ohio 137.
- types and varieties for Maryland, (57) 32.

Wheat—Continued.

- types, varying characteristics, (56) 340; (58) 533.
- unevenly ripened, combining, (60) 379.
- v. barley in scratch grain, (60) 860.
- v. corn, heating effect on chickens, (60) Ill. 260.
- v. wheat screenings, feeding value, (60) Mont. 762.
- value for chickens, (58) Ill. 361.
- varieties, (51) Ga. 132, Wash.Col. 136, Ore. 739, Mo. 741; (52) Calif. 33; (53) U.S.D.A. 132, Okla. 133, Calif. 430; (54) 231; (55) N.C. 228, N.Mex. 433, Wash.Col. 831; (56) Ind. 132; (57) Tenn. 126, Calif. 225; (58) 830; (60) Colo. 40, West.Wash. 732.
 - and requirements, (58) 632.
 - baking quality, (53) Ohio 534.
 - characteristics, (55) Alaska 230.
 - characters affecting yield, (55) 831.
 - distribution, (59) Wash.Col. 528.
 - fertility in, (54) 535.
 - for Kansas, (53) 528.
 - for Minnesota, (55) Minn. 132.
 - gasoline color value, (56) 205.
 - improved, registration, (58) 533.
 - in Australia, (51) 39.
 - in Caucasus, zonal distribution, (56) 439.
 - in central Montana, (58) Mont. 638.
 - in England, (51) 39.
 - in France and North Africa, classification, (54) 135.
 - in France, key, (54) 640.
 - in New South Wales, (58) 136.
 - in Sweden, (53) 835.
 - leaf structure and developmental rhythm in, (58) 525.
 - length and color of coleoptile in, (58) 834.
 - merits, (55) Mich. 825.
 - milling and baking tests, (57) 133.
 - registered, class, origin, and acreage, (58) 533.
 - registration, (56) 433.
 - resistant to Hessian fly, (56) Ill. 230.
 - rust susceptibility, (53) Minn. 150.
 - select, (57) Tenn. 829.
 - susceptibility to disease, (56) Minn. 524.
 - tests, (54) Ill. 327.
 - tillering and culm weight, (59) 129.
 - yields, (51) Va. 35; (55) Mo. 132, Calif. 331; (58) Del. 428.
- variety as agronomic unit, (51) 529.
- variety, improved, (54) Minn. 30.
- variety survey in Washington, (59) 227.
- variety testing, methods, (60) 817.

Wheat—Continued.

variety tests, (51) Ohio 433, Minn. 636, N.Dak. 833; (52) Ga.Coastal Plain 224, Ind. 226, Mo. 334, Kans. 433, S.C. 528, Nebr. 529, N.J. 732; (53) W.Va. 31, Wyo. 133, Ga. 230, Md. 332, N.Dak. 529, Can. 530, Ariz. 733, N.C. 734, U.S.D.A. 834; (54) Ga.Coastal Plain 130, Mont. 327, Ind. 333, Mo. 732, Wyo. 733; (55) Tex. 332, Alaska 433, U.S.D.A. 433, Md. 526, N.Dak. 527, Idaho 825; (56) 35, Ark 332, Ga.Coastal Plain 523, Wyo. 526, Ariz. 731, Iowa 821, 825; (57) Ohio 125, Okla. 125, Ga. 225, 227, Mo. 424, Alaska 522, Okla. 523, Ind. 628; (58) Ark. 321, Ill. 322, S.C. 325, Alaska 427, Mo. 428, S.C. 632, Ga.Coastal Plain 732, 828, Okla. 828; (59) Ga. 221, Wyo. 223, N.J. 325, Ind. 728, N.C. 728, Tex. 729, Nebr. 824, N.Dak. 825; (60) Ga.Coastal Plain 132, Ariz. 133, Ill. 222, Ohio 636, Alaska 728, Oreg. 731, Wyo. 733, Ga. 815.

Velvetnode, inheritance of pubescent nodes in, (52) 332.

vicinism in, (51) 232.

viscosity and winter hardiness in, (57) 126.

viscosity measurements, effect of hydrogen peroxide, (54) 502.

vitamin B complex, proportions of F and G in, (59) 689.

vitamin B in, effect of fertilizers, Ohio, (57) 168; (58) 534; (59) 258.

water requirement, (58) Can. 223.

water requirement and cell-sap concentration, (60) 520.

water requirement, effect of rust infection, (51) 48.

water utilization during growth, (60) 214.

Webster, resistant to stem rust, (58) 45.

western Canada, milling and baking quality, (53) 534.

wild species, phylogenetic connection, (57) 422.

whitehead, notes, (58) 442.

winter—

- after-ripening rate, (59) 632.
- analyses and baking tests, (54) 11.
- and spring, length of vegetative period, (60) 537.
- as forage crop, (54) Wash.Col. 329.
- breeding experiments, (51) Wis. 434; (52) Kans. 433; (55) Oreg. 637; (56) Ill. 333.
- cost of production, (51) U.S.D.A. 292; (56) Ill. 385.
- cost of production and profit, (58) Ill. 379.

Wheat—Continued.

winter—continued.

- culture, (52) U.S.D.A. 828; (55) N.Dak. 641.
- culture experiments, (51) Minn. 133, Wyo. 137; (53) U.S.D.A. 132; (54) U.S.D.A. 132, Wyo. 733; (55) Oreg. 637; (56) Mont. 737, Kans. 823; (57) 524; (58) U.S.D.A. 532.
- culture methods, (59) Mont. 37.
- cutting back, effect, (54) 440.
- date of heading out, (55) 629.
- effect of mulching, (56) Ill. 334.
- effect of summer fallow, (52) Idaho 829.
- frost resistance in, (51) 237; (52) 835.
- hardiness, artificially freezing plants as test of, (58) 737.
- hardiness, correlation and anatomical characters, (53) 231.
- hardiness studies, (51) 39; (55) U.S.D.A. 35; (58) 329.
- improved production, (56) Wyo. 829.
- in dry areas of the western United States, (52) U.S.D.A. 637.
- in Montana, winter killing, (54) 535.
- mosaic disease in, soil factors, (58) 445.
- mulching, experiments, (54) Ill. 327.
- percentage returns, (51) Ind. 830.
- physiological properties, (56) 137.
- planting tests, Idaho, (57) 726; (59) 728.
- production, seed bed factor, (58) Nebr. 637.
- quality, effect of fertilizers, (56) 639.
- rate and date of seeding and seed bed preparation, (58) U.S.D.A. 637.
- seasonal changes in composition, relation to frost resistance, (56) 829.
- seeding experiments, (51) Mich. 133, Wis. 435, Idaho 829, N.Dak. 832; (52) Utah 719, Utah 733, Idaho 828; (53) Wyo. 133; (55) Minn. 227, Minn. 228; (56) Idaho 233, Wis. 732; (60) Mont. 730.
- sowing, furrow drill for, (53) Mont. 790.
- spike production, effect of temperature, (55) 438.
- spring harrowing experiment, (51) Wash.Col. 136.
- studies, (55) Nebr. 135.
- testing, (52) Ill. 433.
- tillage experiments, (56) Kans. 823.

Wheat—Continued.

winter—continued.

under dry land culture, (55) U.S.D.A. 132.

varietal resistance or susceptibility to *Tilletia laevis*, (55) 846; (56) 448.

varieties, (51) Idaho 830; (52) U.S.D.A. 827; (55) Ark. 30; (59) Mich. 438; (60) Mont. 729.

variety tests, (51) Minn. 134, N.Mex. 433; (52) Mont. 435, Utah 732, Idaho 828, Wash.Col. 829; (53) Ind. 130, Minn. 130, Minn. 131, N.Mex. 131, U.S.D.A. 134, N.Dak. 334, Ind. 431, Wis. 432; (54) 530, Wash.Col. 827; (55) Ga. 131, Minn. 227, Ill. 337, Nebr. 636, Nebr. 637, Oreg. 637, Minn. 735, Idaho 825; (56) Mont. 133, Ill. 333, Minn. 524, Utah 525, Wash.Col. 525, Kans. 822; (57) Can. 33, Tex. 126, N.Mex. 224, Minn. 226, Okla. 226, Idaho 726, N.J. 727; (58) U.S.D.A. 532, Minn. 828; (59) Wash.Col. 31, N.Mex. 222, Idaho 728; (60) Oreg. 132, Wash.Col. 814.

yields, (51) U.S.D.A. 135, Nebr. 831; (52) U.S.D.A. 527; (55) Ohio 528

yields after fallow, (52) Oreg. 435.

yields, effect of weather, (56) 207.
yields, factors affecting, (59) Nebr. 824.

world situation, (53) 394.

world's, in 1923, (51) 91.

world's supply, (58) 890.

xerophytic, physiological characters, (53) 238.

yellow berry, cause and control, (55) 652.

yellow rust, studies, (54) 145.

yellow seedlings in, (60) 324.

Yeoman II, milling and baking quality, (54) 828.

Yeoman II, tests, (52) 637, 638.

yield, (51) Ohio 488; (54) Pa. 328; (55) Nebr. 636; (58) Ky. 79; (60) Mont. 730.

and composition, effect of time of cutting, (57) 525.

and protein in, relation to moisture and nitrogen, (52) 637.

and protein in, relation to nitrogen of soil, (56) Idaho 339.

and rainfall, (53) 14; (54) 510; (58) 14.

and rainfall in Bavaria, (51) 509.

and rainfall in Ohio, (52) 507.

determination from plant characters, (59) 631.

effect of liming, (55) Tenn. 724.

Wheat—Continued.

yield—continued.

effect of precipitation and temperature, (56) 413.

effect of previous crops, (55) Alaska 433.

effect of rotations, (58) 418.

effect of sunshine, (55) 716.

effect of time and rate of seeding, (57) 530.

factors affecting, (57) Va. 426.

following fallow and substitutes, (52) 227.

following potatoes, (52) 439.

reduction, cause, (52) Mont. 435.

relation to length of growth period, (52) Calif. 38.

relation to loss of leaf surface, (52) 328.

relation to temperature and rainfall, (54) 413.

trend in, (56) U.S.D.A. 685.

Wheatgrass, crested—

as dry-land pasture, (60) Mont. 730.

as early pasture crop, (59) N.Dak. 826.

Wheats, speltoid, origin, (58) 525.

Wheel scrapers, economical use, (52) U.S.D.A. 585.

Wheel track widths, standardization, (52) 288.

Wheels—

dishing, standardization, (52) 288.

dual, dynamometer test of brake-drum heat in, (58) 376.

open-rim, slippage, (51) Ind. 884.

rear, of vehicles in starting, downward kick, (56) U.S.D.A. 681.

Whey—

butter, (51) 278.

butter, keeping qualities, (60) N.Y. Cornell 70.

dried, feeding value, (53) 172.

feeding value, (52) 769; (55) Miss. 566.

fruity odor in, (53) 475.

manufacture of by-products from, (53) 277.

milk sugar and other solids from, (59) 576.

pasteurization methods, (55) 472.

pH values, measurement, (53) 12.

residues, feeding value, (55) 769, 772.

zinc and copper dissolved by, (53) 277.

Whipworms—

in dogs, pathology, (55) 876.

in swine, specific identity, (55) 776.

in swine, viability, (58) Ill. 368.

White ants, *see* Termites.

White cedar reproduction by natural cuttings, (58) 842.

White color inheritance in canaries, (51) 429.

White flannel moth, life history and poison apparatus, (53) 256.

White fly—

citrus—

- and parasites in India, (52) 154.
- in Japan, (60) 559.
- in Porto Rico, (57) 558.
- notes, (60) 559.
- papers on, (53) 856.

cloudy-winged, notes, (56) 552.

control in California, (59) 354.

greenhouse—

- control, (58) 160; (59) 654.
- English and American races, (56) 60.
- feeding methods, (58) 455.
- notes, (59) 652.
- parasite of, (60) 248, 650.
- sex determination in, (54) 633.
- transmission of mosaic disease by, (57) 359.

in California, (53) 255.

in tomato houses, control, (54) 534.

larvae, control, (56) Fla. 855.

notes, (52) Fla. 251, 853.

pest of rhododendrons, (60) 650.

White grub experiments, (51) 855.

White grubs—

- and value of parasites, (58) 57.
- as affected by soil temperature, (51) 723.
- control, (54) 53; (56) 552.
- in Southern Quebec, parasites of, (56) 458.
- notes, (59) Iowa 55.
- on sugar beets, (53) Utah 254.
- on sugar cane, control, (53) 155, 860.
- on sugar cane, natural enemies, (57) 362.
- rotation as control measure, (58) Mich. 459.

White, H. C., editorial note, (58) 401.

White pine—

and hardwood stands, studies, (56) 346.

blister rust—

- aeciospores, wind dissemination, (56) 55.
- control, (51) 45, 53, 656.
- control in Northeastern States, (56) 55.
- description and control, (54) U.S.D.A. 255.
- foreign studies, (53) 651.
- history, (59) 454.
- in Germany, (57) 157.
- in Michigan, (54) 150.
- in New York, (58) 154.
- in Northwest, (53) 651.
- in Pacific Northwest, (52) 451; (57) 551, 852; (60) 157.
- infection, conditions antecedent to, (57) 355.
- infection through grafted roots, (53) 651.
- inoculation, (57) 355.
- life cycle and control, (59) U.S. D.A. 647.

White pine—Continued.

blister rust—continued.

- notes, (54) 448; (56) 542, 748; (60) 48.
 - outbreak in Maine, (52) 550.
 - relation to Ribes, (54) 549; (59) U.S.D.A. 754.
 - relative susceptibility of species, (57) 355.
 - situation, (58) 252.
 - spores, longevity on Ribes, (57) 753.
 - sporidia, viability, (55) 756.
 - spread, relation to weather, (53) 550.
 - studies, (60) Pa. 344.
 - summary, (57) 653.
 - teliospores, longevity, (54) 752.
 - chemical injuries to, (52) 353.
 - forests in Idaho, slash disposal, (51) U.S.D.A. 541.
 - forests, western, timber growing and logging practice, (58) U.S.D.A. 336.
 - growth studies, (52) 145.
 - injury from red squirrel, (59) 153.
 - plantation, thinning, (55) Mich. 40.
 - scale, control, (54) Mich. 655.
 - seed, western, stimulating germination, (54) 645.
 - seedlings, effect of fall planting, (59) Mich. 44.
 - seedlings, leaf efficiency, (58) Vt. 743.
 - slash, rate of decay, variation in, (59) 337.
 - stands, removing undesirable species in, (54) 341.
 - stands, thinning experiments, (57) 538.
 - stumps, removal with sodatol, (51) 387.
 - thinning, (59) U.S.D.A. 533.
 - transpiration, effect of temperature and humidity, (52) 625.
- weevil—
- biology and control, (55) N.Y. Cornell 560.
 - in New England, (57) 362.
 - life history studies, (59) N.H. 248.
 - new parasite, (58) 666.
 - parasites, mites attacking, (58) 266.
- western—
- age of planting stock, relation to site, (56) 142.
 - fall sowing, (51) 843.
 - fall sowing and delayed germination of seed, (52) 541.
 - germination, effect of heat, (54) 341.
 - germination, factors affecting, (52) 541.
- White rot of Allium in Europe and America, (55) 848.
- White scours in calves, (51) 681.
- Whitewash, making and applying, (53) U.S.D.A. 287.

- Whitney, M., editorial note, (58) 405, 406.
- Wichita National Forest and Game Preserve, (53) U.S.D.A. 846.
- Wild, *see also* Animals, wild.
- fowl, North American, life histories, (54) 52.
- life in Kentucky, (54) 51.
- Willow—
- beetles, control, (55) 663.
- cricket-bat, watermark disease, (55) 551.
- cuttings, root systems, development, (55) 323.
- dieback and bark disease, (55) 251.
- leaf beetle in Pennsylvania, status, (58) 345.
- leaf beetles, biology and control, (52) Me. 661.
- scab or blight, notes, (60) Conn.State 743.
- scale, life history, (58) 256.
- successional disease in, (57) 158.
- Willows—
- basket, manurial requirements, (54) 542.
- basket, raising from seed, (60) 145.
- basket, studies, (51) Mo. 745.
- in New Zealand, fungus diseases of, (58) 449.
- oyster-shell scale affecting, (53) Colo. 154.
- Wilting of plants, relation to drought resistance, (55) 124.
- Wind—
- damage, prevention on peat soils, (60) 513.
- effect on tree growth, (53) 441.
- injury to crops, prevention on muck land, (57) Mich. 16.
- motors, function of counter weights, (55) 480.
- power for electrical generators, (53) 891; (56) 80, U.S.D.A. 315.
- power for farm electric plants, (52) 785.
- power machines, degree of action, (54) 582.
- pressure tests on large model building, (59) 282.
- pressures on structures, (58) 683.
- resistance of motor vehicles, (54) U.S.D.A. 384.
- Windmills—
- as source of power, (59) 84; (60) Minn. 183.
- electricity generated by, (55) 881.
- historical review, (51) 388.
- in Burma, (51) 386.
- with vertical axle, (51) 388.
- Window—
- materials used in therapy, spectral characteristics, (59) 495.
- openings, air leakage around, (51) 790; (53) 188; (58) 377.
- Winds—
- and gipsy moth spread, (52) 355.
- and moisture, laws of, (52) 808.
- Winds—Continued.
- ecological rôle, (53) 15.
- hot, of southeastern Europe, cause and injury from, (60) 418.
- Wine industry in Yugoslavia, (52) 142.
- Winter—
- blossoms from the outdoor garden, (57) 142.
- injury, effect of soil types and treatments, (53) 538.
- injury to apple roots, (51) N.H. 154.
- injury to raspberries, (57) 353.
- temperature of central Europe, predicting, (58) 14.
- Winthemia quadripustulata—
- biology, (56) Miss. 557.
- effect of constant humidities, (59) 59.
- notes, (55) Miss. 555; (57) 362.
- Wire sieves, small mesh, effect of wear, (53) 108.
- Wireworm, white, economic importance, (53) 257.
- Wireworms—
- affecting truck crops, control, (58) Pa. 345.
- and false wireworms in Saskatchewan, (59) 460.
- baiting, (54) 557.
- biology and life history, (60) Pa. 356.
- concentration before soil fumigation, (56) 157.
- control, (51) Wash.Col. 157; (52) N.J. 752; (53) 755; (56) Pa. 154; (57) N.J. 59, N.J. 758; (58) 459; (59) N.Y.State 56, 357; (60) 648.
- depth of hibernation, (58) 263.
- economic importance in Saskatchewan, (60) 654.
- economic, in Pacific Northwest, (53) 363.
- effect of prebaiting and soil fumigation, (59) Idaho 758.
- false, affecting wheat, (56) Idaho 63.
- false, economic importance, (60) 654.
- false, notes, (53) 154.
- in dahlia roots, control, (56) Calif. 256.
- in glasshouses, control, (56) 860.
- injury to cultivated plants, (60) 654.
- life history, (59) 159.
- notes, (53) Utah 254; (55) Iowa 554; (57) Idaho 755; (59) N.Dak. 855.
- of Alberta, (57) 860.
- of irrigated land, destruction, (54) Wash.Col. 853.
- on hops, (53) 554.
- on tobacco, (55) Conn.State 253.
- on truck crops, control, (55) 55.
- protection of corn from, (51) 257.
- rearing, (52) 856.
- sensory pits of ninth abdominal segment, (58) 560.
- soil fumigant for, (52) 856.
- studies, (59) Me. 561.
- wet land, in Iowa, (55) 560.

Wisconsin—

Station, notes, (51) 199, 698; (52) 200, 400, 700, 797; (53) 99, 198; (54) 498, 798, 900; (55) 99, 399, 497, 700, 900; (56) 198, 600, 799; (57) 600, 699, 799; (58) 199; (59) 199, 400, 799; (60) 200.

Station, report, (51) 495; (56) 797.
Station, report of director, (53) 497; (59) 99.

University, notes, (51) 199, 698; (52) 200, 400, 700; (53) 99, 198; (54) 498, 798, 900; (55) 900; (56) 97, 198, 600, 700, 799; (57) 600, 699, 799; (58) 199, 398; (59) 199, 400, 799; (60) 200.

Wistar Institute, gift of biological farm to, (59) 799.

Witches' broom—

in citrus plants, (51) 542, 549.
of potatoes, (56) 352.

Witch-hazel gall, organism from, (59) 556.

Woburn Experimental Farm, work, 1876-1921, (51) 637.

Wohlfortia vigil larvae, in conjunctiva of man, (52) 454.

Wojnowicia graminis, notes, (52) Wash. Col. 845; (54) U.S.D.A. 452; (56) 448, Kans. 841.

Woman's Institute library of cookery, (56) 86.

Women—

basal metabolism, variations in, (52) 160.

education for rural life, (60) 388.

energy expenditure during walking, (54) 890.

energy metabolism during staircase climbing, (60) 593.

farm, insanity among, (53) Ohio 797.

farm, treatise, (53) 297.

farm, use of time by, (56) Idaho 597.

in Belgium, agricultural education for, (55) 99.

in poultry industry, (59) 363.

lactose metabolism in, (60) 893.

metabolism studies, (54) 592; (56) 193; (57) 91.

surface area determination, (58) 591; (59) Mo. 790.

Women's—

institute movement in Great Britain, (56) 389.

institutes and clubs, papers on, (56) 889.

institutes in Canada, (51) 299; (53) 899.

Wood—see also Timber and Lumber.

acid hydrolysis, effect of prestaming, (54) 113.

acid hydrolysis, effect of salts, (51) 8.

anatomical and physical properties, handbook, (51) 245.

and cellulose, chemistry of, treatise, (56) 107.

Wood—Continued.

and metals, strengths and related properties, (52) 887.

and wood pulp cellulose, effect on plant growth, (51) 415.

as affected by paint, (51) 388.

borers damaging timber in Australia, (51) 554.

borers in Pennsylvania, (57) 64.

British Guiana, for paper making, (51) 843.

cause of decay in, (53) U.S.D.A. 356.

cellulose determination in, (51) 114; (53) 110.

charcoal, ash-free, preparation, (55) 10.

charcoals, identification, (54) 806.

chemistry of, (51) 311; (55) 802.

chemistry of, treatise, (56) 107.

clover, culture, (53) Iowa 734.

composition and durability, relation, (52) 486.

conductivity in tropical plants, seasonal variation, (60) 426.

cubical contents, measurements, (55) 746.

decay, studies, (52) 849; (55) Colo. 656, 851; (56) 655.

distillate, highly reducing substances in, (54) 114.

distillation, (53) 209.

distillation, acetone from, (54) 202.

distillation, technology, (54) 708.

electrical resistance as measure of moisture, (60) 377.

fibers in paper pulp, determination, (55) 14.

fibers of Australian timbers, (55) 841.

fire-killed, pulping qualities, (52) 445.

for furniture, identification, (56) U.S. D.A. 444.

fungi in, effect of methods of seasoning, (52) U.S.D.A. 249.

hard and soft, distinguishing, (55) 803.

identification and classification system, (56) 240.

in furniture and interior finish, identification and care, (55) 495.

in tropical plants, conductivity and structure, (57) 418.

Indian, characteristics and uses, (54) 646.

kiln drying and preservation, (52) 55.

leopard moth, control, (51) 760.

lice, notes, (56) 659.

microscopic identification, (54) 646.

moisture content, relation to decay, (55) 757.

moisture movement in, (58) 819.

of Guatemala, (55) 648.

oil, oxidation and hydrolysis, (56) 801.

origin and production of veneers and plywood, (57) 696.

preservation—

in marine piling, (59) 247.

- Wood—Continued.
- preservation—continued.
 - low temperature coal-tar creosote in, (60) 879.
 - mixtures of sodium fluoride with organic dinitro compounds for, (60) 879.
 - process for, (53) 589.
 - with arsenated petroleum oil, (53) 812.
 - preservatives—
 - absorption, (60) 674.
 - penetration, (56) U.S.D.A. 384.
 - studies, (55) 377; (58) 582.
 - toxicity, methods of testing, (57) 158.
 - properties and uses, treatise, (52) 887.
 - protecting against termites, (51) U.S.D.A. 660.
 - protecting with aluminum paint, (60) 378.
 - pulp, bleaching, (53) 209; (55) 113.
 - pulp, cause of decay in, (53) U.S.D.A. 356.
 - pulp, decay and molding, control, (55) 757.
 - rats, anatomy, (56) 656.
 - rats, breeding, (55) 757.
 - rots, manual, (58) 252.
 - shavings v. buckwheat hulls as bedding for cattle, (57) N.J. 73.
 - sodium fluoride penetration in, visual determination, (56) 853.
 - spring and summer, chemical composition, (55) 808.
 - structure, (51) 648.
 - structure, growth, characteristics, etc., (58) 646.
 - structure, relation to manner of failure, (55) 681.
 - tars, solubility in water, (54) 8.
 - technology, Indian, manual, (56) 46.
 - testing methods, (57) 13.
 - tick, hereditary transmission of tularemia by, (56) 261.
 - tissue, *Torula ligniperda* in, (52) 353.
 - treatment with water-soluble toxic salts, (56) Ark. 382.
 - using industries of North Carolina, (51) 649.
 - using industries of Ontario, (55) 40.
 - utilization, demonstration courses in, (52) U.S.D.A. 496.
 - western forest, identification, (51) 842.
 - zinc chloride absorption and penetration into, (52) 585.
- Woodchucks, control, (59) U.S.D.A. 153.
- Wood-destroying fungi—
- laboratory cultural diagnosis, (55) 151.
 - of Java, (53) 153.
 - resistance to heat, (52) 55.
- Woodlot—
- management, manual, (58) 541.
 - tax act, Mich., (53) 392; (56) 387; (58) 440.
- Woodlots—
- as farm asset, (53) Ohio 599.
 - Cornell University, management, (53) 345.
 - farm, grazing, (51) Ohio 899.
 - farm, studies, (59) Minn. 443.
 - farm, value, (60) Mich. 442.
 - grazed and ungrazed, growth in, (55) 443.
 - relation to birds in New York State, (57) 159.
- Woodpecker, downy, and sapsucker, comparison of work, (51) 54.
- Woodpeckers, relation to Oregon horticulture, (59) 648.
- Woods—
- American, suitability for paper pulp, (57) U.S.D.A. 637.
 - commercial, of British Columbia, (58) 181.
 - commercial, of the South, (56) 240.
 - from Nigeria, (55) 540.
 - identification, (52) 345.
 - Indian, anatomical notes, (52) 241.
 - of colonial Africa, industrial qualities, (55) 540.
 - of Madagascar, (56) 838.
 - of New Zealand, keys, (52) 742.
 - of South Africa, characteristics and structure, (58) 843.
 - of the world, bibliography, (60) 444.
 - of tropical American species, (53) 347.
 - Philippine commercial, strength properties, (58) 680.
 - Philippine, identification, (52) 241.
 - resistant to termites, (53) 156.
 - water-retaining capacity, (56) 539.
- Woody plants—
- Clitocybe* root rot on, (59) 348.
 - cross transfer of foods and nutrients, (51) Md. 224.
 - culture, (58) 142.
 - fruit cast in, (57) 321.
 - germination, (56) 426.
 - in winter, manual, (51) 493.
 - of Kenya Colony, (57) 243.
 - pocket guide, (57) 142.
 - relation to pH of Texas soils, (58) 613.
 - transport of foods and nutrients in, (54) 426.
- Woody stems, healing of wounds in, (55) 237; (57) 237.
- Wool—
- absorption of acids by, (60) 696.
 - action of acids on, (59) 694.
 - action of ammonia on, (56) 496.
 - action of atmosphere on, (56) 194.
 - action of formaldehyde on, (57) 95; (59) 97.
 - and hair, new information on, (51) 100.
 - bibliography on, (58) 696.
 - bleaching with sulfur dioxide, (55) 696.

Wool—Continued.

- British, quality and production, (53) 170.
- caliper, description and use, (60) Idaho 198.
- character and yield, effect of breeding, (57) 660.
- characters, (57) 95.
- characters and inheritance, (56) N.H. 328.
- characters of Welsh sheep, improvement, (52) 170.
- chemical products, (53) 718.
- Chicago trade in, (51) 298.
- chlorination, (56) 596, 898.
- classing, (56) 94.
- clip, classing for market, treatise, (59) 463.
- clip, forecasting, (58) 513.
- clip of 1925, (52) Mich. 768.
- cloth prices, predetermination, (58) 94.
- cloth, rate of drying, factors affecting, (57) 695.
- cost of production, (54) Oreg. 880; (60) Ohio 83.
- covering on face, ears, and legs of sheep, inheritance, (60) N.H. 128.
- decomposition at 100° C., (57) 597.
- dry weight determination, (56) 95.
- dyeing, theories, (58) 898.
- effect of alkalies, (56) 697.
- effect of dips on, (54) 897.
- effect of sunlight, (58) 696.
- estimation of alkali in, (55) 613.
- fastness of dyes on, (54) 597.
- fat, vitamin A in, (55) 294.
- fibers—
 - action of chromic acid on, (60) 298.
 - and yarns, X-ray investigations, (60) 97.
 - colloidal characteristics, (55) 794.
 - determination of fineness, (54) 296.
 - different portions, quality, (54) 296.
 - dyed and undyed, action of sunlight on, (57) 596.
 - effect of sunlight, (54) 597.
 - extension under constant stress, (56) 94.
 - frictional heat tester, (58) 696.
 - gel structure, (56) 94.
 - intracellular structure, (58) 94, 95.
 - measurements of diameters, (54) 896.
 - measuring, micrometer caliper for, (54) Wyo. 596.
 - Merino, biometrical analysis, (54) 896.
 - Merino, development, (53) 370.
 - of heather and Merino lambs, (54) 860.
 - of Württemberg sheep, uniformity, (54) 759.

Wool—Continued.

- fibers—continued.
 - properties, (54) 197.
 - scales of, studies, (54) 564.
 - single, tensile testing, (58) 898.
- fineness—
 - and body conformation, (51) 100.
 - determination, (57) 596.
 - inheritance, (54) 860; (57) 823.
 - measuring, (54) 759.
- fleeces, determining clean weights, (59) 195.
- grading and marketing in California, (60) 682.
- growing and marketing, (58) 898.
- hydrolysis by sodium sulfide, (59) 411.
- improvement, papers on, (57) 762.
- industry in Peru, status and prospects, (59) 96.
- inheritance, phases, (57) 660.
- insulation resistance, effect of humidity, (60) 696.
- internal structure, (53) 69.
- international trade in, (54) 197.
- isoelectric point, determination, (56) 712; (59) 694.
- laboratory, methods of instruction, (57) 762.
- length of staple relation to weight of fleece, (60) Mont. 761.
- manufacturing, pH control in wet processes, (59) 497.
- marketing in England and Wales, (57) 190.
- Mele, studies, (54) 268.
- Merino, nonuniformity in growth of fleece, (57) 393.
- microbiology, (60) 97.
- paint in, removal, (58) 95.
- Peruvian and Improved Peruvian, manufacturing value, (58) 95.
- physical properties, (52) 672.
- piece goods, shadiness in, cause, (59) 795.
- plasticity, (60) 397.
- prices, index numbers, (59) N.Dak. 885.
- production—
 - improvement, (56) Mont. 164.
 - in California, (57) 384.
 - in England, progress in, (52) 871.
 - in Maryland, (52) 870.
 - in New Mexico, (57) 170.
 - in South America, (56) 697.
 - in southeastern Ohio, (55) Ohio 80.
 - of Angora rabbits, (51) 177; (60) 567.
 - relation to sulfur utilization by animals, (60) 853.
 - with range Rambouillet sheep, (60) U.S.D.A. 465.
- properties, (55) 94.
- protection from moths, (60) 557.
- protective agents against action of alkali, (60) 599.
- proteins of, studies, (57) 308.

- Wood—Continued.
 rendering unshrinkable, (56) 898.
 review, annual, (51) 275; (52) 394;
 (53) 667; (54) 484; (55) 195;
 (56) 898; (59) 564; (60) 597.
 samples, selecting for shrinkage tests,
 (57) 762; (58) 696.
 shrinkage, (60) Wyo. 794.
 shrinkage, laboratory tests, (54) 596.
 specific gravity, relation to swelling
 and sorption in liquids, (54) 896.
 standardization, (56) 298.
 standardization and grading in foreign
 countries, (60) 682.
 studies, progress and needs, (57) 761.
 studies with Rambouillet sheep, (57)
 Wyo. 367.
 sulfur content, variation in, (55) 696.
 sulfuric acid in, estimation, (55) 613.
 tar on, (56) 95.
 tariff on, treatise, (56) 485.
 tensile strength and elasticity, effect
 of sheep management, (56) 562.
 textbook, (54) 896.
 thermal conductivity, effect of humid-
 ity, (54) 795.
 trade, Australasian, statistics, (52)
 871.
 trade, international, (53) 296.
 trade, statistical review, (54) 888.
 uneven dyeing, causes, (60) 598.
 yarns, damped, variations in, (56) 194
 yearbook, (51) 172; (54) 197.
 yield—
 effect of age, (52) Ky. 468.
 effect of age and individuality,
 (51) Tex. 75.
 effect of climatic conditions, (58)
 14.
 from different groups of sheep,
 (53) Can. 868.
- Woolen—
 and Worsted Industries, British Re-
 search Association, (58) 392.
 goods, odors in, (56) 397.
- Woolly aphid, *see* Aphid, woolly, and Apple
 aphid, woolly.
- Work, effect on metabolism of goat, (53)
 664.
- Work, external, estimation from respira-
 tory metabolism, (51) 262.
- World—
 Economic Conference, report, (59) 482.
 Population Conference, proceedings,
 (59) 386.
- World's Dairy Congress—
 Association, report, (51) 577.
 proceedings, (52) U.S.D.A. 573; (60)
 660.
 report of delegates of Argentina, (52)
 479.
 reports of delegates, (60) 570.
- World's Forestry Congress, notes, (52)
 799; (54) 799.
- World's Poultry Congress—
 editorial, (57) 301.
- World's Poultry Congress—Continued.
 poultry disease program, (58) N.J.
 369.
 proceedings, (54) 471; (55) 165; (59)
 360.
- Worm nodules, in cattle, (59) 172.
- Worms—
 affecting man, (51) 179.
 affecting man, key catalogue, (55) 552.
 in dogs, new anthelmintic for, (54) 73.
 in dogs, test of raw onions for, (53)
 385.
 in dogs, water treatment for, (55) 679.
 in domestic animals, (54) 578; (56)
 571.
 in domestic animals in South Africa,
 check list, (60) 574.
 in furniture and structural timber,
 treatise, (59) 456.
 in poultry, control, (53) Calif. 449;
 (57) Idaho 184.
 parasitic, notes, (58) 474.
- Wormseed—
 American, oil, production, (59) 577.
 oil emulsions, use against Japanese
 beetle, (53) U.S.D.A. 455.
- Worsted spinning research, (58) 94.
- Wort, vitamin B in, effect of fermentation,
 (53) 204.
- Wound reactions, temperature relations in,
 (56) 326.
- Wounds, effect on rotation of protoplasm in
 plant cells, (55) 324.
- Writing, mechanics of, and preparation of
 manuscripts, (54) U.S.D.A. 96.
- Wyatt's immunizing material, value, (55)
 176.
- Wyoming—
 State experiment farms, service of,
 Wyo., (53) 195; (57) 899.
 Station, notes, (51) 399, 698; (52)
 400; (53) 199; (55) 399; (56)
 499; (57) 600; (58) 300; (59) 500.
 Station, report, (51) 197; (53) 696;
 (54) 796; (56) 599; (59) 298;
 (60) 795.
 University, notes, (51) 698; (52) 400;
 (53) 199; (57) 600; (59) 500.
- Xanthates for control of nematodes, (57)
 Calif. 256.
- Xanthippus neglectus, notes, (53) 756.
- Xanthium—
 delayed germination and catalase ac-
 tivity in, (51) 24.
 seeds, dormant, continuous respiration
 studies, (56) 516.
 species and hybrids in Europe, (57)
 134.
 species, developmental history, (57)
 134.
 strumarium as weed in Cuba, (54)
 239.
- Xanthonia decem-notata as apple pest in
 Maine, (55) 559.
- Xanthophyll—
 as source of vitamin A, (57) 392.

Xanthophyll—Continued.

- determination, (53) 313.
- preparation and properties, (53) 501.
- studies, (51) Mo. 776.

Xanthosoma spp., new food plants for the South, (52) U.S.D.A. 340.

Xenia—

- in domestic fowls, (56) 225, 226.
- in grapes, (57) 140.
- in plants, (56) 225.
- in wheat, (58) 527.

Xenopsylla—

- and allied genera of Siphonaptera, (57) 554.
- astia, bionomics, (51) 58.
- cheopis, notes, (54) 157.
- cheopis, relation to plague in Shanghai, (59) 561.
- eridos, rôle in spread of plague, (57) 760.
- spp., plague transmission by, (53) 758; (58) 56; (59) 657.

Xerophthalmia—

- among children of Denmark, (51) 267, 566.
- and keratomalacia, (60) 197.
- and rickets, simultaneous experimental production, (55) 695.
- epithelia tissues in, (54) 294.
- experimental, studies, (54) 891.
- in guinea pigs, effect of whole wheat flour, (60) 393.
- vitamin treatment, (51) 566.

Xerophytes, drought resistance of, (53) 518.

Xerophytism and leaf anatomy, relation to transpiring power, (53) 123.

Xestobium tessellatum, notes, (57) 552.

Xestopsylla gallinacea, *see* Hen flea.

Xiphophorus helleri, sex reversal in, (60) 325.

X-ray—

- diagnosis of animal parasites in man, (56) 173.
- diagnosis, value, (55) 574.
- treated mice, hereditary structural defects in descendants, (52) 131; (54) 429; (55) 824.
- treatment of infection, (51) 679.
- tube for detection of boring insects, (52) 662.

X-rays—

- action on meristems of castor bean, (58) 217.
- and crossing-over, (51) 230; (52) 129.
- and stimulation of cell function, (60) 627.
- and temperature, effect on linkage and fertility, (53) 428.
- and temperature, effect on linkage in pomace fly, (54) 324.
- applications in automotive industry, (56) 883.
- chromosome breakage by, (54) 432; (55) 327.
- direct and indirect action on embryonic fowl, (58) 528.

X-rays—Continued.

effect on—

- arrangement of chromosomes, (58) 423.
- coat color in mice, (58) 730.
- corn, (58) 730.
- crossing-over in X chromosome, (55) 733.
- Drosophila, (56) 728; (60) 33.
- eyes and gonads of mice, (51) 828.
- fertility, (53) 430; (57) 220.
- germination of *Oryza sativa*, (53) 519.
- growth and germination of sunflowers, (60) 627.
- mice during pregnancy and lactation, (58) 529.
- Nicotiana sex cells, (58) 626, 729, 730.
- oestrous cycle in mice, (57) 324.
- ovaries in mice, (57) 30, 325.
- plant cells, (52) 216.
- plant tumors, (56) 629.
- plants, (54) 519; (58) 626.
- production of mutations in pomace fly, (58) 25.
- rats, (54) 433.
- return gene mutations, (60) 31.
- seed germination, (56) 326.
- seed potatoes, (60) 135, 524.
- sex ratio and fertility, (54) 528.
- tyrosine and cystine solutions, (60) 502.
- Vicia faba* cells, (54) 626; (56) 26.
- vitamin D in activated ergosterol, (60) 792.
- investigation of woolen samples, (60) 97.
- investigation with cellulose, (58) 196.
- mutation production and rearrangements of genes, (59) 324.
- mutations induced by, (60) 127.
- use against cereal smut, (57) 840.
- use in textile industry, (56) 297.

Xylaria—

- mali n.sp., description, (59) Va. 544.
- sp., notes, (56) Ill. 349.
- thwaitesii, notes, (54) 255.

Xyleborus—

- confusus on coconut palm, (56) 58.
- fornicatus, control, (54) 157.
- fornicatus, control, relation to fertilizers, (57) 761.
- fornicatus, notes, (58) 159; (59) 249.
- spp., notes, (56) 459, 858.

Xylem, relation to surrounding tissue, (51) 328.

Xylion gibbicollis on grapevines, (59) 658.

Xylocopa spp., studies, (52) Calif. 59.

Xylocrius agassizii, studies, (54) 557; (60) Oreg. 753.

Xyloryctes satyrus, intermediary host of thorny headed hog worm, (58) 164.

Xylotrechus quadripes, studies, (54) 558; (57) 655.

Xylotrupes gideon, control, (51) 662.

Nystus brassicae, notes, (57) 60.
 Yak and zebu, crossing between, (56) 430.

Yams—
 culture in New Zealand, (56) 334.
 movement of carbohydrates in stems, (57) 418.
 varieties, P.R., (54) 634; (60) 732.
 variety tests, (52) 132; (53) Guam 430; (55) Guam 131, V.I. 333; (57) V.I. 326; (60) Guam 814.
 West Indian, varieties, (56) 439.
 yields, (61) P.R. 833.

Yarn—
 mercerization, effect of degree of twist, (60) 297.
 physical properties, effect of twist, (54) 596.
 strength and yard extension, foundations, (60) 297.
 strength, relation to staple length and yarn count, (57) 694.

Yarns—
 abrasion tests, technique, (55) 795.
 and fabrics, testing, treatise, (56) 496.
 breaking, (56) 194.
 damped knitting, variations in, (56) 194.
 doubled, luster, (54) 696.
 irregularity in, determination, (55) 392.
 properties, instrument for studying, (55) 392.
 sized, physical tests on, (51) 235.
 testing instruments for, (60) 398.
 treatments, physical tests, (56) 898.

Yautia disease, notes, (55) 849.

Yautias—
 keeping qualities, (57) P.R. 425.
 new food plants for the South, (52) U.S.D.A. 340.
 recipes, (55) 291.
 seed piece tests, (54) P.R. 634.
 variety tests, (56) 525.
 vitamin A in, (60) 291.
 vitamin B in, (59) 793.
 vitamins in, (57) 690.

Yeast—
 action in supplementing high protein diets, (58) 194.
 antidiabetic hormone from, preparation, (52) 765.
 antineuritic substance in, effect of nitrous acid, (52) 462.
 antineuritic vitamin separation from, (51) 312.
 as pellagra preventive, (55) 890.
 as supplement to synthetic rations, (59) 490.
 atmospheric nitrogen utilization by, (51) 63.
 bios, relation to factors composing vitamin B, (57) 791.
 brewers', nutrition experiments, (55) 891.
 by-product, vitamin B in, (54) 892.

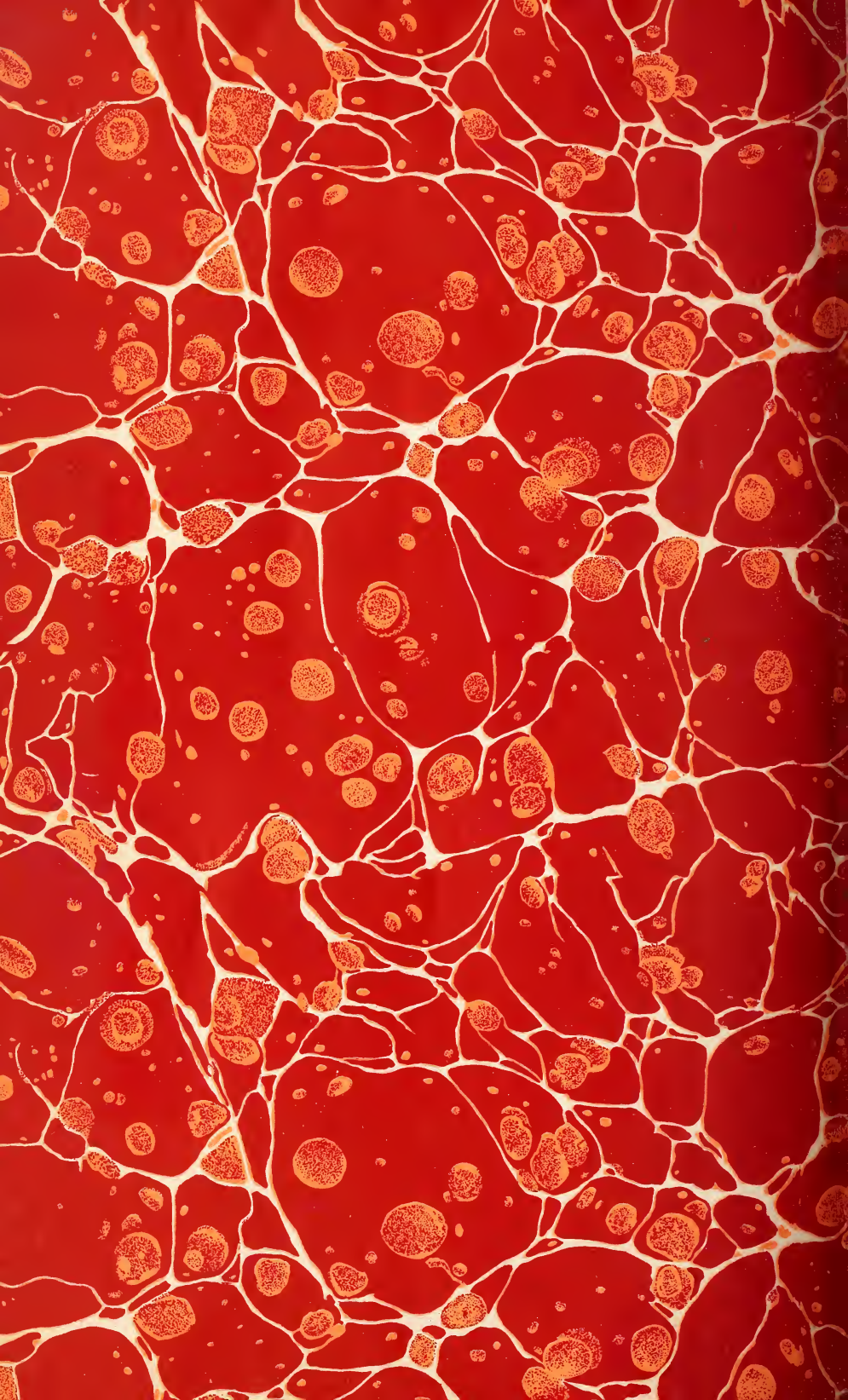
Yeast—Continued.
 cells, as affected by ultra-violet light, (51) 25.
 cells in dough, counting, (53) 109.
 cells, multiplication in purified nutrients, (54) 504.
 colonies, yellow color in, (51) 476.
 constituents and application in human nutrition, (50) 690.
 development and nutrition, (52) 627.
 development, effect of vitamins, (55) 24.
 dried, for increasing egg production, (54) 670.
 dried, reducing properties, effect of heat, (52) 65.
 effect on—
 activity of segments of duodenum and colon in rats, (59) 393.
 alimentary rate, (59) 393.
 digestibility of feed, (53) Okla. 172.
 gastric secretion, (59) 393.
 metabolism, (60) 91.
 extract as supplement to gelatin, (56) 696.
 extract, chemical constituents, (59) 109.
 extract, standard, value of vitamin B in, (57) 195.
 extracts, clarification, (52) 11.
 fat, vitamin A in, (53) 502; (59) 595.
 fat, vitamin D in, (59) 595.
 fate in intestines of man and rat, (52) 564.
 feeding to poultry, (52) Calif. 75; (55) N.Dak. 568; (59) N.Dak. 869.
 feeding value, (53) 176, Mo. 469; (58) Okla. 268.
 fermentation, effect on—
 imbibitional properties of glutenin, (52) 12.
 proteins of flour, (56) 502.
 for dairy cows, (54) 68.
 for pigs, (52) Mich. 74, Wash.Col. 872; (56) Wis. 765.
 fresh and dried, vitamin B in, (56) 794.
 growth, effect of ammonium chloride, (53) 105.
 growth, relation to substances formed by bacteria, (51) 667; (52) 162.
 growth, studies, (56) 726.
 growth-promoting action as measure of vitamin B, (55) 204.
 growth-promoting principle, concentration, (54) 805.
 ingestion, effect on leucocyte count, (53) 458.
 irradiated dried, antirachitic value, (57) 792.
 manufacture, nitrogen losses in, (59) 11.
 milk-fermenting, (60) 864.

- Yeast—Continued.
 nitrogenous constituents, (56) 9.
 pellagra-preventive action, (53) 662.
 proteolytic enzymes of, (54) 109.
 relation to microorganisms of soil,
 (60) 511.
 value for egg production, (53) 670.
 vitamin A in, (60) Pa. 393.
 vitamin B in, variation, (57) 196.
 vitamin B requirement, (54) 308.
- Yeasts—
 cause of spoilage in canned apples, (59)
 Can. 91.
 fermentation of honey by, (59) 461;
 (60) Mich. 12, Mich. 66.
 growth, effect of iodine, (60) 894.
 in butter, determination, (60) 865.
 in butter, effect on keeping quality,
 (52) 775.
 in creamery butter, (60) 572.
 in dairy products, (53) Iowa 782; (60)
 570.
 in poultry nutrition, (58) 670.
 in sauerkraut, (58) 612.
 in soil, studies, (56) 512.
 on cacao beans, (59) 324.
 sugar-tolerant, in chocolate creams,
 (57) 891.
- Yellow berry in wheat, cause and control,
 (55) 652.
- Yellow dung fly, notes, (56) 659.
- Yellow fever—
 in mosquitoes, incubation period, (60)
 63.
 mosquito—
 attempts to infect with *Leptospira*
icteroides, (60) 63.
 disseminator of surra, (58) 678.
 extracts, leptospiricidal power,
 (60) 63.
 hatching stimuli for eggs, (58)
 664.
 larvae, food of, (58) 861.
 notes, (54) 754.
 oviposition near habitations, (59)
 254.
 transmission of dengue fever by,
 (53) 654; (59) 657.
 prevention, (52) 480.
 transmission by different species of
 mosquitoes, (60) 63.
- Yellow oil from *n*-butyl alcohol manu-
 facture, composition, (55) 109.
- Yellowstone National Park—
 big game animals of, (54) 52.
 birds of, (54) 52.
- Yew—
 Japanese, hardiness tests, (55) Iowa
 535.
 planting, cultivation, and pruning,
 (54) 446.
 tree, growth rate and value, (51) 146.
- Yogurt for the Tropics, importance, (60)
 661.
- Young farmers' clubs, history and develop-
 ment, (54) 86.
- Zacerata asparagi n.g. and n.sp., notes,
 (51) 256.
- Zaleptopygus sp., notes, (53) U.S.D.A. 54.
- Zamia palm destruction, (53) 840.
- Zarhopalus corvinus, notes, (54) 558.
- Zealand Agricultural Society, activities,
 (51) 36.
- Zebras, fumigation with sulfur dioxide,
 (57) 875.
- Zebu and yak, crossing between, (56) 430.
- Zebu-carabao hybrid, possibility, (59) 726.
- Zein, cystine in, (56) 13.
- Zein, definition, (54) 802.
- Zelus socius, notes, (52) Calif. 58.
- Zeolite formation in soils, (57) Ariz. 613.
- Zeuzera coffae, notes, (56) 459.
- Zeuzera pyrina, *see* Leopard moth.
- Zinc—
 and iron, comparative physiological
 importance, (53) 364; (54) 891.
 arsenite, determination of water-solu-
 ble arsenic in, (52) 712.
 biological function in animal metabo-
 lism, (56) 793.
 chloride, absorption and penetration
 into wood, (52) 585.
 chloride, resistance of wood-destroying
 fungi to, (56) 853.
 contamination of food from galvanized
 iron containers, (51) 163.
 effect on reproduction and growth,
 (57) 195.
 excretion by man, (57) 195.
 in animal nutrition, importance, (52)
 161.
 in Kentucky bluegrass, (56) 804.
 in soil from smoke gases, effect on
 plants, (58) 521.
 metabolism in rats, (56) 293.
 occurrence and function, (53) 310.
 oxide fumes, effect of inhalation by
 animals, (58) 674.
 plating, solution by milk and whey,
 (53) 277.
 refineries, injury to vegetation, (51)
 348.
 rôle in normal nutrition, (58) 389.
 toxicity, (57) Okla. 596, 892.
- Zinckenia fascialis, notes, (51) V.I. 856.
- Zionist Organization in Palestine, agricul-
 tural colonization, (56) 790.
- Zonitoides arboreus, studies, (55) 151;
 (57) La. 555.
- Zonocercus elegans, summary, (53) 358.
- Zooecidia of Netherlands East Indies, (59)
 563.
- Zoological—
 dictionary, (58) 659.
 dissections, handbook, (51) 657.
- Zoology—
 agricultural, of North Wales, (53) 52.
 Danish forest, treatise, (53) 651.

Zoology—Continued.

- economic, treatise, (52) 495.
 - general, textbook, (54) 151.
 - invertebrate, treatise, (51) 452.
 - laboratory outlines in, (57) 290.
 - medical and veterinary, reference index, (57) 552.
 - medical, outlines, (51) 179.
 - of Colorado, (59) 852.
 - textbook, (57) 289; (60) 890.
- Zootropism and zootropic races in mosquitoes, origin, (60) 561.
- Zygaenidae, data, (56) 353.
- Zygina pallidifrons—
feeding methods, (58) 455.
- Zygina pallidifrons—Continued.
transmission of mosaic disease by, (57) 359.
- Zygocotyle—
host relationship, (59) 877.
lunata from the cow and from water birds, (59) 877.
- Zygorhynchus mölleri, decomposition of proteins by, (53) 310.
- Zygosaccharomyces—
cavarae n.sp., description, (55) 249.
opuntiae n.sp., description, (57) 155.
- Zymosterol, irradiated, examination for vitamin D, (60) 692.





OP 3

S-2432

JUL 26 19

Index v. 5

Ex6R

1

**U. S. DEPARTMENT OF AGRICULTURE
LIBRARY**

NOTICE TO BORROWERS

Please return all books promptly after finishing your use of them, in order that they may be available for reference by other persons who need to use them.

Please do not lend to others the books and periodicals charged to you. Return them to the Library to be charged to the persons who wish them.

The mutilation, destruction, or theft of Library property is punishable by law. (20 Stat. 171, June 15, 1878.)

Lib. 9



3-7888

