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Gleanings  
in  
Bee Culture



February

Vol. L

1922

No. 2

# LOWER PRICES

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Editorial Staff			
Geo. S. Demuth and E. R. Root	A. I. Root	H. H. Root	H. G. Rowe
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## HONEY MARKETS

### U. S. GOVERNMENT MARKET REPORTS.

#### Information from Producing Areas (First Half of January).

**CALIFORNIA POINTS.**—Recent heavy rains have strengthened the prospects for a heavy flow of high-grade honey next season. Many beekeepers who have been holding back some of their higher-priced honeys are now offering them, due to the outlook of a heavier crop. The movement has been limited during the past two weeks and the market has been dull. Low prices of sugar and syrups thought to have an adverse effect on honey prices. Competition with cheaper honeys from Inter-Mountain districts also lessening the movement of white sage and white orange from California. It is believed that the old crop will all be cleaned up before the new crop is harvested, but local demand will be an important factor in the amount of honey that is left. Large shippers quote to outside buyers, in carlots and less, f. o. b. shipping points per lb.: White orange blossom, offered at 12c, but no sales; white sage, nominally 10½c; light amber sage, 8½c; light amber alfalfa, 6½-6¾c. The whole range of prices can be considered nominal, as so few sales were made. Little demand is also experienced for Hawaiian honey, which is offered in carload lots, f. o. b. San Francisco at 3½c per lb. for honeydew grade.

**INTERMOUNTAIN REGION.**—Bees with ample stores are wintering well, as the temperature to date has been moderate, while not so mild as to induce activity. The holiday business has been light, but conditions are now expected to improve, and some buyers are making slightly improved offers. Considerable honey from some sections being consigned. Carlot sales of white sweet clover and alfalfa are reported at 8-8½c, most 8½c per lb., with l. c. l. sales of 5-gallon cans at 9-10c, few 11-12c per lb. Carlot sales No. 1 white comb are reported at \$4.75 per 24-section case, with No. 2 grade selling at \$4.25-4.40 per case. L. c. l. transactions in No. 1 grade are reported at \$5.00-5.50 per case. Beeswax has been purchased for 20c cash or 22c trade, with some transactions at higher prices. In Salt River Valley, Arizona 6¼c per lb. is quoted for a carlot of amber alfalfa honey. Heavy rains in the Valley point to a big crop next year. Due to the presence of alfalfa weevils and the low prices of alfalfa hay in some sections of Idaho, a considerable alfalfa acreage will be plowed up in the spring, reducing the feeding area for many colonies.

**TEXAS POINTS.**—Crop outlook not favorable, due to long drouth in the fall. Bees considered in normal condition. Some light amber extracted honey is selling at 7½c per lb., but the 1921 crop is about exhausted in many localities. Most of the honey in the state was disposed of in the summer and fall at 8½c per lb. for extracted and 12½c for bulk comb honey.

**EAST AND NORTH CENTRAL STATES.**—Prospects good for next season as fields are generally well covered with snow. Conditions considered ideal for bees which were properly prepared for winter. Cellar-wintered colonies reported in good condition; colonies wintered in summer stands have, in favorable localities, enjoyed a few hours of flight since last report. While moving more freely than last season, comparatively little honey has been sold during the past month, as the attention of buyers has been more closely centered on candy than on honey. Bottlers are offering 9-10c per lb. in carlots, but few sales were made at those figures. Less than carlot sales of white clover reported at 12-14c per lb. in 5-gallon cans. White comb ranges \$4.80-5.25 per case in small lots. Comb honey is so nearly exhausted in Wisconsin that western honey is now being shipped into that state. Further, western extracted honey is being bought by Wisconsin bottlers for blending as the delivered price is cheaper than local goods can be purchased at.

**NORTHEASTERN STATES.**—The crop outlook for next season is reported as fair, altho the lack of snow in some areas is harmful to clover. Bees are wintering well, but the opportunity for a

clearing flight is badly needed by some colonies. The honey movement is light, as is usual at this time of year. The supplies of most beekeepers are already largely exhausted. No. 1 white comb is reported at \$5.00 per case, and No. 1 buckwheat at \$4.00-4.25 per case. No large transactions were reported for extracted white clover in 5-gal. cans, but in 5-lb. pails it has sold freely. Buckwheat honey in barrels is reported as moving at 7c per lb.

**SOUTHEASTERN STATES.**—Supplies light. Few sales reported of amber extracted at 7½-9c, white 10-12c per lb. Abundance of cane syrup around 50c per gal. is held partly responsible for the light demand this season. In Mississippi and Louisiana rain has been plentiful, and crop outlook and colonies are both good. In Georgia and Florida recent cold weather has kept bees inside the hives except on favorable days. Bees are bringing in pollen from the maple for brood-rearing.

#### Telegraphic Reports from Important Markets for January 14, 1922.

**CHICAGO.**—Since last report 1,000 lbs. each Wisconsin, Kansas, Iowa and Texas arrived. Extracted: Demand and movement very slow, most sales in small lots. Operators taking inventory and not pushing sales. Better movement expected. Market about steady. Sales to bottlers, bakers and candy manufacturers, per lb., Colorado and Idaho, alfalfa and clover, white 11-11½c light amber 9¼-10c, mixed flavors dark 8¼-9¼c. California, white sage 11-11½c. Michigan and Wisconsin, basswood and clover, white 12-12½c. Comb: Demand and movement very slow, market weak. Michigan, Ohio and Minnesota, clover and alfalfa, 24-section cases No. 1, \$5.25-5.75; No. 2, \$4.00-4.50. Beeswax: Receipts moderate. Demand and movement moderate, market barely steady. Sales to wholesale druggists, laundries and ship-supply houses, African and South American, crude 15-16c.

**NEW YORK.**—Domestic receipts limited, foreign receipts moderate. Supplies limited. Demand light, market dull but slightly better feeling. Extracted: Spot sales to jobbers, wholesalers, confectioners, bakers and bottlers, domestic per lb. California, light amber alfalfa 7-8c, light amber sage 8½-10c, mostly 9-10c, white sage 11-12c, white orange blossom 13-14c, mostly 13c. New York, white clover 11-12c, buckwheat 7-8c. West Indian and South American refined 60-70c per gal. Comb: Supplies light. New York 24-section cases white clover No. 1, \$6.00-7.00; buckwheat, mostly \$4.50. Beeswax: Foreign receipts moderate. Supplies limited, sales to wholesalers, manufacturers and drug trade, South American and West Indian crude light, best 23-24c, few 25c, slightly darker 18-22c. African, dark 15-17c, few 18c.

#### From Producers' Associations.

There has been little movement of honey in the past 30 days, but there is developing a better demand for extracted honey. Bulk comb is no longer on the market, and only a few producers still have honey to sell. The price to producers on the 60-lb. basis is stationary at 8 to 9 cents. The last month has been so warm that the bees have consumed large amounts of stores. If spring does not come early, wholesale feeding will be necessary. Rain is badly needed over the southwest part of the state.

Texas Honey Producers' Association.  
San Antonio, Texas. E. G. LeStourgeon.

Do not expect much business ordinarily the latter half of December, therefore were not disappointed on the small volume during this period. If retailer will offer honey on a fair margin of profit and will push it, there should be a large movement between now and April, as fruits and pantry stores are getting well cleaned up.

The Colorado Honey Producers' Ass'n.,  
Denver, Colo. F. Rauchfuss, Secretary.

#### THE A. I. ROOT COMPANY'S QUOTATION.

Medina, O., Jan. 24, 1922.

We are in the market for three carlots of white-to-water-white western extracted honey for which we will pay 8½c cash, f. o. b. shipping point, on approval of samples submitted. Above quotation based on carlots. We have ample stocks of white

clover, also of amber and light amber grades, and are not in the market for comb at present time. (No shipments of honey will be accepted under

any conditions except as ordered by our purchasing department.)

The A. I. Root Company.

**THE OPINIONS OF HONEY PRODUCERS THEMSELVES AS REPORTED TO GLEANINGS IN BEE CULTURE.**

Early in January we sent to actual honey producers and some associations the following questions:

1. What portion of the 1921 crop is still in the hands of producers in your locality? Give answer in per cent.
2. What price are producers receiving for honey at their station when sold to large buyers? (a) Comb honey? (b) Extracted honey?
3. What are prices to retailers in small lots? (a) Comb honey fancy or No. 1 per case? (b) Ex-

tracted honey in five-pound pails or other retail packages?

4. How is honey now moving on the market in your locality? Give answer in one word, as slow, fair or rapid?
5. How much more honey has been sold locally this season than usual? Give answer in per cent, using amount formerly sold locally as basis.

The answers as returned by our corps of honey and bee reporters are as follows:

States.	Reported by	Crop Unsold.	In Large Lots. Comb. Extracted	To Retailers. Comb. Extracted	Movement.	Increased Locally.		
Alabama	J. M. Cutts	15	\$4.80	\$.08	\$5.00	\$.60	Slow	250
Alabama	J. C. Dickman	10		.08		.75	Fair	
Arkansas	J. Johnson	25	4.80		6.00	1.00	Slow	50
Arkansas	J. V. Ormond	0				1.00		100
British Col.	W. J. Sheppard	10		.28		1.75	Fair	100
California	M. C. Richter	85				1.15	Slow	30
California	M. A. Saylor	10	3.00	.09	3.60	.75	Fair	50
Colorado	B. W. Hopper						Slow	0
Colorado	J. A. Green						Fair	105
Connecticut	A. W. Yates	20	6.00	.15	8.00	1.00	Slow	100
Florida	C. C. Cook	40		.08		.65	Fair	50
Florida	H. Hewitt	5		.08		.85	Fair	4400
Florida	W. Lamkin	5		.09		.75	Slow	
Georgia	J. J. Wilder	60	5.00	.10	6.00	.75	Slow	85
Illinois	A. C. Baxter	0			6.50	1.25	Slow	100
Illinois	C. F. Bender	0			6.00		Slow	100
Illinois	A. L. Kildow	0	5.25	.12	6.00	.85	Rapid	20
Indiana	T. C. Johnson	3			6.00	1.15	Slow	25
Indiana	E. S. Miller				6.00	1.25	Fair	30
Indiana	J. Smith	0			8.00	1.25	Fair	25
Iowa	E. G. Brown	20		.11	5.50	.90	Rapid	25
Iowa	F. Coverdale	0			6.50	.70	Fair	
Iowa	W. S. Pangburn	30		.13	4.00	.90	Slow	
Kansas	C. D. Mize				6.50	.75	Slow	
Kansas	J. A. Nining	0			6.00	.75	Slow	20
Louisiana	E. C. Davis	20		.09		.75	Fair	25
Maryland	S. J. Crocker, Jr.				5.75	1.00	Fair	
Massachusetts	O. M. Smith					1.25	Slow	
Michigan	I. D. Bartlett	5				.75	Fair	500
Michigan	L. S. Griggs	25	4.80	.12	6.00	1.25	Slow	100
Michigan	F. Markham	15	5.50	.13	6.00	.85	Fair	125
Mississippi	R. B. Willson			.07		.85	Fair	125
Missouri	J. W. Romberger		5.25	.11	6.25	.95	Fair	100
Nevada	L. D. A. Prince	0					Fair	
Nevada	T. V. Damon	0	4.50	.08	5.00		Good	
Nevada	E. G. Norton						Slow	
New Jersey	E. G. Carr				6.50	.80	Fair	20
New York	Adams & Myers	15			6.50	1.00	Fair	100
New York	G. Howe	0			7.20	.95	Fair	50
New York	F. W. Lesser	0				6.00		
New York	G. J. Spahn	10					Slow	
New York	H. L. Stevens	5		.09		.90	Fair	100
North Carolina	C. S. Bugarnier					1.25	Fair	110
North Carolina	W. J. Martin	10	6.00	.11	9.60	1.60	Slow	
Ohio	E. G. Baldwin	10	4.75	.07	6.75	.90	Fair	50
Ohio	R. D. Hiatt	10			6.00	1.15	Fair	200
Ohio	J. F. Moore	10	4.80	.12	4.80	.80	Slow	
Oklahoma	J. Heuelsen	0				1.00		100
Oklahoma	C. F. Stiles	0						
Oregon	E. J. Ladd	10			6.25	1.00	Fair	80
Oregon	H. A. Scullen			.11	5.80	1.00	Fair	
Pennsylvania	H. Beaver	10		.08		.70	Fair	50
Pennsylvania	D. C. Gilham	20			7.00	1.00	Fair	
Pennsylvania	G. H. Rea	0			6.50	.95	Fair	100
Rhode Island	A. C. Miller	10					Fair	
South Carolina	A. S. Conradi	0			6.50	1.10	Rapid	25
Tennessee	G. M. Bentley	1		.25	9.50	1.75	Fair	50
Texas	T. A. Bowden	18				.80	Slow	
Texas	J. N. Mayes	5	3.60	.12		.90	Rapid	10
Texas	H. B. Parks	10		.13		.80	Fair	15
Utah	M. A. Gill	5			4.50	.60	Fair	25
Utah	N. E. Miller	10		.08		.50	Fair	75
Virginia	T. C. Asher	15				1.25	Fair	
Vermont	J. E. Crane	15			7.50	1.80	Fair	100
Washington	G. W. B. Saxton	15		.15		.75	Slow	
Washington	G. W. York	25		.11	6.00	.85	Slow	25
West Virginia	W. C. Griffith	0			7.50	1.00	Fair	100
West Virginia	T. K. Massie	5					Fair	
Wisconsin	N. E. France	15		.15		.60	Slow	
Wisconsin	E. Hassinger, Jr.	5			7.00	.75	Slow	35
Wisconsin	H. F. Wilson	5		.13		.95	Rapid	
Wyoming	A. D. Brown	50	5.00		6.10	1.00	Slow	25



**T-shaped Form Block**

The sharp edge of hot plate slides under T-tin when cutting off foundations.

**Slide Spring on Form Block**

Holds section securely on the block while it is being reversed.

**Hand Lever**

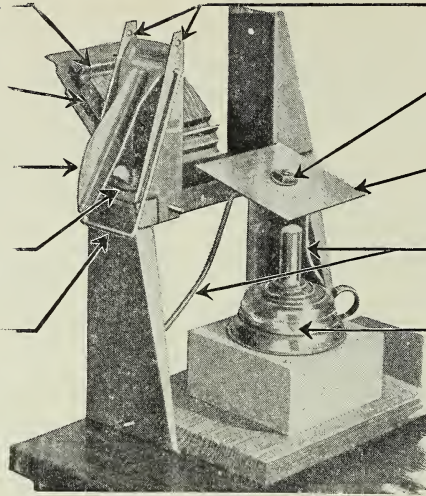
Which quickly fastens dovetails of section.

**Thumb Adjusting Nut**

Permits lever post to be moved backward and forward for sections of different sizes.

**Truss Wire**

May be swung over opposite post when fastening dovetails if desired.

**Adjustable Lever**

These holes in frame permit raising for use with taller sections.

**Hot Plate Nut**

Permits hot plate to be tilted at just the right angle.

**Hot Plate**

Melts edges of foundation, then cuts large piece off to make small bottom starter.

**Wires Supporting Hot Plate**

Permit it to move to and from the form block.

**Alcohol Lamp**

Hot plate tilts over lamp when not in use, permitting surplus wax to run off back edge.

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AMERICAN BEE JOURNAL, HAMILTON, ILLINOIS

# GLEANINGS IN BEE CULTURE

FEBRUARY, 1922

## EDITORIAL

SINCE many of the beekeepers' associations are taking up the subject of the Dr.



### The Miller Memorial Library Fund.

Miller memorial, at their winter meetings, thus adding constantly to the list of donors, we have decided to wait until the April issue before publishing this list in Gleanings, thus giving time for us to include the contributions now being made at these meetings. The names of contributors to this fund who made their contributions thru Gleanings and The A. I. Root Co. up to November were reported to C. P. Dadant, Hamilton, Ill., chairman of the committee in charge of this fund. These names were printed in the January issue of the American Bee Journal.



THE American Farm Bureau Federation suggests that county farm bureaus would do



### Movement Among Farmers to Increase Acreage of Clover.

well to use the facts and figures of the corn situation as a basis for discussions on the limitation of corn acreage and the expansion of the legume acreage for 1922. This great federation suggests that "Pitch Clover" may be better than "Plant Corn" for the coming year. Such a movement should benefit beekeepers wherever any of the clovers are grown. While the farmers are debating as to just what legume to plant in reducing their acreage of corn, it is a good time for beekeepers to see that their farmer neighbors are well supplied with good literature on sweet clover (both the Hubam and biennial varieties) and alsike clover in regions where these plants do well. Several bulletins on growing sweet clover as a farm crop have been published by the United States Department of Agriculture within recent years, and at least one (Farmers' Bulletin 1151) on alsike clover. No doubt many of these can still be had free by writing to the Department of Agriculture at Washington. In addition to these, several states have published similar bulletins, which can be obtained by writing to the state agricultural colleges. By consulting with the county agent or the local

farm bureau, beekeepers can, no doubt, make arrangements for a wider distribution of such literature in their localities, which should benefit the farmers as well as the beekeepers.



OUR readers will note the tremendous increase in the amount of honey sold locally,



### More Honey Sold Locally Than Ever Before.

as reported on our market page by honey producers themselves, who are reporting for this page (see page 69, last column).

The figures given this month should be compared with those given last month, where the percentage of the total crop of honey sold locally is given by the same reporters. While these figures, to a certain extent, reflect the handling of the reporter's own crop, they are in each case, so far as possible, a report for the community represented, so that the figures here given are representative of conditions as they exist thruout the country.

Much of the honey sold locally this year must have gone to new consumers, since in many locations, where it has been the custom for beekeepers to ship away practically all the honey produced, a large percentage of honey produced last season has been sold locally. This new outlet for honey, which has been created by the beekeepers themselves, is largely responsible for steadying the honey market last fall. If the honey carried over from 1920, together with the 1921 crop, had been dumped upon the general market to be handled thru the regular trade channels, the results would have been disastrous.

The honey producers of this country are to be congratulated in finding these new outlets for their product. One serious mistake has been made by some in selling honey in a retail way at the wholesale price. This abuse will, no doubt, correct itself ultimately, especially if market information, such as that furnished by our market page and other bee journals as well as that furnished every two weeks by the Bureau of Markets and Crop Estimates, can be sufficiently distributed among beekeepers everywhere.



FOR MORE than 50 years American beekeepers have been striving for better combs, especially those used in the brood-chamber. The invention of comb



### The Problem of Better Combs.

foundation thus far stands out as the greatest single step in this direction; but, as beekeepers know, the use of comb foundation does not always result in perfect combs. Poor combs in the brood-chamber are even now causing annually tremendous losses to those beekeepers who are not fully alert to the importance of good combs, for they stand in the way of the most rapid and complete building-up of the colonies in the spring and also promote swarming. In order to insure best results in honey production it is now necessary to sort over the brood-combs, from time to time, to cull out those which are not best suited for brood-rearing.

The aluminum honeycomb which is being tried out by beekeepers all over this country, as well as in some foreign countries, has therefore created great interest among beekeepers everywhere. In England, the Semi-Comb, which is also made of aluminum, is creating great interest among British beekeepers. The experimenting with wood-base foundation, described by H. H. Root in this issue, is another attempt to solve this problem, and while not as revolutionary in character as metal combs, the success attained thus far will, no doubt, create great interest, for beekeepers are becoming more and more alert concerning the securing of better combs. With all the effort now being made and with thousands of beekeepers studying the same problem, surely something will be worked out that will give us better and more durable combs. Just what the final solution will be, no one can now tell.

In the meantime beekeepers should not plunge heavily into an equipment of either of these new things until quite sure that they will answer every purpose. Beekeepers are too often prone to experiment with new equipment on too extensive a scale, letting their enthusiasm for something new run away with their better judgment. It will be infinitely better to try these on a small scale at first. Perhaps neither of these new developments will answer the beekeeper's purpose fully. We can well afford to go slow with them while they are still in the experimental stage of development.



IN an article in this issue, E. F. Atwater points out certain conditions under which



### Destroying Old Bees in Fall to Save Stores.

it may be profitable to eliminate the old bees from strong colonies in the fall, wintering only the younger ones, the purpose being to save stores and prevent building up too early in

the spring. In most localities there is usually no complaint about colonies being too strong in the fall. Where there is a considerable period of time after the close of the main honey flow before the beginning of winter, or where the late honey flow is meager, the colonies naturally go down to normal winter strength. In fact, the trouble is perhaps more often the other way, for thousands upon thousands of colonies go into the winter every year too weak for safe wintering.

Practical honey producers will, no doubt, be more inclined to criticize Mr. Atwater's suggestions, in regard to destroying the old bees, on the ground of economy than from sentiment. Instead of rearing a lot of bees that are too old for winter when winter begins and then destroying them, would it not be better to prevent the rearing of these bees? This could be accomplished by killing the old queen, then after an interval of queenlessness, requeening the colonies at such a time that most of the old bees will disappear before winter. The winter colony will then be made up of young bees reared from the young queen.

No doubt, however, as Mr. Atwater implies, these old bees in the fall help the colony to winter better, thus resulting in a stronger colony in the spring; but, as Mr. Atwater points out, it is not desirable in his locality to have the colonies very strong in early spring on account of the relative lateness of his main honey flow. In such cases why not so manage that the colonies shall come thru the winter as strong as possible, then divide them in the spring before they have had a chance to reach full strength but in time for each division to build up to maximum strength by the time the main honey flow begins? Thus two colonies will be made, each of which, if ample stores are provided, should be in better condition for the honey flow than the original colony would have been if left undivided. If increase is not wanted, the colonies can be united back to the original number some time in August, thus saving in fall brood-rearing, since the united colonies would then rear only about as much brood as each would have reared if not united.



THE United States Department of Agriculture has just issued three new Farmers' Bulletins, outlining



### Four New Bulletins for Beekeepers.

the beekeeping management required for best results in three important honey-producing regions as follows: Farmers' Bulletin 1215, "Beekeeping in the Clover Region"; Farmers' Bulletin 1216, "Beekeeping in the Buckwheat Region"; and Farmers' Bulletin 1222, "Beekeeping in the Tulip-tree Region." Each of these bulletins shows by an outline map of the United States the territory included within the region indicated.

The peculiarities of each region are discussed in each case, and simple directions are given for a system of management to meet the requirements of the locality. Beekeepers will, no doubt, welcome this method of handling the subject of management in beekeeping, the details of which must of course differ for different regions. These bulletins can be obtained free while the supply lasts by writing to The Bureau of Entomology, Washington, D. C.

The fourth new bulletin is United States Department of Agriculture Bulletin 998, "Heat Production of Honeybees in Winter." This is a report on the study of a colony of bees in a respiration calorimeter. With this apparatus, the energy output of a colony was measured by measuring both the respiratory products given off by the bees and the amount of heat given off within certain intervals of time. The temperature of the air surrounding the hive was changed from time to time to determine the amount of heat and respiratory products given off at different temperatures. The oxygen content of the air, the percentage of carbon dioxide and the humidity were changed, and the response of the bees to these changes carefully noted.

One of the surprises in this connection is that neither an excess of carbon dioxide nor a considerable deficiency of oxygen affected the bees adversely. In fact, a lack of ventilation apparently had a quieting effect upon them.

The energy produced by the bees when they were about as quiet as they are under most favorable conditions in early winter, when measured by this apparatus, was found to be greater, according to body weight, than that produced by a man working at hard manual labor, considering the fact that the work was done by only a relatively few of the bees of the cluster. According to this, the energy produced by a colony in the height of a honey flow must be tremendous for the body weight involved when compared with higher forms of animals.

We understand this bulletin is for sale by the Superintendent of Documents for five cents, cash or money order, stamps not being accepted for bulletins.



IN THIS issue are articles by W. J. Shepard, Arthur C. Miller and J. L. Byer on the Lewis treatment for European foul brood. The reader will note the difference in the attitude of Mr. Miller and Mr. Byer regarding the destructiveness of this disease and the importance of elaborate treatment.



**Some Peculiarities of European Foul Brood.**

Mr. Byer sees no need of fussing with drugs, which involves shaking the bees from their combs once a week in order that the

combs may be sprayed with a solution of sodium hyperchlorite to control this disease, when under his conditions the bees are able largely to control it themselves. As he says he looks upon European foul brood with "comparative contempt."

On the other hand, Mr. Miller is enthusiastic about the drug treatment. He mentions the "virulent type" of European foul brood prevalent in his locality, which the ordinary treatments for this disease do not cure. Both of these men have been thru the mill with European foul brood, but they emerge with quite different views in regard to treatment.

Mr. Byer is located in the midst of the clover region of Ontario where the stimulation of the comparatively early honey flow from clover causes strong colonies of vigorous bees to clean out the dead larvae so thoroughly that the disease is not able to make much progress. If it does get the start of certain colonies, doubtless 10 days of queenlessness and then requeening with a young queen of resistant stock will usually enable the bees to clean up the trouble.

Mr. Miller in Rhode Island is outside of the clover region proper where the early honey flow is not dependable, and where the bees can not be depended upon to clean out the dead larvae so promptly or so thoroughly. One man, because of his stock, management and location, is able to look upon European foul brood with contempt; while another, because of the difference in his locality, is compelled to go to a lot of trouble to keep the disease under control.

The so-called "virulent type" of European foul brood does not, however, entirely stay out of the clover region or regions having a dependable early honey flow. On several occasions the Editor has seen it appear suddenly in all its glory in clover localities, but these were seasons when the clover failed. Even then its virulence depended largely upon the stock and management.

In any region having a strong dependable early honey flow, beekeepers who have good stock and so manage that their colonies are rousing strong early in the spring will not need to bother with drugs to control European foul brood, nor will they need to destroy the combs. In regions where nature fails to co-operate in furnishing a good honey flow at the critical time the problem is quite different, but rousing strong colonies of good stock go a long way even there. When these fail and requeening after a period of queenlessness fails, as in Mr. Miller's case, something else must be done. Perhaps the drug treatment is the answer as to what this should be.

In regard to the Stewart gasoline treatment for American foul brood, mentioned by Mr. Byer, beekeepers can well afford to let the federal and state experts do the experimenting along this line, at least the first season.



THE fact that orange bloom can produce nectar in commercial quantities was hardly recognized 15 years ago. Heretofore the sole usefulness of the orange as a source of nectar was, supposedly, that of stimulating the bees to breeding up and becoming strong. Its potential power as a nectar-secreter was lost sight of, owing to the fact that its blooming period was early and at a time when most colonies were too weak to store much surplus. During the past decade good beekeeping has demonstrated that colonies can be made strong enough to gather orange honey in commercial quantities. At the present time, according to the character of the flow and the skill of the beekeeper, average colony productions usually amount to from 40 to 250 pounds, and orange-blossom honey ranks among the three main honey sources of the state.

#### The Orange Locations of the State.

Southern California produces nearly three-fifths of the state's orange crops; but central

## THE CALIFORNIA ORANGE FLOW

*Great Colony Strength, the Maintenance Thereof and Abundant Storing Space Are Vital Factors*

By M. C. Richter

Out in California when weather conditions are favorable at the time of the bloom of the orange trees, thousands upon thousands of these beautiful trees, laden with their fragrant blossoms, pour out literally tons of nectar daily. At such times the nectar is often so abundant in the orange blossoms that men working among the trees sometimes find their clothing sticky with nectar that has dropped on them when the branches were shaken. If all of this nectar could be gathered and made into honey, it would require scores of trains to haul it to market. In this the first of a series of articles dealing with California conditions, Mr. Richter tells how to get the most out of an orange-blossom honey flow. This series of articles will be invaluable to California beekeepers as well as others. Eastern beekeepers who are located in the clover region will note the similarity of the problems involved in securing a crop of orange-blossom honey and clover honey, the problems of securing a large force of bees early in the spring, the control of swarming and the supering being almost identical in the two regions.—Editor.

and northern California are rapidly increasing their production, and today Tulare is the banner orange county, leading Riverside by more than 200,000 bearing trees. The five leading localities are as follows: (1) The area enclosed in and adjacent to a triangle drawn thru Pasadena, Redlands and Santa Ana; (2) the eastern foothills of Tulare County (Lindsay, Porterville and a new section known as the Terra Bella District; (3)

Ventura and Santa Barbara counties; (4) San Diego County, (5) Butte County. There are many other small, but promising districts in central and northern California, notably in Kern, Sacramento (Fair Oaks) and Placer Counties.

#### Conditions Under Which Nectar Is Secreted.

The period of nectar-secretion is most variable and dependent upon several factors, especially climatic ones over which the beekeeper has practically no control. It should be mentioned, however, that the best cultural conditions under which an orange



At times there is so much swarming during the orange flow that some beekeepers find it profitable to get increase by means of decoy hives.



grove is kept will prove conducive to greater nectar-secretion. In other words, if an orange tree be supplied with the best conditions for its growth and reproduction, such as most suitable soil, proper retention of moisture in the soil, sheltered location protected from climatic extremes, and the like, the orange tree then will be found to be thriving under its most favorable conditions and will give forth a greater abundance of nectar. It should also be added that the recent research work of Dr. E. F. Phillips shows that the orange as well as all other plant life secretes better at higher altitudes and higher latitudes. Consequently, Riverside, San Bernardino and northern California territory are very favorable locations. Blooming in April at a time when there is much inclement weather, the orange flow is necessarily irregular. Its duration may be but 10 days or it may extend over a period of about a month. At times it may be exceedingly rapid, and the intake of nectar may reach 15 to 20 or more pounds daily for several days at a time. When such is the case the nights are comparatively cool and are followed by fine warm days with temperatures reaching as high as 85° to 95°F.

#### Significance of an Orange Location.

Aside from affording a fairly constant amount of a fine quality of easily marketable honey, the orange flow, as has been pointed out, comes early and is of comparatively short duration. It is evident from this fact that but few yards are kept permanently on a purely orange location. The flow is over during the fore part of May, the colonies are strong, and there are several other sources of nectar available in other parts. The orange flow is a flow utilized principally by the migratory beekeeper, and the successful migratory beekeeper is well grounded in the fundamental principles of his profession.

It is a well-known fact that a colony that has been made fit for a honey flow has consumed from 50 to 75 pounds of honey or its equivalent in a sugar-syrup feed or in incoming nectar, and that the colony, if properly handled during the short orange flow, may be utilized again with its strength unimpaired for another flow. The great saving in the cost of preparing a colony for a honey flow is at once apparent. The important consideration to bear in mind, when moving from one source of nectar to another, is to move before the first flow of nectar has entirely ceased. In other words, move at the first signs of a waning flow or when the daily intake of nectar per colony has decreased to only 2 or 3 pounds. Very often at this stage there is a slight inclination to rob, which at once is a sign that the bees should be on the move. It is better to move at such a time, even though the next honey flow has not yet commenced. A decreasing honey flow, especially if it be abrupt, is a sign for the queen to stop laying and for

the bees to fill up the brood-nest with honey.

#### Preparation of Colonies for Flow.

Orthodox beekeeping tells us that, in order to prepare a colony for the orange or any other early honey flow, it should have produced the fall before at least 15,000 young workers or, to put it more specifically, there should be three full Langstroth combs or the equivalent thereof filled with brood during the fall, so that the young bees resulting therefrom may go into the quiescent stage during winter. It is these 15,000 workers or three pounds of bees reared usually during September that, so to speak, vitalize the colony and make it possible to increase its working force up to from 50,000 to 75,000 by the beginning of April. Orthodox teaching likewise says that there should be in the colony a queen of the current year's raising. If there be a fall honey flow, no difficulty is experienced in procuring the 15,000 young bees. If, however, the honey flow is over in early summer and migratory beekeeping is not practiced, then it is advised to requeen during the fall. This should be done early



Every year colonies of bees are brought into the California orange groves.

enough so as to have the queen laying at least six weeks before the quiescent period. Stores to the amount of 50 pounds more or less are necessary, dependent largely upon what nectar the bees might find during February and March, and to a less extent to what protection the colony has received during winter and the building-up period. Some sort of winter and early spring protection, either by means of packing paper (see October issue of this journal for last year) or windbreaks, is a factor that absolutely should not be disregarded.

The all-worker-comb-excluderless-two-story hive is the proper home for a colony during the late fall, winter and early spring months. In this state the quality and the distribution of stores in the two hive-bodies and their bearing on cleansing flights and empty cells for clustering space are of but little importance. But owing to the greater activity of bees during the above periods, California must lay more stress on abundant stores. Inferior stores, such as honeydew honey, are consumed in greater quantities, owing to the larger amount of indigestible matter contained therein. Colonies, prepared as outlined above, need practically no attention until the flow begins.

### Moving to the Oranges.

Migratory beekeepers know that moving is expensive and that it costs no more to transport a prepared than it does an unprepared colony to a flow. They know, too, that the best time to move to a flow is not a few days before it starts, but just at the time that it opens. If the colony to be moved had not been prepared the fall before, it will more than likely lack the 50,000 to 75,000 workers and likewise a good-sized brood-nest of emerging bees. It will be necessary, then, to make up colonies of required strength by either uniting or by the utilization of frames of emerging brood from weaker colonies. Before moving, each two-story colony should have at least 10 to 15 pounds of bees and several frames of well-sealed brood. In addition to this they should have 10 pounds of stores. To make up colonies is a very costly procedure. It shows that a good deal of wasted time has been spent on weak colonies, and that a certain amount of bees and bee equipment is lying idle at a time when it might be very useful.

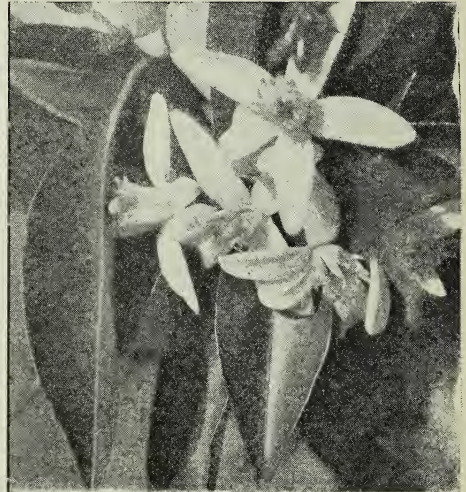
### Colony Manipulation During Orange Flow.

There are two important considerations here: first, maintaining intact the working force of each colony; and, secondly, providing at all times sufficient storage capacity for incoming nectar. The former consideration is, of course, to prevent the issuance of a swarm, and the procedure is as follows: Put the queen in the brood-chamber with one frame of unsealed brood in the center (having first destroyed all queen-cells), and then fill out with empty worker comb, if the colony is to be used for a honey flow other than the orange. If the orange is the only source of nectar for the season, then substitute an empty comb for the comb of brood and frames of foundation for the frames of comb. This will considerably retard the production of bees at a time when they are not needed. A queen-excluder is next placed over the brood-chamber, and then two full-depth supers of empty comb (spaced eight to a ten-frame body or seven to an eight-frame body, as the case may be) are placed over the excluder. If the colony had but ten frames containing brood then these are placed in a super which is put above the two supers of empty comb, taking care to remove any queen-cells that may be found. However, the colonies should have from 12 to 18 frames containing brood at this time or at a time when the colonies have reached their peak in brood-rearing, and if such be the case there will be two hive-bodies containing brood to be placed above the two bodies containing empty comb. The frames of brood should be spaced nine to a ten-frame super, filling the top super full of brood, with sealed brood on the outside, and the remaining brood in the center of the story below.

This plan, for all practical purposes, prevents swarming and, in fact, is a plan where-

by artificial swarming has been practiced. It is important that two supers of drawn comb be between the queen and the emerging brood above. It is not necessary to destroy any queen-cells that may be started on the brood after it has been placed above. This method of swarm control must be put into practice only when the colony is strong and on the point of swarming.

The second consideration, namely, that of sufficient storage space, regulates, as it were, the orange crop. At the onset of the flow, after the colonies have been treated for swarming, they are normally five stories high. The two top stories when they were placed above, besides containing the brood, held also considerable honey, and, as the flow progresses and the brood emerges, these are the first to be filled with honey. In the meantime the two empty supers below are serving a twofold purpose in that they pre-



Orange blossoms. Sweet as they are beautiful.

vent swarming and provide ample space for rapid intakes of nectar. These two supers act as safety reservoirs, and the greater the honey flow, the more thin nectar or unripe honey will these reservoirs contain. Should the intake for any certain day amount to some 20 pounds, one super of empty combs is none too large to be filled with this thin nectar, which is spread out in every cell of the eight combs. Two or three such days of rapid nectar-secretion may mean the addition of one or two extra supers of comb, and whenever extra supers are needed they should be placed immediately above the excluder. Throughout the honey flow always watch the super just above the excluder, and as it fills up slip an empty one between it and the excluder. Even if the colony mounts to seven stories high, there is no other way in which a strong colony can handle all of the nectar which it has the ability to gather. Modesto, Calif.



# WOOD BASE FOUNDATION

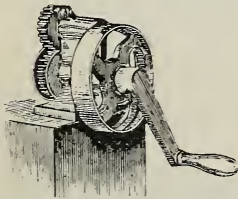
*Is This the Solution of the Long Standing Problem of Durable Non Sagging Combs?*

By H. H. Root

strengthen combs to prevent sagging or breaking out in the extractor. In these experiments he tried imbedding cloth, paper, wood veneer and other

THE securing of nearly perfect combs, that will stand the heat of the summer without sagging or breaking, is a problem nearly as old as bee-keeping itself. In the days of the box hive, beekeepers fastened wooden sticks about one-half inch in diameter thru the middle of the hive to support the combs, these sticks running horizontally in different directions thus crossing each other.

After Langstroth first brought out the movable-frame hive in 1853, both he and Quinby tried out wooden bars running thru the middle of the frame either vertically or horizontally to help support the combs, as well as furnish winter passageways thru the combs. Quinby reported that without such supports he had trouble from combs heavy with honey breaking down in hot weather.



Crimping machine used by Moses Quinby in 1870 for making the cells of his metal combs.

Working further on this problem in 1870, Quinby made metal combs quite similar to the metal combs now being tried out again in this country and in England. To make these metal combs Quinby built a machine to crimp the thin tin strips which were used in building up these artificial combs. From the accompanying illustrations, taken from a revised edition of Quinby's book, it will be seen that these metal combs, made more than 50 years ago, were assembled in almost exactly the same way as the aluminum combs of today, the difference being that the cells on each side of the septum were made up separately and attached to the sheets of tin which formed the septum. This is the principle now used in England in manufacturing the "Semi-Comb." The aluminum combs made in the United States have a septum incorporated in the strips of metal by the manner in which the metal is crimped, so that the cells on both sides, as well as the septum, are assembled at once.

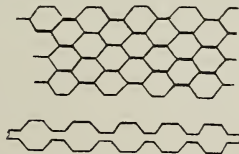


Diagram showing how the crimped metal was placed together by Quinby to form the metal combs.

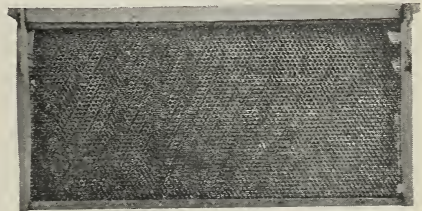
In the early days of comb foundation, which came into use in this country in 1876, A. I. Root conducted many experiments to

material within the foundation, but gave up all of these in favor of wires stretched thru the frames similar to the way this is done today, except that he used vertical wires together with a support made of folded tin in the middle of the frame.

Dr. Miller used small wooden splints, which were impregnated with hot wax and imbedded in the foundation vertically, to strengthen and support the comb. While these prevent the sagging of the combs they do not strengthen them sufficiently for the rough use they usually receive in the extractor.

### Different Methods of Wiring Frames.

If there is a form of wiring a frame that we have not tried, it is a form that none



Foundation with wire cloth incorporated in the base. This has not proved successful.

have thought of. We have tested every conceivable form of horizontal wiring; we have tried vertical wiring—five, seven and nine vertical strands—and we have tried a combination of the two, both horizontal and vertical. For two seasons we have been using what is known as the California plan. In addition to the four horizontal wires, a diagonal wire extends from the bottom of one end-bar, up across two tacks in the top-bar and down to the bottom of the other end-bar, the end-bars being notched to permit the diagonal wiring. This plan makes a much stronger comb; but, unless all the wires are perfectly imbedded, deformed or drone cells are formed at the intersections. We have tried again the tin stays that A. I. Root used years ago, as well as the vertical wood splints advocated by Dr. Miller.

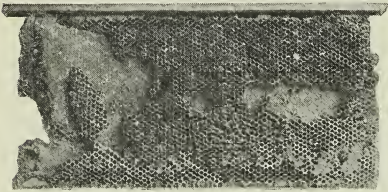
Some of these plans are good so far as the prevention of stretching and consequent building of drone comb are concerned, but in none of them are combined all the good qualities that should prevail in a durable comb.

Two years ago we began experimenting

with combs having as a base some material other than wax, which would stiffen the wax and prevent distortion of the cell and breaking of the comb in the high-speed extractor.

#### Wire Cloth.

Foundation having wire cloth incorporated in the base has a very attractive appearance and the bees draw out the cells nicely. There is not enough metal to conduct the heat to or from the brood, and, of course, such combs will not stretch or sag, provided

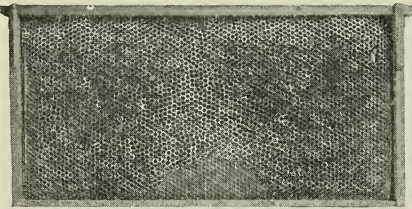


Foundation having a base of tough Bristol board. Combs built on such foundation are universally unsatisfactory.

the wire cloth is firmly fastened to the frames. This, however, is a difficult achievement, and the expense and labor necessitated in securing to the frames foundation with a wire-cloth base are quite an objection.

#### Celluloid.

About three years ago we made some foundation with a celluloid base, coating some old roll film photographic negatives with wax and running them thru the mill. The celluloid yields just enough in the pressure



The early attempts in making wood-base foundation were not a success. Note above the irregular cells and drone-cells, a result of insufficient cell wall.

of the mill so that the base is quite natural. The combs built from such foundation do not sag, but the celluloid has an unfortunate tendency to spring out and in, like the bottom of an oil can, throwing the midrib to one side or other of the center of the frame. Moreover, celluloid after a time dries out and becomes very brittle. We fear that breakage would ultimately result in the extractor.

#### Paper and Bristol Board.

In spite of the early experiments of A. I. Root we next tried hard cardboard and even

bristol board, the latter being so hard and tough that it could hardly be cut with a knife. Both these materials are objectionable in that, because of being fibrous, the bees gnaw the wax off and then proceed to gnaw the paper. In the moisture of the hive or when thin honey is placed in the cells, the paper also tends to blister, so that the combs in a short time are entirely unfit for use.

We have not tried any kind of cloth, because A. I. Root's early experiences with this were so convincing; furthermore, others who have tried the cloth since have found the same trouble—the bees consider it a foreign substance and proceed to gnaw it away.

#### Bakelite.

To a limited extent we have tried foundation with a bakelite base. Bakelite is a material which is used quite extensively in a number of ways, one of the most common uses being for pipe stems. For making foundation the bakelite can be obtained in very



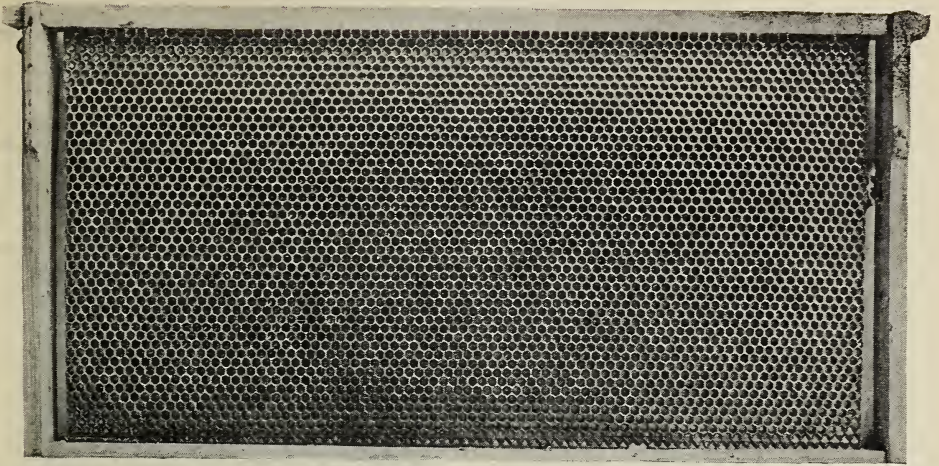
This wood-base comb was one of a full set on which, fifteen months prior to the time the picture was taken, a swarm had been hived. The colony built up to full strength, wintered well in 1920-1921 and appears to be normal in every respect today. Note the brood close to the top-bar.

thin sheets with a cloth center. The bakelite renders the cloth very hard and smooth with a glass-like surface. While our experiments are not conclusive as yet, we fear that the expense of this material will be an objection; also that its odor of carbolic acid will prove offensive to the bees.

#### Wood Base Foundation.

The foundation that has given us by far the best results is that having a base of thin wood veneer with the grain running vertically. We hived a weak colony on such foundation in the spring of 1920. The colony built up nicely, wintered well in 1920-1921 and seemed to be normal in every respect last season. Brood was reared close to the top-bars. In fact, we have seen sealed brood in the row of cells adjoining the top-bar. There is, of course, no possibility of sagging or stretching, and the cells are not deformed in the upper part of the combs; therefore the brood area is greatly enlarged. Thin





A representative comb from the latest pattern wood-base foundation having the cell walls clearly defined. There are no more imperfect cells than would be found in case of combs built on regular foundation. This comb is one of twenty built during a goldenrod honey flow in September, 1921, by twenty different colonies. There are some irregular cells next to the top-bar because by an oversight the cells were not clearly defined on the wood base clear to the top-bar.

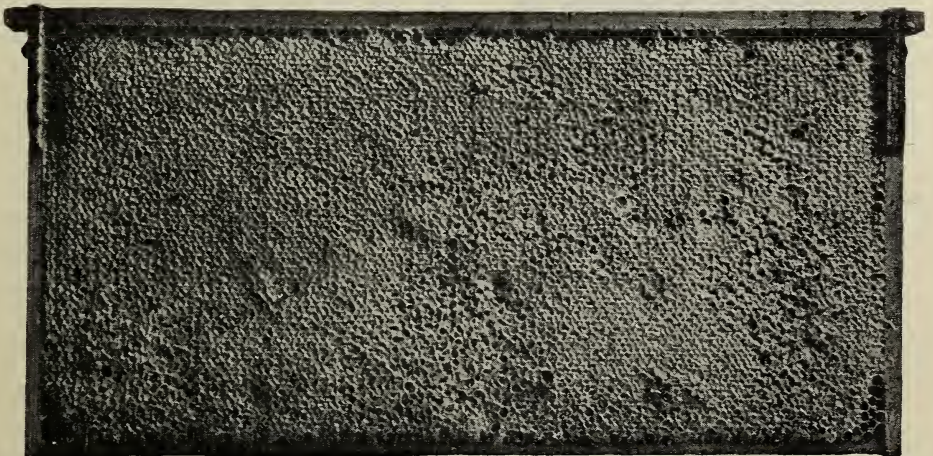
top-bars and bottom-bars are possible, for, of course, the wood veneer makes the frames very strong.

Early in the season of 1921 we tried wood veneer only  $\frac{1}{40}$  of an inch thick. We found that this, however, has a tendency to wrinkle in the hive, so that the combs have a corrugated appearance.

We first nailed the wood veneer solidly in the frames, but we found that unless there is room for some expansion and contraction from one end-bar to the other, the wood veneer even  $\frac{1}{20}$  of an inch thick has a

tendency to warp. We now support the wood veneer by nailing in the center only, and we also saturate the fiber with waterproofing material, so that the wood will be little effected by atmospheric changes.

When we first started making the wood-base foundation we supposed that an impression of the base only would answer, and we made no effort to secure a good wall of the cell. The bees paid very little attention to the original base and constructed worker or drone cells as suited their convenience. Moreover, in some instances they seemed to



Sealed honey in a comb built from wood-base foundation. Such a comb could be dropped on the floor without danger of breaking. The honey extends not only to the thin top-bar but also clear to the bottom-bar.



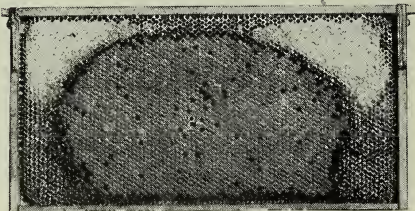
think that the wood base was the capping of the comb, and they constructed queer bridging effects and irregularities making the combs quite unfit for use.

As soon as we secured wood-base foundation with a well-defined cell wall we found that the bees built straight worker combs without showing the slightest tendency to make deformed or drone cells. In September, 1921, during a goldenrod honey flow we selected 20 different colonies, removed two full combs from each, and on one side of each brood-nest we put a thin top-bar frame with wood-base foundation, and on the other side an ordinary frame with the regular foundation, these frames in each case being placed between the outside comb of brood and combs of honey. In 48 hours all the foundation was drawn out. We could see very little difference between the wood base and the regular, so far as the progress of the work was concerned. There were no defective cells drawn from the wood-base foundation, and the twenty combs were as nearly perfect as any we have ever seen.

The wood-base comb is as smooth as a board, tho occasionally a comb shows a slight curve because of the warping of the wood veneer. We now believe that waterproofing the pores of the wood overcomes even this occasional defect.

The wood is about as good a non-conductor of heat as wax. We find no tendency for the queens to shun wood-base combs after July 15, as they have done in the case of the metal combs in our locality. In fact, so far as we can tell now, the bees rear brood in the wood-base combs just as readily as in the combs built from regular foundation. The advantage of the thin top-bar will be

that good combs result when the wood-base foundation is drawn out between combs of sealed brood or honey. Of course, that is the best way to get a perfect comb even from regular foundation. It is needless to mention here that, if wood-base foundation is given to the bees at a time when they are not building combs, the results are no better than if ordinary foundation were given at such a time. While we have found no par-



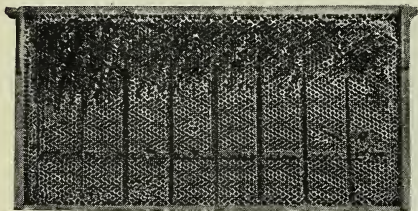
A typical wood-base comb containing brood in all stages and honey. Tho not shown in the illustration, the unsealed brood extends practically to the bottom-bar.

ticular tendency to gnaw the wax off the wood, we believe this is what would happen under such circumstances. In fact, whenever bees would gnaw regular foundation we think they would gnaw the wax off the wood base. Any kind of foundation should be given only when the bees soon will be or actually are building combs.

Wood-base foundation does not entirely prevent the building of a few cells of drone comb, for when any portion of the comb is mutilated, the bees in repairing it will build drone-cells, if the colony is strong and prosperous, just as they do when ordinary foundation is used.

The question might logically be asked whether the flat base is as acceptable to the bees as the pointed base of natural comb. Apparently the bees try to point the base; but, finding they cannot, they seem to pay no more attention to this feature; at least the wood-base comb is built about as quickly as is a comb from regular foundation. The base of the metal comb is not natural; but, since the bees cannot change it, they waste no time on it. The same is true, so far as we can tell, in case of the wood-base combs. The old flat base foundation used years ago was modified by the bees to a natural base. Because they cannot do this in the metal combs nor in wood-base combs, very sensibly they waste no time over it.

Tho we have tested hundreds of these combs, wood-base foundation has not yet proven to our satisfaction that it is perfect. I can merely say that, so far, it promises to be the logical answer to the problem that has troubled beekeepers for 50 years—the problem of securing perfect and durable combs.



The result of extracting the honey from wood-base comb without a screen in the pocket of the extractor. The comb stood the strain all right, but the wax cells crushed into the braces of the pockets. This experiment was merely to test the strength of the comb.

recognized as one of the greatest importance, and, since the wood-base foundation extends down between the halves of the split bottom-bar, the comb is built solid to the bottom-bar. In this way the capacity of the comb is considerably increased.

I am not prepared to say that a swarm hived on a full set of frames containing wood-base foundation will build a full set of perfect combs. We have demonstrated



**B**ROOD diseases among bees is a subject that most beekeepers would like to be able to dismiss from their minds; but even if the subject is

an unpleasant one, sad experience teaches us that no such pleasant prospects are possible for a long time to come, to say the least, and, as in the case of many other pests that afflict almost all kinds of rural industries, "eternal vigilance" is the only thing that will keep us from going under in the fight with this age-old enemy of the bee industry.

True there are some who contend that we are gradually gaining in this fight, and that it is only a matter of time before foul brood will be almost, if not altogether, wiped out; yet I for one have no such hopes. I fully believe that this disease will be here to fight, just as long as this present generation of the genus homo remains here on terra firma, and that is about as far ahead as the most of us care to speculate, so far as earthly matters are concerned. Only recently I had first-hand information that large commercial beekeepers in a near-by state were being forced to give up producing extracted honey on account of the prevalence of American foul brood; so I judge that other sections, as well as Ontario, look upon foul brood as still being the chief menace to successful beekeeping.

The curse of the disease does not merely consist of loss from the actual destruction of colonies, but in many other ways as well. We have a slight sprinkling of American foul brood in two of our three beekeeping centers, and I have often remarked that, even if disease is known to exist near our yards, the work of the apiary is increased at least twofold.

When looking for queens in the annual overhauling of the colonies during fruit bloom, if the operator is examining for traces of disease at the same time he is supposed to be looking for queens, it is surprising how many queens he will overlook, as compared with working in an apiary where he is reasonably sure no disease is near, and consequently is able to concentrate all his attention in looking for the queen. In forming nuclei in a rush of work, time must be taken to examine every comb thoroly, if he wishes to be really safe against the possibility of breaking up those same nuclei later in the season.

And so these items could be multiplied indefinitely, but all beekeepers who have had much experience in keeping bees in a locality where foul brood is present know all about this matter already.

#### The Lewis Foul Brood Cure.

But my attention was directed to this sub-

## SOME DANGEROUS ADVICE

### *Lewis Treatment and Stewart Treatment for the Brood Diseases Handled Without Gloves*

By J. L. Byer

being heralded by some of our friends in British Columbia. A drug with various names, some of them very lengthy, is sprayed over all the surface of the combs, and this, it is claimed, kills all the germs, spores, bacilli or whatever else causes the disease. Our genial but generally very critical friend, A. C. Miller, reports that he has tried it with European foul brood with such success that the disease now has no terrors for him. As the drug solution kills all the eggs in the combs, possibly all the young larvae too, I am forced to wonder why friend Miller has jumped to the conclusion that the cure was caused by the drugs, for a cessation of brood-rearing will generally stop the further development of European foul brood in strong colonies, as many of us have proved conclusively.

Only a few years ago we were panicky here in York County as to the ravages of European foul brood, and I frankly admit that for a time it looked as tho we were going to be put out of business. Altho we do not know what is ahead of us, yet we now look upon this disease with comparative contempt; while, on the other hand, the old brand of American foul brood is still giving us trouble in some sections more than at any other time. A few neglected colonies in a back yard, diseased, later on dead, and then all robbed out, will give a commercial beekeeper worry and trouble altogether out of proportion to the value of all the offending colonies.

Aside from the possible benefits of drugs as applied to the combs, so far as combating disease is concerned, the method of treatment would be mussy and highly dangerous to other colonies, all combs having to be handled individually while being sprayed on both sides. The bees are all driven out of the hive during the treatment, I understand, and please conjure in your minds just what that would mean unless all colonies were taken away to some place where there were no healthy colonies present.

#### The Stewart Foul Brood Cure.

But if you must use drugs for treating American foul brood, why not try the following remedy (printed on a card) as it is most simple and every one can get the drug recommended in this case:

#### HOW I HANDLE AMERICAN FOUL BROOD.

After dark quietly pick up the diseased hive and without disturbing the bees carry it into the shop, from which let the bees go out thru a bee-escape in a window. Authorities tell us that a bee carries no honey when leaving its hive voluntarily, and I see

ject, this evening, by an article in a recent issue of the American Bee Journal, relative to the new cure for foul brood (both kinds evidently) that is

keepers know that any bee can enter any hive it wants to when there is no attempt to force it in. When the bees are all out of the hive uncapped every cell in the combs. If there is any honey in the corners of the combs, scrape those parts down to the septum and wash out the honey. Then stand the combs in gasoline for two minutes. For that purpose a can four inches by ten inches by two feet high is convenient and economical in the use of gasoline. Put the frames in the extractor and throw out the gasoline. Stand them a second time in the gasoline for another two minutes, but do not again put them in the extractor. Simply shake out what you can and hang the combs in the supers. When the gasoline has evaporated use the combs any place with safety. This treatment will also kill moths and their eggs.

This is much better than the shaking method, for any beekeeper knows that when we shake bees many of them crawl into the clothing, and it is possible that those who have authority to inspect and shake bees thus scatter more disease than they eradicate as a result of the shaking treatment. Disease-laden bees may thus be carried long distances into localities where there is no disease, and when one of them leaves the clothing and enters a hive the owner at once has American foul brood in his bees.

These ideas are for beekeepers who do their own thinking.

Emerson, III.

W. H. H. Stewart.

During the past two months I have received a dozen or more cards containing the above directions for handling American foul

brood, and as the Editor will see on the address side, I am asked to "distribute" these messages for the benefit of other beekeepers. Not having ever tried out the plan here given, I should not be too emphatic in my judgment; but if an opinion is asked as to what I think about it, I will say that it appears to me that the circulation of such advice thru the country, at a time when thousands of dollars are being spent to fight American foul brood, should be treated as objectionable matter by the postal authorities. If I am wrong, I am ready to be corrected; but when one thinks of soaking the combs in gasoline twice, and running them thru the extractor, with all the attendant nastiness that goes with the mess of foul and healthy larvae together when thrown out in the process, and all for what—simply to save a few combs—that is enough to condemn the plan if there were no other objections. Then again, I do not believe that combs filled with dried-down scales would be free from the disease.

Markham, Ontario.



**T**HE practical results of the research done by Dr. Phillips and Mr. Demuth on the essentials of the most successful and economical wintering are unquestionably saving the beekeepers of this country many times the total yearly cost of the Division of Apiculture of the Bureau of Entomology at Washington; yet, strange to say, there is a vast area where beekeeping is growing rapidly, in which the beekeepers are skeptical as to the benefits of heavy packing outweighing the heavy expense and labor involved. Results of such packing in the great arid West, even though the winter temperatures may for short periods approximate those of Ohio or even more northerly states, require careful interpretation and more extended study.

Certain it is, that in practically the entire arid region bees winter, as a rule, with little or none of the careful and painstaking care required further east. For instance, while my old A B C book says that even a slight direct draft upward thru the hive may cause the loss of colonies; here colonies in hives, so open that they act merely as imperfect windbreaks, usually winter nicely, regardless of the extremes of temperature.

One man, an educator of experience, whom I have heard describe his results of heavy packing, packed a number of colonies even more thoroly than advocated. In some of

## WINTER PROTECTION in the WEST

### *Lack of Uniform Results From Packing. Can Colonies be Too Strong for Best Wintering?*

By E. F. Atwater

these colonies, the saving in stores and other advantages were exactly as anticipated, while other colonies, even in the same packing cases, consumed all their abundant food supply by early spring, and had to be fed.

My own limited experiments have not been very satisfactory. While the saving in stores, in some of the colonies, was exactly as represented, the colonies showed no considerable advantage in early brood-rearing, nor in honey production. In fact, some unpacked colonies were much better.

#### Were the Entrances Too Small?

It is quite possible that the excessive consumption of stores, in some colonies, may be due to packing too early, leaving packing on too late in the spring, or, more probably, to the very small entrances used, usually about  $\frac{3}{8}$  by  $1\frac{1}{2}$  or  $\frac{3}{8}$  by 2 inches. After packing, almost the entire population of big two-story colonies would be clustered on the outside, often for days at a time; then in April again this excessive clustering occurred; and on examination some time later, stores were found scanty in some, and more or less brood appeared to have been overheated, with not many bees in the hives to do the necessary work of the spring breeding period. The condition of chaff hives, each containing two colonies with only a thin partition between the two, and a little



less than two inches of packing material at the sides and about eight inches above, was much better, even with entrances equally small. The waste of energy in sending air currents thru the small entrance must be excessive on warm days in the spring.

If the results claimed for heavy winter packing may be attained by enlarging the entrances, except during the coldest weather, are there not still some conditions present in many localities, which may render of doubtful value the packing or wintering of enormous colonies?

#### **When Colonies May Be Too Strong in Spring.**

The old golden rule of beekeeping, "Keep your colonies always strong," is as good advice now as in the past, but I am almost satisfied that I have wintered tons of bees that were of no value to me some years, making considerable feeding necessary and probably not adding to my crop of surplus honey.

Colonies run for extracted honey and having a large number of young bees, a young queen and a fairly good late flow of honey, go into winter with a very large force of bees, many of which are quite old. Even without protection, these colonies usually winter quite well; then during dandelion and fruit bloom, they rear a relatively large amount of brood, to be followed by a period when there is usually very little nectar to be had. During the two to four lean weeks, there is too often a real difficulty in getting the queens to lay freely and make any considerable increase in the amount of brood reared. Colonies are sometimes weaker when the honey flow arrives than they were in early May.

The comb-honey man, with his brood-chamber honey-bound late in the fall and usually smaller colonies, winters very well; and, as there is not the big force to rush early brood-rearing, it is probably easier to get that steadily increasing amount of brood up to our June honey flow, which is so desirable. If a large increase is desired, that is another matter. It will then pay to winter a large force of bees, and make quite an increase during fruit bloom.

As to whether or not packing is desirable, it appears to me that in some localities there may be some things that the producer of extracted honey may do to advantage with very strong colonies late in the season. Another season I shall test some of these fully; I would have done so this year but for my absence from home nearly one-third of the season.

#### **Eliminating Old Bees in the Fall.**

Possibly one of the simplest plans to eliminate a lot of the old worthless bees is to set out several robber traps about the time that brood-rearing ceases, and, after the bees are robbing to some extent on a few combs of honey, trap all robbers for a day or two. It is said that there is a surprising comfort in equalizing stores and preparing such a

yard for winter, free from the annoyance of countless robbers.

By eliminating most of the old robber bees it is highly probable that the spread of foul brood may be reduced very greatly, and it is not impossible that, in all localities where there is much foul brood, trapping of the robbers in all commercial apiaries may be the greatest means for disease control during the fall months.

Another plan, which may be successful, is to close the entrance of each very strong colony for a day or two, so no bees can get into the hives, yet all desiring to do so may get out thru a simple escape. Early in the morning, a day or two later, the clusters of old bees may be scraped into a can and destroyed. Another plan, used by some, is to remove the strong colonies a short distance, and place empty hives, with a comb or two, in their places, to catch the returning old bees. Possibly other methods, which may be much better, may be devised for getting rid of these old bees.

When living in S. Dakota, I was told that Daniel Danielson, now of Brush, Colo., had divided colonies in such a way, late in the season, as to secure about all the old bees in one hive, and most of the young bees in another, and even the cellar-wintered the colony made up of old bees died. Geo. A. Emerson of California, for years an extensive producer, tells me that even there some study is being made, and apparently with considerable success, of methods of eliminating the old bees in the fall; and I think it possible that in many localities it may pay well to do so, where there is sufficient time for medium-sized colonies to breed up for the honey flow and where but little increase is desired. Where one winters, year after year, a host of non-producers, there is a waste of tons of honey, that the producer, from what I have seen of him in several states, can ill afford to lose.

I shall expect this article to bring forth considerable criticism from sentimentalists with their heads in the clouds, on the ground of alleged cruelty in destroying these worse than useless consumers; but many of these same men are not above extracting so closely that countless numbers of colonies starve to death in winter, or moving bees with so little ventilation that they fairly scream for air and liberty. The plans suggested only shorten somewhat the lives of some of the bees, and, in my opinion, they are fully as justifiable as any taking of life of other animals that man may live.

If there is a possible gain in your locality, with your conditions, by wintering medium-sized colonies of young bees, eliminating most of the old ones, packed or unpacked as your climate demands, then let us work out the methods necessary, and save the tons of honey now wasted by the useless consumers, and by so doing put our business on a better paying basis.

Meridian, Idaho,



## THE LEWIS FOUL BROOD CURE

One Beekeeper Tells How to Make the Solution.  
Another How to Use It

Please allow me to say that I think the presentment of the Lewis treatment in the November number of *Gleanings* could not have been improved upon, and will have the effect of setting the ball rolling right.

It cannot be too clearly understood that we have stated the case, and given out the results, just as we found them in British Columbia, without any attempt at exaggeration, and entirely for the benefit of the beekeeping fraternity. It is now up to everyone to test the treatment for themselves.

For the benefit of those who may be unable to obtain either B-K or Fecto, it may be stated that sodium hypochlorite, of approximately the same strength as is contained in these two proprietary preparations, can be made as follows:

Dissolve six pounds of sal soda in two gallons of hot water, and three pounds of chloride of lime in one gallon of cold water. Pour together and allow to settle. The clear mixture, at the rate of eight ounces to the imperial gallon of water, is ready for use.

The solution should be made with hot water, at near boiling point, so as to avoid chilling the brood when it is used. A pint of solution will be about sufficient for one spraying for each hive, if a fine mist sprayer is used. Sodium hypochlorite soon deteriorates if it is not kept well corked and in a dark place.

W. J. Sheppard.

Nelson, B. C.

Sodium hypochlorite is a very powerful destroyer of bacteria. It was the famous "Dakin Solution" of the war. It is quite harmless to drink, and in fact surgeons in the war have told me that they had to use it in their drinking water when the water could not be sterilized by boiling. It is not particularly pleasant to the taste, but one soon gets used to it. Its efficacy as a bactericide is due to chlorine gas it contains.

Mr. Lewis first used a proprietary article sold under sundry names. I was unable to find any of them here, and on making a few inquiries I learned what the commercial solution is and then made it myself. Two pounds of sal soda—common washing soda—is dissolved in two gallons of hot water. Cold water is too slow. One pound of chloride of lime is dissolved in one gallon of cold water. Hot water would free too much of the chlorine gas. It is a fine dry powder and does not readily mix with water, so it is best to stir in a little water at a time, making a sort of paste and when all is well wet

stir in the rest of the water. Then mix the two solutions and let stand over night. A white precipitate is found at the bottom of a clear solution. This latter is the sodium hypochlorite and should be bottled for use. The precipitate can be thrown on the ground for fertilizer, being carbonate of lime.

So much for the material. Now for its use. It is to be sprayed all over the combs, and for this purpose a common bush sprayer costing 50 cents is just right. This throws a fine mist and does not wash larvae from the cells. It is advisable to catch the queen and cage her until thru spraying, because she often wanders out with the bees and sometimes does not find her way back. As soon as the spraying is finished and the bees have begun to spread over the combs again, she may be released and returned to the bees. In spraying, the bees are shaken from a comb and both surfaces of it are sprayed; it is returned to the hive, and each succeeding comb is thus treated. The bees will work away from the freshly sprayed combs, and soon most of them are outside the hive. They soon go back and will lick up all drops of the liquor. It is only the the gas which bothers them.

The gas penetrates every open cell and destroys all bacteria with which it comes in contact. The liquid can be used full strength; but there is no gain, and I have found half and half of the solution and water fully effective.

Now as to the results experienced by Messrs. Sheppard and Lewis in their early spring applications. At that season colonies do not readily open and clean out sealed cells, and until such cells are opened and exposed to the gas the contained bacteria are not destroyed and will readily infect healthy brood. It is necessary to repeat the spraying at intervals of about a week until all sealed cells containing dead larvae have been opened and cleaned out. Thereafter the colony stays clean unless it becomes freshly infected from outside sources.

There is a well-recognized type of European foul brood called the virulent type, prevalent here and in other parts of the country. It spreads within the colony with startling speed, and in the course of a week or so after the colony is infected 60 to 90 per cent of all larvae are dead or dying. The larvae lose all shape and "melt" down into a dark, shapeless, pasty mass which is tracked all over the combs and hive interior until the filth is most repulsive to the sight, and the bees make only the most feeble attempts to clean up. The queen will not use the foul or partly cleaned cells; she will seek such parts of the combs as are free





## FROM THE FIELD OF EXPERIENCE

from the slimy filth and deposit eggs there, so the brood is found scattered all about the combs, presenting a very strange and unusual appearance. Such larvae as die after the cells are sealed, turn into a most unpleasant liquid.

None of the customary treatments of European foul brood have the slightest impression on the virulent type, nor have I yet found any strain of bees in the least resistant to it. According to reports from the Government the germs of the two types are the same, and so far I have been unable to discover any reason for its virulence at different times and places.

When the British Columbia inspectors sent me the particulars of the chlorine treatment I was quite as skeptical as you are, but I will try anything once and I was more than glad to hear of anything which promised to check the form of European foul brood we had here.

I followed their instructions to the letter, and after I found it was a success I began to vary the application to see if I could cut out any of the details and simplify the application. I found no advantage in the addition of oil, rather the contrary.

The eggs in the combs are often destroyed. Sometimes it seems to be the strength of the solution and sometimes the chilling; but instead of being an ill to be avoided it is on the contrary an advantage, as it is the equivalent of dequeening for three days and gives the bees a better chance to clean up. Where there are many sealed cells the spraying must be repeated at intervals until all cells are opened and cleaned. To determine this, all but two colonies of an apiary were thoroughly disinfected and cleaned, and the two colonies received spray treatment until but one or two sealed cells of dead young were to be found in each comb in one hive and but three or four such cells altogether in the other colony. Then they were let alone to see what would happen. In about a fortnight both colonies were again foul with the disease. Both were fairly strong colonies of pure Italians of a strain claimed to be resistant.

I now know chlorine gas is a better "resistant" agent than any strain of bees. Mr. Sheppard and his associates advised heating the solution before applying it, to avoid chilling the brood. So far I have not found the heating to be of any special advantage.

Be sure and wear old clothes and old shoes when working with chlorine solution, because it is a wonderful bleaching agent and will quickly take the color out of garments or tan shoes if it drops on them. Nice tan shoes so treated, tho well spotted, are far from being like trout "speckled beauties"—as I found out. Arthur C. Miller.

Providence, R. I.

### THICK TOP BARS OBJECTIONABLE

They Reduce the Comb Surface of the Frames and Increase the Brace Comb Nuisance

Personally I have produced thousands of pounds of fancy sections built solid to the wood and scarcely a cell not capped. Very wasteful and expensive to have them finished so completely I'll admit; but exhibition rules called for it, and that, by the way, was what killed comb-honey production in Ontario. However, that is an aside; what I wish to say is that such methods would produce burr-combs if they were to be had. But we did not have burr-combs of any account, and our top-bars were only five-eighths inch deep. To me it seems superfluous to mention the depth of the top-bar in connection with burr-combs, because it has nothing to do with them. They are built only where spacing is inaccurate. They are merely a protest against inaccurate spacing. Inaccurate spacing of the comb is overcome by extending or cutting away cells. Inaccurate spacing of pieces of wood induces burr-combs in large spaces and brace-combs in spaces which are too small. Enlarging the pieces of wood without correcting the spaces between them simply increases the burr-comb nuisance by increasing the areas over which they may and will be built. The cure for burr-combs is for the manufacturer and the beekeeper to correct the spaces where they cause the most trouble. I believe the space which bees prefer is not less than a quarter nor more than five-sixteenths of an inch. With a correct bee-space there will be very few burrs and braces; but the amount of these will be in proportion to the wood surfaces available for building them, and while not much difference will be seen there are always more of them on a deep top-bar than on a shallow one.

I have not the literature available to see if I can tell how the error crept in. That it was fathered by some who have been an untold blessing to the industry in other ways should not be made an occasion for perpetuating an error. That I am not alone in the feeling of protest against the intrusion of unnecessary wood in a frame already too shallow is evident by many letters I have received objecting to so much wood. Owing largely to my teachings at short courses and demonstrations there is a rapidly growing demand in Ontario for the shallow top-bar. One manufacturer objects that on account of buying the pine all in seven-eighths inch boards he cannot save anything by making the top-bars shallow. I should think that could be overcome in some way, considering the fearful price now paid for white pine. But even if it cannot, I would rather he dressed off the extra wood and fed it to



## FROM THE FIELD OF EXPERIENCE



the furnace than crowd it into my brood-chambers which are already too small.

Georgetown, Ont. Morley Pettit.



### HUBAM IN BRITISH COLUMBIA

Makes Growth of Thirty and One-half Inches in  
Twenty-one Days

Beekeepers, as a class, are not fully alive to the possibilities of improving their business thru the agency of spreading information among the farmers of their various districts concerning the new fodder plants, which are of value to the farmer as well as the beekeeper. Hubam clover is an ideal means of improving and prolonging honey flows. It is a plant of wonderful fodder and soil-enriching value to the farmers, few of whom appreciate its great worth. It is also a good honey plant. Beekeepers might with profit to their business buy seed of this clover from reliable dealers, thereby being sure of getting the correct strain of seed, and resell at cost to farmers in their district to try out. In a short time it will be fully established.



Hubam clover sown on May 1 at Vancouver, B. C.; this picture taken June 20.

If a farmer can once see this clover growing, he will be quick to recognize its great value. Here in British Columbia we do not have a great deal of cultivated crops which are of much use to the beekeeper, and in the

coast district our honey flow is over in July. A general cultivation of Hubam clover here would improve and prolong our honey flow until frost. The same condition is true in many other parts of the country.



The same Hubam clover, sown on May 1, as it looked on Aug. 26.

Sweet clover is not looked upon with much favor in British Columbia, but all previous experience with it here has been with the old biennial variety, which can not be compared with the new annual.

On a trial plot here, seeded May first, Hubam clover had by July 17 made a growth of from four to five feet and was ready to bloom at that time. From July 17 to August 6, just 21 days, it made an additional growth of 30½ inches. On some of the warmer days it made a growth of two inches in 24 hours. When cut for hay or pastured it grew still more rapidly. This clover, seeded here in 1920, wintered over and was in bloom a week ahead of this year's seeding. Plots left uncut were still in bloom on October 12, and bees were at work on them eagerly.

Samples of Hubam at our local exhibition attracted a great deal of attention, and there were many inquiries regarding seed. The accompanying pictures will give some idea of Hubam's wonderful growth. The above results were obtained in trial plots under various conditions of soil preparations, some with lime and some without; but the growth was about equal in each plot.

Vancouver, B. C.

W. P. Long.



THE short editorial on page 9 of the January issue of *Gleanings* set me to thinking of the time when I was young in beekeeping, and my bees had

American foul brood, when I bought colonies of bees from a distance. I got rid of it by simply destroying the combs, without disinfecting the hives. We knew nothing of microbes in those days. A few years ago I was attending a beekeepers' convention where a learned professor told the beekeepers how they must disinfect foul-brood hives with a gasoline torch and all tools used in handling the combs, with boiling water. He did not even except their fingers. A gentleman sitting near me whispered to me and said he had used hives from which foul-brood colonies had been removed without any return of the disease. Now I am not saying that the bare walls of the hive may not carry the germs of American foul brood, but I do think the danger to be much less than generally believed.

\* \* \*

That is a right good editorial on page 11 on the "Condensation of Moisture in Hives in Winter," and well worth a most careful study by every young beekeeper in the North. To keep bees dry and warm in winter is the secret of successful wintering, and how best to conserve heat and let the moisture escape is another way of putting it. For this we will make the brood-chamber as warm as we can, and then we will give upward insensible ventilation thru old woollen carpeting, rugs, leaves, soft planer shavings or dry sawdust, or cork dust. Such a covering will permit most of the moisture to escape while it retains the heat. With such conditions bees will winter as safely in our cold northern winters as any stock.

\* \* \*

As I look over *Gleanings* for January it would seem as tho the most important question confronting the commercial beekeeper of today is that of marketing or selling his crop at paying prices. As I look over the markets for the past 50 years and think of the enormous amount of honey consumed today, compared with the demand for it when I first began keeping bees, the outlook for the future is bright and promising. There seems but little difference in the retail price today and 40 years ago, notwithstanding the very greatly increased production. The nuisance of one producer's selling his honey at retail at wholesale prices seems to be widespread; and, what is more, there appears to be no way to prevent it. We may, however, reduce this evil somewhat by beekeepers or associations securing the names of all beekeepers who practice this method,



## SIFTINGS

J. E. Crane

and buy their honey early in the season. I was told of one beekeeper in Maine, who was selling his comb honey for six cents a pound. Another and larger

beekeeper bought him out and put a stop to such considerable competition and made a good profit on the honey at the same time.

\* \* \*

E. S. Miller of Indiana, on page 31, tells us of carloads of honey being put up in five and ten pound pails and sold by canvassers directly to the consuming public. With lower prices, this will be practiced more and more.

\* \* \*

"Caged queens lose fertility," says M. C. Osborne on page 21. Our own experience has been that it is injurious to confine a queen in a small cage for two or three weeks. If it is necessary it is better to confine them with a "push-in-comb cage."

\* \* \*

That is certainly a very interesting article by George Riedel, page 16, on "Beekeeping in Foreign Lands," with climate and honey resources almost perfect. Yet even there he finds conditions not altogether satisfactory. There are other things than success in our business that add to or detract from our happiness.

\* \* \*

Mr. Demuth tells on page 38 how best to prevent the granulation of comb honey in cold weather. There is still in my mind much mystery as to the cause of granulation of comb honey. Doubtless the kind of honey has much to do with it, but not all. Mr. Demuth's advice appears to be the best to be given at present.

\* \* \*

On page 714 of the *Atlantic Monthly* I read: "It is summer; the breath of sweet air, simmering noises of insects, shrill locusts high in the foliage, heavy bees wading from milkweed to clover." Now this may be very literary, but hardly true to nature. Bees do not wade from milkweed to clover in real life.

\* \* \*

It was with a heavy heart that I read of the death of Mrs. Root, in the January number of *Gleanings in Bee Culture*. Yet not for long for I can not think of her as dead, for indeed she is not dead but rather removed to a higher sphere of life. With even a small acquaintance with her one could not help but recognize her sweet, patient Christian spirit, in fact, her kinship with the Christ. Our heartfelt sympathy is extended to her large circle of relatives and friends.

HERE is how Vergil instructed his Roman readers to take honey, commenting meanwhile on stings and insect enemies, and suggesting a novel way to avoid bad wintering:

## Beekkeeping as a Side Line

Grace Allen

"If e'er thou wouldst from its small shelf unseal  
The honied store, first having purified  
Thy lips and breath, with water sprinkle well  
And wait the wreathing smoke with wave of hand.  
Twice in the year the teeming brood is born,  
Two harvests have they: when the Pleiad star  
Spurns with her winged feet the ocean's rim,  
And when in flight before the stormful sign  
She sinks from heaven beneath the wintry wave.  
This is the season when the wrath of bees  
Breaks bounds, and if one harm them, they infuse  
A venom in each sting and in thy veins  
Implant a hidden barb, leaving behind  
Their own lives in the little wounds they give.  
If a hard winter bodes, and thy fond care  
Forecasts their future, pitying what would be  
Thy spirit-broken swarm's distressful state,  
Fear not to smoke them out with odorous thyme  
And cut the empty combs. Haply some newt  
Has bored the wax unseen or in the cells  
The sunbeam-fearing beetles throng, or they  
Who sit at unearned feasts, the shirking drones.  
Or some rude hornet with his mightier sting  
Has forced his way, or moth of dreadful breed,  
Or spider, by Minerva's craft, has hung  
Her swinging webs at entrance of the hives.  
The more the bees feel poverty, the more  
They turn to eager laborers and retrieve  
A fallen people's fortune, heaping high  
Their crowded marts and flowery granaries."

And thus he described disease and recommended treatment.

"But if it chance, because the life of bees  
Has the same ills as ours, that their small frames  
Languish in pestilence, these certain signs  
Will tell thee of their plight: the stricken ones  
Keep changing color and their visages  
Are hideously wasted; then the tribe  
Bears slowly from its house the lifeless forms  
With mournful pomp of death

Burn at such time the sweet-breathed galbanum.  
Carry them honey poured in pipes of reed  
Tempting them thus to feed and calling them  
To the familiar feast. 'Tis also well  
To flavor it with sap of powdered galls  
And rose-leaves dried, or freshly trodden must  
Warmed at a fire, or raisin-clusters plucked  
From some choice vineyard; also leaves of thyme,

Then there's a useful flower  
Growing in meadows, which the country folk  
Call star-wort, not a blossom hard to find,  
For its large cluster lifts itself in air  
Out of one root; its central orb is gold  
But it wears petals in a numerous ring  
Of glossy purplish hue:

The roots of this steeped well  
In hot, high-flavored wine, thou may'st set down  
At the hive door in baskets heaping full."

In one place, after having described certain ways of bees, he wrote these lines of deep loveliness:

"These acts and powers observing, some declare  
That bees have portion in the mind of God  
And life from heaven derive; that God pervades  
All lands, the ocean's plain, th' abyss of heaven,  
And that from him flocks, cattle, princely men,  
All breeds of creatures wild, receive at birth  
Each his frail, vital breath; that whence they came  
All turn again, dissolving; so that death  
Is nowhere found, but vital essences  
Upsoaring in the vast, o'er- vaulted sky  
Move unextinguished through the starry throng."

There is a long passage about fighting that is hard to understand. Dr. Sanborn and I were wondering about it a few days ago. What did Vergil have in

mind when he wrote it, we wondered? During the first few lines I thought it was robbing he was referring to, but, no, for he says,

" . . . they burst  
Impetuous from their portals, and the bees  
Join battle high in air."

I have never seen anything like that. Yet haven't I read somewhere about swarms sometimes fighting? Most glowing and spirited is the poet's description—how

"The chieftains in the midstmost war are known  
By their far-shining wings"—

pretty vivid imagination there, surely! There is "a loud alarm"—"a raging charge"—"little wings glitter"—"stings are sharp as javelins"—"they grapple limb with limb." And at the last the victor "compels to panic flight his routed foe." A really laughable part follows, for

" . . . when the two chief captains homeward  
come  
From conduct of the war, the vanquished one  
Must be condemned to die!"

And how they are garbed!

" . . . One now shines forth  
In golden flecked attire . . . strong and flour-  
ishing,  
Of haughty looks and bright with crimson scales,  
The other in foul garb inglorious  
Drags slothfully his swollen bulk along!"

Yes, "and like their kings, their follow-  
ers"; so some are

" . . . foul and colorless  
As dust-cloud on a highway"—"but the others flash  
With glittering beams and wear a glow of fire!"

What was this battle, I repeat? For we must remember all the Georgics, antiquated tho they seem now, were meant to be very practical when written. Vergil told how to breed good colts and calves, how to graft fruit trees—"nor is there one sole way to graft and bud"—when to sow barley and flax and millet, and when to begin work "if vetches thou would'st have or common kidney bean." What had he seen in his Italian beeyard like a battle high in air, or what had some beekkeeping friend described to him?

\* \* \*

In August Gleanings of last year this department had an article on Francois Huber, the blind naturalist of Geneva, who conducted such wonderful investigations in the life and habits of the honeybee a century and more ago. Recently a letter has come to my desk, regretting that so little was there told about Huber's actual discoveries. So here is a brief account, itself necessarily incomplete, of what there was no room for in that article.



He built, as I said in August, the first observation hives—one for a single comb and others for several combs, opening like books with hinged leaves, each leaf containing a comb. Among his important discoveries are the impregnation of the queen in mid-air, and the fact of one fertilization being sufficient; the development of eggs of an unmated queen into drones; the fact that the queen apparently knows what kind of egg she is about to lay and always deposits it in the right cell (tho he acknowledged and clearly stated a mystery in this matter of eggs and sex—a mystery that later was largely cleared up by Dzierzon's great discovery of the parthenogenetic origin of drones); the rivalry of queens; the fact that queens can be reared from worker larvae; that if bees are given worker cells containing worker eggs or larvae, and also containing royal jelly, they will never raise those larvae into workers, but into queens—and if queens are not desired, they will destroy the worker brood and devour the royal jelly; that eggs are true eggs—the embryonic development and emergence having been watched; that some workers sometimes become layers; that drone eggs will produce drones even when reared in worker cells—tho they may be small; and that worker eggs will produce workers even when reared in drone cells—and they will not be large.

He aided in the discovery of ovaries in workers, thus doing away with the age-old idea of neuters. He ascertained that the slaughter of the drones never takes place in a colony lacking a fertile queen, or in one still fostering swarming ambitions. By placing eggs in cells in blown-glass, and thru these walls observing the spinning of cocoons, he concluded that drones and workers spin complete cocoons, while queens spin imperfect ones, which, enveloping the head and thorax, extend only to the second segment of the abdomen, and inferred that if these cocoons were complete the queens could not destroy rival pupae. He observed that the laying of drone eggs is either coincident with swarming preparations, or precedes them, and established many facts about swarming. He demonstrated by many experiments that bees, eggs and larvae all absorb oxygen and give off carbonic acid. In studying the air of the hive in this connection, he discovered the fact and the details of systematic ventilation, and the renewal of air in the hive by wing work. He studied thoroly the Sphinx atropos (death's head moth) and its ravages in the hive. He learned that the odor of the poison of the sting rouses other bees to stinging. He discovered the origin of propolis. He made extensive studies of the senses of bees, locating the organs of touch in the antennae, and those of smell—which he demonstrated to be very keen—in the mouth (tho this theory seems recently to have been disproved—along with the conflicting claims of many

other students of these elusive organs). He failed to establish a sense of hearing, and questioned its existence. He concluded that taste was at least very imperfect. In his study of sight, he discovered that the lenses of the eyes of bees are not adjustable.

When he was forty-five years old, he lost his valued assistant, Burnens, who went to another city and accepted an office of some influence. Huber's later experiments, especially the very extensive ones with wax, were conducted with the assistance of his son Pierre, who became himself a naturalist of note, particularly in connection with the study of ants.

Huber discovered that wax comes from the under side of the abdomen of the workers. He also proved it to be produced by the digestion and conversion of honey, tho it had long been supposed to come from the conversion of pollen. He confined one swarm of bees on honey only and another on pollen only. New comb was built in the first hive, and removed, seven times; while none at all was made in the second. But why, then, he promptly wondered, do bees gather pollen? Not for the sustenance of the adult bees, he concluded after further study (in which he proved honey to be essential), but for larval food. After close scrutiny he decided that workers swallow pollen and later regurgitate it as food for the larvae. Marked bees were seen to eat pollen, go to the brood and plunge their heads into cells containing larvae. After they left, these cells were examined and found to contain a supply of larval food. Another thing that he discovered when studying wax, was that flowers do not always contain nectar, as had been supposed—and that nectar secretion is influenced by variations in atmospheric conditions.

The entire process of comb construction was observed and recorded in all its details. Bees were watched removing wax scales from the under side of the abdomen and passing them forward to the mandibles, whence, later, the plastic and cohesive wax issued and was attached to the top of the hive. One bee alone, he reported, starts the comb-building. When her supply of wax is exhausted, another follows, proceeding the same way, guided by the work of her predecessor. When this waxen wall is about one inch long and about two-thirds as high as one cell, they begin excavating it into cells, one on one side, two on the other, the joining of the two being exactly opposite the center of the one. Only these first cells, however, are so excavated, all the others being built in their regular cell form. He claimed, too, that the much-praised exactness of the bee is overestimated.

Huber's work has been the foundation on which modern investigation has rested. To an astonishing degree modern investigators (not counting Dzierzon) have merely verified the work of the great blind master.



## FROM NORTH, EAST, WEST AND SOUTH



**In Northern California.** In nearly all sections of our part of the state, colonies went into the winter period strong in young bees and heavy in stores—strong in young bees owing to various sorts of fall flows in almost all localities, and heavy in stores, owing partly to the fall flows and, to a greater extent, because the market, for the lower grades of honey especially, was so negligible that it hardly paid the beekeepers to extract. This condition is particularly true where it concerned members of the California Honey Producers' Co-operative Exchange, who were receiving as an advance but 3 cents per pound, and, as rumor had it, were to receive no more. We have been favored lately with some very heavy rainfall, and, with bees in such good condition, prospects for next season's crops are excellent.

Many of us are greatly concerned regarding the future of co-operative marketing of honey in California. It will be remembered that the Exchange's three-year marketing contract has expired. Will the various local exchanges continue to exist and, if so, are they again to become members of the State Exchange? And when will the State Exchange inform its members, the local exchanges? and, in turn, when will the local exchanges inform their members, the beekeepers, regarding a settlement on the 1920 and 1921 pools? It has been many months now, according to the best information that the writer can gather, since members of local exchanges have received any correspondence relative to the settlement of pools from either the local or state exchanges.

Two weeks of beekeepers' short courses, conducted jointly by the University of California College of Agriculture and the U. S. Department of Agriculture, for beginners and advanced students, were held at Berkeley during December. The attendance was small, especially for the last week, which was devoted to advanced students. It seems to be almost impossible to convince beekeepers generally that it is their distinct advantage to attend such courses when some of the best authorities in the country are prepared to give them the very latest on beekeeping practices. Beekeeping has become a specialized industry and has changed very rapidly during the past few years. We hardly realize that this is true. A few years ago we did not know where to find good locations, nor would we have known how to secure the crops in such locations, were it not for the teachings of the past few years. To combat diseases is a much more serious problem today. And we are just beginning to find out that we must know what it costs to produce honey. Dr. E. F. Phillips of Washington, Geo. S. Demuth, of this journal, and other qualified men

discussed and imparted the latest teachings on the foregoing, as well as other subjects, which we cannot afford today to pass over lightly. If we do, others are bound to take our places. Beekeeping journals are recording our progress, and every one of us should devote much more time to their careful perusal. M. C. Richter.

Big Sur, Calif.

\* \* \*

**In Southern California.**—December came in very dry, and, until after the middle of the month, it looked as if we would have a dry year. Then it began raining, and the ground has not had such a soaking for many years. There was rain, rain, rain and for a change a few more showers. From seven to thirty inches have fallen over the bee-ranges of southern California since my last report. Roads were made impassable in many sections, railway and highway bridges were washed out, some of these being repaired and going out a second time during the storm.

The rain has surely put a different aspect on the prospects for honey, and there apparently seems to be no reason for anything but the best of crops for the season of 1922. Of course, spring rains, winds or climatic conditions can still materially help or hinder in the making of a crop. But, generally speaking, everybody is happy.

The short course in beekeeping, held in Exposition Park, Los Angeles, early in December, was not as well attended as it should have been. The course was one of much value to beekeepers, and it is not often that we are given the opportunity of attending lectures of the nature of those given. But the great majority of beekeepers are inclined to pay little or no attention to such things. When spring comes they get busy for a little while with the bees and then "lay them by" for the rest of the year. It is amazing sometimes how well some apiaries really do—considering the care they get.

Referring to page 743 of December Gleanings, we beekeepers of California think that we are entitled to some of those "Short Cuts" promised by ye editor as "Seasonable Articles" for use during the year 1922. We hardly think that we are a year behind, so we must be ahead. At any rate, an article on swarm control in the May issue would be of little use to a beekeeper whose bees had swarmed during March or April. Or, an article in July or August on harvesting a crop of honey and packing it for market would not do much good to a fellow who had produced his honey during May and June, as many of us do in California. How about this, Mr. Editor?

[The Editor had not forgotten the needs of California beekeepers when he wrote the





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outline of plans for 1922, but had already provided in advance for exactly what you are asking. See M. C. Richter's article in this issue and others to follow. Gleanings has some other surprises for you, and expects to do much better than promised editorially in the December issue.—Editor.]

Wonder if Gleanings will move to California next. With so many of their good people coming, it may not be expecting too much to look for the whole Gleanings family to follow to the best place on earth.

With February comes considerable apiary work in southern California. One of the most important duties is to see that all of the colonies are supplied with sufficient stores to carry them thru unfavorable weather. Especially be on the lookout when they begin to have a large number of young bees and much brood to care for. The weather being favorable, some may start queen-cells by the last of the month. These should be carefully looked after, as the colonies with these young queens are the very best for 1922 honey-gathering. Get plenty of supplies ready, such as supers, frames and hives for increase. All extractors, autos and anything used during the busy season should be put into good condition while there is plenty of time. "A stitch in time" applies to our industry as much as to any other, or more. L. L. Andrews.

Corona, Calif.

\* \* \*

**In Texas.**—The weather conditions during December have been almost ideal, so far as man is concerned, but they have caused the bees to utilize a great amount of stores. We had our first killing frost the 9th of December and a cold snap about the 20th. With the exception of these few cold mornings we have had almost summer conditions. The bees have flown freely almost every day and during the latter part of the month on some days were bringing in large amounts of pollen from mistletoe. During the last week of December numbers of bees were seen apparently collecting nectar from several species of hardy composites and from white brush. These conditions exist thruout the state, with the exception that the weather is slightly colder in the northern part of the state, and the consumption of stores correspondingly less. An examination of about 400 colonies in the past two weeks shows that the prediction made some three months ago has worked out remarkably well. The only colonies which have died out were those with honey and pollen-clogged brood-nests. A careful survey of this section of the state leads to the statement that the loss of colonies during the winter will largely occur within the month of December. This statement is

agreed to by the large majority of our beekeepers, and taking this statement as true, it is figured that the winter loss in this section for 1921-1922 will not be over 3 per cent. This is very small but is accounted for by the fact that large amounts of honey were left upon the hives. In all of the colonies that have died out, so far as examined we find that the cause was the lack of young bees rather than the lack of stores, and this was due in a number of cases to old queens. The honey-plant condition remains unchanged, and the prospects appear very good for a spring honey flow.

The beekeepers of this section were very much interested in the article by E. F. Atwater, in the December Gleanings. If Mr. Atwater were a beekeeper in the chaparral section of southwest Texas, he would not make some of the statements that he makes. In former years we ran our outyards up to 150 or 200 colonies, but after comparing the returns from the larger and the smaller outyards, the beekeepers have come to the common practice of placing not over 50 colonies in an outyard and placing the outyards closer together. We even believe that in a few years we shall be reducing the size of our outyards to perhaps 25 and again shortening the distance between them. The Texas beekeepers look upon the problem from the standpoint that they can get a greater amount of honey by so placing the outyards that the bees will not have to travel more than a mile in the collection of honey. Of course, we understand that these small yards are necessitated by our scanty flora in some places; but in other places we know that we have as great a number of nectar plants per square mile as anywhere on earth, and the short distance between apiaries is simply a method to increase our yield.

Dr. Chas. T. Vorhies reports Desert Bloom (*Baccharis sarathroides*) as a fall nectar and pollen plant in Arizona. In Texas we have several species of *Baccharis*, and while we have never heard of a honey flow recorded from this plant we positively know that it is the source of a large amount of the amber mild-flavored honey produced along the Gulf Coast. This plant so resembles willow that very few people know it as a separate plant. Along the Gulf Coast, *Baccharis* grows by the acre. In fact, there are some places where there are thousands of acres in a locality completely covered by this plant. The Mexicans' name for it is Yerba Dulce. This is very appropriate as the plant has the odor of recently extracted honey. A number of the beekeepers along the Gulf undoubtedly owe their large average yields to this plant.

We note that several beekeepers have recently reported wild carrot as a nectar plant, and in writing about it have confused



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it with the tame carrot. These plants are very different in the flower arrangement. The flowers of the cultivated carrot are worked very heavily by the bees wherever the plant is allowed to bloom; but the wild carrot, which occurs in immense quantities wherever there is a limestone soil, appears to be a nectar plant only on rare occasions. The writer kept careful notes on this plant for about four years, and only during one period of two weeks were honeybees observed to work upon it. Its nectaries are exposed, which makes this plant primarily a fly plant, and the nectar does not seem to be overly abundant.

E. O. Timm of Bennington, Neb., who has been secretary of the Nebraska Honey Producers' Association for several years, will work for E. B. Ault of Calallen, Texas, during the coming summer. The beekeepers of Texas extend the hand of welcome to Mr. Timm, and we are sure that he in turn will benefit us by his presence.

Frank Warmuth, who is well known as a queen-breeder in Texas, will be with the firm of Patterson & Winters in 1922. Mr. Warmuth has made a very enviable reputation with Mr. Burluson of Waxahachie and Mr. Ault of Calallen.

The Texas Honey Producers' Association will hold its annual business meeting on January 17. Many matters of importance must be decided at that time. As these matters concern all beekeepers in Texas, all beekeepers, whether members or not, are invited to be present. Three directors and a delegate to the American Honey Producers' League meeting are to be elected.

San Antonio, Tex. H. B. Parks.

\* \* \*

**In Louisiana.**—The continued summer-like weather all thru the autumn and up to the present time (January 3) has kept a few fall honey plants blooming, and the bees have been constantly at work carrying in some honey and a great deal of pollen. Of course, this condition does not apply to the extreme north end of the state. In that locality, an early frost, about October 20, killed everything, and since that time, while the bees have been flying, there was nothing in the nectar line to gather.

Today I noticed the fine condition of the white clover. The growth had so far advanced that a great many blossoms were noticeable. This is not unusual here, as the clover begins to bloom at this time each year. However, I have never seen a bee working on white clover until about February 15; after that time it may be depended upon as a nectar producer until about July 1.

About January 5 the soft maple comes in

blossom and produces quite an abundance of honey and pollen. It is followed from that time on with blossoms of many minor nectar-secreting plants without any interruption, until the big crops of tupelo and black gum, willow, holly and gallberry come in April and May.

I have found a great mistake committed by many beekeepers in Louisiana, and that is the small number of supers placed above each brood-chamber. In many cases I find only one shallow super is being used, while the honey flow in that locality would enable the bees to fill easily a half-dozen supers.

Our spring flow comes in such abundance that it is an easy matter for the bees to store, at times, 10 to 15 pounds each day. Why should we lose this valuable honey when it is so easy to purchase extra supplies? About March 1 at least as many as three shallow supers can be placed above each brood-chamber. This will help to prevent swarming which occurs very early here, and also will insure a good crop.

The weather conditions are such in Louisiana that this extra room may easily be given without chilling the bees, and it will act as a playground in bad weather for the young bees that are emerging from the cells so rapidly at this season.

The United States Government, as well as Louisiana State Government, has spent millions of dollars in building levees along the rivers and in digging canals to drain districts, and in these localities the bee flora has become so great that it is possible for a beekeeper to harvest as many as seven crops each year.

We have every grade of honey from water white to amber. All of these flows are distinct, with the exception of our July flow, and by extracting in time, the honey from each can easily be kept separate.

There are many intelligent beekeepers here, and the industry is rapidly coming to the front. In due time Louisiana will easily rank among the foremost bee and honey-producing states of America.

Baton Rouge, La. E. C. Davis.

\* \* \*

**In Alabama.**—The winter till January 1 was very mild, and the bees began gathering substitutes for pollen just a few days before Christmas. If this condition had continued all the queens would have begun to lay and, of course, greatly reduced the supply of winter stores; but on January 1 we had a cold spell that will prevent any more trouble from this cause, for a while at least.

We have also had very little rain so far. While this has caused no damage yet, unless there are more rains before March we shall probably have a wet spring, which will





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cause the bees to build up slowly. This, of course, is serious, especially for the package shipper.

While the general business depression has hit us pretty hard the beekeepers are optimistic, expecting better times when things open up in the spring. Practically all beekeepers are buying supplies and preparing for a big year whether they get it or not.

At extracting time last year there was no market for honey; this caused an unusual amount to be left on the hives, some men not robbing half their bees. This, together with the slack demand for queens and the consequent low price, caused beekeepers to leave their bees in better shape than they have in many years.

Most package shippers are expecting a good year in spite of the general depression, as supplies are lower than they have been for years, while the price of honey is on the increase.

The unusual demand for packages and queens during the war has caused many men to go into the bee business in localities not suited for commercial beekeeping, and others are still doing this, seeming to feel that beekeeping will remain on a war-time basis while everything else sinks to below pre-war levels. Of course, these men will go out of the bee business as they went into it, poorer but wiser.

The low price of honey and high freight rates seem to be a blessing in disguise, causing twice as much honey to be sold locally as before, principally on account of the activity of the beekeepers in putting honey before the people.

J. M. Cutts.

Montgomery, Ala.

\* \* \*

**In Mississippi.**—As a general thing, over the state bees went into winter heavy with stores. November, December and, thus far, January have been pleasantly mild. We do not think this mildness has been harmful to our bees. In fact, we are of the opinion that the literature has exaggerated somewhat the extent to which bees wear themselves out during the warm southern winters. We have made some observations in the field this winter that bear us out in this.

On December 14 last we visited our good friend, Dr. J. D. Shields of Natchez, Miss., for the purpose of laying plans for shipping nuclei and pound packages, which work he will undertake in the spring. The day was warm and sunny. Roses and violets were profusely in bloom about the house. Dr. Shields was anxious to show me the color of his bees to get my opinion as to their purity as Italians. We left his front gallery shortly after noon to look over a small yard near the house, first, however, having lightly complained of the heat and having shed our

coats. The mercury was at about 76 degrees and not a bee was flying. It was necessary for us to tap at the entrance of each hive to get the bees to show themselves.

The next day we visited B. F. Minnis, an esteemed citizen and commercial honey producer of Port Gibson, Miss. This was another warm sunny day, but there was no sound of flying bees in the air. About three o'clock we did see one bee come in with a load of bright yellow pollen, probably from the tiny blue aster, that was still putting out a few straggling flowers. Perhaps there were not two dozen bees in this yard of 40 colonies that had left the quiescence of the hive to rove the fields, even tho it was warm and there was some little food available.

We recently had the good fortune of a trip east and the pleasure of visiting one of the foremost authorities in the country on beekeeping. He was of the opinion that the South had seen its balmiest days in the nucleus and package business. We are not as yet, however, ready to accept this man's point of view. Those in the business are anything but downhearted. A peep into the bee journals witnesses the fact that they are spending large sums on advertising. We are confident with them, since large numbers of colonies weaken or die out in the North every winter, that the southern beekeeper will be called on every spring to keep this otherwise unoccupied equipment from becoming dead overhead.

R. B. Willson.

Agricultural College, Miss.

\* \* \*

**In Southern Indiana.**—In southern Indiana and Illinois, the roadside selling of honey should be more generally practiced than it is, more especially now that hard roads are being built extensively, which brings the buyer in his automobile right to your yard. Let us more carefully study business methods and salesmanship. A man clever enough to produce honey is clever enough to sell it. A sign in large neat letters, well back from the road, so it may be easily read as the autos speed along, is good; or, if placed close to the way, it should be lettered on both sides, that it can be read coming and going. Five and ten pound tin pails are more and more coming into use, and are very popular with the auto trade. Nothing ruins the honey business like selling at too low a figure. Honey is the most delicious and wholesome of all sweets, and should command a good price. There are plenty of cheap syrups and glucose concoctions now on the market that are cheap in price and quality, but honey is not at all in this class. We must not attempt to compete with them in price, but ask one that is fair and that brands our goods as superior in every way.

We are indeed unfortunate in the name



## FROM NORTH, EAST, WEST AND SOUTH



"Extracted Honey." It is misleading to the uninformed. A prominent business man came to my place not long ago to buy some honey. He said, "I like your honey for I know it is real bee honey. I can get extract of honey at the stores; but I want real honey." Another man told me once, "I prefer your honey to that honey extract sold in the stores." We laugh at this ignorance, but it reminds me of a story. Ikie met Archie and said, "Archie, I haf a goot choke on you. After this ven you kisses your wife you better pull down der curtains for I saw you kiss your wife last night." Archie replied, "Ah, Ikie, der laff ish on you, der laff ish on you. I was not at home at all lasht night." So while we are laughing at the other fellow's ignorance, let us be sure "der laff ish not on us." If the public is ignorant of matters pertaining to honey, who is to blame, they for not learning, or we for not enlightening them? Since beekeeping is our business, and we have honey for sale, I believe "der laff ish on us."

Vincennes, Ind. Jay Smith.

\* \* \*

**In Porto Rico.**—Beekeeping in Porto Rico is at a low ebb. I know of one firm that has some thousand colonies, which have not yielded an average of 25 pounds per colony in the past three years. This low yield, owing largely to overcrowding, coupled with the low price of honey, has simply stagnated all activity among the beekeepers. I am led to believe there is considerable honey ready for extracting which has been left with the bees, as it would hardly pay for the cost of extracting it.

Many apiaries are located in such inaccessible places that it is impossible to reach them by any wheeled vehicle. This means all supplies and all honey extracted must be transported to the nearest usable road on the heads of peons (laborers) or by small burros which carry from 100 to 150 pounds a load.

When delivered to the road the honey is emptied into fifty-gallon barrels. From this point it is taken in motor trucks to the nearest coast town which is visited by the steamships. All the island transportation is still at the high war-time rates or worse. Local handling of freights now must be done by means of motor trucks. The price of gasoline averages about 50 cents a gallon, and there is no talk of profiteering. It frequently happens the steamship is delayed. Then the barrels of honey must be left in storage at a price. Unless there is a dock at the port, the honey must be lightered out to the steamship by means of small flat-bottomed boats, also at a price. So it can readily be understood that expenses jump when you figure there is a payment to be made for

each separate handling—which is only right, but it necessarily raises the cost of production.

To recapitulate: First, you have the cost of the empty barrel, sold today for about \$5.50 each; next, two to three pounds of parrowax to wax the inside of the barrel; delivery of empty barrel to apiary; cost of delivery of honey to port; cost of lighterage, steamship freight and insurance; cost of handling in New York City, if sold there, plus the fixed charge of the commission man making sale. When all these fixed charges are met, you will be lucky if you do not receive a bill for costs which the amount received for honey did not cover.

These are some of the reasons that good honey is not worth the cost of extracting at present prices.

In September of this year fifty-gallon barrels of honey had been selling on the island delivered to a port town for \$19.00. Deducting cost of new barrel and transportation, the producer receives about one and eleven-twelfths cents per pound, net. Out of this must be paid labor, rent, upkeep and return on investment. Naturally, it is impossible to produce honey at this figure.

Within the past three months the States' price for Porto Rican honey has advanced about 30 cents a gallon. This will help, but this price will not leave a balance on the right side of the ledger. With these prices, there is little doubt many small apiaries will be allowed to dwindle away until there is nothing left but empty hives and damaged frames.

Penn G. Snyder.

Aibonito, Porto Rico.

\* \* \*

**In Utah.**—Utah will come up to next season well cleaned up on her two previous honey crops with very little honey held over. Our local market is very good, 100,000 pounds in 60-pound cans being sold in this valley besides the bottled goods sold in the stores. There are perhaps 35,000 people in Cache Valley, so this means that these people have bought at least three pounds per capita in the last six months.

The beekeepers of Utah are looking ahead with much pleasure to the meeting of the Honey Producers' League to be held in Salt Lake City in January, but we were disappointed in not being favored by the Government men who held two meetings in Colorado, then flew right over to California.

While there are perhaps not many places where beekeepers need instruction more than we do here, we are not without some merit, for we have one beekeeper who produced 150 tons of honey last season. After the Government finds out that there is such a place in Utah on the map, we may be noticed next time.

M. A. Gill.

Hyrum, Utah.



HEADS OF GRAIN FROM DIFFERENT FIELDS

**Large Hives in New Mexico.** We are trying out two yards of the large hives shown in the accompanying picture. They hold 12 frames, but we use only 11 in the brood-chamber and 10 in the super. The colonies in these hives for the last two years (the length of time we have been running them) have produced more than twice as much honey per colony as those in eight-frame hives. The picture of



Hives with one, two and three entrances.

the one row shows where we have been making tests with one, two and three entrances during the heavy honey flow. The picture was taken just after the top entrances were closed. I could see no difference in the ones that had three entrances and the ones that had one good large one. In the picture of the yard the small hives are a part of my mating nucleus yard. The Rio Grande River is just across the valley and runs around the foot of the hills in the distance.

J. W. Powell.

Mesilla Park, N. M.

**To Clean Pollen Clogged Combs.** I noticed an article in November issue of Gleanings in regard to getting the bees to remove pollen from brood-combs. I have tried scraping the cells with the hive-tool as recommended, and it worked. I have also tried shaving the cells with a sharp knife or an uncapping-knife and that worked well, too. The best plan I have ever tried where the pollen was old and dry was to fill the cells with water and let the combs soak a day or two. The water will soften the pollen, and it can be rinsed out. I have never had to melt up any combs on account of their being clogged with pollen.

Homedale, Idaho.

A. N. Norton.

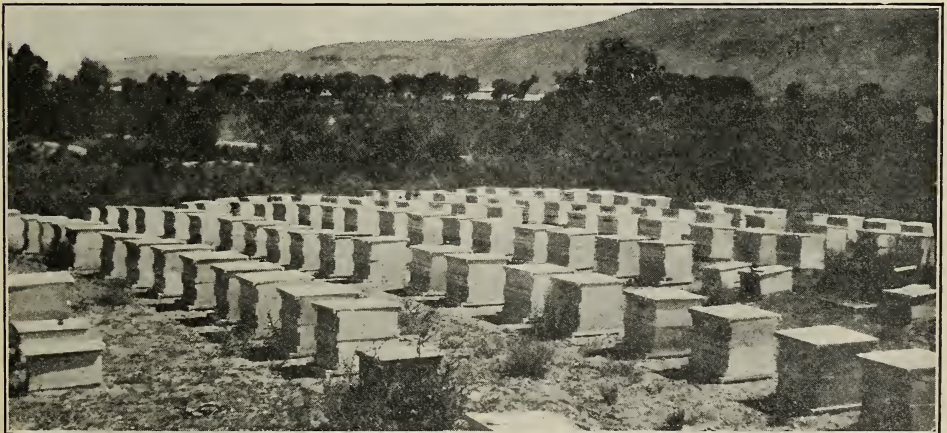
**Who Is This Man?** There is a pestilential fellow, who is trying to ruin my chances for successful beekeeping (and yours, too). In every state which I have visited, he has been at work before me, blasting my chances and the chances of countless others, and, never tiring, persists at his abominable work, heartlessly taking opportunity for education, travel, and all the better things of life, even bread and butter itself, from me and my family, and from yours.

Who is this man who skulks on the trail of every beekeeper who seeks to do well by himself, his family, his local community, his nation and the world?

Regardless of cost of production and a fair income to the producer, tho usually a producer himself, he is the man who cuts the price.

Meridian, Idaho.

E. F. Atwater.



An apiary of big hives in New Mexico belonging to J. W. Powell.

## HEADS OF GRAIN FROM DIFFERENT FIELDS

**Paste for Labels That Stick to Tin.** Take one part honey, three parts flour, and water sufficient to cook thoroly into a smooth paste. I leave the paste a trifle stiff and dip the tip of the brush into water, then lightly over the top of the paste.

This paste will keep sweet a long time and will stick labels to tin or glass cheaper and better than any paste I have seen. I have found nothing so far that it will not stick to.

The large soft paper mail order house catalogs are just springy enough to make the best of pasting pads. Lay flat with back toward you, and a few leaves turned over or torn out. Place a skewed pile of labels bottom up, paste skewed edges and top label, then roll the can on the top label to pick it up and finally smooth down the corners.

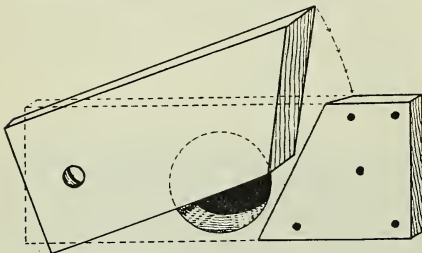
Laplata, N. Mex. Harrison H. Brown.

**Ventilator Made of Wood.** Having just read E. L. Sechrist's article concerning the Hanson ventilator

in *Gleanings* for December, 1921, I take it upon myself to offer a suggestion as to a more simple way to obtain the same result.

Mr. Sechrist's idea is very good and worthy of consideration. I intend to use it in my own yard during the coming year.

Having spent 12 years at the carpenter's trade, I naturally like to make things of wood, especially when I think I can improve them by doing so. When making my ventila-



tors, I leave the hole in the super, as Mr. Sechrist has suggested, but discard the three metal parts and in their place put a piece of  $\frac{3}{8}$ -inch board about  $2 \times 5\frac{1}{4}$  inches. This board will have been sawed in two at an angle both on its face and thickness as shown in cut. The smaller piece is nailed to the super, and the larger piece is fastened with one  $1\frac{1}{4}$ -inch No. 10 R. H. screw in such a way as to allow it to swing on the screw. By swinging the larger piece around and letting it hang in a vertical position, the ventilator is left open, and by placing a stick between the saw-cut, the ventilator can be opened to any size desired. Both pieces are

fastened to super, therefore there is no danger of losing any of the parts.

This ventilator can be made almost airtight, due to the manner in which the board has been cut in two, as the harder the larger piece is pushed in the smaller piece, the tighter it hugs the super.

Mr. Sechrist claims his ventilators cost him two cents each. The price of this one will not exceed one cent; and still it embodies all the good features explained by Mr. Sechrist in his article, with the added advantage that one does not have to be so careful when painting his supers, as a coat of paint will not interfere with its operation in any way.

Geo. D. Larsen.

Omaha, Neb.

**Combined Bee Brush and Hive Tool.** As I do not like to have too many tools

in my hands, I combined a Coggs shall brush and a screwdriver

as shown in the sketch. I call it the "Buchman Broom." You are at liberty to use it. It is simply a strong screwdriver inserted in



Two-in-one apiary tool.

the handle of the brush. It is easy to loosen up the frames with it and then brush off the bees without changing tools. It has to be tried to be appreciated. John Buchman.

Trumansburg, N. Y.

**Chunk Honey in a Slow Honey Flow.** I use the Long Idea Hive here, as honey comes in too

slowly to force the bees upstairs. I use Jumbo frames with full sheets of foundation. The bees will put about four inches of honey above the brood. When this is sealed over I cut out a square piece at each end, leaving a strip at the ends and middle to support the comb below. The next morning after the bees have cleaned up all the honey from the combs I cut out a piece of foundation and fill the holes cut out the day previous. As soon as they are filled I cut out the middle and fill that up as before. Sometimes I get a full frame, which I cut out and fill with a full sheet of foundation. If the bees fill an old comb with honey, I spread the brood-nest and put the frame in between when they will clean it out, putting the honey in the new combs where I want it.

George H. Place.

Mountain Home, Ark.



## QUESTION.

—If a colony has good, straight combs, is it necessary to cut them out when they get old and replace them with new ones, or will it be all right to continue using them after they are black with age?

Colorado.

Vernon L. McClure.

Answer.—No. It is neither necessary nor advisable to discard brood-combs simply because of their age. Good, straight combs, having nearly all cells of worker size that have had brood reared in them to the top-bar, so that they are strengthened thruout by cocoons, are valuable property and should not be melted up on account of their age. For discarding combs there are plenty of other reasons, which are much more important than that of age. Many combs are damaged for brood-rearing purposes by the stretching of the cells in the upper portion before this part of the comb has been strengthened by cocoons, because honey is stored in the upper part of the comb the first year, leaving about two inches of tender comb. When the cells are stretched too much out of shape they can not be used for brood-rearing, thus greatly reducing the value of such combs for use in the brood-chamber.

You probably have in mind the reduction in the size of the cells by the addition of the cocoons, as brood is reared in them time after time. Theoretically the addition of layer after layer of cocoons would soon so reduce the size of the cells that they would become too small for brood-rearing; but, in practice, combs that have been in use 30 years or more are apparently just as good for brood-rearing as new ones. The bees evidently gnaw out the cocoons at the sides of the cells, leaving them at the bottom. This accumulation of material in the bottom, of course, would make the cells shallower, but the bees extend them to full depth as cocoons accumulate in the bottom. Old brood-combs are, therefore, thicker than new ones. Sometimes the bees tear down the walls of the cells to the base and then rebuild them. This is usually done in patches instead of over the whole comb.

## SNOW CLOSING THE ENTRANCE.

Question.—Will it injure the bees for the snow to drift high enough to cover the hive entrances, or will enough air pass thru the snow to supply the needs of the bees?

G. C. Morrison.

Ohio.

Answer.—Loose snow does not injure the bees even when it covers the hives completely. In fact, during cold weather the snow affords additional protection. The bees do not need much oxygen during winter if they are quiet and wintering well. Plenty of air would pass thru the snow to supply all of the oxygen needed for strong

## GLEANED BY ASKING

Geo. S. Demuth

colonies that are quiet. If wet, slushy snow is driven into the entrance by the wind and then freezes, closing the entrance entirely, there would be some

danger of the bees smothering, especially if the colony is abnormally active and not wintering well. When the bees are as quiet as they usually are in November and December, the entrance could even be sealed with ice for some time without smothering the bees, since they use so little oxygen when quiet that probably enough would pass thru the walls of the hive to prevent smothering for several days. As soon as the bees discover that they are confined, however, they immediately become excited and would then need many times as much oxygen as when quiet.

## DO BEES NEED POLLEN FOR WINTER?

Question.—Some of my colonies are going into the winter with little or no pollen, while others have a good supply. Does this make any difference?

J. A. Satterwhite.

Virginia.

Answer.—Apparently bees do not need pollen during the broodless period of winter, but they will need it when brood-rearing is begun in the spring. At this time, however, they are usually able to gather some pollen from early flowers, so it should not be necessary in your locality to have a store of pollen in the hives during the winter for spring use. In localities where early pollen is not available, combs of stored pollen would of course be advantageous, but these could be given in the spring if necessary.

## THE JUMBO HIVE.

Question.—Does the Jumbo hive have enough room for the queen so that an excluder is not needed, and do the bees store plenty of honey in the brood-chamber of these hives so that feeding is not necessary?

Michigan.

Earl F. Townsend.

Answer.—The Jumbo hive has enough room for the most prolific queens if the combs are all good, having nearly all cells of worker size; but when producing extracted honey this does not insure that the queen will stay below, especially if any old dark combs, which have previously had brood reared in them, are used in the supers. By using only white combs in which no brood has ever been reared in the supers, there would be less trouble from queens going above. In comb-honey production, of course, the queen-excluder is not needed, even with a smaller hive. The amount of honey stored in the brood-chamber at the close of the season depends largely upon the character of the honey flow. In some locations there is but little honey in the brood-chamber at the close of the season in extracted-honey production, even when hives larger than the Jumbo are used; but, in other locations, es-

pecially if the honey flow is slow toward the close of the season the Jumbo hive is usually well provisioned for winter. The large brood-chamber, as a rule, can not be depended upon to have a sufficient supply of honey for the bees at the close of the honey flow, if extracting supers were given freely during the honey flow. For this reason some beekeepers use a shallow extracting super as a food-chamber, this being filled early in the season and tiered up above the queen-excluder among the extracting supers during the honey flow to insure sufficient stores for winter, thus avoiding feeding in the fall.

#### WINTERING IN TWO STORIES.

Question.—Is there any advantage in using two stories for wintering in the quadruple packing-case when I can easily give a second story when I clip my queens in the spring. S. H. Graham.

New York.

Answer.—Probably not in your locality. In fact one would expect them to winter better in a single story on account of the smaller amount of space to keep warm. The advantage of two stories is largely in supplying a greater amount of stores and room for spring brood-rearing. If a second story two-thirds or more filled with honey is given next spring in time for the heavy spring brood-rearing, the advantages of the two-story system will be secured, with the added advantage of having a smaller winter chamber. The greatest trouble with this plan is the temptation to extract this extra honey when it is taken off in the fall to sell with the surplus honey instead of storing it in a warm room during the winter to be given back next spring. The two-story plan removes this temptation and usually gives splendid results where the winters are not too severe.

#### FROTH ON HONEY IN BOTTLES.

Question.—What causes honey stored in a cement honey-house, which is rather damp, to form a white froth when extracted and placed in bottles? It looks as tho it is fermenting and is rather thin? New York.

W. Burden.

Answer.—Your last sentence would indicate that the honey may have absorbed moisture before it was extracted, while stored in the damp honey-house, for it should not be thin now if it was well ripened and mostly sealed before you took it from the bees. Unless it was stored for some time in this room before being extracted it should not have absorbed much moisture in this way. You can tell by smelling or tasting if any of it is fermenting. Even a slight fermentation can be easily detected in this way. When heated honey is put into bottles the air bubbles rising to the surface sometimes form froth on the top, even on thick well-ripened honey. This can be avoided by having the honey-gate attached to a hose from the filling tank, the honey-gate having a long snout by which the stream of honey can be directed to the bottom of the bottle, the gate being lifted as the jar is filled. Honey that is slightly fermented can be improved by heating not

above 150-160°F. to drive off the alcohol; but, if there has been much fermentation, the delicate flavor of the honey will be destroyed.

#### DURING WHAT MONTH DO QUEENS LAY.

Question.—Does the queen bee lay every month in the year? If not, during which months does she lay? Mary Fisk.

Texas.

Answer.—Queens do not lay thruout the year, but usually take a rest during the winter. In your locality no doubt there will be some queens laying every month in the year in a good-sized apiary, but when the colonies are normal in strength the queens usually rest for at least a few weeks during the winter even in the South. Brood-rearing is usually suspended in the northern portion of the United States sometimes in September or early in October, and if conditions are favorable it is not begun again until sometime in March. Farther south of course the broodless period is shorter, but except in the extreme South brood-rearing is usually suspended during November and December in all colonies that are normal in strength. Weak colonies usually have a shorter broodless period than strong ones.

#### PACKAGE BEES OR NUCLEI.

Question.—Which would be better for me, to purchase from the South in the spring three-frame nuclei or three-pound packages of bees at the same price? A young laying queen is to be included in either case. E. W. Wooster.

Maine.

Answer.—This will depend upon just how much sealed brood would be included in the three-frame nuclei as well as upon the equipment you have ready for receiving the bees. If three frames well filled with brood nearly ready to emerge were included, the three-frame nuclei would give you more bees to start with than the three-pound packages, for each frame would yield nearly a pound of young bees. If, however, only a little brood is included, the packages would, no doubt, give you more bees to start with, provided, of course, the packages and nuclei arrive in equally good condition.

When you receive the nuclei, if you receive in sealed brood and bees as many or more bees after the brood emerges, you are ahead in that you have three combs containing some honey and pollen. If you do not have combs containing some honey and pollen and have to start the package bees on frames of foundation, the nuclei should forge ahead of the package bees; but if you can put them on combs containing some honey and pollen, there would not be much difference.

Generally speaking, the three-frame nuclei should be better, but a serious objection to the shipping of nuclei as a general practice is the danger of transmitting the brood diseases thru the combs. Package bees being without combs avoid this danger when provisioned with queen-cage candy in which no honey was used.



THERE is now in effect a quarantine, which prohibits the importation of bees on combs or used beekeepers' equipment into any part of the Upper Peninsula of Michigan, Cheboygan, Emmet and Charlevoix Counties, Mich.

\* \* \*

The Governor of California has issued a proclamation making the week of February 6-11 "California Honey Week." This is the week of the 33d annual convention of the California State Beekeepers' Association.

\* \* \*

The state of Georgia has amended its foul brood law, requiring that persons who desire to sell bees and queens shall secure a license from the state before selling any bees or queens. The fee for this license is \$25.00.

\* \* \*

E. F. Phillips is to speak on "The Honey-bee, Its Type of Individuals; the Relationship of Bees to Flowers and Their Economic Value in Ensuring Cross-pollination; Beekeeping as an Industry and an Important Branch of Agriculture," at the Academy of Natural Sciences of Philadelphia, 19th and Race streets on April 3, this being a part of the Ludwick lectures.

\* \* \*

At the annual meeting of the New York State Association of Beekeepers' Societies, held at Syracuse, N. Y., Dec. 4, 5 and 6, 1921, it was voted to abide by the motion of Feb. 20, 1920, and merge into the Empire State Federation of Beekeepers' Co-operative Associations, Inc. The above change was made to give the state organization a financial and business standing for the mutual benefit of its members, continuing, too, the social and educational activities. The board of directors, with the aid of representatives from the Bureau of Farms and Markets at a recent meeting, mapped out tentative plans and framed by-laws for the Federation and local associations for their approval. To further perfect this organization the directors have called a meeting of representatives of all the local or regional beekeepers' associations thruout New York State at 10 o'clock, Wednesday, Feb. 1, 1922, at the courthouse, Syracuse, N. Y. While this is a meeting of representatives of local organizations, the meeting will be open to all beekeepers.

\* \* \*

C. B. Gooderham has been appointed Dominion Apiarist of Canada. The Beekeeper, published at Peterborough, Ont., has the

# JUST NEWS

Editors

following to say of the new appointee: "Mr. Gooderham was born in England and came to Canada in 1908, residing first in Nova Scotia. He attended Truro

Agricultural College and Macdonald College, Quebec, graduating from the latter as a Bachelor of the Science of Agriculture in 1916. In his final year, he led his class, specializing in entomology. After graduation, he went to Nova Scotia as Assistant Entomologist and foul brood inspector where he did splendid work in cleaning up the apiaries as well as teaching modern methods of beekeeping. In 1917 he came to the Central Experimental Farm, Ottawa, as assistant to the late F. W. L. Sladen, and has had charge of the apiary. The Department of Agriculture has been fortunate in their choice of Dominion Apiarist, as other institutions, having recognized his worth, were anxious to secure his services."

\* \* \*

Beekeepers in the cotton belt will be pleased to learn that, so far as experiments have been conducted by South Carolina and other states on sweetened poisons, these apparently have no advantage over poisons not sweetened, for control of the cotton boll weevil. Some beekeepers in the cotton belt have expressed the fear that the use of sweetened poisons would destroy honeybees.

\* \* \*

The Nebraska Honey Producers' Association at its annual meeting, held at Lincoln on Jan. 3, had the largest attendance of beekeepers in its history. At the business meeting, C. E. Carhart of Wayne was re-elected president, and Charles E. Gaydou of Blair, secretary. It is the plan of the association to increase its membership in a state-wide drive by several hundred members.

\* \* \*

In a press article prepared for the San Francisco Chamber of Commerce, R. B. Calkins recently said: "California bees have just finished gathering their 1921 crop, that may take 50 trains of 50 cars each for its transportation. California apiaries add three million dollars annually to the production record of the state. \* \* \* \* The largest part of the California honey crop of ten million pounds a year is marketed thru the beekeepers' organization, the California Co-operative Honey Producers' Exchange. This organization, with business and collecting branches thruout the state, sells to honey jobbers and to the bottling trade thruout the United States, and also bottles a large amount of excellent honey under its own label."

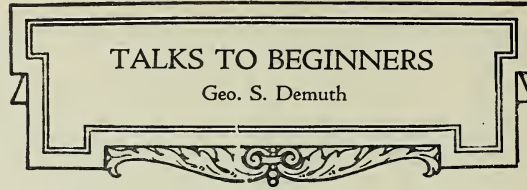
**A**LTHO through out most of the United States and Canada, February is the time for beekeepers and prospective beekeepers to study their books and bulletins on beekeeping and to attend beekeepers' conventions, instead of doing any thing with the bees, it is now time for those who have not yet secured their bees to make arrangements to do so.

#### Various Ways to Secure a Start in Bees.

Some of the 1922 class of beginners will purchase established colonies already in first-class condition from some reliable dealer or a neighboring beekeeper. For many this is by all odds the best way, since starting right makes the going easier later. Some will purchase unproductive colonies not in first-class condition at a much lower price from someone who has not learned to make bees profitable, and then gradually correct the faults until the colony is in first-class condition, thus paying in labor a part of the cost of the equipment. Some will purchase bees probably of inferior stock in box-hives or log gums, then in the spring transfer the bees to modern hives, and later change to better stock by killing the old queen and introducing one of better stock purchased from some reliable queen-breeder. Some will secure their first colonies by cutting beetrans in the spring and transferring the bees to modern hives. Some will purchase either packages of bees, each with a queen (shipped in wire-cloth cages without combs) or two or three frame nuclei (small colonies with combs) from a breeder or a dealer, and when these arrive put them into hives already prepared. Some will wait until the swarming season when they will take to a neighbor beekeeper some empty hives prepared for receiving swarms and arrange for him to hive swarms in them. Some will not think of keeping bees until a stray swarm comes to their place and clusters on a tree or fence as if asking to be put into a hive. This classical and romantic method is the way many of our greatest beekeepers, including A. I. Root and the late Dr. C. C. Miller, made their start.

#### Which of These Ways Is Best?

Those who are sufficiently interested in how to obtain a start in bees to be reading this page, should arrange to secure them in time for the bees to store a crop of honey this season. This rules out the purchasing of swarms, which usually do not issue, especially in the North, until the midst of the honey flow. There is left a choice of any one of the various ways of securing established colonies mentioned above or purchasing either package bees or nuclei in time



for them to build up to full strength for the main honey flow.

The main honey flow of the season may be expected to begin as early as  
M a r c h and

April in some parts of the extreme South, and as late as the latter part of June in the far North and some parts of the alfalfa region of the West. Since it requires six weeks or more for a colony to build up from a two or three pound package or a two or three frame nucleus to full strength, it would be necessary to have these bees delivered in the North in April or early in May, to have them ready for the main honey flow in June and July. In the South where the main honey flow comes much earlier, there would not be time to build up to full strength from package bees or nuclei, for the breeders and dealers usually are not ready to deliver package bees and nuclei until about the first of April. But in some parts of the South where there is a later honey flow, package bees or nuclei can be built up in time to gather surplus honey.

Since not many package bees or nuclei will be shipped until after April first, methods of handling these will be described later; but those who expect to procure bees in this way will do well to order them soon, before the best breeders have booked orders for all they can supply.

In the South those who expect to purchase established colonies should do so this month or next, especially in regions where the honey flow comes early. In the North it will be just as well to wait until April or May; tho, if an opportunity to purchase good colonies of bees presents itself earlier there is no reason why they should not be purchased now, except that it is better, when possible, for the beginner to avoid the chances of winter loss by waiting until after the cold weather is over.

#### Great Difference in Value of Colonies.

There is a great difference in colonies of bees that may be available for purchase. Some colonies are in odd-sized hives which do not fit standard equipment. Some are in poorly made hives, having crooked combs or ill-fitting frames, which can not easily be taken out of the hive for examination; and some are in box hives, hollow logs, or nail kegs with the combs built solid to the sides; while other colonies are housed in new factory-made hives of standard size, cut with great accuracy so that the combs can be readily taken out for examination and other necessary work done without irritating the bees. Some colonies, even in the very best hives, have such poor combs for brood-rearing that the bees can not build up as strong



for the honey flow as when the combs are more nearly perfect; while in others the beekeeper used full sheets of foundation in the brood-frames and by careful management when the combs were built secured nearly perfect combs, having almost all of its cells of the size for rearing worker bees instead of drone-cells or badly distorted cells that are neither drone size nor worker size. Colonies of bees supplied with a set of good combs are worth considerably more than colonies having crooked combs or combs having a large percentage of drone-cells or misshapen cells, for these will have to be replaced by good combs before the colony can be in first-class condition. Some colonies are of scrub stock that may be cross and ugly to handle, poor honey gatherers or too much inclined to swarm to be profitable in storing surplus honey; while other colonies are of good stock, their ancestors having been selected for years for gentleness, energetic work, good wintering and less tendency to swarm. Some colonies may have at this time only a few pounds of honey, not enough to last until nectar can be had from spring flowers; while others may be supplied with 30 to 40 pounds of honey. Some colonies have only enough bees to occupy one, two or three spaces between the combs when the outside temperature is near the freezing point; while others are so strong that the cluster of bees occupies six, seven or eight of the spaces between the combs at freezing temperatures outside. In some colonies the bees will have aged so much during the winter that they will die off faster during the spring than young bees can be reared to take their places, so they can not possibly attain full strength in time for the honey flow without help; while in other colonies having better conditions for winter, the bees are still young in the spring when they begin brood-rearing, enabling them to build up rapidly to great strength. Some colonies have old queens that will not be able to lay enough eggs during the spring to enable the colony to build up to profitable strength in time; while other colonies have young queens able to furnish enough eggs to build up mammoth colonies in time to gather the crop of honey. It will thus be seen that colonies of bees in the spring are worth all the way from the value of the wax in the combs and the kindling wood in the hive (about \$1.00), minus the cost of rendering the wax and making the kindling, up to \$20 or more for strong colonies having a good queen of good stock, in good hives, having good combs and supplied with 25 to 30 pounds of honey.

#### How to Judge the Colonies.

With such a variation in the value of colonies of bees, how can a beginner choose good ones? Out of all these qualities, since it is good colonies of bees that are wanted, the most important things to look for at this time are the size of the cluster and the

amount of honey in the hive. Most of the other defects can be remedied later without spoiling the chance of securing a crop of honey.

The size of the cluster can be determined by opening the hive and looking down from the top to see how many of the spaces between the combs are occupied by the bees. The cluster should occupy not less than four of the spaces between the combs when the outside temperature is near freezing. In well-packed hives they should occupy five or more spaces, and in a bee-cellar they should occupy not less than six or eight spaces.

Some idea as to the amount of honey in the hive may be had by lifting the hive, then lifting an empty hive, noting the difference in weight. A more accurate way, of course, is to weigh them. The hive that is well supplied with honey should weigh 25 pounds more than an empty hive and combs of the same kind.

In selecting colonies, if the choice lies between a colony that was a last season's swarm and the parent colony from which it or some other swarm came, it is usually better to choose the parent or old colony, for it is the one which has a young queen.

Often colonies can be purchased for less than they are worth from people who do not know how to make them productive. It is not often possible to buy bees at a bargain from a successful beekeeper. In buying full colonies it is therefore usually necessary to get them from a breeder or dealer or from some one who has not been successful in beekeeping. Usually the latter class of colonies are not in first-class condition; but, if they are strong and well supplied with honey, the beginner will gain some valuable experience by buying them and putting them in good condition. For the ambitious beginner who has a little time to devote to it, it is a great pleasure even to purchase bees in box hives and transfer them to modern hives. To purchase unproductive colonies and make them productive brings a feeling of satisfaction in achievement that is worth something.

In deciding on the price to pay for bees in box hives, odd-sized hives or poorly made and ill-fitting hives, the beginner should study his catalog of beekeepers' supplies to find the cost of new complete hives, for this must be added to the price paid for the bees if the old hives are not usable. By studying the catalog carefully the beginner will be enabled to judge as to the value of the modern hives in which bees may be offered for sale in his vicinity. Factory-made hives are usually made more accurately than those made by hand or at a local planing mill. The standard size used most extensively in this country is the 10-frame Langstroth hive. The 10-frame Jumbo and the 11-frame Jumbo (Modified Dadant) are also standard sizes and are preferred by some producers of extracted honey.

MUCH has been said about selling honey in 5-pound and 10-pound pails at about the double the wholesale price. It cannot be done in Florida, as we have homemade cane syrup on the market all the time at low price."—Ward Lamkin, Liberty County, Fla.

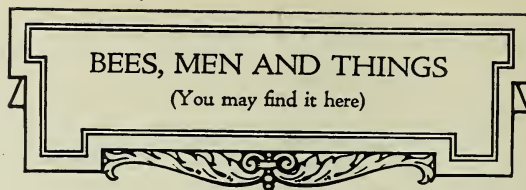
"I suggest that your label department accept the suggestion of the Editorial department, and arrange to cut out the "extracted."—Elton Warner, Buncombe County, N. C.

"You will notice by the corporation envelope in which this letter is sent that our village has adopted the old straw skep as part of its crest, and it is also in the corporation official seal."—T. A. Chapman, Beeton, Ont.

"Last spring, thru the incentive of Gleanings, I had painted a large sign on both sides, 'Honey for Sale,' and placed it on my lawn at the side of the state highway where it could be read by parties approaching from either direction. As a result my entire honey crop was sold at home at a very good price. This sign will be worth from \$50.00 to \$75.00 to me each year in the future, according to the size of my honey crop. Yours for home bees, birds and flowers.—S. E. O'Neel, Jefferson County, Ind.

"The Department of Agriculture is doing some very extensive work by way of inspection of apiaries and educational lines. We can now boast of a chief apiary inspector, and seven or eight deputies, of whom I am one. I inspected over 5,000 colonies of bees the past season in 500 different yards. We have a few persons that keep bees, and quite a few that just let the bees stay around, but the European and the American foul brood are making a good many read up and get wise. There are all kinds of hives being used, even crocks, and I have seen beer kegs in several yards with bees flying in and out the bung hole. Hundreds of pounds of beeswax are wasted by the beekeepers leaving boxes where the bees have died for the worms and mice to eat up. If this could all be saved I believe the price of foundation would be much less."—S. W. Uber, Indiana County, Pa.

"Only 300 miles off the north coast of Australia is Timor, the last link in an island chain sweeping from Singapore, the southeast corner of Asia, to the big south continent. Wild bees are numerous there, and in the mild climate of Timor build their comb in the open on the under side of the limbs of tall trees. One of the picturesque,



tho perhaps painful, industries is the collection of the nests by nearly naked native tree-climbers. The people feast on the honey and sell the wax

which forms one of the chief exports of the islands."—National Geographic Society's News Bulletin, Washington, D. C.

"I got 28,000 lbs. of honey for the entire year of 1921 from 260 colonies and increased to 360."—C. C. Cook, Lee County, Fla.

"While working around my hives Dec. 29 I noticed drones flying out and in the hives almost as if it were spring time."—G. O. Pharr, Iberia, La.

"Clover was so short here if the bees got any honey from it in Monroe County they had to get on their knees to do it."—Louis F. Wahl, Monroe County, N. Y.

"Bees are wintering well to date, Jan. 12, but light in stores which is mostly sugar fed late last fall. Bees will need close attention the coming spring to prevent starvation."—T. C. Asher, Campbell County, Va.

"My best colony produced for me 190 sections last season, varying in weight from 12½ ozs. to 16 ozs. I should say the average per colony was about 130 sections. We secured 35c per section, and even at the latter figure our venture has been very profitable."—Harold Q. Breisch, Schuykill County, Pa.

"The Cuban beekeeper of today deals only with black (German) bees, or the Italian species. There are several species of diminutive Cuban bees, entirely stingless; they are now kept only as a curiosity in little boxes or the holes of nearby trees. The products of the Cuban apiaries are about 1,000,000 pounds of strained honey and comb combined."—Bureau of Public Service, Havana.

"I was registering a letter at the Miami (Fla.) postoffice, when the clerk remarked on the firm name, 'The Pettit Apiaries.' He said, 'Do you keep bees down here?' 'No,' I said, 'I keep bees in Ontario in the summer and come down here to rest while they sleep in winter.' 'Oh, yes,' he said, 'they seal it up in the winter, don't they?' I said, 'Yes.' What else could I say? Then he went on to explain: 'Down here the beekeepers can cut honey all the year around.' Mentally I could see his picture of people cutting combs out of skeps or box hives. It fitted with his former vision of bees industriously sealing honey while the snow piled high over their hives, and—I was speechless."—Morley Pettit, Georgetown, Ont.





# OUR HOMES

## A. I. ROOT

Know ye not that ye are the temple of God, and that the Spirit of God dwelleth in you? If any man defile the temple of God, him shall God destroy; for the temple of God is holy, which temple ye are.—I. COR. 3:16, 17.

When a man's ways please the Lord, he maketh even his enemies to be at peace with him.—Prov. 16:7.

If ye had faith as a grain of mustard seed ye might say unto this sycamine tree, Be thou plucked up by the root, and be thou planted in the sea, and it should obey you.—LUKE 17:6.

**I**N Our Homes for September

I told you how a single person was, as I believe, led to change his mind very suddenly in answer to prayer. I am now going to try to tell you how quite a respectable crowd of people all of a sudden turned about and took "a back track," also in answer to prayer. I hardly need tell you that all my life I have been opposed to the

tobacco habit—not because it is a notion of mine, but because I have felt sure it is harmful to humanity at large, young and old. My father used it many years; in fact, the habit became so firmly fixed on him that he was scarcely ever seen without his pipe. He finally began failing, and was feeling much cast down because old age seemed to be coming on when he should have been almost in his prime. Some good sensible doctor advised him to try going without tobacco. It was a terrible task he had before him, especially for a few days; but in a few weeks the gain was very apparent. People joked him wherever he went by remarks something as follows:

"Why, brother Root, what is up? You seem to be getting young again."

He did get back his health and happiness, and lived to a fairly good old age. Well, when I started out to serve the Lord in place of A. I. Root, one of the first things I was called on to do was to furnish employment to the needy people of our town; and very soon I had men and women, and girls and boys, at work for me. When our first brick building beside the railway track was completed in the fall of 1878, and we had moved in, I was much annoyed by having the carpenters and others squirt tobacco juice all around the premises. I took this, however, as a kind of necessary evil, and did not say much about it. But one day in passing some boys on the street, one of them, with a cigar in his mouth, said to his companion, "Johnny, I don't see you smoking any more. What is the trouble?"

"Well, I don't have any money to buy cigars; but when school is out I am going to work for Mr. Root again, and then I shall have money so I can learn to smoke."

This happened so long ago that I can remember only imperfectly the particulars; but I decided then and there that if my giving employment would help boys buy

tobacco it was time to call a halt; and I think I made some kind of a rule that no boys who used tobacco would be given employment until they gave up the use of it. I do not think we had any law then in regard to selling tobacco to minors; but the question soon came up as to what age a boy ceases to be a boy and becomes a man, and it was not long before I had found I had

run against a snag. I was interfering with personal liberty, and that same "personal liberty" is being talked about, as you may know, just now. I told the men folks who used tobacco the story about my father, and I suggested to them to try giving it up, and some of them did try. I remember that one day my foreman said laughingly he wished that a certain carpenter would go to using tobacco again, and gave as a reason that since he had stopped or tried to stop he was not worth half price. The matter was talked over, pro and con. I can not remember just now the particulars, but I had for once in my life a little experience with what might be called a "strike." My help talked it over, and I was asked to back down in what I had undertaken to do in regard to the tobacco habit. I do not think I had prayed over it as I ought to have done; and I am inclined to think that I was at least just a little unreasonable; but before I knew what was going on, the engine was shut down; my help, old and young (with very few exceptions), including the women in the office, got their dinner pails and left the premises. Let me digress a little right here.

Some years before this event occurred a bright little girl with a remarkably sweet and pleading face came to me for work. I said to her something as I did to the boy Jacob, "Why, my little friend, are you old enough to work in the office?"

She replied with a very pretty girlish smile that she knew she was young, but she wanted to help her widowed mother. She took hold of the work in a way that surprised me; and after she had been with us for about two years she came to me and said something as follows: "Mr. Root, I have a very dear friend who is wasting her time and talents by going to dances and being out late nights, etc. If you could give her a place here in the factory, say to

help me, for instance, I think we might get her interested in something of more account in this busy world of ours. I *must* get her away from the crowd she is now going with."

I was particularly pleased to know that Bessie (in fact, I am now talking about the one we called "Queen Bess") had in mind "treasure in heaven" as well as in this world; and those two women, or young girls, got to be in a little time the life of the business, especially so far as filling orders promptly and accurately was concerned. These two opened the mails, and looked after having every letter promptly answered and instructions faithfully followed. While these two bright girls worked at their desk, busy as the bees, they sometimes hummed in a low tone snatches from Gospel Hymns which were just then being copied and sung by almost everybody; and altho I have, during my long life, listened to many great singers, I am sure I have never heard anything from anybody that equaled the singing of those two particular friends of mine. Well, when the strike started up, to my great surprise and astonishment my gentle friend and expert helper, before I knew it, had turned right about, and was, I might almost say, leading the strike. Her brother (one of our men) was a user of tobacco. When I saw them desert their post, one after another, and go out with their dinner pails, I was so surprised that I am afraid I actually forgot my emergency prayer, "Lord, help." The strikers were almost half a mile away in their march before I came to my senses. But I did finally go into a little room where I had been in the habit of praying, and I think my prayer was something like this: "O Lord, thou knowest all about this trouble. Thou knowest, too, that thy servant is weak and human, and full of mistakes and blunders. Now please take him and my mistaken friends into thy hands and care; and may the Holy Spirit follow them and convince them of the mistake they are making, where I seem to have failed."

As nearly as I can find out, at the *very time* I uttered this prayer the "procession" came to a halt. Bessie was the leader. She called a halt and said something as follows:

"Please hold on a minute, friends. I am afraid we are making a mistake. I am sure Mr. Root will be reasonable if we go back and tell him we should like to go back to work."

Then the procession turned around and started back. I cannot remember the particulars; but one of the other girls in the office suggested that in the future we should take ten minutes every day just before the noon whistle blew. During this interval of ten minutes we were to sing a hymn, and I, or somebody among the helpers, would close with prayer. This time was also to be devoted every day to having the employer and the employees become acquainted with each

other, and, by discussing things of mutual interest, to promote the welfare of all. At this juncture each hand contributed a day's work toward the purchase of an organ for use at these exercises. This was done in the summer of 1879, and the services were held regularly till Sept. 1, 1885.\* About this time my health failed; and owing to the increase of business and my enforced absence from home it was deemed necessary to discontinue the noon service, especially as it seemed to be a difficult matter, in my absence, to get the help together upstairs.

Now, this tobacco matter is a great question; and the cigarette habit that has been coming in of late is a *still* greater question, especially where cigarettes are sold to boys of almost any age who happen to have a nickel to pay for them. We need much wisdom on both sides. Some time ago I remonstrated with the editors of the *Scientific American* because of the full-page advertisement printed in their columns recommending cigarettes; and as it seems to touch both sides of the question I submit a part of the correspondence below. Below is my letter:

September 24, 1921.

Scientific American Publishing Company.

Attention Mr. Chas. Allen Munn, Publisher.

My good Friends:

Now, you haven't asked me for advice, or even to give opinion, but I am going to venture one nevertheless. Had you kept the cigarette advertisements out of the weekly, especially the full-paged advertisement, in *colors*, is it not possible it would not be necessary to change it to a monthly? I am sure a good many people like myself have noted the inconsistency of such a glaring advertisement in a journal devoted to a better humanity and a better world. Some years ago I ventured a remonstrance, and one of the Munn's, I think it was, wrote me that he felt a good deal as I did about the cigarette advertising.

Now, I don't know what your plans are for the month, but I do hope and *pray* that these glaring advertisements of cigarettes, so offensive to many people (and I think the best people in the world), now be eliminated.

I am now close to eighty-two years old. Of course, I wasn't able to read very intelligently when the first *Scientific American* came out, but when I was ten years old I was so much taken up by it that I borrowed the back numbers and read them over and over; and when I was somewhere about fourteen or fifteen, I wrote one or more articles for the *Scientific American*, that were published.

May the great Father above guide you and direct you in whatever course you may take, is the prayer of

Your old friend,

A. I. Root.

P. S.—Since writing the above, the *Scientific American*, dated September 24, 1921, is just at hand, and I want to say to you the article on the "Divining Rod" is worth the price of the *Scientific American* the whole year. It's worth that to me anyway; and now comes the reason why it should be continued weekly: The promoters of this fraud (and I think quite probably it is fraud) will be taking thousands of good dollars from good, honest men, while if a paper like this came out once a week it might save a lot of people from getting entrapped. I am sure you see the point; and I hope to live long enough to see the *Scientific American* changed back to a weekly, or to see some other journal take its place (or try to take its place) if it has got to

\*Perhaps it would be well to say right here that my stenographer, who is taking down these notes, W. P. Root, played that organ at every noon service, with scarcely an omission, during all those six years.



come. With all that's going on nowadays in the way of wonderful discoveries in science, we must have some periodical that can sift the wheat from the chaff, just as you have been doing for the past seventy years or more. Your old friend,  
A. I. Root.

SCIENTIFIC AMERICAN  
(Established 1845)  
PUBLISHING COMPANY  
MUNN & Co.

New York, Oct 4, 1921.

Dear Mr. Root:

Your very good letter addressed for the attention of Mr. Chas. Allen Munn is received, and in his absence I beg to thank you for your kindly expressions toward the Scientific American, also for your subscription for a half year to the new monthly.

It is a great stimulus to the publishers and to the editors to hear from a reader who has been subscribing for and reading the Scientific American such a great number of years.

You have made some pointed suggestions, which gives us the privilege of answering and explaining. In the first place, it would be utterly impossible for publications to exist in their present form today, were it not for the patronage of advertising. We could not begin to pay the writer, illustrator, engraver, printer and paper manufacturer their present prices were it not for the advertising.

It has always been the policy of the Scientific American very carefully to censor all advertising which is admitted to its columns, and we not infrequently decline advertising because it does not admit of our strict censorship. That particular class of advertising (cigarettes) does not, as you say Mr. Munn has told you, appeal to us; nevertheless this advertising is appearing in almost all the reputable journals. More than that it is appearing in practically all of the daily press. Cigarettes are on sale at your department store, your newsstand, your stationery stores, in fact any place you turn. If you abhor the exploitation of cigarettes, and carry your point to boycotting those who exploit or handle them, I am fearful you would not be able to carry on your daily routine of life. If the Scientific American had declined this advertising, it would have in the past year or two made a serious dent in our revenue, such a dent as we could not afford. I hope therefore, my dear sir, that you will close your eyes if possible to this class of advertising, and bear with us for the reasons as stated.

The first copy of the Scientific American Monthly contains two cigarette advertisements, which I feel sure are going to be objectionable to you, but inasmuch as we were under contract to run these advertisements, we had no alternative, tho be assured we would have greatly preferred to omit them.

We are working toward the perfection which, as an old friend, you would like to see, and we sincerely hope that even if you have outlived three score and ten, you will live to see it and rejoice with us in it. A. C. Hoffman,  
Secretary.

### Blueberries in the North, and Blueberries in Florida.

The Department of Agriculture has just sent out a most valuable bulletin of over 50 pages and almost as many beautiful illustrations, entitled, "Directions for Blueberry Culture." It is from our good friend, Dr. Coville (see page 653, October issue). It makes the matter very plain in regard to propagation. On account of the beautiful and expensive plates the price is 30c. Address Supt. of Documents, Government Printing Office, Washington, D. C.

From the pamphlet I make an extract as below:

Great interest has developed recently in Florida on the subject of blueberry culture. Extravagant and misleading statements have been published and thousands of ordinary wild bushes have been sold

at high prices, the purchasers being led to believe that the plants were of specially selected or adapted varieties. One company, located near Tampa, published as the frontispiece of a blueberry advertising pamphlet a natural-size illustration of a quart box of one of the United States Department of Agriculture selected hybrids, without designating it as such. The reader of the pamphlet would naturally believe that the bushes the firm was selling would produce such berries as were shown in the illustration. The real success of a single blueberry plantation near Crestview, in northwestern Florida, set with selected plants from the near-by woods, is chiefly responsible for the present wave of blueberry exploitation in that State. The best advice that can be given at present to those desiring to experiment with blueberry culture in Florida is to make certain that any plants they buy are as represented by the seller, to be sure that alleged improved varieties are not in reality ordinary wild blueberries, perhaps inferior to wild bushes that the purchaser might find in his own neighborhood by careful search. The selected hybrids described in this bulletin are of northern parentage and probably will not thrive in Florida because Florida winters are not sufficiently cold to give these plants the chilling they require in winter. The United States Department of Agriculture has already begun the breeding of improved blueberries from species native in Florida, but it greatly desires better southern breeding stocks than it now possesses.

Mrs. Bradshaw (see page 653, October) informs us she gets from the swamps and woods the plants which she advertised.

### Hubam Clover.

Sirs:—We purchased four ounces of Hubam clover seed last spring, and planted it by hand on one acre. It grew from five to eight feet tall and produced 556 pounds of clean seed in the hull. I believe it is one of the greatest crops that ever has been planted here.

It bloomed for three months, and a few stalks are blooming yet that we never cut. The bees worked from morning until night. There seemed to be a continuous honey flow as long as there was bloom.

We are for bees and Hubam clover. I would like to see this in Gleanings if you have the space.

Rule Brothers.

Terlton, Okla., Route 1, Oct. 5, 1921.

Gentlemen:—About a year ago I purchased an ounce of annual sweet clover seed. I planted about half of it and sent the rest to my cousin, Miss Norah Goodsell, Battle, Sussex Co., Eng. I obtained about the same results as everybody else, but I thought you would be interested in foreign results.

I will write the letter word for word that I received, telling the results as follows:

"First of all, I will tell you about the clover.

It was sown April 29th and came up May 6th.

It was just a week coming up. The weather has been dry. We have had only little showers, no rain at all you might say. As soon as a shower came, the sun was out the next minute burning up things. The fields are all burnt up, no green grass at all. Dad said it was the worst year we could have had for clover. Well, it is to the height of 4½ feet now. It began blooming the first of July. Dad is going to thresh it out when it gets ripe. It grew better than anything we saw this summer."

It looks like a good thing for England, doesn't it?

Samuel Goodsell, Jr.

Cameron, Ill., Oct. 4, 1921.

### KIND WORDS OF SYMPATHY.

May God abundantly bless the dear friends who have written me such touching letters of sympathy in my great bereavement. I have said again and again, surely I must print *this one*, but there are so many this brief note will have to answer. My department of Gleanings, from this on, must be given, at least mostly, to the betterment of a sinful humanity and a sinful world. A new baptism of God's Holy Spirit has come into my life.

More than ever, your old friend.

Dec. 13, 1921. A. I. Root.

## Classified Advertisements

Notices will be inserted in these classified columns for 50c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column, or we will not be responsible for errors. Copy should be received by 15th of preceding month to insure insertion.

### REGULAR ADVERTISEMENTS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

Jay Smith, J. P. Moore, Bert Smith, J. G. Burtis, Clarence Foote, Woodward Apiaries, Edw. A. Winkler, Edgar Williams, Adam Kalb, Joe C. Weaver, J. H. Corwin, S. Rouse, A. J. Lemoine, Hardin S. Foster, Livingston Seed Co., Michigan Honey Producers Exchange, Allen Latham.

### HONEY AND WAX FOR SALE

FOR SALE—Honey in 5 and 60 lb. cans. Van Wyncarden Bros., Hebron, Ind.

FOR SALE—Buckwheat honey in 5-lb., 10-lb., or 60-lb. cans. H. B. Gable, Romulus, N. Y.

FOR SALE—White and amber honey in 5-lb. pails. R. C. Wittman, St. Marys, Pa.

FOR SALE—Clover honey in new 60-lb. cans. None finer. W. X. Johnston, Port Hope, Mich.

FOR SALE—White clover and aster honey in 60-lb. cans and ten-pound pails. John S. Field, Brooksville, Ky.

FOR SALE—Clover honey from the capping melter. Good for cooking, baking, etc. J. D. Beals, Oto, Iowa.

FOR SALE—Clover, amber and buckwheat honey. 60-lb. cans and 5 and 10-lb. pails. C. J. Baldrige, Kendaia, N. Y.

FOR SALE—Choice clover honey, 15c; buckwheat, 10c per pound. Two 60-lb. cans to case, f. o. b. here. Wm. Vollmer, Akron, N. Y.

FOR SALE—Buckwheat honey in 60-lb. cans, one can to case, liquefied, \$6; 2 cans to case, granulated, \$10.80. John J. Lewis, Lyons, N. Y.

FOR SALE—Spanish needle-heartsease honey, fine body and flavor. Write for price. State quantity wanted. F. W. Luebeck, Knox, R. D. No. 2, Ind.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gal. barrels. Samples and price on request. A. I. Root Co., 23 Leonard St., New York City.

FOR SALE—Extra choice extracted white clover honey, put up in new 60-lb. cans and 5-lb. pails. Sample 20c, same to apply on first order. David Running, Fillion, Mich.

FOR SALE—Clover, basswood or buckwheat honey, comb and extracted, by the case, ton, or carload. Let me supply your wants with this fine N. Y. State honey. C. B. Howard, Geneva, N. Y.

FOR SALE—Extracted honey, clover, 15c per pound; amber, 10c; two 60-lb. cans to case; amber in barrels, 8c; in five-case or five-barrel lots, 5% off; in ten-case or ten-barrel lots, 10% off. H. G. Quirin, Bellevue, Ohio.

FOR SALE—12,000 lbs. of choice white clover honey, well ripened, put up in new 5 and 10 lb. ville, Ky. Sample 25c. W. B. Wallin, Brooksville, Ky.

FOR SALE—No. 1 white Wisconsin extracted honey, well ripened, put up in new 5 and 10 lb. pails and 60-lb. cans. Write for prices. August Lotz Co., Boyd, Wis.

FOR SALE—White clover honey in 60-lb. cans at 12c per lb., same honey in 5-lb. pails at \$10.00 per doz. f. o. b. Waterville, Ohio. F. W. Summerfield, Waterville, Ohio.

FOR SALE—Selected No. 1 comb honey, \$35 per carrier of six cases, 24 sections to case. Clover honey in 10-lb. pails, \$9.50 per case of six pails. J. D. Beals, Oto, Iowa.

SUPPLY your trade with finest white sweet clover honey, liquid. Case of six 10-lb. pails, \$9.40; case of 12 5-lb. pails, \$9.60; a 12-lb. can by paid parcel post, \$2.75. C. S. Engle, 1327 E. 23rd St., Sioux City, Iowa.

HONEY FOR SALE—In 60-lb. tins, water-white orange, 14c; water-white clover or white sage, 13c; extra L. A. sage, 11c; N. Y. State buckwheat, 10c, for immediate shipment from New York. Hoffman & Hauck, Inc., Woodhaven, N. Y.

RASPBERRY honey, blended with willow-herb, put up in 60-lb. cans. In order to close out quickly will sell for 12c a lb. We have some raspberry mixed with a small quantity of goldenrod for 10c a lb. Sample of either kind, 20c, which may be deducted from order for honey. Elmer Hutchinson & Son, Lake City, R. D. No. 2, Mich.

### HONEY AND WAX WANTED.

WANTED—Extracted clover honey. L. K. Hostetter, Lancaster, R. D. No. 5, Pa.

WANTED—Honey, section, bulk comb and extracted. Elton Warner, Asheville, N. C.

WANTED—Extracted honey. Give lowest price and particulars in first letter. L. A. Junod, Greenville, Ill.

BEEWAX WANTED—For manufacture into SUPERIOR FOUNDATION. (Weed Process.) Superior Honey Co., Ogden, Utah.

WANTED—Well-ripened white clover extracted honey. Mention price f. o. b. Mahwah. Prompt remittance. John Vanden Berg, Mahwah, N. J.

I AM in the market for white clover, basswood, or amber honey. Send sample and quote me your lowest prices delivered f. o. b. Preston. M. V. Facey, Preston, Minn.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

WANTED—Beeswax. We are paying 1 and 2c extra for choice yellow beeswax and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address, so we can identify it immediately upon arrival, and make prompt remittance. The A. I. Root Co., Medina, Ohio.

### FOR SALE.

ROOT'S GOODS AT ROOT'S PRICES. A. W. Yates, Hartford, Conn.

FOR SALE — "SUPERIOR" - FOUNDATION, "quality unexcelled." Let us prove it. Order now. Superior Honey Co., Ogden, Utah.



**FOR SALE**—10-frame hive-bodies in flat. C. H. Hodgkin, Rochester, Ohio.

**HONEY LABELS**—New designs. Catalog free. Eastern Label Co., Clintonville, Conn.

**FOR SALE**—A full line of Root's goods at Root's prices. A. L. Healy, Mayaguez, Porto Rico.

**FOR SALE**—Large quantity of new and used bee supplies. George Olson, Hematite, Mo.

**YOU** will make no mistake in ordering your comb foundation of E. S. Robinson, Mayville, N. Y.

**CYPRESS** beehives, supplies and genuine Hubam clover seed for sale. J. Tom White, Dublin, Ga.

**FOR SALE**—50 shallow extracting supers full of comb. Write for prices. M. F. Perry, Bradentown, Fla.

**FOR SALE**—Standard 8 and 10 frame dovetail hives, \$1.75 and \$2.00 each. P. D. Roban, Waverly, Minn.

**PORTER BEE-ESCAPES** save honey, time, and money. Great labor-savers. For sale by all dealers in bee supplies. R. & E. C. Porter, Lewiston, Ill.

**ROOT'S BEE SUPPLIES**—For the Central Southwest beekeeper. Beeswax wanted. Free catalog. Stiles Bee Supply Co., Stillwater, Okla.

**FOR SALE**—Good second-hand 60-lb. cans, two cans to a case. Boxed at 40c per case f. o. b. Hugo. A. H. Schmidt, Hugo, Minn.

**NEW** Root eight-frame Danz. comb honey supers, in packs of five at 90c each. Same in shallow extracting supers at 75c each. Stover Apiaries, Mayhew, Miss.

**FOR SALE**—1000 new shallow Danz. frames, 17 x 5 3/4 in., Root make. In flat, 100 per crate. \$5.00, or \$40.00 for the lot f. o. b. here. Adams & Myers, Ransomville, N. Y.

**FOR SALE**—Good second-hand 60-lb. cans, two cans to a case, boxed, at 60c per case f. o. b., Cincinnati. Terms cash. C. H. W. Weber & Co., 2163 Central Ave., Cincinnati, Ohio.

**SPECIAL SALE**—Low price for 30 days on 1-story 10-frame single-wall dovetail hives, KD in packages of 5. Material and workmanship guaranteed to please. Write for price stating quantity wanted. A. G. Woodman Co., Grand Rapids, Mich.

**FOR SALE**—The Custer Battlefield Apiaries with complete equipment for extracted honey. We have the best of everything and it must go. Highest average records ever made. Don't write unless prepared to buy. The Custer Battlefield Apiaries, Hardin, Mont.

**FOR SALE**—New cypress bottom-boards, standard 8-frame, 50c; 10-fr., 60c. One piece cypress covers, best made, 8-fr., 50c, 10-fr., 60c. 5% reduction in lots of 100. 100 twin-mating boxes, N. P., 50c each. All prices f. o. b. Macon, Miss. Geo. A. Hummer & Sons, Prairie Point, Miss.

**FOR SALE**—To further reduce our large equipment, we offer a full line of NEW and SLIGHTLY USED Jumbo and standard Langstroth bee supplies of Root manufacture. We also offer full colonies of bees in Jumbo and Langstroth hives. Complete list free. We can save you real money. No disease. The Hofmann Apiaries, Janesville, Minn.

**FOR SALE**—25 standard and 20 Jumbo hives with metal covers. 10 5/8 x 5 and 15 1/4 x 4 1/4 comb supers all 10-frame, nailed and painted, some never used. Best offer takes part or all. 15 colonies in Jumbo hives, \$10.00; 10 colonies in Modified Dadant hives, \$12.00. Italians. Will ship in May. A. H. Hattendorf, Ocheyedan, Iowa.

**FOR SALE**—Jumbo and Standard hives with bees; also good 10-frame hives, metal roofs and reversible bottoms, with or without drawn combs. No disease. Horace Lamar, Liberty, Ind.

**FOR SALE**—70 10-fr. brood-bodies with frames; 25 shallow extracting supers with frames, drawn comb or foundation; 25 4 1/4 x 1 1/2 section supers with sections and full sheets foundation; 15 queen-excluders; 40 inner covers; 25 Porter bee-escapes; 75 3-quart pepper-box feeders; 3000 4 1/4 x 1 1/2 cartons, boxes and supers, painted. Price \$100. One foundation machine, 6-inch, \$5.00; one foundation machine, 10-inch, \$8.00; one foundation machine, 10-inch, \$10.00; 500 4 1/4 x 1 1/2 sections, \$8.00; 50 lbs. super and brood foundation, \$25.00. There are five-stands and many other things, all for \$150.00. M. E. Abernethy, Bristol, Vt.

**BARGAIN** in used Root quality standard supplies; reason for offering, changing from standard 10-fr. to larger hives. 20 deep supers with ten imperfect combs in each, suitable for extracting, only \$2.00 each. 46 deep supers with 10 good brood-combs in each, \$4.00 each; 11 deep supers, same as above, except metal-spaced frames, \$4.00 each. All combs drawn from full sheets and wired. 60 7-wire wood excluders, a few never used, all good as new, 50c each; 90 deep empty supers, 60c each; 50 good bottoms, 25c each; 40 extra good bottoms, 35c each; 75 metal tops with super covers, 70c each; 80 complete new metal-spaced Hoffman frames in flat, \$4.00; 100 used metal-spaced Hoffman frames, 4c each; 100 wood-spaced used Hoffman frames, 3c each; 300 shallow Hoffman frames, used, 2c each. Everything in good shape and mostly comparatively new stuff. Crated for shipping f. o. b. Allensville. First certified check or M. O. gets the goods of any part of offer. Porter C. Ward, Allensville, Ky.

### WANTS AND EXCHANGES.

**WANTED**—Used 8-frame standard hives. L. G. Lockhart, Douglas, Neb.

**ROYAL** typewriter, \$65.00. Will trade for honey, queens or offer. E. A. Harris, Albany, Ala.

**WANTED**—Used "Buckeye" hives. Give price and number immediately. James Cockburn, Wellsboro, Pa.

**WANTED**—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

**500-EGG** Queen incubator hatches 92%, like new, exchanged for bees or drawn Hoffman frames or combs. Offer please to Koch's Apiary, Mercer, Box 92, Wis.

**BEE SWAX** wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered. A. I. Root Co. of Iowa, Council Bluffs, Iowa.

**WANTED**—To exchange Italian bees and queens for a Planet, Jr. garden seed drill complete, good second-hand bee supplies, pure Hubam clover seed. S. Whann, R. D. No. 2, Polk, Pa.

**OLD COMBS**, cappings or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies, or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

**WANTED**—10-frame standard hives and equipment, empty combs (wired) and bees (nearly). To interest must be warranted disease-free, good condition and priced right. L. W. Smith, Madison, N. J. (or 56 William St., New York City).

**OLD COMBS WANTED**—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our 1922 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Son, Hamilton, Illinois.

LAND WANTED—I may be willing to exchange 50 or 100 colonies of bees for land, preferably in Arkansas or Mississippi. Bees are in standard 10-frame factory-made hives, painted white, everything first class, and bees absolutely free from disease. Write fully in first letter. C. M. Elfer, St. Rose, La.

ON 50-50 BASIS—South coast country apiary 25 miles from city of 150,000. 100 strong colonies Italian bees. Complete modern equipment. Room for several out-apiaries. 6000 lbs. of honey this year, while other crops were failures. 10 acres truck and strawberry land. New bungalow, barn, chicken and hog houses on rental basis. Team of horses, stock and farm implements. References required as to ability and honesty. Built up the business myself, beginning with nothing. It's an established business, not a speculation. Good schools and churches. A Thorsternberg, Sugar Land, Texas.

### SEEDS AND PLANTS.

"We will not guarantee the purity of any seed advertised nor any nursery stock, as nurserymen ordinarily will not do this themselves; but any seedman or nurseryman advertising in our columns will have given us excellent references in advance, and our readers may consider this fact in their favor."—From Our Guarantee and Advertising Conditions.

HUBAM clover seed, ½ lb., \$1.00; lb., \$1.75; 10 lbs., \$16.50. Noble Nursery, Noble, Okla.

PURE Hubam for a quick clean-up, oz. 20c; lb., \$1.25; 10 lbs., \$10.00. L. B. Harber, Mt. Olivet, Ky.

NORTHERN-GROWN HUBAM, \$25 for 25 pounds, f. o. b. Ames. Blair Bros., Rt. 4, Ames, Iowa.

FOR SALE—Hubam clover seed, genuine Hughes strain. Seed scarified. Free sample. Jas. H. Kitchen, Springfield, C. R. No. 5, Ohio.

GUARANTEED pure Hubam clover seed (unhulled), 1 lb., \$1.10; 10 lbs., \$10.00, postpaid. Hughes variety. Evan Jones, Williamstown, N. J.

FOR SALE—Yellow sweet clover, biennial, hulled, \$6.00 per bushel; white, \$5.00. R. L. Snodgrass, Augusta, Kansas.

BIENNIAL sweet clover seed, in the hull, at 5c a pound, or 5 lbs. postpaid, for \$1.00. Sow a little and get it started around each apiary. Stover Apiaries, Mayhew, Miss.

CANADIANS, ATTENTION! Ontario-grown Hubam sweet clover seed for sale. \$2.00 per lb., 20c per oz. Scarified and hulled in Superior machine. Buy in Canada and save exchange and duty. H. D. Clark, 41 St. Clair Ave., Hamilton, Ont.

HUBAM—The annual white blossom sweet clover. Guaranteed genuine Hughes strain, produced under cultivation. Gleaned and scarified seed. Cultures for inoculation will be furnished at cost, 14,500 seeds, 25c; lb. \$2.00. Lloyd A. Sheffield, East Lansing, Mich.

HUBAM CLOVER—Produced under cultivation. Original seed (Ames, Iowa, strain) from Henry Field Seed Co., at \$8.00 per lb. Purity of our seed attested under oath. Affidavit, each shipment. No weed seeds, none moldy, none better at any price. 1 lb., \$1.45; 10 lbs., \$13.50, delivered. Chas. B. Phelps, Shawnee, Okla.

HUBAM—Gleanings has copy of certificate. Henry Field Seed Co., by Henry Field, Pres., attesting my purchase of seed, Feb. 10, 1920, and Jan. 11, 1921. No other sweet clover grown near ours. References gladly furnished. Note our delivered prices: 1 lb., \$1.45; 10, \$13.50. Chas. B. Phelps, Shawnee, Okla.

GUARANTEED NORTHERN-GROWN HUBAM SCARIFIED and re-cleaned seed, \$75 for 100 pounds f. o. b. Ames. Blair Bros., Rt. 4, Ames, Iowa.

NORTHERN-GROWN HUBAM, GUARANTEED GENUINE scarified and re-cleaned seed, \$25 for 25 pounds; \$75 for 100 pounds, f. o. b. Ames. Smaller orders, \$1.50 a pound. Prepaid. Blair Bros., Rt. 4, Ames, Iowa.

HUBAM CLOVER, NORTHERN GROWN—This seed has been re-cleaned and scarified by the Michigan Farm Bureau, and was originally grown from seed procured by Prof. Hughes. It was grown under cultivation in Missaukee County, Mich., and where the common biennial has not been grown. Therefore, there has been no possible chance for hybridity, and is the pure guaranteed annual variety of the famous Hubam clover. Now selling at \$2.00 per lb. Quotations made on larger quantities. Earl L. Baker, Lake City, R. D. No. 3, Mich.

### BEEES AND QUEENS.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing, Mich.

HARDY Italian queens, \$1.00 each. W. G. Lauer, Middletown, Pa.

TRY ACHORD'S BEEES and QUEENS. Price list by return mail. W. D. Achord, Fitzpatrick, Ala.

FOR SALE—Italian queens, nuclei and packages. W. T. Perdue & Sons, Ft. Deposit, R. D. No. 1, Ala.

A card will bring our circular and price list of our reliable bees and queens. R. V. Stearns, Brady, Texas.

BOOKING orders now for early queens and package bees. Write for prices. Sarasota Bee Co., Sarasota, Fla.

WARNER'S QUALITY QUEENS—Write for illustrated catalog. Elton Warner, R. D. No. 1, Asheville, N. C.

FOR package bees and Italian queens, write Jones & Stevenson, Akers, La. Safe arrival and satisfaction guaranteed.

FOR SALE—Carload bees, nuclei, pound packages, full colonies. See our ad elsewhere. The Stover Apiaries, Mayhew, Miss.

PHELPS GOLDEN QUEENS will please you. Mated, \$2.00; 6, \$10.00; or \$18.00 a doz. C. W. Phelps & Son, Binghamton, N. Y.

FOR SALE—200 colonies Italian bees in two-story 10-frame hives. No disease. Modern outfit in A1 condition. H. A. Jett, R. D. No. 1, Box 155, Tucson, Ariz.

PACKAGE BEEES—\$1.50 per pound. Untested Italian or Carniolan queens, \$1.25 each. See larger adv. Circular free. J. E. Wing, 155 Schiele Ave., San Jose, Calif.

QUEENS OF QUALITY for 1922. Three-banded Italians only. After April 15, untested, \$1.25; tested, \$2.00. Satisfaction guaranteed. P. M. Williams, Ft. Deposit, Ala.

FOR SALE—500 colonies in 4 yards, with power extractor, easy terms, near English colony. Very healthful, wonderful flows, local market. M. C. Engle, Herradura, Cuba.

FOR SALE—Comb packages, 3 lbs. bees, one good untested queen on a standard frame of honey and emerging brood, \$6.50; 2 lbs. same as above, \$5.00. 15% down to book order. To be shipped April 20 to June 1. Queens introduced if wanted subject to be laying en route. Guarantee safe delivery. C. A. Mayeux, Hamburg, La.



PACKAGES, two-pound. Queens, day-old and untested. Thompson safety cages. Resistant Italians. Write for circular. James McKee, Riverside, Calif.

FOR SALE—3000 pounds of bees for spring delivery at pre-war prices. Rosedale Apiaries, Big Bend, La., J. B. Marshall and H. P. LeBlanc, Props.

FOR SALE—Early package bees, nuclei and queens. We handle 1800 colonies. Shipping season March 1 to June 1. Loveitt Honey Co., Phoenix, Ariz.

MY 1922 queens for sale. The Big Yellow kind, none better. Satisfaction guaranteed or money back. Price, \$1.00 each, or \$80.00 per 100. E. F. Day, Honoraville, Ala.

FOR SALE—Bright Italian queens, 1, \$1.25; 12, \$12.00. Write for prices of nuclei and pound packages. Safe arrival guaranteed. T. J. Talley, Greenville, R. D. No. 3, Ala.

WE are booking orders now for spring delivery for the famous "Colorado Queens." Send your order early so as to be sure to get your queens. C. I. Goodrich, Wheatridge, Colo.

BEEES BY THE POUND — Also QUEENS. Booking orders now. FREE circulars giving details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas, E. B. Ault, Prop.

FOR SALE—Golden Italian queens ready May 1. 1 queen, \$1.25; 6, \$6.50; 12, \$12.00; 100, \$85.00. Virgins, 50c each. Write for prices of nuclei. W. W. Talley, Greenville, R. D. No. 4, Ala.

FOR SALE—Two-pound packages three-banded Italian bees with queens, \$5.25 each; 10 or more, \$5.00 each. One-fourth down books order. Satisfaction is my guarantee. J. J. Scott, Crowville, La.

FOR SALE—100 or more colonies and outfit for extracted honey in a productive region for beekeeping. Price, \$1500. Land and homes are reasonably priced here. B. F. Averill, Howardsville, Va.

YOUR name on a card will bring by return mail, descriptive booklet with prices of my Improved Strain of Italian queens. Twenty-four years' experience. J. B. Hollopeter, Queenbreeder, Rockton, Pa.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, \$1.00 each; \$10.00 per dozen; \$75 per 100. Pure mating, safe arrival and satisfaction guaranteed.

LET us save you money on three-band queens, package bees and nuclei. Special orders solicited. Send for circular and prices. No disease. Until June 1 write our Apalachicola, Fla., office. Tupelo Honey Co., Columbia, Ala.

BOOKING orders for spring delivery. Queens, package bees, and nuclei. The reliable A. I. Root strain. Golden and leather-colored Italians. Virgins, 60c; untested, \$1.25. Circular free. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

FOR SALE—To clear partnership 160 colonies Italians, good hives, metal-spaced, wired, full sheets metal tops; 4000 good combs, cheaper than pound packages. Will sell part of them in 10-fr. full-depth bodies, 2 and 3 each. Ed Bradley, Trenton, Ky.

ORDERS booked now for spring delivery, 3-frame nucleus and queen, \$6.50; select tested, \$7.50; Dr. Miller's strain. No pound packages. Low express rates and quick transit north. 10% with order. S. G. Crocker, Jr., Roland Park, Baltimore, Md.

COLORADO HEADQUARTERS for QUEENS—Northern-bred leather-colored three-band Italians. Safe arrival guaranteed. Booking orders now for June 1st delivery. Send for circular and price list. Loveland Honey & Mercantile Co., Loveland, Colo.

MERRILL'S Selected Italian Queens combine the qualities you want. They are large, vigorous, well marked, beautiful and gentle. Try them at \$1.00 each; 6, \$6.50; 12, \$10.80. Ready after April 15. I ship nothing but the best. Order now. G. H. Merrill, Greenville, R. D. No. 5, S. C.

FOR SALE—20 colonies Italian bees in new standard 10-frame hives. Requeened last August with the famous Root queens. Price \$10.00 per colony. Also 15 colonies, same as above, in 8-frame hives, halved together at the corners. Price, \$7.00 per colony. James Dearmin, Oakland, Minn.

BRIGHT ITALIAN QUEENS, \$1.00 each, 10% less in dozen lots. Pure mating, safe arrival and reasonable satisfaction guaranteed in U. S. and Canada. Write us for prices on package bees. We have them in season. Graydon Bros., Rt. 4, Greenville, Ala.

FOR SALE—Three-band leather-colored bees and queens—big cut in prices. No disease. Safe arrival and satisfaction guaranteed. Shipping season April 15 to May 25. Send for circular and prices on quantities. J. M. Cutts & Son, R. D. No. 1, Montgomery, Ala.

MY GOLDEN ITALIAN QUEENS possess the qualities which make beekeeping profitable. Mated, \$1.00 each, \$10.00 per doz. Virgins, 50c each or \$4.25 per doz. Safe arrival and satisfaction guaranteed. Your orders solicited. Crenshaw County Apiary (Melvin Talley, Prop.), Rutledge, Ala.

FOR SALE—Three-banded Italian bees and queens. 2-lb. package with queen, \$4.75; without queen, \$3.75. Queens, \$1.00 each, \$11.00 per dozen; 25 per cent cash books order; safe arrival and satisfaction guaranteed in U. S. and Canada. We ship nothing but the best. W. C. Smith & Co., Calhoun, Ala.

QUEENS, package bees and nuclei. Booking orders now for 1922. Shipping begins March 15. Our early queens ready for northern queenless colonies at unpacking time. One untested, \$1.50; one select untested, \$1.70. Circular free of our pedigreed strain on request. Dr. White Bee Company, Sandia, Texas.

FOR SALE—Package bees for spring delivery, three-banded strain, bred for business, 20% cash books your order. Safe arrival and satisfaction guaranteed. A two-pound package of bees, and select untested queen for \$5.00; 25 or more for \$4.75 each. Write for prices on larger lots. Caney Valley Apiaries, J. D. Yancey, Mgr., Bay City, Texas.

I EXPECT to be ready to start shipping 3-lb. packages of bees with 1-frame brood and bees, 1 untested queen, at \$6.00; 2-frame with untested queen, \$4.50, about April 15. Young tested queen, 50c extra, or \$1.50 each. I think I was the second to ship packages of bees from this state and know how to serve customers. F. M. Morgan, Hamburg, La.

FOR SALE—61 colonies of bees, 10-fr. standard hives. No disease. With queen-excluders, brood-nest, wired and foundation, 124 supers, mostly full-drawn combs, lots of stores, 1 2-fr. Root Cowan extractor, 1 Hershiser wax press, 1 steam-heated uncapping knife, 1 queen-rearing outfit and extras. Had 3½ tons of honey last season. Bees are in good condition. Going out of business. No reasonable price refused. O. J. Arfsten, Locke, Box 17, Calif.

BEEES—2-lb. packages, \$3.50; 6 or more, \$3.45; 12 or more, \$3.40; 25 or more, \$3.25; young Italian queens, \$1.25 extra. Shipments April 10 to May 1, by express f. o. b. New Orleans. Hardy three-banded and leather-colored stock, free from disease, shipped in Root cages on frame of foundation, safe arrival and satisfaction guaranteed or money refunded. 25% deposit to book your order. Order early and state date you prefer shipment. Reference, A. I. Root Co., New Orleans, La. R. S. Knight, 4927 Conti St., New Orleans, La.

**FOR SALE**—Package bees and Italian queens. We have been shipping packages and queens for years. Try us! Allenville Apiaries, Allenville, Ala.

**EXPRESS** is lower on northern bees. Prices no higher, 2 lbs. Italian bees with queen on comb of stores in May, \$5.75. Comb of stores insures success. Prompt delivery and safe arrival guaranteed. Card brings circular of golden and 3-banded queens. Ross B. Scott, LaGrange, Ind.

**THREE-BANDED ITALIAN QUEENS**—Bred from queens whose bees have given big crops of honey. Pure mating and satisfaction guaranteed. May 15 to June 15: 1, \$1.50; 6, \$7.50; 12, \$13.50. All orders filled in rotation. First on list will be first filled. J. D. Kroha, 87 North St., Danbury, Conn.

**FOR IMMEDIATE acceptance:** 100 good all around colonies 3-banded Italian bees and frame. Lock-joint hives, full sheets wired in foundation, contains following: 8 standard L frames, about 3 lbs. bees, one good young queen, \$6.00 each. With extra super and frames, \$9.00 each. Oscar Mayeux, Hamburg, La.

**LARGE, HARDY, PROLIFIC QUEENS.** Three-banded Italians and Golden. Pure mating and safe arrival guaranteed. We ship only queens that are topnotchers in size, prolificness and color. After June 1: untested queens, \$1.50 each; 6 for \$8.00; 12 or more, \$1.40 each; 25 or more, \$1.25 each. Tested queens, \$3.00 each; 6 for \$16.00. Buckeye Bee Co., Zoarville, Ohio.

We know our queens are much better than all the rest. By actual test side by side, all workers look just alike. Three bands only. If they show the slightest trace of four bands, fire them back to us, for that shows very poor breeding indeed. Pure bred Italian bees only show three bands. Untested, \$1.00; select untested, \$1.25; tested, \$2.00; select tested, \$3.00. F. M. Russell, Roxbury, Ohio.

**CONNECTICUT** queens. Highest grade 3-banded Italians ready June 1. Select untested, \$1.25 each; 6, \$6.50; 12, \$12.00; 50, \$47.50; 100, \$90. Two lbs. bees with queen, \$5.00; 3 lbs. with queen, \$7.00. Two-frame nuclei with queen, \$5.50; 3-frame with queen, \$7.50. Select virgin queens (not culls), 50c each, \$45.00 per 100. No disease and satisfaction guaranteed. A. E. Crandall, Berlin, Conn.

**FOR MAY DELIVERY**—One vigorous Italian queen, one frame emerging brood, one pound bees, price complete, \$5.00. Additional pound bees, \$1.00. Additional frame of brood, \$1.00. Banat mixed queens and bees 5% discount. After May 25 10% discount on all. Safe arrival guaranteed. Send 10% to book order. T. W. Livingston, Norman Park, Ga.

**PURE ITALIAN QUEENS**—Golden or leather-colored, packages and nuclei; 1 untested queen, \$1.50; 6, \$7.50; 12, \$13.50; 50, \$55.00; 100, \$100; virgins, 50c each; packages, 24 and under, \$2.25 per pound; 25 and over, \$2 per pound; nuclei, one-frame, \$4; 2-frame, \$6; 3-frame, \$7.50; queens extra. W. A. Matheny, Ohio University, Athens, Ohio.

**THAT PRITCHARD QUEENS AND PRITCHARD SERVICE** made a hit last season is proven by the many letters of appreciation and repeated orders received. This year we are **BETTER PREPARED** with a **LARGER OUTFIT AND REDUCED PRICE.** Untested, \$1.25 each, 6 for \$7.00; select untested, \$1.50 each, 6 for \$8.50; select tested, \$3.00 each. Queens clipped free on request. We are booking orders now. Send yours at once and we will do our best to ship on date you desire. Acknowledgment and directions for introducing sent on receipt of order. Safe arrival and satisfaction guaranteed. Untested ready about June 1. Arlie Pritchard, R. D. No. 3, Medina, Ohio.

**BURLESON ITALIAN BEES AND QUEENS**—In 2 and 3 lb. packages; 1 2-lb. package with select untested queen, \$5.00; 25 or more, \$4.50; 1 3-lb. package with select untested Italian queen, \$6.25; 25 or more, \$5.75. Ten per cent with order, balance 10 days before shipment; 1000 colonies to draw from. Can deliver the goods on time. Safe arrival and satisfaction guaranteed. T. W. Burleson, Waxahachie, Texas.

**FOR SALE**—100% queens bred from extra-select Jay Smith breeder. Larger queens from my cell builders reinforced with hatching brood and mated in standard frame nuclei. I guarantee safe arrival and entire satisfaction and that every queen lays before being caged. Also package bees. I am after a name and reputation. Give me a trial. Select untested, 1, \$1.25 6, \$7.00; 12, \$13.00; 25 to 100, \$1.00 each. H. Peterman, R. F. D., La-throp, Calif.

**FOR MAY DELIVERY, 1922**—One vigorous Italian queen, one frame emerging brood, one pound bees. Price, complete, f. o. b. Bordeloville, \$5.00. Additional frames of brood, each \$1.00; additional pound of bees, each \$1.00. Queen introduced and laying en route to you. Safe arrival and satisfaction guaranteed. No disease. Reference given. Orders booked one-fifth down. May delivery. Send for addresses of satisfied customers. Jes Dalton, Bordeloville, La.

**FOR SPRING DELIVERY**—Vigorous leather-colored Italian queens, famous three-banded stock, also bees in packages. Can ship April 15 or May 1. Two pound package with laying queen, \$6; three-pound package with laying queen, \$7.25. Three-frame nucleus with laying queen, same price as three pounds bees with laying queen. If you wish a purely-mated queen in a package, add \$1. I offer thoroughbred stock, and stock bred for business. I am now booking orders for spring delivery. Safe arrival guaranteed, or replacement or money refunded. Order early. C. M. Elfer, St. Rose, La.

**THREE** pounds of bees, a Hoffman frame of brood and honey, and an untested Italian queen for \$6.50. Discount allowed on large order. I guarantee satisfaction, safe arrival and free from any kind of disease. I will replace any packages that arrive in bad order, or shortage, if given a receipt from the express company to that effect. 25% books your order for April and May delivery. E. J. Beridon, Jr., Mansura, La.

I WILL give packages of bees for a good bird or quail dog, about a year old, and dog must be trained. I would prefer a bitch, and must have the dog on trial. Can furnish best of references. E. J. Beridon, Jr., Mansura, La.

**LOW PRICES**—High quality stock for 1922, 2-frame nuclei and untested Italian queen, \$5.00 each; 25 or more, \$4.75 each. 3-frame nuclei and untested Italian queen, \$6.50 each; 25 or more, \$6.25 each. If tested queens are wanted, add 50c per nucleus. All prices f. o. b., Macon, Miss. No disease has ever been in our yards. Will replace any loss or refund money, on purchaser sending us bad order receipt from express agent. Terms: 10% of amount with order, balance just before shipment is made. Order early and get your bees when you want them. Hummer Bees, Queens and Service will give satisfaction. No queens except with nuclei. Geo. A. Hummer & Sons, Prairie Point, Miss.

**ITALIAN BEES AND QUEENS.**—I am wintering tested queens, reared late last fall, for early shipments with packages. Pound packages shipped with comb. Shipped when you want, with tested queens, 2-lb. pkg., \$5.75; 12 or more, \$5.50 each; 3-lb. pkg., \$7.25; 12 or more, \$7.00 each. Nuclei, per frame, same prices respectively as pound packages. For May delivery with untested queens, deduct 50c per package. Queens, May and June, untested, \$1.50; 12, \$1.25 each; select untested, \$2.00; tested, \$2.25; 6, \$2.00 each; select tested, \$2.75. 10% discount on orders for queens received prior to April 1. Certificate of inspection with shipment. Satisfaction and safe arrival guaranteed. 25% books your order. J. L. St. Romain, Hamburg, La.



**MISCELLANEOUS.**

CALIFORNIA Wonder Seed Corn. Greatest producer. Also shelled Spanish peanuts at wholesale. Write for circular. James McKee, Riverside, Calif.

MEDICINAL roots and herbs are very profitable to grow. We especially recommend growing Golden Seal, which with good care will yield as high as \$10,000 per acre for each crop. It takes several years to mature but will average \$1000 a year. Special Crops, a monthly paper, tells how. Sample copy, 10c, \$1.00 per year. Address Special Crops Pub. Co., Box "G," Skaneateles, N. Y.

**HELP WANTED.**

WANTED—Young man with general experience for the coming bee season. State qualifications in first letter. Room and board furnished. B. B. Coggsball, Groton, R. D. No. 12, N. Y.

WANTED—Married man to work in commercial orchard, who is able to extract honey and help with bees. H. W. Funk, Normal, Ill.

EXPERIENCE AND FAIR WAGES given to active young man willing to work for help in well-equipped beekeeping business of 600 colonies. Season April to November. State occupation, weight, height, age and experience. The Pettit Apiaries, Georgetown, Ont., Can.

WANTED—Young, energetic, willing worker acquainted with extracted honey production and light farming, for 1922 season in our out-Apiary business. Give age, weight, wages expected, and also reference as to character, experience with bees, farm work, trucks, and cars all in first letter. Must be handy with shop tools. Steady job for right party. The Hofmann Apiaries, Janesville, Minn.

**SITUATION WANTED.**

MIDDLE-AGED single man with three years' experience wants position at once. Good mechanic. Chas. L. A. Beckers, 604 West 49th St., New York City.

STUDENT of bee culture wishes place with large honey producer to learn practical beekeeping. Good worker. Can also keep books and do stenographer's work as am qualified. Good references. Fred L. Allen, Nacogdoches, Box 574, Texas.

BURBANK SEEDS—BULLETIN 61 FREE, describing new and rare flowers, grains and vegetables. Also announcing the new books (just published), "How Plants Are Trained to Work for Man," Luther Burbank, Santa Rosa, Calif, U. S. A.

**BEE SUPPLIES**

Our plant is especially equipped to manufacture dovetailed hives, supers, frames, sections and shipping cases.

We guarantee our goods to be first class in workmanship and material.

We carry a complete line of everything for the beekeeper.

Dealers—Write for our dealers' proposition.

Write for our new catalog.

**A. H. RUSCH & SON CO.**

**REEDSVILLE, WIS.**

*Are You Thinking About*

**A BIG HIVE?**

Wherever the larger brood-chamber may be advantageous, the Jumbo Hive meets the requirements of the beekeeper and the bees for size fully as well as any large hive, with the very decided advantage of not necessitating any additional or odd-sized equipment. It gives 27% more brooding and storage space than the standard 10-frame hive. The Jumbo brood-chamber with 10 good combs has room for over 90,000 cells, which number is computed to be 20,000 more than the best laying records show that any queen has been able to fill at any one time. This is sufficient room for the most prolific queen and 15 to 20 pounds of stores, even at the height of brood-rearing.

**BECAUSE---**

- if you plan using a larger hive next year, the Jumbo equipment is what you want. It will prove cheapest and best.
- especially, all standard 10-frame equipments fits the Jumbo. So, you can get this larger hive for your apiary at least possible expense.
- once a part of your equipment, it can be worked with least possible inconvenience.

**THE A. I. ROOT COMPANY OF IOWA  
COUNCIL BLUFFS, IOWA**

## CANDY FOR WINTER FEED

In winter bees sometimes starve with plenty of honey in the hive. Use candy and avoid this unnecessary loss. Put up in large paper plates weighing two pounds each. Write for price, also catalog of Bee Supplies.

**H. H. JEPSON**

182 Friend St. Boston, 14, Mass.

## EVERGREENS

**Hill's Hardy Tested Sorts**  
Best for windbreaks, hedges and lawn planting. Protect buildings, crops, stock, gardens and orchards. Hill's Evergreens are nursery grown and hardy everywhere. Hill's Evergreen book sent free. Write today. Beautiful Evergreen Trees at moderate prices. World's largest growers. Est. 1855.

**THE D. HILL NURSERY CO., INC., DUNDEE, ILL.**  
Box 248 Evergreen Specialists



### Shrubs and Trees

That provide Nectar for the Bees and Fruit for the household. No Cash with order. Get our Catalog TODAY.

**PROGRESS NURSERIES**  
1317 Peters Ave. Troy, Ohio

### 125 Seeds FREE

To build new business we will send you a trial package of this Wonderful New Tomato and our big 160-page Seed and Nursery Catalog. Tells how to plan, plant and care for gardens, and the prices are lower than ever. Condon's Seeds yield abundantly the finest Fruits, Flowers and Vegetables. Write—today.

**CONDON BROS., SEEDSMEN**  
Rock Laver Valley Seed Farm  
Box 83 Rockford, Illinois

**Condon's Giant Everbearing Tomato**

## BARNES' HAND & FOOT POWER MACHINERY

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

Machines on Trial

Send for illustrated catalog and prices.

**W. F. & JOHN BARNES CO.**  
645 Ruby Street  
ROCKFORD, ILLINOIS



## VICK'S GARDEN & FLORAL GUIDE for 1922

IT'S FREE A WORTH WHILE BOOK WRITE TODAY

For vegetable growers and all lovers of flowers. Lists the old stand-bys; tells of many new varieties. Valuable instructions on planting and care. Get the benefit of the experience of the oldest catalog seed house and largest growers of Asters in America. For 73 years the leading authority on vegetable, flower and farm seeds, plants, bulbs, and fruit. 12 greenhouses. 500 acres.

**Vick Quality Seeds Grow the Best Crops the Earth Produces**

This book, the best we have issued, is absolutely free. Send for your copy today before you forget. A postcard is sufficient.

**JAMES VICK'S SONS, 33 Stone St.**  
Rochester, N.Y. The Flower City



## 1922 ITALIAN QUEENS

Untested, \$1.20 each, 12 or more, \$1.00 each. Select Untested, \$1.50. Tested, \$2.00.

No disease.

Package Bees Priced on Request.

**D. W. HOWELL**

Shellman, Ga., Box A3.

## INDIANOLA APIARY

is now booking orders for 1922 for Italian bees and queens. Write for price list and circular. No disease. Bees inspected by State inspector.

**J. W. SHERMAN**

Valdosta, Ga.

### "Best" Hand Lantern

A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economic—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. Agents wanted, Big Profits. Write for Catalog. **THE BEST LIGHT CO.**  
306 E. 5th St., Canton, O.

## TYPEWRITER SENSATION



**\$4 or \$5 a month**  
A Standard, Guaranteed TYPEWRITER With Every Modern Writing Convenience

Write Today For Illustrated Circular Explaining Try-Before-You-Buy Plan

**SMITH TYPEWRITER SALES CO.**

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## 450,000 TREES

200 varieties. Also Grapes, Small Fruits, etc. Best rooted stock. Genuine. Cheap. 2 sample circulars mailed for 20c. Descriptive price list free. **LEWIS ROESCH, Box C, Fredonia, N.Y.**

### Strawberries

Grown the Kellogg Way  
**Yield BIG Profits**

Our Free Book tells how. Written by the Strawberry King. Gives his secrets for growing the Big Crops of Fancy Strawberries that won him fame and fortune. Worth its weight in gold. Costs nothing—it's FREE.

**R. M. KELLOGG CO.**  
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**FREE BOOK**

## DINGEE ROSES

On Own Roots

Pot-grown rose bushes, on own roots, for every one anywhere. Plant any time. Old favorites and new and rarest, the cream of the world's productions. "Dingee Roses" known as the best for 71 years. Safe delivery guaranteed anywhere in U. S. Write for a copy of Our "New Guide to Rose Culture" for 1922. It's FREE. Illustrates wonderful "Dingee Roses" in natural colors. It's more than a catalog—it's the lifetime experience of the *Oldest and Leading Rose Growers in America*. A practical work on rose and flower culture for the amateur. Offers 300 varieties Roses and other plants, bulbs and seeds and tells how to grow them. Edition Limited. Established 1850. 70 Greenhouses.

**THE DINGEE & CONARD CO., Box 218, West Grove, Pa.**



## Trees---Plants---Seeds

Everything for the fruit grower, farmer or suburban home. Highest grade stock, low, direct-from-grower prices. You can be sure when you buy from us that stock is healthy, sturdy and ready to produce maximum results in fruit or flower.

Our extensive line of ornamental shrubs, bushes, and perennials includes the worth-while varieties for beautifying the home grounds, a splendid stock for commercial growers or home use. Seeds for the vegetable or flower garden.

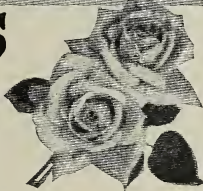


We have the exclusive sale of the Dr. Worcester Peach.

Our 1922 catalog, a mine of planting information, is free.

**WOODLAWN NURSERIES**  
882 Garson Ave.,  
Rochester, N. Y.

## ROSES of New Castle



Are the hardiest, sturdiest, freest blooming rose plants in America. Grown on their own roots in the fertile soil of New Castle. We give you the benefit of a lifetime experience and the most select list in America. Every desirable Rose now cultivated in America is included in our immense stock—and the prices are right.

Our rose book for 1922 **ROSES OF NEW CASTLE** tells you how to make rose growing a success. Published and elaborately printed in actual colors. Send for your copy today—a postal will do. Address **HELLER BROS. CO., Box 218, NEW CASTLE, IND.**

## GOOD SEEDS



**Grown From Select Stock—None Better—52 years** selling good seeds to satisfied customers. Prices below all others. Extra lot free in all orders I fill. **Big free catalogue** has over 700 pictures of vegetables and flowers. Send your and neighbors' addresses.  
**R. H. SHUMWAY, Rockford, Ill.**

# ALFALFA

**ISBELL'S MICHIGAN-GROWN**

Whatever your soil, there's a Bell Brand strain that is fitted to your farm—that will give you a big yield yet is so hardy that it will not winter-kill. Do not risk a crop failure—plant the proven, tested Bell Brand.

**FREE Samples** of any field seeds to show quality, sent on request with Isbell's 1922 Seed Annual. Big savings on sterling quality seeds, direct from grower. Write today.

**S. M. Isbell & Company**  
677 Mechanic St. (33) Jackson, Mich.

## HUGHES HUBAM ALABAMA

Grown where it originated, under direct supervision of H. D. Hughes, the original discoverer and distributor. Genuine. Uniform types. Early or late. Use discretion.

**FREE A SAMPLE OF SEED OF THIS WONDERFUL CLOVER**

Yields 6 times as much as other clovers.  
Great for stock, either pasture or hay • Palatable • Very Nutritious • Drought resistant.  
Best honey plant known.  
Makes your soil produce more.

HUBAM

BIG MONEY

growing seed of most wonderful clover ever discovered • Thoroughly tested • Can be grown anywhere • Recommended by farmers editors etc. *Get for booklet—HUBAM CLOVER—WHAT-WHERE-WHY*

ALABAMA HUBAM CLOVER ASSN  
P. BOX 61—NEWBERN, ALA.

## HUBAM CLOVER

The Honeybees' Friend

Beekeepers are greatly interested in Hubam Clover because it produces the largest crop of splendid honey food. We have a select lot of certified hardy Hubam Clover seed, 25c an oz.; \$2.50 a lb.; when orders are placed for ten lbs. or more, \$2.00 per lb. Order early. Supply limited.

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**RHODES DOUBLE CUT PRUNING SHEAR**

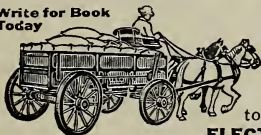
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**RHODES MFG. CO.,**  
328 S. DIVISION AVE., GRAND RAPIDS, MICH.

**THE** only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. All shears delivered free to your door.

Write for circular and prices.

Write for Book Today



## FARM WAGONS

High or low wheels—steel or wood—wide or narrow tires. Steel or wood wheels to fit any running gear. Wagon parts of all kinds. Write today for free catalog illustrated in colors.

**ELECTRIC WHEEL CO., 23 Elm Street, Quincy, Ill.**



# PLANT HUBAM

The **New ANNUAL Sweet Clover**



Hubam is a fast growing white sweet clover—grows 5 to 8 feet the same season. An excellent hay, big yielding and nutritious.

In crop rotation, Hubam saves a year, as it is an annual; it means thousands of extra dollars in the pockets of growers. Hubam has been acclaimed the most important crop development in years.

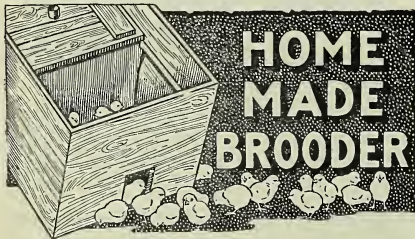
### Plant Northern-Grown Hubam

Isbell has adopted this southern clover to northern conditions—has made it hardy, yet big-yielding. Make sure of big crops by procuring Michigan grown Bell Brand Hubam direct from the growers.

**Write Today For Special Prices CATALOG FREE**

Isbell's 1922 Catalog gives cultural directions—describes the best seeds—points the way to bigger, better crops. Send for it today—it is **free**—and it will prove very valuable to you.

**S. M. ISBELL & COMPANY**  
676 Mechanic St. (24) Jackson, Mich.



## HOME MADE BROODER

**Costs Only \$4.96, Complete**

In an hour you can make a better brooder than you can buy. No tools needed but saw and hammer. It will do the work of 4 old hens and do it better. The materials, including heater, cost \$4.96.

I want you to try my Brooder and will send you plans for making it, together with a Putnam Brooder Heater, for \$4.75; all postpaid. Try the Brooder out and if you don't say it's the best Brooder you ever used, return the Heater in 30 days and get your money back. Your dealer will make you the same offer and guarantee. Ask him, but if he does not carry the Brooder Heater, send me \$4.75 and I will mail you a Brooder Heater and plans promptly. Illustrated circular free.

**I. PUTNAM**  
Route 260-B Elmira, N. Y.



**Burns 10 days without attention**

## World's Best Roofing

at Factory Prices

“Reo” Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofings, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Positively greatest offer ever made.

### Edwards “Reo” Metal Shingles

cost less; outlast three ordinary roofs. No painting or repairs. Guaranteed rot, fire, rust, lightning proof.

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Lowest prices on Ready-Made Fire-Proof Steel Garages. Set up any place. Send postal for Garage Book, showing styles.

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## 850,000 GRAPE-VINES

66 varieties. Also Small Fruits, Trees, etc. Best rooted stock. Genuine. Cheap. 2 sample vines mailed for 20c. Descriptive price list free. **LEWIS ROESCH, Box C, Fredonia, N. Y.**

## The “BEST” LIGHT



Positively the cheapest and strongest light on earth. Used in every country on the globe. Makes and burns its own gas. Casts no shadows. Clean and odorless. Absolutely safe. Over 200 styles. 100 to 2000 Candle Power. Fully Guaranteed. Write for catalog. **AGENTS WANTED EVERYWHERE.**

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306 E. 5th St., Canton, O.

### SPECIAL NOTICE.

When the advertisement of aluminum honeycombs first appeared in Gleanings, March, 1921, the following reservation was printed in the advertisement:

“The Editors of Gleanings in Bee Culture, altho not endorsing aluminum combs, will thoroly test these combs made in Texas, and will announce their conclusions as to the merits of them, in their climate and latitude, upon the completion of their tests in several apiaries.”

The Texas Honey Producers' Association sent us last spring a set of aluminum honeycombs made in Texas sufficient for one extracting super. These were used by us in the extracting super according to directions, and the bees filled them with honey, altho they showed a preference for the wax combs. We feel that in fairness to the aluminum combs and also to the beekeepers that we should reserve full judgment until we can make further tests, and especially reserve judgment as to their use in the brood-chamber.

Managing Editor, Gleanings in Bee Culture.



This Ball Bearing  
**APACHE**  
Grist Mill



PREPAID FOR ONLY  
**\$800**

FEED the hopper, turn the wheel, and enjoy making your own wholesome whole wheat or graham flour, old-fashioned corn meal, rye flour, chops and hominy, and bring down living cost. Best coffee and spice grinder. If you have poultry, grind your chicken feed, save feed money and get more eggs.

Apache grinding plates of special mixture iron made to give longest wear. Steel ball bearings make it only a boy's job to run it. Send money or check today. Satisfaction guaranteed. For the present we can make prompt delivery. So don't delay.

A. H. PATCH, Inc., Clarksville, Tenn.  
The Apache Grist Mill is companion to the Black Hawk Corn Sheller, famous for 35 years for its "Can't Wear Out" Guarantee.



**BETTER GARDENS  
EASY TO KILL WEEDS  
AND MULCH THE SOIL**

**BARKER  
WEEDER, MULCHER  
AND CULTIVATOR**

Don't do garden work the slow, back breaking way. The BARKER makes the finest gardens possible—quickly, easily. Simply push along rows (like lawn mower)—8 blades revolving against underground knife destroy the weeds and in same operation break the crust into a level, porous, moisture-retaining mulch. Aerate soil. "Best Weed Killer ever used." Has leaf guards, also shovels for deeper cultivation. A boy can run it—do more and better work than 10 men with hoes.

Write for **FREE BOOK**

Illustrated book, postpaid, gives prices delivered to your station, contains valuable information on gardens, letters from users, etc. A card brings it. Write today.



**BARKER MFG. CO.**

Box 23  
DAVID CITY, NEB.

# Pennsylvania Beekeepers!

I wish to announce that I have secured the State Agency for The G. B. Lewis Company, and am now in position to furnish you with "Beeware" at Catalog Prices, direct from Bloomsburg. My first carload has arrived, consisting of:

**MODIFIED DADANT HIVES AND SUPERS**—The Big Hive which is proving so successful everywhere.  
**DADANT'S INCOMPARABLE COMB FOUNDATION**—The kind the bees prefer.

**LEWIS UNEQUALED SECTIONS**—Best by test.  
**STANDARD EQUIPMENT** of every description, and  
**EVERYTHING** listed in the "BEEWARE" CATALOG.

Let me figure on your needs before you purchase elsewhere. A card will bring my catalog. Shipping facilities of the best. Four railroads, P. R. R., D. L. & W., P. & R. and B. & S. Prompt and courteous service always. A trial order will convince. Reference: First National Bank, Bloomsburg, Pa.

**C. C. BRINTON, "The Busy Bee Man"**  
BLOOMSBURG, PENNSYLVANIA

**MASON BEE SUPPLY COMPANY  
MECHANIC FALLS, MAINE**

From 1897 to 1922 the Northeastern Branch of  
The A. I. Root Company

*PROMPT AND EFFICIENT SERVICE*

BECAUSE—Only Root's Goods are sold.  
It is a business with us—not a side line.  
Eight mails daily—Two lines of railway.  
If you have not received 1922 catalog send name  
at once.

Established 1885.

Write us for catalog.

**BEEKEEPERS'  
SUPPLIES**



**The Kind You Want and the Kind  
That Bees Need**

We have a good assortment in stock of bee supplies that are mostly needed in every apiary. The A. I. Root Co.'s brand. Let us hear from you; information given to all inquiries. Beeswax wanted for supplies or cash.

**John Nebel & Son Supply Co.**  
High Hill, Montgomery Co., Mo.

**LEWIS 4-WAY BEE ESCAPES**



Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial metal. Price each 18c postpaid. Made by **G. B. Lewis Company, Watertown, Wis., U. S. A.** For Sale by all Dealers.

**"The Capital of Beedom"**

Half-a-hundred trains—freight, express, and mail—besides boats and motor-trucks, at the beeman's service every day.

Full stocks, best goods, service and treatment. Get catalog.

**MOORE & PEIRCE,**  
ZANESVILLE, OHIO, 22½ S. Third St.

CENTRALLY

LOCATED

TO

SERVE

NEW

ENGLAND

BEEKEEPERS.



**BEE SUPPLIES**

**F. COOMBS & SONS, BRATTLEBORO, VERMONT**

ORDERS

FILLED

PROMPTLY.

CATALOG

ON

REQUEST.

**"falcon"**

**SUPPLIES --- QUEENS --- FOUNDATION**

When you buy "falcon" you get the best.

Prices for 1922 will please you.

Ask for our free Catalog and booklet, "Simplified Beekeeping."

**W. T. FALCONER MFG. COMPANY**

FALCONER (Near Jamestown) NEW YORK

*"Where the best beehives come from."*

If there is no "falcon" Dealer near you, write for our proposition to dealers.



## BUYING BEES IS LIKE---

Mr. Beekeeper: Buying bees is like buying other stock. The first consideration in the purchase of bees or queens is to get hardy, vigorous stock. Our bees and queens are noted to be very hardy, vigorous and very resistant to diseases. The second consideration is getting them in time for the honey flow. Send us your order. You will not have to worry about bees not arriving on time, loss in transit, disease, etc., as safe delivery and satisfaction are guaranteed. Do you realize that a nice frame of emerging brood is equal to 1 lb. of bees? Each package is shipped on a comb of emerging brood with honey. Also nuclei, full colonies, pre-war prices. 10% with your orders. First-class references if desired. Write for price list and other information.

M. VOINCHE, BUNKIE, LA.

### Responsibility

We like to have our customers think of our stock, our shipping facilities and our treatment of their orders as RELIABLE. Not the best perhaps, but equal to any. A card will bring our circular. May we hear from you?

**R. V. STEARNS**  
BRADY, TEXAS.

## QUEENS

OUR OLD RELIABLE THREE-BANDED ITALIANS ARE HONEY GETTERS.

They are gentle, prolific, and very resistant to foul brood. Orders booked for one-fourth cash. Safe arrival guaranteed. Circular free.

PRICES APRIL 1st TO JULY 1st.  
 Untested .....\$1.25; over 25, \$1.00 each  
 Sel. Unt. .... 1.50; over 25, 1.25 each  
 Tested ..... 2.50; over 25, 2.25 each  
 Selected Tested ..... 3.00 each  
*See our Dec. and Jan. Advertisement.*

**JOHN G. MILLER**

723 C Street, Corpus Christi, Texas.

## BEES AND QUEENS for 1922

**5 PER CENT DISCOUNT FOR ORDERS RECEIVED IN JANUARY.**

One 1-frame nucleus with untested queen, \$4.00; one 2-frame nucleus with untested queen, \$5.00; untested queens, \$1.25 each; 12, \$1.10 each; tested queens, \$1.60 each; 12 or more, \$1.35 each; select tested queens, \$2.00 each. Breeders, \$5.00 at all times. Satisfaction and safe arrival guaranteed.

**H. L. MURRY - SOSO, MISSISSIPPI**

## QUEENS

Three-banded Italian Queens that must please. Pure mating and satisfaction guaranteed. We do not claim to have the best, but do claim them to be as good. Untested Queens, \$1.25 each. Twelve or more, \$1.10 each. Tested Queens, \$1.60 each. Twelve or more, \$1.40 each.

### CYPRESS BEE SUPPLIES

Hives, hive-bodies, bottom-boards, covers, frames, foundation, etc. Write for prices. All queens shipped from Crawford, Miss., all supplies shipped from Coker, Ala.

### The Abston Apiaries

Crawford, Miss.

Coker, Ala.

## QUEENS NUCLEI AND PACKAGE BEES

Jensen's "Blue Ribbon" Bees and Queens win favor wherever they go. "Highest Quality" and "Best Service" are synonymous with us in handling your orders, large or small. Eight years' experience in the South, rearing queens and preparing bees for shipment, coupled with best shipping facilities, are items in your favor that will count. Our bees are good hustlers, hardy winterers, gentle, and uniformly marked Three Bands. Queens that are beauties; possessing great prolificacy and longevity, the qualities that determine a queen's worth. They clean up European foul brood. We guarantee: Freedom from disease, health certificate with each shipment. Safe arrival East of Rocky Mts. in U. S. and Canada. (Agent's statement must accompany claims to avoid delays.) Complete satisfaction.

**QUEENS**—Untested queens, \$1.10 each; over 25, \$1.00 each. Purely mated. Select Untested, \$1.35 each; over 25, \$1.25 each. Tested, \$2.00 each. Select Tested, \$3.00 each. Breeders, \$7.50 and \$10.00 each, in a one-frame nucleus.

**NUCLEI**—Two-frame with young queens, \$5.50 each; over 10, \$5.00 each. Three-frame with young queens, \$7.25 each. Over 10, \$6.75 each.

**COMBLESS PACKAGES**—One-pound, \$2.75 each; over 10, \$2.50 each. Two-pound, \$4.25 each; over 10, \$4.00 each. Three-pound, \$6.00 each; over 10, \$5.75 each. If queen is wanted make choice and add price.

**TERMS**—20% to book, balance before shipment. We do not accept more orders than we can fill when agreed. Shipment of bees by express f. o. b. here unless quoted otherwise. Ask for our folder, it's free.

**JENSEN'S APIARIES, R. F. D. NO. 3, CRAWFORD, MISSISSIPPI.**



# BEES AND QUEENS

Mr. Beekeeper, if you want good quality, quick service, prompt attention, and perfect satisfaction, *TRY NORMAN BROS.' pure three-banded Italian bees and queens.* And see for yourself. We are going out to please our customers and to build up our business, and we know it will take honest dealing to do it. And we are going to send out just what we are advertising. Our bees are hardy, prolific, disease-resisting and honey gatherers. Orders booked with one-fourth down; balance before shipment is desired. Place your order with us. We ship when you want them. We ship only 2-lb. packages by express f. o. b. shipping point. \$4.00 each; 12 or more, \$3.80 each. Add prices of queens wanted.

### Prices April and May.

	1	6	12	100
Untested Queens..	\$1.25	\$6.50	\$12.50	\$90.00
Select Untested..	1.35	7.00	13.20	100.00
Tested Queens...	2.00	11.00	21.00	
Select Tested.....	2.50	each		

We guarantee pure mating, safe arrival, free from all diseases, and perfect satisfaction in U. S. A. and Canada. Remember you take no risk when you deal with us. Isn't that enough said?

**NORMAN BROS.' APIARIES**  
NAFTEL, ALA.

## 1922 ROOT 1922 QUALITY QUEENS

3000 Nuclei headed with young Italian Queens ready to serve you on early spring orders

*April, May and June.*

Untested Queens . . . \$1.50; 25 to 99, \$1.30  
 Select Untested Queens 1.75; 25 to 99, 1.50  
 Tested Queens . . . . . 2.25; 25 to 99, 2.00  
 Select Tested Queens. 2.75; 25 to 99, 2.25

*July to November.*

Untested Queens. . . . \$1.25; 25 to 99, \$1.00  
 Select Untested Queens 1.50; 25 to 99, 1.25  
 Tested Queens . . . . . 2.00; 25 to 99, 1.50  
 Select Tested Queens. . 2.25; 25 to 99, 2.00

Write for prices on 100 or over.

1 1-frame Nucleus with Tested Breeding Queen . . . . . \$10.00  
 1-lb. Package Italian Bees . . . . . \$2.25  
 2-lb. Package Italian Bees . . . . . 3.75  
 3-lb. Package Italian Bees . . . . . 5.25  
 Quantity prices on application.

Safe arrival and satisfaction guaranteed to any point in the United States.

**The A. I. ROOT CO. OF TEXAS**  
Box 765, San Antonio, Texas.

## For Your 1922 Requirements

Everything in Bee Supplies, Quality and Service combined with Lower Prices. Our production cost is lower; beekeepers, this is all given to you.

*Our catalog for 1922 is out, send for one.*

**August Lotz Company, Boyd, Wisconsin**

**BANKING  
BY MAIL  
AT 4%**

### HAPPY HOMES

Health is the first step in success. Thrift is the next—it goes hand in hand with a happy home.

Open your Thrift Account with this strong, progressive bank at 4%—you can bank with us by mail.

Write for Booklet.

**THE SAVINGS DEPOSIT BANK CO.**  
A.T.SPITZER, Pres. MEDINA, OHIO  
E.R.ROOT, Vice Pres. E.B.SPITZER, Cash.



# The Crowning Touch to the Home

It's just a house until you plant a garden. Then it becomes a home—a place where happiness can be found indoors or out—a living index to the character of those who live within. No wonder real home-makers give such care to planning beautiful gardens!



The choice of varieties is made easy for you by the S. & H. catalog. S. & H. ornamental shrubs are carefully selected, vigorous plants, with abundant foliage and finely colored bloom. All seeds listed are taken from unusually fine strains, proven by our own trials. S. & H. trees are preferred by professional nurserymen and orchardists all over the country. Nearly every thing you need for your garden is listed.

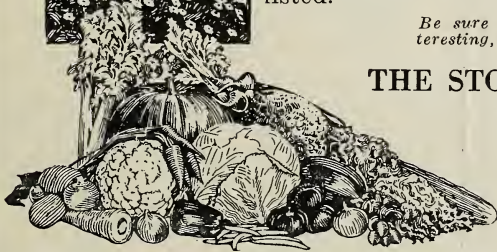
*Be sure to send tonight for this interesting, splendidly illustrated catalog.*

## THE STORRS & HARRISON CO.

Nurserymen and Seedsmen

Box 147

PAINESVILLE, OHIO



# HUBAM

## THE NEW GIANT HONEY CLOVER

A mass of white bloom until late autumn, heavy with A-1 honey. A summer-long paradise for bees.

Hubam produces an almost incredible yield of honey, and, being annual, saves a year in crop rotation. Sown with grain, it matures after harvest for forage, soiling or seed. Six times as much nitrogenous material for plowing down as Red Clover.

1 to 4 lbs. per acre in 30-in. drills gives big seed yield. Tremendous demand—and the honey is "velvet."

Our Hubam is scarified and certified to be from original Ames stock. Write for further information and prices.



## May Seed & Nursery Co.

120 Elm Street  
Shenandoah, Iowa

# A CINCH FOR BEEKEEPERS

*That's what HUBAM means.*

It makes a wonderful honey flow from early summer to killing frost; is a splendid legume for pasture or hay; and a luxuriant growth to plow under for humus and plant food. Besides this, the cash crop from the seed alone is no small item. Our average yield has been 400 lbs. per acre. Let us send you our Seed Sense magazine free. Tells all about it. We offer genuine, certified HUBAM at \$2.00 a pound on early orders

With each and every order for Hubam we will include FREE a can of Nitrugin pure culture bacteria which will insure proper growth of the Hubam plant.

**HENRY FIELD SEED COMPANY**  
SHENANDOAH, IOWA.



# QUEENS



## THREE-BANDED ITALIAN BRED FOR SATISFACTION.

As good as money can buy. Breeding queens are imported from Italy. By using imported mothers and mating their daughters to domestic drones, you have a light leather-colored bee, which is recognized by the largest beekeepers of the world as the best for general purposes. All queens are reared in strong two-story ten-frame hives, under the natural condition. You take no risk in buying from me, as I guarantee perfect satisfaction or return your money. Give me a trial, I can please you.

	1	6	12
Untested . . .	\$1.50	\$7.50	\$13.50
Sel. Unt. . . . .	1.75	9.00	16.50
Tested . . . . .	2.50	13.00	24.00
Sel. Tested. . .	4.00	22.00	41.50

Write for prices on larger lots.

**D. E. COLLIER**  
RAMER, ALABAMA.

# I Pay Transportation Charges on Package Bees



BANDED

- THREE 1-lb. package, including young three-banded queen . . . . \$4.50
- 2-lb. package, including young three-banded queen . . . . 6.00
- 3-lb. package, including young three-banded queen . . . . 7.50

25 cents per package less for twelve or more packages. Delivered to your address via parcel post. In comparing my prices with others, take in consideration you have no express charges to pay. Parcel post shipments go through quicker.

SELECT (one grade) untested queens, \$1.50; six, \$8.00; twelve, \$15.00. Safe arrival of bees and queens, pure mating, and satisfaction guaranteed. Let me book your order now with ten per cent cash, balance just before shipping. Shipment will be made on the day you name. I have not yet disappointed a customer. No disease.

**JASPER KNIGHT**  
HAYNEVILLE - - - ALABAMA

# Queens SWARMS OF BEES BY THE POUND FOR 1922---THREE-BANDED STRAIN ONLY Queens

Price of Packages by Express—1-lb. packages, \$4.00 each; 6 up to 12, \$3.90 each; 12 or more, \$3.75 each. 2-lb. packages, \$5.50 each; 6 up to 12, \$5.25 each; 12 or more \$5.00 each. 3-lb. packages, \$7.25 each; 6 up to 12, \$7.00 each; 12 or more, \$6.75 each. If wanted by parcel post, add 10 per cent. Select untested queens, \$1.50 each; 12 or more, \$1.40 each. Select tested queens, \$3.00 each; 12 or more, \$2.75 each. Pure mating of all queens is guaranteed. Wings clipped on request. We breed only the 3-banded strain, as we find after test they are unsurpassed by any other strain. All queens are reared by experienced and expert queen-breeders and the business management is under control of those having over thirty years' experience keeping bees in a large way. Every package or queen ordered is guaranteed to arrive in good condition and to give entire satisfaction. 10 per cent cash with order. Bees or queens shipped day specified.

HAYNEVILLE APIARY COMPANY, HAYNEVILLE, ALA.. U. S. A.

# TALKING LAWS' QUEENS QUEENS SPEAK FOR THEMSELVES

Over thirty-five years as commercial queen-breeder and advertiser in this journal have brought orders from thousands of Gleanings readers. If there is a dissatisfied customer I do not know it. I have many testimonials that make me glad. One firm bought over 5000 queens of me, and writes that my "queens and business methods are very satisfactory." Another writes, "Your queens are all good queens. Our individual crop of honey was 105,000 pounds season 1921; Laws' queens did it."

**PRICES:** Untested, each, \$1.25; 12 for \$12. Tested, each, \$1.50; 12 for \$15. Breeding queens, none better if as good, each, by mail, \$5; or with a 3-frame nucleus of her own bees by express, \$10. This nucleus, if ordered early, should gather honey enough to pay all costs. Write for prices quantity lots. I am prepared to furnish in large lots; also bees in three-frame nuclei. No disease; entire satisfaction. Address

**W. H. LAWS, BEEVILLE, BEE COUNTY, TEXAS**



**ELTON WARNER'S QUEENS (Italian)**

—a strain developed during years of selective breeding for use in his many commercial honey-producing apiaries.

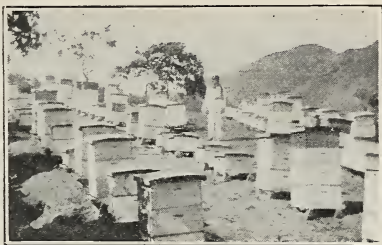
Every queen is reared and selected with the greatest care, and only one grade is sold. No queen leaves our apiaries that does not reach our high standard of perfection.

To secure shipment when wanted, please place your order early. No cash required with order. (Payment to be made before shipment.)

1 to 3                      4 to 11                      12 or more  
\$2.00 each.              \$1.80 each.              \$1.60 each.

**ELTON WARNER APIARIES.**

R. D. No. 1, Asheville, North Carolina.



Send for illustrated catalog.

**BURLESON'S OLD RELIABLE  
Three-Banded Italian Queens**

**NONE BETTER**—Not as cheap as some, but worth the difference. I guarantee them to be absolutely free from brood diseases.

**These are My 1922 Prices**—Untested, \$1.25 each; \$13.50 per doz; 25 or more, \$1 each. Select Untested, \$1.50 each; \$15 per doz., 25 or more, \$1.15 each. Select tested, \$3 each.

Considering the high quality of my queens combined with service and reliability justifies the above prices. **Send all orders together with remittance to**

**J. W. SEAY, Mgr., MATHIS, TEXAS**  
**T. W. BURLESON, WAXAHACHIE, TEXAS.**

**Try Achord's Package Bees  
and Queens**

**THREE-BANDED ITALIANS ONLY.**

We have the stock, equipment, and experience, and can give you prompt, satisfactory service. We have more than 1000 big, healthy hustling colonies of pure Italian bees to draw from. Write for illustrated price list.



**W. D. ACHORD, FITZPATRICK, ALABAMA**

**QUEENS**

Three-Band Italians

**PACKAGE BEES**

**QUEENS**

Silver Gray Carniolans

Orders booked with 25 per cent deposit, balance just before shipping. Deliveries start April 1st. Safe arrival guaranteed of bees within 5 days of shipping point, queens anywhere in U. S. A. or Canada. Circular free.

1-pound package	.....\$2.00 each.	10 or more	.....\$1.75 each
2-pound package	..... 3.50 each.	10 or more	..... 3.00 each
3-pound package	..... 5.00 each.	10 or more	..... 4.50 each
1 Untested queen	..... 1.25 each.	10 or more	..... 1.20 each
1 Select Untested queen	..... 1.50 each.	10 or more	..... 1.40 each
1 Tested queen	..... 2.00 each.	10 or more	..... 1.80 each
1 Select Tested	..... 2.25 each.	10 or more	..... 2.00 each

Write for prices in large lots.

Breeders, extra selected and tested for breeding.....\$5.00 each

References by permission—First National Bank of San Jose; Security State Bank, San Jose; Cleanings in Bee Culture, Medina, Ohio; American Bee Journal, Hamilton, Ill.; Western Honey Bee, Los Angeles.

**J. E. WING, 155 SCHIELE AVENUE, SAN JOSE, CALIFORNIA**

## Bees and Queens for 1922

Is there a great difference among bees and queens? Mr. Beekeeper, with bees and queens a small difference counts high. A small per cent better laying queen will greatly increase the field force; this will insure a larger honey yield per colony. A small per cent better worker will aid wonderfully. A small per cent more gentleness will greatly reduce the stings; this increases the efficiency and speed of handling, not counting the pleasure. A small per cent of better marking adds wonderfully to the beauty of the colony.

By developing the small quantities of my bees and queens I have attained marked success in producing better queens and bees. My aim is to produce bees and queens that will meet the high standard required by beekeepers. Let me book your order for 1922. One-fourth the full amount will insure your getting bees and queens when you want them most next spring. Perfect satisfaction, safe delivery, and pure mating guaranteed. Pure Italian bees and Three-band Italian queens of the better kind.

Untested—1, \$1.50; 6, \$7.50; 12, \$13.50. Selected Untested—1, \$1.75, 6, \$9.00; 12, \$16.50. Tested—1, \$2.50; 6, \$13.00; 12, \$24.50. Selected Tested—1, \$4.00; 6, \$22.00; 12, \$41.50. One pound bees, \$2.75; two pounds bees, \$4.75; three pounds bees, \$6.75. If queen is wanted with bees add price. Write for prices on large lots.

N. FOREHAND - - - - RAMER, ALABAMA

## PACKAGE BEES

All bees are shipped on a standard Root frame, emerging bees with honey.

### April 15th to May 10th Shipments.

1 pound bees, with frame.....\$2.50  
2 pounds bees, with frame..... 3.75  
3 pounds bees, with frame..... 5.00  
Add price of queen if wanted.

Untested three-banded .....\$1.50  
Tested three-banded ..... 1.75

For shipments after May 10th  
deduct 12 per cent.

Please order from this advertisement.  
15 per cent down to book orders. Balance fifteen days before shipping

**L. C. Mayeux**  
BOX 15, HAMBURG, LOUISIANA.

## Package Bees ---AND--- Reliable Queens

### GOLDEN AND THREE-BANDED ITALIANS

We are now in a position to accept orders for queens and bees for spring shipping in large quantities. We have the stock and experience necessary to handle your orders, whether large or small.

1-lb. Package with Queen..\$3.00  
2-lb. Package with Queen.. 5.00  
3-lb. Package with Queen.. 7.00  
Tested Queen 1, \$2.50; six..12.00  
Untested ....1, 1.25; six.. 7.00  
Select Untest. 1, 1.50; six.. 8.00

We are in position to fill orders from 100 to 5000 queens or packages. Safe arrival and satisfaction guaranteed.

Terms, 25% to book orders.

**E. A. SIMMONS**  
GREENVILLE - - - - ALABAMA



# Our Crow

Will be sent you for the asking. This is our 1922 booklet with prices and twenty pages on selecting a strain of bees, rearing queens and packing and shipping bees. It tells you the good points to look for in a strain of bees and how

## Forehand's Three Bands

*The Thrifty Kind*

have stood the tests of America's best apiarists for thirty years. It briefly tells of the growth of our business since 1892. This little booklet will be interesting and helpful to all interested in apiary culture. A copy will be sent you free.

W. J. Forehand & Sons  
Fort Deposit, Alabama

# QUEENS Package Bees and Nuclei QUEENS

Have a special offer to Beekeepers' Associations or groups of beekeepers that can use a car of bees at a time, 800 to 1000 packages. We are prepared to load 2 cars a week after April 5th, 1922. Free ticket to the party coming down to go back with the car or I can furnish a man. This is the best way; no transferring from one car to another; bees go through in 3 to 4 days. Also special attention given to small orders.

**1922 PRICES. BOOKING ORDERS NOW. SAFE ARRIVAL GUARANTEED.**

1-pound package.....\$2.25 each; 25 or more.....\$2.15 each  
 2-pound package..... 3.75 each; 25 or more..... 3.60 each  
 3-pound package..... 5.25 each; 25 or more..... 5.00 each  
 2-comb nuclei..... 3.75 each; 3-comb nuclei..... 5.25 each

(Add price of queen wanted.)

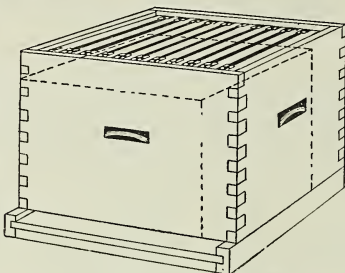
1 Untested Queen.....\$1.50 each; 25 or more.....\$1.30 each  
 1 Select Untested..... 1.70 each; 25 or more..... 1.50 each  
 1 Tested ..... 2.25 each; 25 or more..... 2.00 each  
 1 Select Tested ..... 2.65 each; 25 or more..... 2.25 each

One-fifth down with order, balance just before shipping; or 4% discount for full remittance for December, and 3% for January orders.

**THE NUECES COUNTY APIARIES, CALLEN, TEXAS**  
 E. B. AULT, PROP.

# MODIFIED DADANT HIVE

Glance at the 11 frames, spaced  $1\frac{1}{2}$  inches from center to center,  $11\frac{1}{4}$  inches deep of the Modified Dadant hive, giving adequate room for brood and stores in one hive body.



Note the outlines of the standard 10-frame Hoffman depth hive body compared to the Modified Dadant body. You can see why more swarms and less surplus come from small hives.

## The Large Hive for Extracted Honey Production

Among the reasons why the Modified Dadant hive deserves a trial, especially where present equipment is not giving satisfaction are:

**DEEP FRAMES,  $11\frac{1}{4}$  IN.  
FRAME SPACE VENTILATION  
SWARM CONTROL EASIER  
 $6\frac{1}{4}$ -IN. EXTRACTING FRAMES.**

**LARGE 1-STORY BROOD NEST  
ADEQUATE WINTER STORES  
GREATER BROOD ROOM  
STANDARD COVERS, BOTTOMS**

Present equipment may be used as super equipment on Modified Dadant brood-chambers. Covers and bottoms for this hive are the familiar metal roof cover with inner cover and regular standard bottoms, except for larger dimensions.

THE STANDARD OF WORKMANSHIP IS "BEEWARE."

—Write for free booklet on this hive to—

**G. B. LEWIS CO., WATERTOWN, WIS.**

**DADANT & SONS, HAMILTON, ILL.**

*There's a distributor near you.*

## Indianapolis Is the Town You Want to Think of When You Need Beekeepers' Supplies

Our stock is 90% new,  
which insures you of  
getting clean supplies.  
Write us for prices.  
Catalog for the asking.

**The A. I. Root Company**  
873 Massachusetts Ave.  
Indianapolis, Ind.

## He Doesn't Want a Pipe!

Jacksonville, Jan. 1, 1922.

The A. I. Root Co., St. Paul, Minn.

Naw! I don't want my *pipe!* And if I want my slippers, I can get them myself.

What I want is my bee supplies for the Honey Flow.

So I am going to order my bee supplies from you at St. Paul, where I can get 100% Quality and Service.

A trial order will convince anybody of their unexcelled service. They give special quotations on quantity lots, too.

**JIM JACKSON,**  
Beekeeper.



THEY STAND

*It Pays to Buy the Best*

PROLIFIC



EXTREMELY

THE TEST.

# THE QUEEN OF QUEENS

CAREFULLY SELECTED

Bred from Root Home-bred selected breeders—backed by over 50 years' experience in breeding the Best, most PROLIFIC QUEENS of today.

## SPECIAL

Orders must be booked not later than March 15, 1922.

25 or more Untested Southland Queens, \$1.00 each; 50 or more, 75 cents each.  
25 or more Tested Queens, \$1.75 each.

- 1-lb. BEES, Frame of Brood with untested queen, \$5.00.  
25 or more, \$4.50; 50 or more, \$4.00.
- 2-lb. BEES, Frame of Brood with untested queen, \$6.00.  
25 or more, \$5.50; 50 or more, \$5.25.

Health Certificate with each shipment.  
Terms: 25 per cent deposit to book order, balance before shipment.  
Shipping to begin about April 1st, 1922.

**THE SOUTHLAND APIARIES**  
BOX 585, HATTIESBURG, MISSISSIPPI.

*Mating, Safe Arrival and Satisfaction Guaranteed.*

HARDY

SELECTED



CAREFULLY

DISEASE-RESISTING

# 17,203 Italian Queens

for 1921 and orders for many more turned down. We do not tell you this in a boasting way, but rather to show our customers what they have helped us to accomplish. If we did not have really **SUPERIOR ITALIAN STOCK** could we have sold that many and had so few complaints, or could we have built our queen business from nothing to that in eight years, if we had not given value received for our customer's money?

## Italian Bees

of the same **SUPERIOR STOCK** in Packages, Nuclei and Full Colonies. We have 2,000 colonies headed with young queens. Can give you good stock at attractive prices. Let us quote you on your needs. Special prices on three-frame nuclei. Special attention to car-load shipments.

**THE STOVER APIARIES, MAYHEW, MISS.**

# THREE-BANDED QUEENS

## BEES IN PACKAGES FOR 1922

After twenty-six years of select breeding we have a strain of Bright Three-banded Italian Bees that are unsurpassed for their disease-resisting (especially European foul brood) and honey-gathering qualities. Read what others say about them:

"Enclosed find \$75.00 for 50 queens. I want these for requeening colonies that have European foul brood as I find your strain resistant. One of the queens bought of you last season built up from a nucleus and made 360 pounds of surplus honey."—Pennsylvania.

"I find your bees gentle, best of workers, and they stand the long winters here fine."—Manitoba, Canada.

"The two-pound packages I got of you last year made an average of 150 pounds of sur-

plus honey. I find your bees not only hustlers but also gentle."—Illinois.

"The one-pound packages bought of you made a surplus average of 175 pounds of extracted honey and an increase of 39%, which is as fine a record as can be had in this locality, especially when the work is done entirely by amateurs."—Pennsylvania.

"I am well pleased with the bees I got from you last year as they paid for themselves and made a nice profit."—Iowa.

### Price List of Packages With Young Queens by Express.

1-lb. packages, \$4.00 each; 12 or more, \$3.75 each. 1½-lb. packages, \$4.75 each; 12 or more, \$4.60 each. 2-lb. packages, \$5.50 each; 12 or more, \$5.00 each. 3-lb. packages, \$7.25 ea.; 12 or more, \$6.75 ea. If packages are wanted by parcel post, add 10%.

Select untested queens, \$1.50 each; 12 or more, \$1.40 each. Select tested queens, \$3.00 each; 12 or more, \$2.75 each. Wings of queens clipped free of charge.

We guarantee our bees and queens to give absolute satisfaction and to arrive in perfect condition with the exception of those shipped by express to Canada. The largest packages we are able to ship by mail to Canada are our 1½-lb. Canadian Specials. Bees will be shipped promptly date named, 10% cash with order and the balance just before shipment.

**M. C. BERRY & CO., BOX 697, MONTGOMERY, ALA., U. S. A.  
WAS HAYNEVILLE, ALABAMA.**

# Give Us a Trial

*We Ship When You Want Them.*

*We Will Book Only What We Know We Can Fill.*

## Italian Bees and Queens of the best strain

- 1-pound package - - - - - \$2.30 each
- 2-pound package - - - - - 3.75 each
- 3-pound package - - . - - 5.25 each

*Young Queens Only*

### Italian Queens a Specialty

*Write Us Your Wants.*

1 Selected Untested, \$1.50; 12 or more, \$1.20; 25 or more, \$1.10.  
Queens are raised for us by queen specialist and selected by us for our trade. 20% down books your order.

*No Disease*

*Quality*

*Service*

## Valley Apiaries

*A. W. Bryson, Prop.*

*La Feria, Texas*



# BEES---ITALIAN BEES---BEES

We are booking orders for colonies, nuclei, and packages of Italian bees. The prices are as follows: Full colonies with Italian queen at \$15.00; two for \$25.00. 3-frame nucleus with Italian queen at \$6.50; 3-lb. pkg. with Italian queen at \$6.50. All combs are straight, wired, and built from full sheets of foundation. Orders filled in rotation. No disease. Our apiaries are state inspected. Safe arrival and satisfaction guaranteed.

## VAN'S HONEY FARMS

VAN WYNGARDEN BROS., PROPS.

HEBRON, INDIANA.

# Thagard's Italian Queens

## *Bred for Quality*

We do not ask you to take our word for the high-quality queens we are breeding. Just read what our customers are saying about them.

April 1 to July 1				
	1	6	12	100
Untested	\$1.50	\$7.50	\$13.50	\$100
Sel. Untes.	1.75	9.00	16.00	125
Tested ...	2.50	13.00	24.00	200
Sel. Test.	4.00	22.00	41.50	335
July 1 to Nov. 1				
Untested.	1.25	6.50	11.50	
Sel. Untes.	1.50	8.00	13.00	
Tested ...	2.00	12.00	20.00	
Sel. Test.	3.50	20.00	36.00	
Breeders .....	\$10.00 to \$25.00			
Italian Bees				
	1	25 or more		
1-lb. package ...	\$3.50	\$2.75		
2-lb. package ...	5.00	4.50		

"The season up here has been very poor on account of the drouth, the average being 100 pounds. The ones I purchased from you average up 20 per cent more than the others and cleaned up a very bad case of European foul brood. I can say that I am well satisfied with your queens and will be glad to recommend them."

"At least 97 out of the 100 queens received from you a few weeks ago are now heading nice three-frame nuclei better than any package one can buy for \$6.00 plus express."

"The 12 queens received in good condition. To say I am well pleased is expressing it mildly. They are the first real Italian queens I have ever received from any breeder. I would not dispose of them for \$5.00 each."

"The queens you sent us in the spring are keeping from nine to ten frames of brood. They are certainly wonders as layers and honey producers."

Our Three-banded queens are bred from imported stock; they are hardy, prolific, gentle, disease-resisting and honey producers. Place our queens against any queens you may obtain anywhere, AND NOTE THE RESULTS.

*Safe arrival, pure mating, and perfect satisfaction guaranteed.*

*Write for descriptive catalog.*

**THE V. R. THAGARD COMPANY.**  
**GREENVILLE, ALABAMA**

*A Superior  
Quality at  
Less Cost*

# SUPPLIES

*A Superior  
Quality at  
Less Cost*

MADE BY THE DIAMOND MATCH CO.

## One-Story Dovetailed Hives

Complete with Diamond Cover and Bottom-Board, Hoffman Frames, metal rabbets and all inside fixtures.

Crates of five, eight-frame . \$10.50

Crates of five, ten-frame . . 11.00

## Standard Hoffman Frames

100 . . . . . \$ 5.50

500 . . . . . 25.00

*Aluminum Honeycombs, as now made by Duffy-Diehl Co., are meeting with success. We carry these in stock to supply Eastern beekeepers.*

## HONEY! HONEY! HONEY!

Beekeepers who are supplying Honey to a regular family trade, or who are located along the high-ways, and are supplying motorists, know that their customers want a honey of a uniform color and flavor. And unless the honey is at all times uniform in color and flavor, customers sometimes become dissatisfied. Our special blend of Fancy Honeys (liquid) is always uniform and is of a fine mild flavor, and will satisfy the most exacting trade.

### Special Blend of Fancy Honey (Liquid)

- 10-lb. Tins, 6 per case . . . . . 16c lb.
- 5-lb. Tins, 12 per case . . . . . 17c lb.
- 2 ½-lb. Tins, 24 per case . . . . . 18c lb.

### Various Grades, Crystallized, 60-lb. Tins

- Water White Orange . . . . . 14c lb.
- Water White Clover or White Sage . . 13c lb.
- Extra Light Amber Sage . . . . . 11c lb.
- N. Y. State Buckwheat . . . . . 10c lb.

## GLASS & TIN HONEY CONTAINERS

- 2 ½-lb. Cans, 2 dozen reshipping cases, \$1.45 case; crates of 100 . . . . . \$5.00
- 5-lb. Pails (with handles, 1 doz. reshipping cases, \$1.35 per case; crates of 100. 7.75
- 10-lb. Pails (with handles), ½ dozen reshipping cases, \$1.10 case; crates of 50 . . . . . 5.75
- 60-lb. Tins, 2 per case—NEW, \$1.30 case; USED . . . . . .25

### White Flint Glass, With Gold Lacquered Wax Lined Caps.

- 8-ounce Honey Capacity . . . . . \$1.50 per carton of 3 dozen
- 16-ounce Honey Capacity . . . . . \$1.40 per carton of 2 dozen
- Quart or 3-pound Honey Capacity . . . . . \$1.00 per carton of 1 dozen

**HOFFMAN & HAUCK, INC.**  
WOODHAVEN, NEW YORK



# Texas Made Metal Combs

Note what some users of the Texas-Made Aluminum Honeycombs say:

I consider them a great success and cheaper in the long run than foundation.—T. A. Engels, Mineral Point, Wis.

The Aluminum comb is worth many times its cost. The only fault I have is my regret that I didn't use more.—Arch G. Newbern, Villa Rica, Ga.

No appreciable difference between them and wax combs. Raised brood just the same the first time used.—Oscar C. Miller, 1217 Ashland Block, Chicago, Ill.

Don't want anything better during a honey flow.—R. A. Arnold, Woodward, Tex.

Four colonies provided with aluminum combs produced some surplus, whereas we got very little from others with wax combs.—Lowther Bros., Ferguson, Mo.

For extracting purposes I consider these combs ideal.—T. W. Burseson, Waxahachie, Texas.

Placed one frame in center of top body (over brood-nest) and two on one side. The one in center was filled with eggs 24 hours after put on. Did not expect this, as there were seven empty wax combs put on at same time.—Arnt Ronning, Alcester, S. Dak.

I consider these combs a success here, and this is a cold climate.—John Santens, Hazelhurst, Pa.

I like the aluminum comb very much and want to replace all other combs with it.—Thornton Bogert, Cincinnati, Ohio.

After being built out there is no difference in choice of wax combs over aluminum by the queen.—M. O. Davis, Trimble, O.

My frames were filled in eight days, and I extracted 45 pounds of fine buckwheat honey from eight combs.—Wm. J. Shaffer, Waverly, N. Y.

I believe the aluminum combs are the cheapest in the long run. They are here to stay, for they are giving good results.—J. B. Sanderson, Fredericksburg, Ohio.

I put four combs of aluminum and four frames with full sheets of foundation in the hive at the same time. The queen laid a few eggs in the center of each comb, and the bees put what little honey that was coming in around the outside of the comb before they ever started to work on the wax foundation.—Oscar Lehman, Menomonie, Wis.

## You Can Get the Same Results

Buy Texas Made Combs from your regular dealer. Any bee-supply dealer can furnish them. They are now carried in stock by the following:

### In the East:

- G. B. Lewis Co., Albany, N. Y.
- Fred W. Muth Co., Cincinnati, O.
- G. B. Lewis Co., Lynchburg, Va.
- Deroy Taylor Co., Newark, N. Y.

### In the West:

- Chas. H. Lilly's Co., Seattle, Wash.
- Western Honey Producers, Sioux City, Iowa.
- Colo. Honey Producers' Assn., Denver, Colo.
- B. F. Smith, Jr., Fromberg, Mont.
- G. B. Lewis Co., Wichita, Kans.
- Superior Honey Co., Ogden, Utah.

### In the North:

- Dadant & Sons, Hamilton, Ill.
- A. G. Woodman Co., Grand Rapids, Mich.
- G. B. Lewis Co., Watertown, Wis.
- Standard Lumber Co., Winona, Minn.
- Minnesota Bee Supply Co., Minneapolis, Minn.

### In the South:

- J. J. Wilder, Waycross, Ga.
- G. B. Lewis Co., Memphis, Tenn.
- Texas Honey Producers' Assn., San Antonio, Texas.
- Crenshaw Bros. Seed Co., Tampa, Fla.

## Lower Prices

For the season of 1922 the prices on Aluminum Honeycombs are greatly reduced.

- Modified Dadant or Jumbo frames .....\$6.00 for 10
- Langstroth or Hoffman frames..... 5.00 for 10
- Shallow extracting any style..... 4.50 for 10

The above prices are f. o. b. factory or dealer's stock. Write for quantity discounts on orders of 500 combs or over.

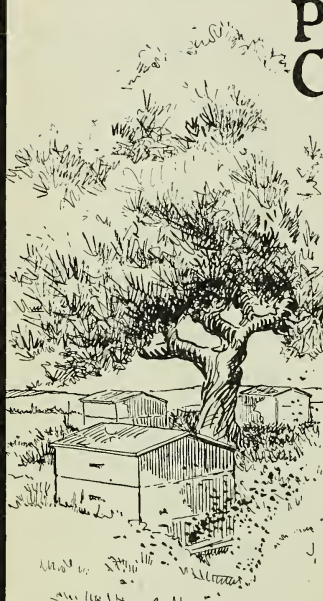
Be sure to buy the combs manufactured in Texas by

**THE ALUMINUM HONEYCOMB CO. OF TEXAS, SAN ANTONIO, TEXAS**

# HUBAM

## Put Your Bees in the Center of Opportunity

and they will produce for you a successful honey crop. Exceptionally low prices on lots for honey purposes. Guaranteed against impurities until safe in your hands



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**LANSING MICHIGAN**



We said last month that we loved to  
quote prices.

We like it just as well this month.

Others are telling us about their 1922  
needs. Why not you?

Best of all, they are "Root Quality"  
goods.

If you haven't thus far----

---Let us send that catalog.

---Send us that list of goods  
for quotations.

---Ship us your beeswax.

If today were the middle of the honey flow, and you  
were short of goods, how would you feel today?

LOOK AHEAD!

M. H. HUNT & SON, LANSING, MICH.

510 North Cedar Street

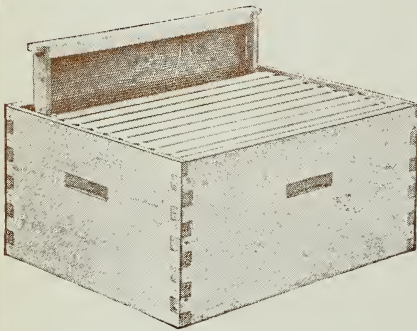
WHAT CONSTITUTES  
*The Best Big Hive?*

Isn't the big hive that the bees accept as readily as any hive, that costs only a trifle more than the standard-sized hive, that takes the regular 10-fr. Langstroth supers, and standard-sized covers, bottom-boards, etc., thus minimizing expense— isn't this the best big hive? We think it is, and so for more than 20 years we have manufactured just such a hive, called the

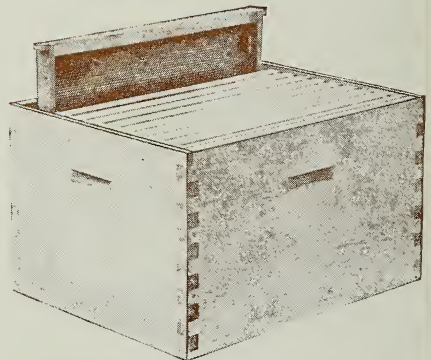
# *Jumbo Hive*

It fully meets the requirements of the beekeeper who for any reason wishes a bigger hive than the old reliable Standard hive taking 10 Langstroth frames. But the Jumbo changes Langstroth dimensions only in depth, the hive being  $11\frac{1}{8}$  inches deep while the Standard is  $9\frac{1}{8}$  inches deep, and the frames to fit the Jumbo hive are  $11\frac{1}{4}$  inches deep, or  $2\frac{1}{8}$  inches deeper than the regular Langstroth frame. It has 3400 square inches of comb capacity, or 27% more than the Standard. This gives room for the laying of the most prolific queen in the brood-chamber, as well as for 15 to 20 pounds of stores.

We can't say that the Jumbo, any more than the biggest big hive, entirely does away with swarming or always assures sufficient winter stores. The difference of locality and management may make this impossible. In some localities the big hive may be preferable. Where it is preferable, the Jumbo meets every requirement and has the added advantages of low price and takes standard equipment—a great economy in labor and first cost.



*Standard 10-frame Langstroth Hive.*



*Jumbo Hive.*

Same dimensions except in depth—same equipment above the brood-chamber. Jumbo hive-body costs only 15c more than Standard, and Jumbo frame (needed only in the brood-chamber) costs only  $\frac{1}{2}$ c more than Standard frame; Jumbo sheets of foundation cost only a trifle over 3c more than Standard foundation sheets—or the Jumbo hive with frames of foundation costs only 50c more than the Standard hive with frames of foundation.

*Write us for fullest information about the Jumbo—the leader of big hives.*

**FREE**—Send for sample of Airco foundation and Root sections.

**DON'T BE LATE.**—Manufacturers have only a very small amount of bee supplies in their warehouses. Business conditions don't warrant tying up capital in this way. Order now. Next spring, if there is a rush, you may not be able to get supplies at all when needed.

## **THE A. I. ROOT COMPANY, MEDINA, OHIO.**

Branches at New York, Philadelphia, Chicago, Indianapolis, St. Paul, Norfolk, New Orleans, Savannah, Ga.; The A. I. Root Co. of Texas, San Antonio; The A. I. Root Co. of Iowa, Council Bluffs; The A. I. Root Co. of Canada, Ingersoll, Ont.