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The University of Arizona and The War



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University of Arizona Record

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The University of Arizona Record is published four times a year by the University at Tucson, Arizona. Entered as Second-Class Matter at the Postoffice at Tucson, Arizona, under the Act of July 16, 1894.

THE UNIVERSITY OF ARIZONA RECORD
VOLUME XI. No. 1. SEPTEMBER, 1917
TUCSON, ARIZONA.

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Foreword

When on the second day of April, 1917, the President of the United States of America declared this Nation to be in a state of war with the Imperial Government of Germany, no national institutions responded more quickly or more completely than did the colleges and universities of our land. From all parts of the country there poured into State and Federal offices tenders of men, equipment, laboratories, and campus. Realizing that all educational interests, as well as social and industrial life, must be influenced profoundly by the demands of war, America's institutions of learning sought so to relate themselves immediately to National needs in this crisis as to render the greatest possible service in the defense of our country.

The University of Arizona took action at once. On April fifth, with the approval and under the direction of the Board of Regents, President von KleinSmid sent the following message to Governor Campbell:

“APRIL 5TH, 1917.

*Honorable Thomas E. Campbell, Governor of Arizona,
Phoenix, Arizona.*

My dear Governor Campbell:

In the National crisis, and in the event of war, it has seemed to the local Board of Regents of the University of Arizona that the use of the campus, the buildings, and the laboratories of the University might be found of great assistance to the State and to the Nation. They desire me, therefore, to offer these to you for your service as Governor of the State in directing the military operations of the commonwealth and, if it meets with the approval of yourself and other members of the Board, to offer the institution, through you, to the Federal Government for such service as the exigencies of war may demand.

I speak as well for the entire Faculty and Student Body, who are united in their desire and anxiety to be of the largest possible service in this hour of our country's need.

Faithfully yours,
(Signed) R. B. VON KLEINSMID,
President.”

Governor Campbell replied as follows:

"Phoenix, Arizona, April 6th, 1917.

My dear Doctor von KleinSmid:

Many thanks for your interesting and patriotic letter of April 5th suggesting that the buildings and laboratories of the University be offered to the State, and if necessary, to the Nation, to assist in directing military operations.

As the Executive and ex-officio member of the Board of Regents, I desire heartily to concur in your valued plan, and am transmitting a copy of your esteemed communication to Hon. Newton D. Baker, Secretary of War, Washington, D. C., with the statement that I am in thorough agreement with the same.

With kindest wishes, sincerely,
(Signed) THOMAS E. CAMPBELL,
Governor of Arizona.

*Dr. R. B. von KleinSmid, President University of Arizona,
Tucson, Arizona."*

The offer transmitted by Governor Campbell to Secretary Newton D. Baker called forth the following reply from the Department of War, through the Council of National Defense:

"WASHINGTON, D. C. APRIL 14TH, 1917.

*Hon. Thomas E. Campbell, Governor of Arizona,
Phoenix, Arizona.*

Sir:

Your letter of April 6th addressed to the Hon. Newton D. Baker, quoting from a resolution offered to you by the Board of Regents of the University of Arizona has been referred to this council for acknowledgement.

It is quite certain that the Government will need for mobilization, etc., a number of buildings, and the use of land suitable for drilling; likewise, will there be great need for laboratories such as those of the University of Arizona.

We have placed this most generous and patriotic offer on file, and when immediate need arises for such facilities, we will communicate with your further.

Kindly convey to Mr. R. B. von KleinSmid, President of the University, our sincere thanks.

Very truly yours,
(Signed) W. S. GIFFORD, *Director."*

The tender of services on the part of the University of Arizona was made in good faith. She believed that the war was inspired by loyalty to an ideal and that ideal to preserve freedom from destruction and to make possible the perpetuity of liberty. During the last six months she has tried in every way, and with all her resources, to aid in bringing victory to the cause of democracy. When the record of Arizona's part in the war shall have been written, we feel confident that our commonwealth will have every reason to be proud of the devotion and service to the cause rendered by her State University.

Faithfully yours,
R. B. VON KLEINSMID,
President, University of Arizona.



The University of Arizona and The War

WHEN the war upon Germany was declared, many wondered exactly what place the universities of the country would take in the crisis. Would they stop their work, or would they devote it entirely to war purposes? Would their young men all enlist, or would they remain in college? The question was quickly answered, for the trained minds of the country solved the problem in short order. Probably no university in the country was quicker in making its decision and making its alterations to suit the needs of the Nation than was the University of Arizona. Almost over night the university developed into a war machine.

Much has been said and much has been written regarding German efficiency, but German efficiency was the result of years of planning and similar efficiency has been developed by the American Nation in its colleges through more or less unconscious training. At the University of Arizona no hysteria accompanied the change. Everything went on peacefully and quietly; the changes went into effect gradually. From all over the country came reports that such and such a university had abandoned its athletic program; that another college had signified its intention to close its doors, all tending to produce a state of uncertainty that was damaging to the Nation as a whole.

At the University of Arizona everyone was ready, for the democratic spirit of the Great West had made all members of the community thoroughly American.

The first call that came upon the University was from the military end. Fortunately since its inception the University has been a military school, the men having studied, for two years at least, military science and tactics. This training was required of men in the two lower classes, but for love and respect of the students for the commandant, Colonel George LeRoy Brown, a great majority had elected two additional years of training. Almost to a man the students of the University qualified and enlisted in government service, some as officers, some as engineers, and in ambulance corps, and others shouldered the hoe and rake.

The Honor Roll

The following is a list of the faculty members, graduates and undergraduates who have entered the service of the Nation to fight "that the world may be made safe for democracy". This list is necessarily incomplete.

NAME	CLASS	BRANCH OF SERVICE
Abell, Norman	ex. 1918	First Arizona Infantry.
Abbott, Wells O.	ex. 1920	Ambulance Corps, Allentown, Pa.
Ames, Edward W.	1916	National Army.
Andrews, Lloyd, Jr.	ex. 1920	Ambulance Corps, Allentown, Pa.
Aylesworth, Herbert R.	1916	National Army.
Badger, Wallace S.	ex. 1919	U. S. Cavalry.
Barnard, Justin Fred.	ex. 1918	Second Lieutenant, Infantry, U. S. R.
Bedford, Arthur H.	ex. 1918	Canadian Ambulance Corps.
Bettwy, Andrew	ex. 1919	National Army.
Brackenbury, Richard A.	ex. 1918	U. S. Marine Corps, San Diego, Cal.
Bradstreet, Herbert N.	1914	Second Officers' Training Camp.
Brewer, Walter Martin.	1916	Second Lieut., U. S. Marine Corps, Mare Island, Calif.
Brisley, Harold	ex. 1918	National Army.
Brooks, Glen	ex. 1919	National Army.
Brooks, S. Earl	ex. 1919	National Army.
Brown, Dudley S.	1917	Second Lieutenant, U. S. Marine Corps, Quantico, Va.
Browne, Myron G.	Special	Captain First Arizona Infantry
Burns, John	1917	Attended First Training Camp.
Burrell, Alden F.	ex. 1919	Second Training Camp.
Castelan, Julius F.	ex. 1920	Inventor of electric gun, now being investigated by the War Department.
Condron, Albert H.	1917	Land Classifier, U. S. Geological Survey, Boise, Idaho.
Crawford, Albert, Jr.	1917	Chemist, U. S. Government, at Washington, D. C.
Culin, Frank Luis, Jr.	1915	Captain U. S. Army.

NAME	CLASS	BRANCH OF SERVICE
Cunningham, Fred	ex. 1920	U. S. Navy.
Duffy, Francis Robert	ex. 1918	National Army.
Eberle, George	ex. 1918	First Arizona Infantry
Enger, Arthur Ludwig	Faculty	Captain Engineering Corps, U. S. A.
Fickett, F. Weldon, Jr.	1917	Second Lieutenant Infantry, U. S. R.
Gardiner, John H.	1918	Medical Corps, U. S. R.
Getsinger, J. Wilson, Jr.	1916	Second Lieutenant Infantry, U. S. R.
Gibbs, Paul	ex. 1918	Medical Corps, First Arizona.
Gray, Frederick A.	ex. 1919	Second Lieutenant, Field Artillery, U. S. A.
Grimshaw, Harold H.	1916	Second Lieutenant, Infantry, U. S. R.
Hageman, Donald	ex. 1918	National Army.
Hall, Roy	ex. 1919	National Army.
Hammels, Vinton	ex. 1918	National Army.
Hanson, LeRoy	ex. 1918	National Army.
Harders, Hans Harwig	1917	Second Lieutenant, 7th Regiment, U. S. Marine Corps, Cuba.
Haynes, John C.	Special	First Training Camp, Presidio, Cal.
Hays, George Vinton	ex. 1918	U. S. Navy.
Hedgepath, John A.	1916	First Training Camp, Presidio, Cal.
Heim, Lloyd	ex. 1916	National Army.
Hendry, James William	ex. 1918	Medical Corps, Allentown, Pa.
Hield, Horace	1917	Officers' Training Camp, Ft. Sheridan, Ill.
Hobson, Harry T.	ex. 1916	Second Lieutenant, U. S. R.
Hodgson, Herbert E.	1917	Second Lieutenant Field Artillery, U. S. R.
Hofmeister, Karl	ex. 1917	Second Lieut., Aviation Corps.
Hurst, Karl	ex. 1918	First Arizona.
Jaycox, Lester W.	ex. 1918	U. S. Marine Corps, Mare Island, Cal.
Jenny, William LeBaron	ex. 1918	Attended First Training Camp.
Kain, William Frederick	Faculty	Ambulance Corps, France.

NAME	CLASS	BRANCH OF SERVICE
Kengla, Louis	ex. 1919	Medical Corps, Ft. McDowell, Cal.
Klein, Leonard	1917	National Army.
Leshner, Charles Zaner	1917	Second Lieutenant, 6th. Regiment, U. S. Marine Corps, France.
Lewis, Gail Inghram	ex. 1919	Medical Corps.
Lindsley, Richard G.	1915	First Training Camp.
Lovett, Archa E.	ex. 1918	Second Lieutenant, Infantry, U. S. R.
Lowdermilk, Walter	1913	Forestry Corps.
Luis, Franklin	1916	National Army.
Lynch, Emzy H.	ex. 1918	Second Lieutenant, Coast Artillery, U. S. R.
Lynch, George B.	ex. 1919	First Arizona Infantry.
Mack, Francis	ex. 1916	National Army.
Maffeo, James S.	1917	National Army.
Mashbir, Sidney	ex. 1912	Captain, U. S. Army.
Mayhew, Henry H.	ex. 1920	Medical Corps.
McClure, Ben	ex. 1917	Medical Corps.
McClure, Frank	1917	First Training Camp.
McGinnis, Russell	ex. 1918	Second Lieutenant Quartermaster's Corps, U. S. R.
McPherson, Orville	1917	Second Lieutenant, Field Artillery, U. S. A.
McSherry, Frank J.	1917	Second Lieutenant, Coast Artillery, U. S. R.
Merritt, Richard	1914	National Army.
Meserve, Charles Arthur	Faculty	Major, Coast Artillery.
Meyer, Archie M.	ex. 1920	Medical Corps, Ft. McDowell, Cal.
Minor, Bert	1916	Medical Corps, First Arizona.
Monroe, Elbert C.	1917	First Training Camp.
Moore, Percy W.	1916	Corporal, U. S. A., now attending Officers' Training Camp at Leon Springs, Tex.
Nigh, Gordon K.	ex. 1920	Medical Corps, Ft. McDowell, Cal.
O'Keefe, John	ex. 1919	Field Artillery.
Oxley, Edward	1916	U. S. Navy.

NAME	CLASS	BRANCH OF SERVICE
Penrod, Temple	ex. 1919	National Army.
Peterson, George	ex. 1918	Attended First Training Camp.
Phillips, Yousta L.	ex. 1918	Medical Corps, Allentown, Pa.
Pickerell, Charles U.	1917	Second Lieutenant, Field Artillery, U. S. R.
Pickerell, W. Watson.	1916	National Army.
Pulliam, Clarence	ex. 1920	National Army.
Ramage, John	ex. 1919	National Army.
Randall, Wainwright	ex. 1916	Medical Corps, Ottawa, Canada
Rebeil, Paul	Special	National Army.
Renaud, Ernest J.	1917	Second Lieutenant, Field Artillery, U. S. R.
Rider, Percy S., Jr.	ex. 1919	Signal Corps.
Rogge, H. Earl	ex. 1918	National Army.
Rogers, David	ex. 1918	National Army.
Rosche, A. W.	Special	Captain, National Army.
Rubel, Albert C.	1917	Second Lieutenant, Eng. Corps.
Ruppert, Karl E.	ex. 1918	Medical Corps, Allentown, Pa.
Russell, Ernest E.	ex. 1918	Second Lieutenant, Infantry, U. S. R.
Ruthrauff, J. Moss.	1912	Engineering Corps.
Ryan, Albert E.	ex. 1918	Second Lieutenant, Infantry, U. S. R.
Ryan, Patrick	ex. 1918	Second Lieutenant, Infantry, U. S. R.
Sandige, John R.	ex. 1917	Agriculturist, Miami Copper Co. War Garden.
Sayre, Ernest	ex. 1912	National Army.
Schaussen, Dwight von.	1917	Second Training Camp.
Scheerer, Cedric Erza.	1917	Second Lieutenant, Coast Artillery, U. S. R.
Scheerer, George	1916	National Army.
Schwalen, Harold	1917	National Army.
Seeley, George	ex. 1918	Second Lieut., First Arizona.
Smith, Turner Church.	1916	National Army.
Steele, Gordon B.	ex. 1918	Alabama National Guard.
Swaney, Oscar H.	ex. 1918	Second Lieutenant, Cavalry, U. S. R.
Todhunter, Ray W.	ex. 1920	Medical Corps, Ft. McDowell, Cal.

NAME	CLASS	BRANCH OF SERVICE
Tong, James A.....ex.	1918	Aviation Corps.
Turvey, Harry E.....ex.	1918	National Army.
Upshaw, Ernest M.....ex.	1918	Medical Corps.
Warner, Albert.....ex.	1918	National Army.
Weber, Ralph.....ex.	1919	Signal Corps.
White, Arthur L.....ex.	1918	National Army.
Winsett, Alfred Irl.....	Faculty	Second Training Camp.
Yoakum, Emil.....ex.	1918	National Army.

The Red Cross

The women of the University of Arizona realized the duties devolving upon them, and while previous to this time Red Cross service and first aid and hospital training had not been particularly popular, they suddenly became a substitute for social events. The following is a list of undergraduate students who not only volunteered their services as members of the American Red Cross Association, but who completed a course in "first aid" training that would qualify them for active service:

Baillard, Helen	Leeson, Frances
Bird, Ruth	Lawson, Alice
Bradley, Salva	Lockwood, Mrs. F. C.
Campbell, Ruth	McDermott, Edith
Davey, Effie	McKean, Kathryn
Eastman, Alice	Proctor, Mae
Hildebrand, Clara	Rider, Jane
Heckman, Madge	Rockefeller, Henrietta
Huddy, Gladys	Saelid, Althea
Jackson, Dorothy	Wetherston, Francis
Jacome, Josephine	Whysall, Ruth

Early among the calls came the demand for men for agricultural services, to produce food and to help in the cultivation of war gardens which were started in many parts of the state. The follow-

ing are among those who were excused from school work for service to the Nation along agricultural lines:

Andrews, L. J.	Kendrick, Gordon F.
Baillard, Helen C.	Knapp, Miles
Barkley, Charles Everett	McGowen, William R.
Bartlett, C. O.	McKinney, Durward L.
Benson, Robert R.	Marlar, Thomas O.
Blake, Francis O.	Moeur, John K.
Brisley, Harold	Morris, Lawrence
Bush, J. R.	Murphey, John W.
Cady, Albert	Parke, Leonard E.
Champagne, Phillip	Phelps, Wilford
Deming, John M.	Pierce, Harold
Downey, Roland V.	Pulliam, Clarence
Epler, Elizabeth	Reiniger, Grace M.
Fosburg, Harold B.	Ronstadt, Fred, Jr.
Gilbert, Ira N.	Stillwell, Logan
Gray, Hollis, B.	Turvey, Harry E.
Herndon, Ralph	Whitehead, Lawrence
Herndon, J. Prugh	White, Arthur L.
Iselin, Albin	Wight, Roy
Irvine, Sylvan	Wilson, Clarence P.
	Work, William M.

The Faculty

Among the faculty members of the University of Arizona who tendered their services to the State and National Governments in various capacities were the following:

RUFUS BERNHARD VON KLEINSMID, *A. M., Sc. D., President of the University*. Called upon to act as Chairman of the Food Conservation Committee of the Arizona State Council of Defense, and has assumed the leadership in the movement of food conservation. Dr. von KleinSmid has also been very prominent as a lecturer to stimulate interest in enlistment, Red Cross, and Army Y. M. C. A. work.

ROBERT HUMPHREY FORBES, *M. S., Ph. D., Dean of the College of Agriculture*. One of the most prominent and active members of the Committee on Food Conservation of the Arizona State Council of Defense.

ANDREW ELLIOTT DOUGLAS, *A. B., Sc. D., Dean of the College of Liberal Arts and Sciences.* Called upon by the Arizona State Council of Defense to serve on the Committee for Scientific Research, and has rendered valuable services in the inspection of new inventions submitted to that body.

CHARLES ARTHUR MESERVE, *Ph. D., Director of the State Pure Food Laboratory.* Went into training camp at the Presidio, California; his excellence in military tactics bringing him the commission of major in the Coast Artillery.

CHARLES FRANCIS WILLIS, *S. B., E. M., Director of the Arizona State Bureau of Mines.* Called upon to serve as secretary of the Committee on Scientific Research of the Arizona State Council of Defense.

ALVA OTIS NEAL, *M. S., Registrar of the University.* Called upon to serve as a member of the Committee on Secondary School Education of the Council of National Defense.

ARTHUR LUDWIG ENGER, *B. S., C. E., Irrigation Engineer, Agricultural Experiment Station.* Attended first training camp at Presidio, California, receiving a commission of Captain in the Engineering Corps, U. S. R.

ALFRED IRL WINSETT, *LL. B., Instructor in Law.* Attending the second Officers' Training School at Leon Springs, Texas.

WILLIAM FREDERICK KAIN, *Litt. B., Instructor in Law.* Member of the Ambulance Corps now serving in France.

Besides the above, many members of the Agricultural Experiment Station and the Arizona State Bureau of Mines have been working along lines closely related to the war.

The Extension Service

Within five days following the declaration of war, the Agricultural Extension Service of the University of Arizona submitted to the Federal Government, upon its request, a confidential report on the agricultural resources and possibilities of the State of Arizona. From the time of this preliminary report up to the present, the Extension Service has played a most important part in the great drive for greater food production and conservation.

The first state-wide agricultural gathering in Arizona following the declaration of war was the Agricultural Mobilization Conference,

held April 20-21, arranged by the Extension Service and held at the University of Arizona.

The call to the leading farmers and to State and Federal specialists in food production and conservation, brought a large group of men and women leaders, who, for two days, including night sessions, considered most earnestly the ways and means for meeting the great national crisis thrust upon us. At this Agricultural Mobilization Conference many of the concrete plans were formulated which have been followed in the emergency agricultural and conservation work. For sound suggestions it was one of the most notable conferences ever held in the state.

At once the entire force of extension workers of the University launched into their work with renewed energy, adapting their projects to the emergency. Never before had there been so many demands for their services out over the state, and never have agricultural workers and specialists set themselves to their task more assiduously.

The staff of Extension workers has consisted of an Extension Director, field specialists, a boys' and girls' club organization, county agricultural agents and a home economics extension organization, with women county agents. The more complete organization has been made possible with the recent passage of the emergency appropriations. The Extension Director has, in addition to administrative duties, been able to do some extension work with agricultural and horticultural crops; a livestock specialist has been kept busy, and specialists of the Experiment Station have been assigned for special projects to field work with the Extension Service.

At the beginning only three county agricultural agents were employed, serving five counties. At the present there are twelve of the fourteen counties of the State either with regular county agricultural agents or special emergency food agents. Some of these agents are answering the call to military service, and there will consequently be some replacements necessary. Every county agent is a direct representative of the University of Arizona Extension Service of the College of Agriculture, and they are also representatives of the United States Department of Agriculture. Being resident in the county and acquainted with local farmers and farming conditions, and with means for transportation, they are the actual agricultural leaders and conveyors of scientific as well as practical agricultural teachings.

The diversity of county agent work prevents any complete report on their accomplishments, but some of these may be briefly grouped

and mentioned. The work of specialists supplements these county agent projects in many instances.

Crop Production—Increased planting and better methods for better yields have been the aim, and some notable results have followed largely from the campaign of the agents. A greatly increased potato planting was secured in the northern counties; the bean acreage was multiplied many times in all parts. At this time all agents are securing the maximum planting of wheat consistent with good farming practice. Less waste land is to be seen under irrigation systems and in reliable dry farm sections.

Feed for Livestock—All agents have made livestock feed growing an important part of their work. More silage will be grown; more hay cut, and more grains for hogs, cattle and poultry will be produced. Agents have taken a leading part in this program, with a full realization that Arizona is fundamentally a livestock state, and that meat production is useful food production.

Crop Pest, Parasite, and Disease Control—County agent demonstrations have led to a far better control of plant diseases, such as smuts and other fungus diseases. In one county, where formerly only 10 per cent of all the farmers in the county treated their oats for smut, the agent induced 80 to 90 per cent to give treatment, with the result that smut was reduced to 8 per cent from 66 per cent infected with no treatment.

Prairie dog and other rodents, pests of crops and of the range, have been destroyed more generally through efforts of county agents and Department of Agriculture specialists. Spraying demonstrations of agents have led to the control of pests in gardens, fields and orchards.

Storing and Preservation of Crops—County agents have carried on a campaign of education and secured farmer demonstrators on storage. Many silos have been built as a direct result of county agent propaganda. In one county the agent secured a reduction for the farmers of 20 to 25 per cent per sack of cement, which meant a saving of \$38.00 for each average silo built. Silo forms for community use have been provided through the agents, and community use of silage cutters and silo filling machinery have been secured. Farmers' co-operative seed grain and produce storehouses are being built; also better cellars and storehouses for potatoes, root crops and food supplies.

Home Food Supply Production—All agents have had as a project the increasing of numbers of gardens for vegetable growing to sup-

plant the practice of buying canned food stuffs so generously practised in Arizona previously. The increase in gardens has been from one to three hundred per cent, and fall and winter gardens are now being planted. An emergency garden expert, whom the Extension Service assisted in providing to a large mining and smelting company, has directed the growing of 420 war gardens by miners. Home curing of meats, home production of substitutes for sugar, such as honey and molasses, home production of soft cheese, have been stimulated through county agent and extension activity.

Emergency Assistance to Farmers—The agricultural agents have been instrumental in assisting farmers to secure extra labor, seed supply and machinery. This has been a regular function of the county agents, but with the needs of the farmers reported through blanks mailed to them to be returned to the agent, the service has been increased.

A crop, labor, livestock, machinery, and resource survey, including information on needs of farmers, has been conducted by the county agents. This has given an enormous mass of data which will be of service to the agents in their work for some time. The State Council of Defense has assisted in securing this data, and the co-operation of county agents and other extension workers with the State Council of Defense has been mutually beneficial.

Home Economics Extension—The extension organization for women consists of three field workers; a state leader of home economics extension and two women county agents. One of the women agents gives her time to Maricopa County, and the other two to a number of counties. The women county agents do for the housewives what the men agents do for the farmers, and accomplish these results in much the same manner.

Much emergency work has been done in food conservation, including many canning demonstrations. Women's organizations have been given technical and practical assistance in their conservation work. Home economics specialists have been furnished for meetings of the Council of Defense and its county women's organizations.

Some of the subjects upon which instruction has been given over the state are: Household equipment, planning meals, food values, efficiency in the household duties, food and clothing conservation, utilization of emergency foods, such as milo flour, etc. An increase of more than 200 per cent of home canned food has been secured.

Boys' and Girls' Club Work—Extension work has likewise been most effectively carried on with the boys and girls of the State through the boys' and girls' club work.

The club organization consists of a state leader and an assistant state club leader, who has charge of the girls' clubs. In addition, four assistant local club supervisors have been employed on part time through the summer.

Eight projects, namely, corn, cotton, grain sorghum, pig, poultry, canning, potato, and gardening have been carried, with special emphasis on the canning and gardening projects. The enrollment of boys and girls in this work is already over 1500, and its fall gardens, pig, poultry, school lunch and sewing clubs to run through the winter are only just being formed.

Ten canning demonstration teams have been organized among the older clubs, and several of the teams have reported public demonstrations.

Plans are already under way to have daily demonstrations at all of the county fairs and at the State fair at Phoenix. Exhibits will be made of all kinds of canning and dried products, including the display of drying and canning devices.

In the garden club work, fall and winter gardens are now being started. Southern Arizona offers unusual possibilities in this line which other states cannot enjoy.

A Farmer Boys' Food Encampment will be held at the State fair, and prize winners from clubs in various parts of the State will be in attendance to benefit from timely lectures and demonstrations.

Livestock Extension—Definite and valuable results have been accomplished by the Livestock Specialist. His line of work has been to assist with cow testing associations and the keeping of individual herd records, range bull management and range sanitation.

Of encouraging accomplishments may be mentioned co-operation work with range men to reduce loss of livestock on the range through disease or starvation. Many herds have been given vaccination against blackleg. Other diseases for which remedial measures have been offered and adopted by stockmen are hog cholera, calf diphtheria, pneumonia, calf scours, tuberculosis, contagious abortion and lump jaw. Steps against the screw worm have been proposed and followed. At the present time the livestock specialist, with the assistance of a representative from the U. S. Department of Agriculture, is carrying on meetings with range sheep and cattle men, calling attention to the poisonous plants of the ranges and the steps to avoid loss from them.

Meetings and Field Instruction Schools—The foregoing are but a few of the leading accomplishments of the Extension workers who

represent the University of Arizona and the Department of Agriculture co-operatively.

It is hard to judge how far-reaching are the public demonstrations given by these Extension men and women. Many farm and home visits are made to give individual assistance. Six county agents alone in the months of June and July made a total of 1384 visits to farms. Farmer demonstrators, co-operating with the agents to the number of 183, were visited, and 413 other farmers stopped their work to attend these demonstrations on their neighbors' farms, led by the agents. In the time these six agents held 152 meetings at which the attendance was 4721.

Home Economics workers, boys' and girls' club workers and Extension specialists likewise held great numbers of public meetings and field instruction schools.

Publications—A Weekly Press Letter is issued by the Extension Service, from which timely articles are clipped by the press. The articles since the war have been unusually valuable, and have been widely copied by the papers. A number of extension circulars have been published and circulated. The number of individual replies to inquiries by mail by Extension workers has been enormous. Material for eighteen timely agricultural and conservational posters was furnished the Agricultural Committee of the State Council of Defense.

The Changes in Curriculum

In response to the demand that the curriculum of colleges and universities should be made more practical, the faculty of the University of Arizona adopted a resolution which requires all women students entering the University to take one year of work in the department of Home Economics, with special emphasis on conservation of food and textiles. This course is one which should fit each student better to manage the affairs of the ordinary household and give a better appreciation of the opportunities for real service in the home and the community.

In accordance with requests of the War Department and the Bureau of Education, the course for men includes military instruction for all students. Previous to this time, military drill has been required only of students of the first two years.

It has been found that the men prepared in the University, upon going to the training camps, have shown marked ability in taking up the work of military science. This has led the departments concerned to believe that the training in military drill and science justifies this additional emphasis on the military work in the universities.

Another important change is the plan made by the University for training of teachers of vocational education, along the lines set forth in the Smith-Hughes bill, providing for federal aid in the teaching of agriculture trades and Home Economics. Anticipating the operation of the Smith-Hughes bill, which becomes effective this year, the faculty has provided a course leading to the degree of Bachelor of Science in Agriculture, with the major in agricultural education; a course leading to the degree of Bachelor of Science in Home Economics, and a course leading to the degree of Bachelor of Science in Industrial Arts. These courses have been published in a catalogue supplementary to the regular catalogue this year.

The College of Mines and Engineering

The College of Mines and Engineering of the University of Arizona has but one aim during the present national crisis and that is to serve with utmost effectiveness the cause for which the Nation is fighting.

At first there may have been some doubt in the minds of the University authorities as to just what course it would be best to follow, but serious reflection and a careful investigation of conditions in Europe sufficed to indicate very conclusively the wisdom of maintaining the activities of the college with the utmost possible vigor, and of making certain minor adjustments in order to meet adequately the needs of our country during the present emergency.

Since the unselfishness and patriotism of this decision has been questioned by some, it seems desirable to state that it was not reached without a knowledge of the opinions and desires of many high government officials. President von KleinSmid attended the Conference of College Presidents, held in Washington in May, and Dean Butler was there in July during the meeting of the Society for the Promotion of Engineering Education. All the delegates to these conferences attended them for the purpose of ascertaining what the United States wished the educational institutions to do, and the

answers they received can best be indicated by quoting a few of the speakers at these meetings.

Hon. Newton D. Baker, Secretary of War, said:

"The War Department is especially anxious not to disturb unduly the educational systems of the country. . . . I think we ought all to adopt as the daily maxim of our talk and our activity that the country shall make every sacrifice necessary, break up every alliance and every activity necessary to bring our force to bear in the most effective way, but that we ought to preserve the country for the common good against every unnecessary dislocation and against every unnecessary abridgement of the processes of our common life.

"I think you ought to have as an especial object the urgent invitation to young men of America to come into your technical schools and devote themselves to engineering branches of education; so that when this war is over the struggle will not have been in vain; so that young men can quickly and efficiently play a part in that reconstruction."

General William M. Black, Chief of Engineers, United States Army, said:

"After careful investigation, it has been decided not to shorten the course at West Point, since the training now offered there cannot be satisfactorily abridged. I feel that a similar decision should be reached by all institutions training specialists. It is a great mistake to shorten courses or to cease to do everything possible to provide trained men for the service of the Nation. It is likewise a mistake for students of engineering to enlist before their training is completed. Schools of technology should keep right on with their work with all diligence."

Hon. P. P. Claxton, United States Commissioner of Education, said:

"The demand for engineers will be greater after the war than ever before in the history of the world. Engineering students should stay at their posts and not go into active service at the front until after they graduate. We shall be very foolish if we do not keep our engineering institutions, at least, up to the highest efficiency."

On other occasions various national leaders have expressed themselves positively on the matter under consideration. The following three quotations should be read by every student or prospective student:

President Wilson: "There will be need for a larger number of persons expert in the various fields of applied science than ever before. Such persons will be needed both during the war and after its close. I would particularly urge upon the young people who are leaving our high schools that as many of them as can do so avail themselves of the opportunities offered by the colleges and technical schools, to the end that the country may not lack an adequate supply of trained men and women."

Major-General Leonard Wood: "Boys should remember that they are now serving in the best possible way by preparing themselves to serve more efficiently when the time comes It is a great mistake for partly educated young boys to rush to the colors now. We don't need them. It is very important they should finish their education."

Colonel S. E. Tillman, Superintendent West Point Military Academy: "Only the most urgent conditions should withdraw any boy from school. In justice to the Government as well as themselves, they should finish their courses."

In a circular letter dated May 22nd, Commissioner Claxton further said:

"England, France, Italy and the Central Empires have thrown into battle a very large per cent of their educated and trained men, including most of the young professors and instructors in their universities, colleges, gymnasia, lycees, and public schools. Their colleges and universities are almost empty.

"A right conception of patriotism should induce all students who cannot render some immediate service of great value to remain in college, concentrate their energies on their college work, and thus be all the more ready and fit when their services may be needed, either for war or for the important work of reconstruction and development in our own and other countries when the war shall have ended.

"No college, university, or technical school that can avoid it should permit its faculty or student body to be scattered or its energy to be dissipated. All should redouble their energies and concentrate them upon those things which will be of most service during the progress of the war, and which will prepare their students for the most effective service for their country and for the world when the war is over.

"The desire to render immediate service is praiseworthy, and the spirit which prompts it should be fostered, *but it is effective service*

that finally counts. Schools and school officers, teachers and students should ever keep this goal of effective service in mind."

The following excerpts from a circular written by D. J. A. L. Waddell, the noted civil engineer who has been decorated by both the Japanese and Russian Governments, will help make it clear why technical schools should increase rather than diminish their activities during the war:

"The larger part of the civilized world will have to be reconstructed after the war, not excluding our own great railroad systems which undoubtedly will have deteriorated on account of overuse and lack of adequate up-keep. Such reconstruction is almost exclusively the work of engineers.

"The European technical men have been killed off by thousands during the past three years; and their slaughter will not cease until the war ends. Moreover, it is more than probable that many American engineers who serve in Europe will never return to our shores, and that a large number of those who do come back will be more or less incapacitated for active professional work.

"The technical schools of all the other warring countries have practically been out of commission for three years, thus cutting down there, almost to zero, the supply of new men for the engineering profession.

"The call to arms in this country by both volunteering and conscription it is feared will soon reduce to almost one-half the attendance at the technical schools of the United States, *while, instead of being halved, it ought properly to be doubled.*

"In spite of the present paralyzation of many lines of engineering work, due to the cessation of large constructions and to the absolute lack of capital for important new projects of a peaceful character, the demand for young graduates from technical schools by the manufacturers of war supplies is so great that there is already a marked dearth of such assistance, which dearth will be more and more accentuated as the war progresses, and the call for ships, guns, ammunition, aeroplanes, automobiles, and other war paraphernalia increases.

"It is beyond question that for the next ten years or more, engineering is everywhere going to be the most lucrative of all the professions."

"Dr. Waddell in the circular mentioned also makes the following appeal:

"Let me, therefore, most earnestly implore all youths who are ready for college this fall, and who are not in any way unfitted for technical careers, to take up some branch of engineering or

technology; and let me entreat the parents or guardians of such youths to exert their influence so as to induce the boys to choose that line of study for their life work. Remember: it is not only for the good of the country that I make this appeal, but also for the ultimate benefit of the young men themselves."

In view of the facts and opinions already set forth, it seems evident that the only patriotic course open to the College of Mines and Engineering is to push ahead as vigorously as circumstances will permit. No radical changes in the curriculum seem necessary; but, in addition to the four years of military training now required of all male students, courses in military engineering and military geology have been provided next year. If the war continues for several years, the present undergraduate students should be able to render effective service in a minimum of time after graduation. It makes no difference whether are are studying mining, civil, electrical, or mechanical engineering; so varied are the engineering requirements of a great army that all can be used to splendid advantage. It has been said that this is an engineers' war, and the following incomplete list of the duties an engineer in the army may be called upon to perform (taken in part from Bond's "The Engineer in War,") indicates that the statement quoted is correct:

1. Reconnaissance work and map making.
2. Collection and utilization of local engineering resources in personnel and material.
3. Locating and laying out defensive positions and points of support.
4. Planning and superintending construction of offensive or defensive field fortifications, including obstacles, sapping and mining, etc., and the execution of the more difficult tasks in connection therewith, such as setting up big guns.
5. Locating, laying out, and improving camps.
6. Sanitation, including water supply and sewage disposal.
7. Construction and repair of roads, railroads and bridges.
8. Construction of temporary buildings, and repair of permanent buildings and other structures.
9. Military demolitions.
10. Operation or repair of "tanks," motor vehicles, aeroplanes, search-lights, wireless installations, etc.

That the College of Mines and Engineering has made its sacrifice to the Nation is shown by the number of its undergraduates now in service, as listed in this booklet. Practically all of those students who would have been seniors next winter have enlisted, and many juniors

have done likewise. The lower classes promise to be record-breakers, however, and will include young men (mostly below draft age) from all parts of the country. With the completion of the new Mines and Engineering Building during the year, the plant and equipment will be nearly ideal, and will enable the College to offer the best possible training for engineers—that obtainable in a university environment.

In conclusion, it may not be amiss to note that certain members of the college are doing research work which may prove of very great value to our Government. One has practically perfected a commercially successful process that should materially increase the output of molybdenum. The advice of the technically trained instructors and the use of the laboratories of the College are extended to any one who has an idea that may be of use to our Country in the prosecution of the war; and it is hoped that inventors will take advantage of the opportunity thus offered, for, as already said, real service to State and Country is the aim of the College of Mines and Engineering.

The Arizona State Bureau of Mines

War Minerals. As the draft registered the country's manhood in June, so now is the State Bureau of Mines endeavoring to obtain a complete compilation and census of Arizona's mineral resources. Especially those minerals of vital importance to the manufacture of war material. The object of this work is to have a complete and detailed compilation of all the information available on the known mineral resources of the State, and in such form as to be of immediate and future use. The value and benefit to the State of such a complete record has been recognized for some time past, and has been contemplated; but the pressing national needs of the moment have made it a necessity for the work to be done at once. The Bureau of Mines recognizes the importance of this, and irrespective of cost, will put all of its energies to getting out a complete and detailed census.

The Bureau of Mines for some months past has been receiving numerous letters from private concerns asking for information concerning various mineral deposits that were either known to exist or probably existed.

The executive committee of the Association of American State Geologists, together with the U. S. Bureau of Mines, and the American Institute of Mining Engineers, formed a "Committee on War Minerals."

The purpose of the committee is to learn of mineral deposits, location of industries requiring minerals, buyers of minerals, prices and other commercial information. This committee is calling upon the various state mining bureaus, geological surveys, mining and geological societies, and state councils of defense to co-operate and partly undertake the work.

The Arizona State Bureau of Mines received a request from the Council of National Defense through the Arizona State Council of Defense asking for advice and co-operation in undertaking a survey of the State of Arizona to ascertain its resources in minerals other than copper, coal and iron, such as oil, chromite, manganese, platinum, antimony, tin, tungsten, molybdenum, clean fluorite for optical purposes, high grade refractory clays, optical glass sand, mica, graphite, nitrates and sulphur. An increased production of the above is of urgent necessity at this moment.

On the first of August the American Institute of Mining Engineers, through its member of the Committee on War Minerals, issued an appeal to all its members to assist in an inventory of the developed and undeveloped minerals of the country. These appeals were so overwhelming that Dr. von KleinSmid, President of the University of Arizona, and Charles F. Willis, Director of the Arizona State Bureau of Mines, recognizing the importance of the country's needs along this line, determined to undertake the completion of the compilation of the mineral resources of the state as efficiently as possible with the limited funds at the Bureau's disposal.

Milton A. Allen, Mineral Technologist of the Bureau, was given charge of the work, and is at present devoting his entire time, together with that of three assistants, to it. It will be some time before the work will be complete, but it is expected that it will be in such shape that material assistance can be given to any person desiring information on mineral deposits within the near future. Mr. Allen will continue the work until its completion, and it is expected that it will occupy the greater part of his time during the national emergency.

Apart from the mere compilation and segregation of all reports of mineral deposits, these reports have to be confirmed by correspondence, and further details obtained beyond the mere statement that deposits exist. It is hoped that the Bureau will be able to make the work even more complete by actual field examination.

In the spring of the coming year, Mr. Allen will undertake a series of lectures throughout the state to stimulate interest and production of the rare minerals needed for war purposes. Apart from this, instructional work will be given in the technology of the metals and minerals, and the encouragement of their proper and conservative utilization.

The United States Geological Survey is now doing a little of this field work and has asked the Bureau to co-operate with them. Many of the reported mineral deposits will be found on examination to have remained idle because of the lack of a known metallurgical process to treat and extract the important minerals at a profit or even extract them at all. It is the purpose of the research department of the Bureau of Mines to carry out research work on these metallurgical problems.

In reply to the appeal of the United States Geological Survey and the National and State Councils of Defense, the Bureau has announced its intention to co-operate in every way possible with any work which will be carried on to locate, work and treat minerals which are vital to the country's welfare at this time.

It will be fully realized what an undertaking this work is, and the value, when it is complete, both to the country and the State; its value in the future in the systematic and economic development of the State's resources is untold.

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