J. BROWNLEE DAVIDSON

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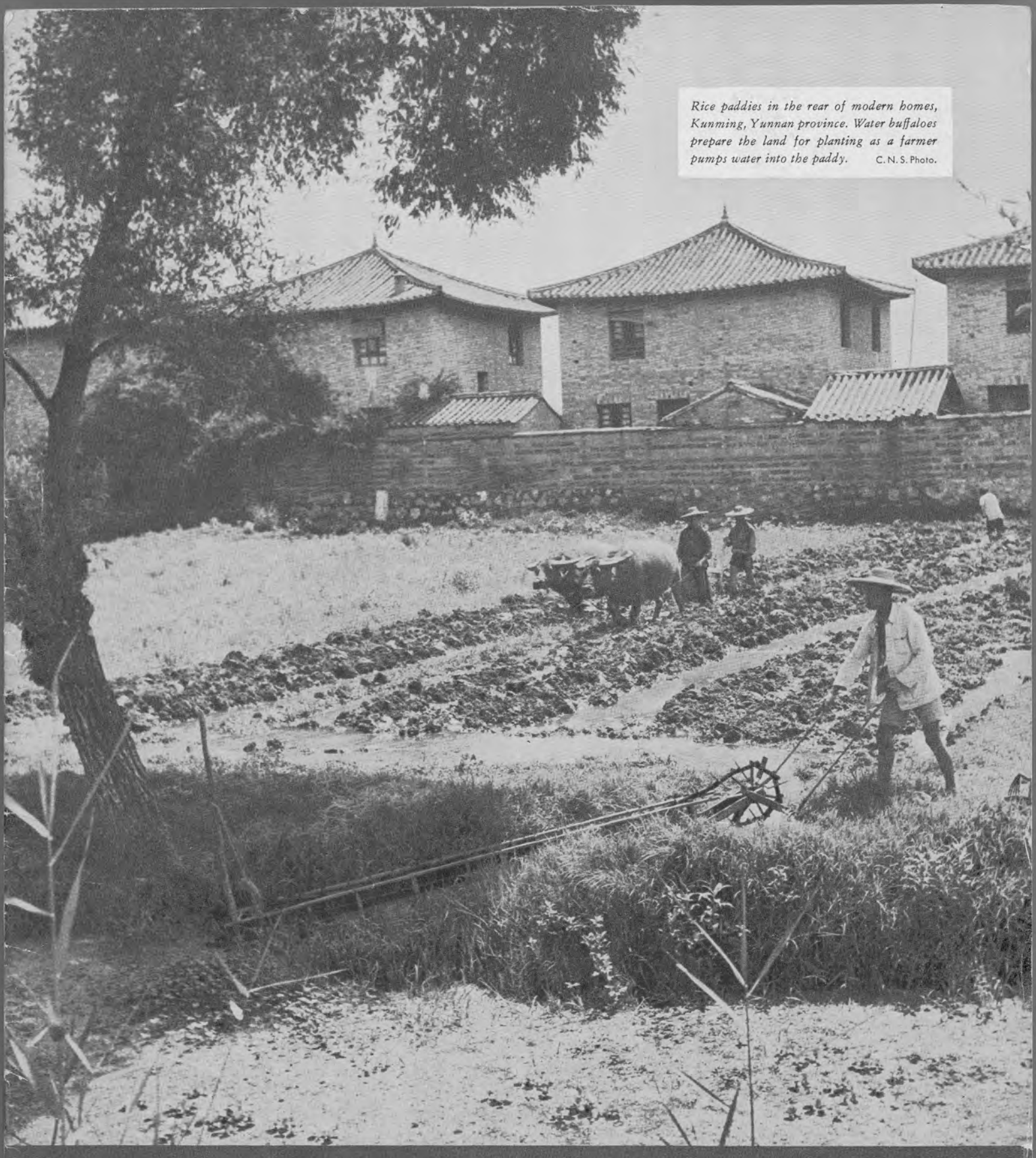
MINISTRY OF AGRICULTURE AND FORESTRY
NANKING, CHINA

美國

戴維生

農業工程系總工程師
農林部中央農業實驗所



Rice paddies in the rear of modern homes, Kunming, Yunnan province. Water buffaloes prepare the land for planting as a farmer pumps water into the paddy. C. N. S. Photo.

COMMITTEE ON AGRICULTURAL ENGINEERING FOR

CHINA

1944

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Committee on Agricultural Engineering for China

INTRODUCTION

THE "discovery" of China by Marco Polo opened the doors of the "Great Wall" to pilgrimages in religion, commerce, and art. These various pilgrimages through the centuries, however, were not enough to bring the vague and mystic picture of this land of opposites into clear focus for the general knowledge of the Western World.

The material aids and personal contacts of the large American pilgrimage to China during World War II have done much to make of China a better known and easier understood friend and neighbor for the United States.

More important, these aids and contacts have indicated further to the leaders of China the urgent need for a movement toward Westernization of certain physical aspects of Chinese life: agriculture, industry, commerce, transportation, and communications.

The International Harvester Company for several decades has had a business contact in Cathay. Through the distributorship of Anderson, Meyer & Co., Ltd., Shanghai, Harvester products have become familiar to Chinese persons engaged in trucking and small industrial operations. This contact has stimulated a natural growing interest by this Company in all things Chinese.

The management of the International Harvester Company is keenly aware of China's serious effort in launching a "Westernization" program in agriculture and industry, and is ready to offer its services.

Fowler McCormick, chairman of the Company's Board of Directors, has backed up the mass-education program of Y. C. James Yen with more than moral support.

The International Harvester Company is at present paying for the agricultural engineering training of twenty young Chinese engineers selected through competitive examinations in China and already through one year in two outstanding American agricultural colleges.

The International Harvester Company has also undertaken the sponsorship of the Committee on Agricultural Engineering composed of four outstanding experts in this field to work in China for an improved agriculture.

This booklet is a presentation of the aims of this committee as agreed upon by the Chinese government, through the Ministry of Agriculture and Forestry, and by the International Harvester Company, and by the men who form the Committee.

G. C. Hoyt
Vice President
In Charge of Foreign Operations

THE NEED

CHINA not only recognizes the need for modernizing her agriculture and developing her industries but is going the necessary step further by making plans to satisfy these needs by whatever methods will bring the best and quickest results.

China is predominantly an agricultural country. With a gross area of almost three billion acres (including Tibet and Mongolia), only 12% of this area (230,000,000 acres) is under cultivation. The total population is estimated at 450 million, 80% of which are engaged in farming.

The farm population per square mile of crop area is found to vary from 900 to 1,900, some serried districts having as many as 4,000 persons. The awkward balance between vast total land area and small farming land, and between total population and the large percentage of people on the farms has produced the inevitable result of small farms. It has been figured that in China it takes three farmers to feed themselves and one non-farmer, whereas in America, the other end of the extreme, one farmer produces for himself and six non-farmers.

The usual size of farms in China is only four acres, the income from which cannot and has never been enough to provide the farmer and his family with a decent living. What can be done to raise the Chinese standard of living?

P. W. Tsou, from the Ministry of Agriculture

and Forestry in China, looks to the modernization of agriculture as the most important enterprise of his country. It will be the biggest contributing factor in ensuring the people freedom from want and in raising the living standards and cultural levels of the rural people.

"Now that China has come out of the war victorious, she will undoubtedly be industrialized," writes Mr. Tsou in a recent article. "The success of China's industrial development, which is now being vigorously encouraged, will depend to a great extent upon the progress of agriculture. First, inasmuch as agricultural exports amount to 80% of China's total exports, the logical way to provide means of paying for the importation of the capital goods required in her industrialization program is to increase agricultural production and exports. Secondly, inasmuch as it will be very difficult for China's infant industries to compete in foreign markets, foreign loans contracted for the purchase of machinery will also ultimately depend upon expanded agricultural exports. Last, but not least, and perhaps more important since the farmers of China form the great majority of her potential domestic consumers, it is essential that their low purchasing power be increased so that the home industries will have an adequate domestic market.

"Those who are assuming the helm of state have determined to launch new and effective measures for the development of agriculture. In order to attain this development, however, we have to have a program."

In this program Mr. Tsou considers the following policy points: a full development and use of agricultural resources, an increase of the farmers' incomes, and the expansion of export trade. To bring this about there must be well-defined plans. Mr. Tsou lists the principal plans for the modernization of China's agriculture as follows:

A. Land Utilization and Soil Conservation.

B. Increasing the Cultivated Agricultural Land Area.

C. Increasing the Production-per-Unit Area.

D. Development of Animal Husbandry.

E. Afforestation.

F. Development of Fisheries.

G. Development of Horticulture.

H. Shifting Workers from Agriculture to Industry.

I. Improvement of Farm Implements.

J. Improvement of Agricultural Financing.

K. Promotion of Cooperative Organizations.

L. Promotion of Rural Industries.

M. Increasing Exportable Agricultural Commodities.

Of particular interest to the Committee on Agricultural Engineering are Mr. Tsou's thoughts on item "I": Plan for the Improvement of Farm Implements. "More efficient farm implements are a prerequisite for larger farms. By using improved farm implements, one farmer of ten years from now should be able to do the work of four farmers of today. Wheat harvesting in the United States, for example, was formerly done with a scythe, and each farmer could harvest two acres per day. After 1831 (date of McCormick's first reaper.—Ed.) the use of the horse-drawn reaping machine enabled each farmer to handle eight acres per day. With the present power-operated machine in the wheat regions of the United States, he can now harvest 40 acres per day; i.e., twenty times as much as with a scythe. The improvement in other farm implements is comparable. It is, therefore, very important that this plan for improving farm implements should be developed along with other plans."

Corn is a curiosity to the Chinese and so far they have not found a taste for it. Although it will never replace rice there might be some cause for a development program, if not for the table, perhaps the stable.
C. N. S. Photo.

Probably the greatest single factor in stimulating action by the Harvester Company to enter into the development program of China's new agriculture was the word painting by Mr. Tsou. Mr. Tsou is China's agricultural voice in the United States and has painted the picture of his country's plight and plans quite vividly with bold colors for an important program. It is a program that seeks the experience of the West. The United States is globally outstanding for its development in agricultural engineering. China is ready to look to America for advice, suggestions, and help.

Before presenting Mr. Tsou's outline on agricultural engineering for China, let us review the United States development in this field, and more specifically farm power as presented by Dr. J. Brownlee Davidson, chairman of the Committee on Agricultural Engineering, and formerly professor and head of agricultural engineering, Iowa State College.

"The increase in the use of power on the American farm, and the resulting progress in agriculture, has been the principal influence in placing America in the lead among nations in the production of food and fiber. As progress has been made, labor has become less and less a matter of brawn and more and more a matter of intellect. Labor is now largely confined to the guidance and direction of the energy supplied from other sources. It is recognized that energy cannot be applied directly to agricultural production but must be used to drive or actuate machines. For this reason the process of utilizing power is generally referred to as mechanization. Furthermore, it should be understood that power, machines, and labor must be properly related in a productive program if it is to be economically successful. The management of these elements of production is basically the art and science of engineering. Power may be introduced into the productive enterprises of any industry when the

A method of fishing on the Hsiang River, Changsha, Hunan Province. "China," writes Mr. Tsou, "has a coast line about 5,000 miles long, she has many fishing centers along the Yangtze, Ming, West, and Sungari Rivers and on various lakes, and the quantity of production is relatively free of climatic restrictions. Her fishing industry can prosper if ships, fishing equipment, and good technical assistance are made available. In that way, a part of China's coastal population can find new employment, leaving more land per capita at the disposal of the farmers, and the marine products thus obtained will contribute considerably to raising the nutrition standards of the people.

"Inland lakes, ponds, and rivers should be fully utilized so that fresh water fishery can be developed." C. N. S. Photo.

cost and character of labor can be reduced or changed.

"As a motor—the producer of power or energy—man is hopelessly outclassed. Experiments conducted many years ago revealed that a mature man of average size in good physical condition could develop, at a treadmill or capstan, 1/10 h.p. for an 8-hour day. If the wage of the laborer is $1 per hour, the cost of power from man labor is $10 per h.p.-hr. This cost may be compared with that of a farm tractor where the power at the drawbar may be 5¢ or less per horsepower hour, or one-half of one per cent as much as the cost for man-developed power. The cost of power from stationary internal-combustion or electric motors may be even much less than that from a tractor.

"When the United States achieved independence in 1776, the farmers of that period in America, as well as those in Europe, cultivated and cared for their crops with the same crude practices and with the same simple implements that the Egyptians and Israelites had used more than 2,000 years before (and similar in many cases to the present-day Chinese implements and methods.—Ed.) In the growing of grain the soil was plowed with a wooden plow, the seed was broadcast by hand, harvested with a scythe and threshed by beating with a flail on the barn floor.

"It is estimated that on July 1, 1945, the American farmer had a power plant of more than 100 million primary horsepower or about 10 h.p. in motor capacity for each person gainfully occupied in agriculture. The farmer's power plant is made up of many kinds of motors; namely—windmills, steam engines, stationary engines, motor trucks, electric motors, and the two most important motors—(1) tractors and (2) animals (horses and mules). It is estimated that July 1, 1945, there were 2,150,000 tractors and over 10 million mature work animals on the farms of the United States. The introduction of so much power into agricultural production has had such a profound and far-reaching influence upon the whole agricultural industry that it is difficult to comprehend.

"The introduction of power into agriculture has resulted in a tremendous advance in the productivity of labor. This is indicated by the great reduction in the number of workers required. As late as 1840, according to the United States census data, 77.5 per cent of the persons gainfully occupied were in agriculture. By 1900 the percentage had declined to 35.7 per cent, and the 1940 census revealed that only 18.5 per cent were so employed. During World War II the percentage has been materially reduced, and it was estimated that for 1945 only one-sixth of the total number of available workers was needed for agricultural production.

"It is clear that there has not been a general

appreciation or understanding of just what this increased production per worker has meant. Some have been anxious lest it result in unemployment. It is true that there are problems of adjustment, but the desirability of increasing the production of the worker in agriculture is becoming well established. It is now quite generally accepted as axiomatic that in a self-contained community the smaller the proportion of workers required to produce food, the greater will be the number available to produce the commodities and services which will advance the material well-being of all. The employment of released workers is one of the nation's great problems in any adjustment, such as that resulting from the war, but, on the other hand, the availability of manpower affords a great opportunity for progress and for providing a higher standard of living for all."

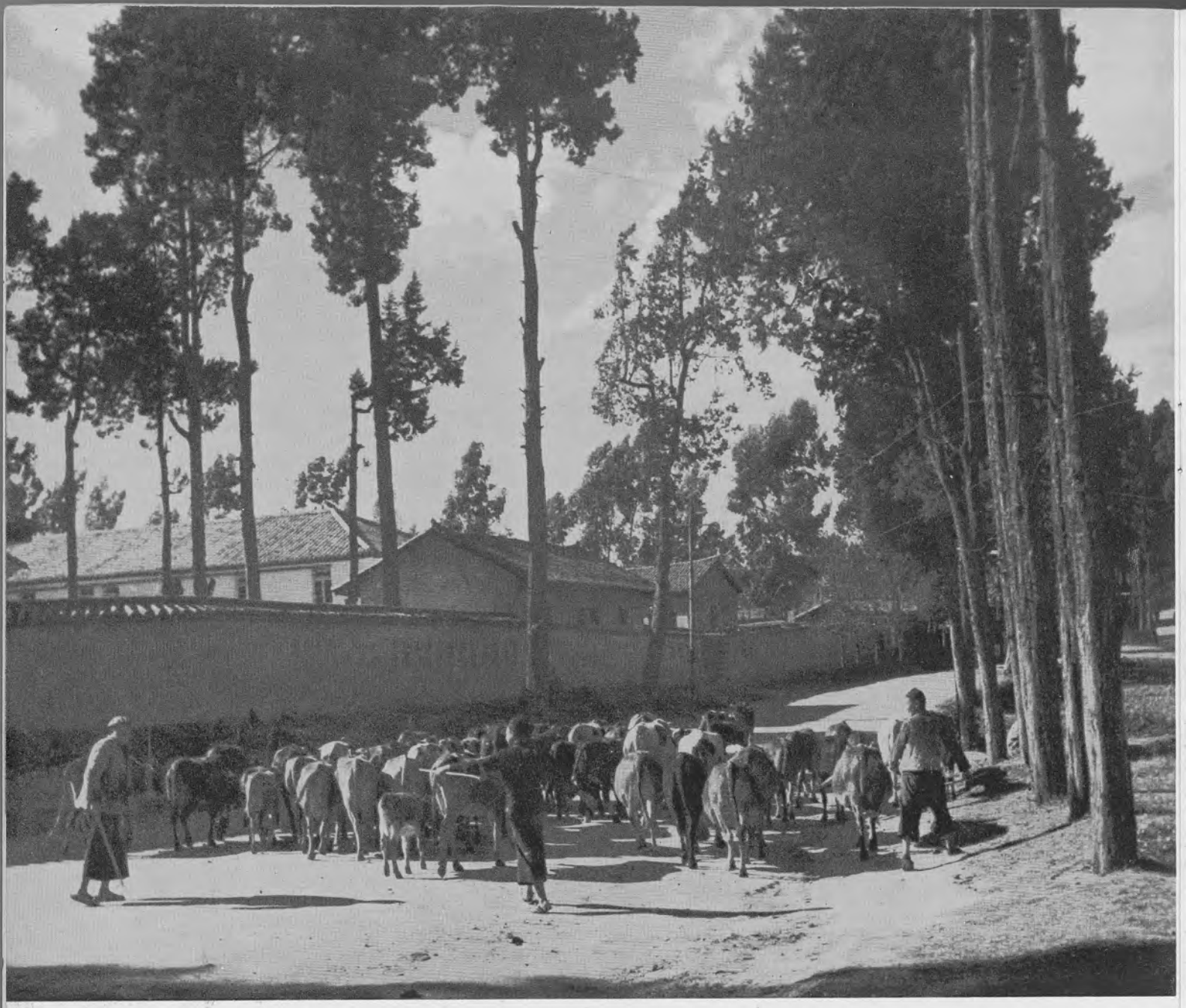
With the American record of outstanding achievement in agricultural engineering and the raising of rural living and cultural standards in mind, Mr. Tsou makes the following suggestions for China.

"The size of farms in China will have to be enlarged as a first step towards elevating the farmers' level of living. . . . When the size of a farm is increased, the farmer must be ready to make adjustments to the change. He must be provided with enough implements and machines to operate his larger acreage. The present available equipment on farms is far from adequate. China needs a group of inventive agricultural engineers to improve all the hand-worked and animal-drawn implements and to introduce tractors, especially to the big flat lands of Manchuria and northern and northwestern China. Wherever farmers cannot buy the equipment individually, they should organize cooperatives to own and operate such implements and machines jointly.

"At present, China is planning and preparing for postwar industrialization. As industries grow, they will have increasing need not only of capital and management, but also of a large supply of labor. The labor will have to be recruited from rural areas. This means that there will inevitably be a decrease in rural population. Where that occurs, the farmer will have to resort to labor-saving implements and machinery to compensate for the loss of labor. Today, the Chinese farmer operates a small farm with plenty of help; tomorrow, he will operate a large farm with less help, and he will be expected to produce as many, if not more, products. The only remedy will lie in the improvement of existing implements and the mechanization of farms. The industrialization of China is a blessing to agriculture provided that the agricultural engineers can furnish the farmers with adequate implements and machines to cope with the changed situation.

"While we should like to see big factories established in the cities of China, we also want thousands of small manufacturing and processing plants erected in rural districts. The development of rural industries will provide employment for the farmers, especially in the slack season, thus giving them opportunities to earn extra income. The bulky farm products can be processed or semi-manufactured in the production area so as to save volume, tonnage, and cost of transportation, which ultimately will result in savings for the city consumers. The machines for such industries as sugar-refining, cotton ginning, fruit and vegetable canning and dehydration, and the like will have to be designed by the agricultural engineers to suit the rural conditions in China.

"Farm housing, farm storage, and handling of farm manure will also need the inventive genius of agricultural engineers to make the designs and to discover the proper materials for construction. The construction should be simple, yet economical and sanitary. All of this requires the work of agricultural engineers, and it explains why China must have agricultural engineering.



Very little has been done in animal husbandry to date in China. P. W. Tsou, of China's Ministry of Agriculture and Forestry, believes: "The development of animal husbandry depends primarily upon expansion of pasturelands and increased production of feedstuffs. In those parts of China where the land is mountainous, much sloping land should be extensively seeded with grasses and legumes. Natural grazing land should be improved and properly managed. At the same time, superior breeds of cattle, goats, and sheep for milk, meat, and wool production should be developed along with superior breeds of chickens, ducks, geese, and turkeys. Great emphasis should be laid on veterinary science in order to combat the tremendous loss due to animal diseases."
Drivers bringing their cattle to the Market in Kunming.

"The program of agricultural engineering, from the government point of view, is one of many agricultural problems. It should be promoted side by side with such other programs as agricultural research, extension, education, and credit. In China today, there is a good bureau of agricultural research, a few well-organized provincial agricultural experiment stations, seventeen agricultural colleges (private and public), a board on agricultural extension, and a strong Farmers' Bank with branches in practically all provinces. What is needed now is to strengthen the above organizations and to adopt a sound system for the coordination of their work.

"There are several things which require immediate action in connection with agricultural engineering, which are as follows:

"First, that a department of agricultural engineering be established in the National Bureau of Agricultural Research. In that department, at least two American experts should be invited to start the research program in agricultural engineering.

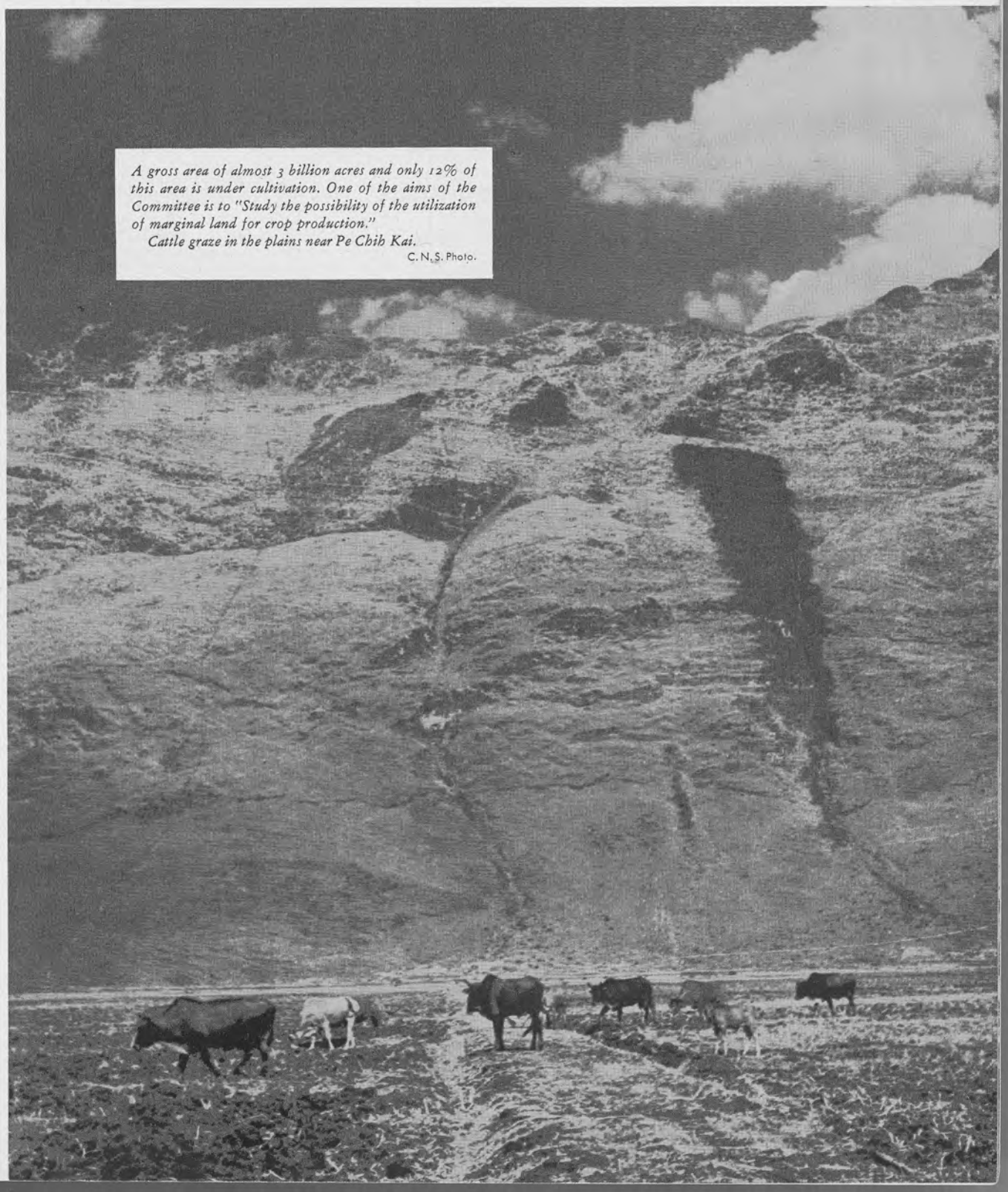
"Second, that a department of agricultural engineering be established in the College of Agriculture of the Central University. At the same time, the government should help strengthen the existing department of agricultural engineering of the College of Agriculture of Nanking University. In each of these two institutions, at

least one American expert should be invited to push the educational program in agricultural engineering.

"Third, that a program of training ninety Chinese experts in agricultural engineering be started immediately by sending over to the United States thirty selected college graduates in that field for the next three years. These men should spend at least three years in America, two years studying in school and one year training in factories and on farms.

"With due encouragement and effort on the part of the Chinese government, the following accomplishments should be expected within the next seven years:

"First, a strong department of agricultural engineering established in the National Bureau of Agricultural Research. The country may be divided into twelve regions. In each region, there will be a national agricultural experiment station,



A gross area of almost 3 billion acres and only 12% of this area is under cultivation. One of the aims of the Committee is to "Study the possibility of the utilization of marginal land for crop production."

Cattle graze in the plains near Pe Chih Kai.

C. N. S. Photo.

THE NEED . . .

each with a department of agricultural engineering of similar nature but less scope than that of the Bureau.

"Second, in the same localities as the national agricultural experiment stations, twelve national agricultural colleges to be established, each with a strong department of agricultural engineering.

"Third, a central office of agricultural extension incorporated in the Ministry of Agriculture and Forestry, with twelve regional offices set up in the same localities as the above-mentioned stations and colleges. The extension offices will lay due emphasis on agricultural engineering in their extension programs.

"Fourth, ninety Chinese experts of agricultural engineering, having completed their training in the United States, assigned to important positions in the above institutions.

"Fifth, hundreds of college graduates in agricultural engineering from the twelve proposed agricultural colleges engaged in the important work of teaching, research, extension, and the manufacturing of farm implements and machines.

"Sixth, several good manufacturing concerns established in China turning out the necessary implements and machines for Chinese farms, farm families, and rural factories.

"Seventh, a good system of rural credit which, among other activities, will finance the farmer and his cooperative in buying necessary implements and machines.

"Only when these seven points are successfully carried out will we have the men and organizations to develop agricultural engineering on a nation-wide scale for the benefit of our millions of farmers. The program must be started now."

The Committee on Agricultural Engineering will work to increase the quantity of food — improve the quality, and bring it within reach to all.
C. N. S. Photo.

American experts composing the Committee on Agricultural Engineering. From left to right, seated: J. B. Davidson, A. A. Stone; standing: E. L. Hansen and H. F. McColly.

DEVELOPMENT *of the* COMMITTEE

WHEN Mr. Tsou approached the International Harvester Company, he was received by a management most receptive to China's plan for agricultural engineering development.

In line with Mr. Tsou's remarks (above) the Company agreed to sponsor four of America's top engineering experts to form a Committee on Agricultural Engineering directly under the National Agricultural Research Bureau of the Ministry of Agriculture and Forestry. They will also cooperate with the agricultural engineering departments of the College of Agriculture of the National Central University as well as the Nanking University, both situated in Nanking.

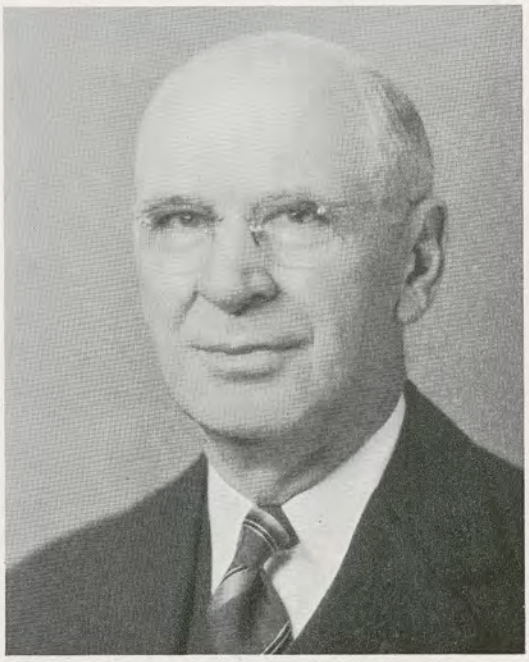
Dr. J. B. Davidson was selected by the Company, with the Chinese government's approval, to act as chairman. Dr. Davidson then enlisted the services of three other experts to form the Committee: Howard Franklin McColly, formerly Chief Water Facilities engineer with the Farm Security Administration, United States Department of Agriculture, to be Dr. Davidson's aide in the Research Bureau; Edwin L. Hansen, formerly agricultural engineer with the Portland Cement Association, to specialize on farm structures with the Reasearch Bureau and teach at Nanking University; and Archie A. Stone, formerly head of the Department of Rural Engineering, New York State Institute of Agriculture, Farmingdale, Long Island, who will teach at the National Central University as well as do research work with the Bureau.

The members of the Committee had many conferences with department heads of the International Harvester Company as well as other American firms taking an interest in the development of Chinese agriculture. See page 19 for a list of firms contributing to the project in the way of equipment donations for demonstrating and teaching aids in China.

The Committee, because of several setbacks in departure from America due to the political and housing situation in China and the recent maritime strike in the United States, had time to do considerable research on subjects of concern to the committee.

The International Harvester Company's role in regard to the Committee was to organize it in conjunction with the Chinese Ministry of Agriculture and Forestry; to pay the expenses of organization and preparation of the Committee; to donate the equipment manufactured by the Company for use in research work in China and also other equipment purchased as aids to demonstrations and teaching. The Company will also defray expenses for the travel to China as well as the shipment of equipment and material. The Company will also pay the salaries of the four experts.

The Committee sailed from San Francisco January 24, 1947, on the *General Meigo* of the American President Line, and will remain in China two and one-half to three years.



Dr. J. Brownlee Davidson
Chairman

Formerly professor and head of the Department of Agricultural Engineering, Iowa State College, Ames, Iowa.

Graduate of University of Nebraska, B. S.
in Mechanical Engineering, 1904
in Agricultural Engineering, 1914
Doctor of Engineering, 1931

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Positions Held:

University of Nebraska, student assistant in shop work, 1904

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Deere and Company, Moline, Illinois, assistant in experimental department, 1904

•

University of Nebraska, instructor in farm mechanics, 1904-05

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International Harvester Co., serviceman, summer 1905

•

Iowa State College, assistant professor of agricultural engineering, 1905; professor, 1907

•

University of California, professor of agricultural engineering, 1915-19

•

Iowa State College, professor of agricultural engineering, 1919

Publications:

Agricultural Machinery, 396 pp., John Wiley & Sons, 1931

•

Farm Machinery and Farm Motors, 512 pp., Orange Judd Co., 1908 (with L. W. Chase)

•

Agricultural Engineering, 554 pp., Webb Publishing Co., 1913

•

Iowa Agricultural Experiment Station, more than thirty titles

•

Technical journal, more than twenty-five titles

•

Editor, Wiley agricultural engineering series

•

Cited by Special Committee of American Society of Agricultural Engineers as author of two papers of "exceptional merit" published in Agricultural Engineering, 1940-44

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Awards:

Cyrus Hall McCormick medal for distinguished service in agricultural engineering, 1933

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"Estranger" membership in Swedish Royal Agricultural Society, 1942

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Other Professional Activities:

Director of survey of research in mechanical farm equipment. United States Department of Agriculture cooperating with the National Association of Farm Equipment Manufacturers, 1926, while on leave.

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Member of an American Commission to the Union of Socialistic Soviet Republics to study and report on colonization in the Far East, 1929, while on leave.

•

Chairman of committee selected by the National Association of Farm Equipment Manufacturers to survey the changes in quality values of farm machines, 1932

•

Engineer consultant on numerous occasions

•

Consultant to War Production Board, 1943

•

Consultant to United Nations Relief and Rehabilitation Administration, 1944

Archie A. Stone

Formerly Head of Dept. of Rural Engineering, New York State Institute of Agriculture, Farmingdale, Long Island, New York. On leave with O.P.A., Chief, Farm Equipment Section, Washington, D. C.—Civil Service rank: Senior Engineer.
Positions Held:
Grew up in implement business with father. Actively in charge of business, 1913-17
Member of House of Representatives, Minnesota, 1917
Farm Machinery Specialist in Teacher Training—New York State Education Department, 1941-42
Chairman, North Atlantic Section, A.S.A.E., 1942-43
Publications:
Textbook—Farm Machinery, 1928-1942
Textbook—Farm Tractors, 1931
Textbook—Farm Tractor Maintenance, 1942
Bulletin—Farm Tractor Engines, New York State, 1922
Bulletin—Garden Tractors on Long Island, New York State, 1928
Bulletin—Tractors for Gardens and Small Farms, New York State, 1939, and numerous others.

Formerly Chief Water Facilities Engineer, Farm Security Administration, United States Department of Agriculture; in charge of engineering activities in water facilities program in 17 western arid and semi-arid states. Civil Service rank: Senior Engineer
Graduate Iowa State College, B.S. in Agricultural Engineering, 1925
Graduate Iowa State College, M.S. in Agricultural Engineering, 1926
Positions Held:
Assistant in retail farm equipment business, Ames, Iowa, 1923-24
Research Fellow, Iowa State College, 1925-26
Assistant traveler, Sales and Service, John Deere Plow Co., 1926-28
Assistant Agricultural Engineer, North Dakota Agricultural College, 1929-31
Head, Agricultural Engineering Department, North Dakota Agricultural College, 1931-39
While on leave—Civil Works Administrator, North Dakota State water Conservation Commission (Secretary and Chief Engineer), 1933-41
Farm Security Administration, U. S. Dept. of Agriculture, Construction Engineer, 1941-42
Farm Security Administration, U. S. Dept. of Agriculture, Chief Water Facilities Engineer, 1942 to 1946
Publications:
Farm Mechanics Text and Hand Book (with others), 1935

Howard F. McColly

Bul. 245—The Harvester-Stacker Method of Harvesting Grain in North Dakota, 1930
Ten circulars, North Dakota Agricultural College, various subjects, 1930-35

Edwin L. Hansen

Formerly Agricultural Engineer, Portland Cement Association
Graduate, Iowa State College, B.S. Agricultural Engineering, 1935
Graduate, University of Illinois, M.S. Engineering, 1941
Positions Held:
Farm Experience, 1930, Soil Conservation Service, U.S.D.A., Junior Engineer, 1935
Assistant, University of Illinois, 1941
Publications:
Bulletin 333—"The Suitability of Stabilized Soil as a Building Material," Illinois Eng. Exp. Sta., 1941
"Stabilizing Soil with Emulsified Asphalt," Eng. News Record, 1941
"A Fire-Safe, Labor-Saving Livestock Compound," Agr. Eng., 1945
Has produced 9 colored, sound, educational movies. More than 200 copies in use.

OBJECTIVES *of the* COMMITTEE

THERE have been other groups of experts who have gone to China, many of them return to their countries somewhat discouraged because the task of remodeling or improvement seems too gigantic. There is too wide a gap between the Chinese system and the Western ways.

The Committee on Agricultural Engineering will develop through their own wide background what they consider are the best methods for Chinese farmers, on Chinese farms, to profitably grow Chinese crops and raise Chinese stock so that whenever the industrial evolution takes place, all factors working together, the best methods will be available.

The Committee is not trying to solve the problem of bringing Chinese agriculture up to date in ten or even fifty years. The Committee will not ponder which comes first, the mechanization of agricultural machinery to enlarge farms, or the industrialization of rural communities so that the farm help can increase their income by factory pay checks.

The broad scope of the Committee's work will have four main points: 1. to increase the supply of agricultural products—food and raw materials used for food, shelter and clothing. A country will never develop with an ill-fed, ill-clad, and ill-housed people; 2. to improve the quality of the products through research and experimentation; 3. to lower their costs to customers—quantity and quality mean nothing if the commodity is out of reach to the mass population; and 4. to advance the well-being of those engaged in agricultural pursuits. There must first be a desire for well-being, this to be brought about through education; then there must be the means to well-being—a way of obtaining large production at lower costs.

Dr. Davidson has an equation to express this point:

$$I = (P - C)Q$$

Income equals price minus cost times unit quantity. In other words, the best income is that which results from lowest cost taken from the prevailing prices multiplied many times. This is the objective of the Committee and will be carried out through the following general studies and programs:

1. Study Chinese agricultural production techniques and equipment, and describe and classify these techniques and equipment by crops and source of power.

2. Study the practicability of the application of American production techniques to Chinese agriculture.

3. Conduct experiments in the application of American agricultural production techniques and equipment to Chinese agriculture. These experiments may include the following types of equipment.
   a. Hand production equipment.
   b. Two-animal equipment.
   c. Small-tractor (garden) equipment.
   d. Medium-size tractor equipment.
   e. Large-tractor equipment in marginal crop area.

4. Initiate a program of improvement of hand implements.

5. Select and develop special farm machines for Chinese conditions.

6. Study the development of all possible sources of farm power. Investigate fuel supplies and sources.

7. Assist with the development of farm equipment manufacture.

8. Relate the use of equipment to soil conservation practices.

9. Cooperate with the development of water control and conservation techniques and construction, land drainage, flood control, and irrigation.

10. Assist in the development of rural processing plants, community manufacturing.

11. Study the possibilities of the utilization of marginal land for crop production.

12. Assist with the improvement of rural housing seeking to improve standards of rural living.

13. Study the problem of grain storage on individual farms.

14. Contribute to the advance of rural health and sanitation through engineering techniques and construction.

15. Contribute to an improvement of the methods of transporting and distributing of agricultural products.

16. Cooperate in every way practicable with other agencies interested in the attainment of objectives outlined.

The studies and programs will be developed through experimentation and demonstration. Five proposed demonstration farms and four National farms already in operation—spread far enough apart to take in all types of soil, labor, crop, and climatic conditions—will be used for this purpose. The Chinese proverb that one picture is worth ten thousand words applies as well to one demonstration being worth a thousand books. Motion pictures will be made of these projects for mass rural educational purposes. See map page 18 for location of proposed demonstration and National farms.

Each crop will be studied for the most efficient use of labor, the most economic use of power, and the most effective use of equipment.

The study of these three points has made the United States the most outstanding of low-cost production areas, and it is the aim of the Committee to help China achieve this end.

Y. C. James Yen, famous leader of Chinese mass education movement, and Fowler McCormick, Harvester's chairman of the Board of Directors. International Harvester is giving $25,000 to this Chinese movement.

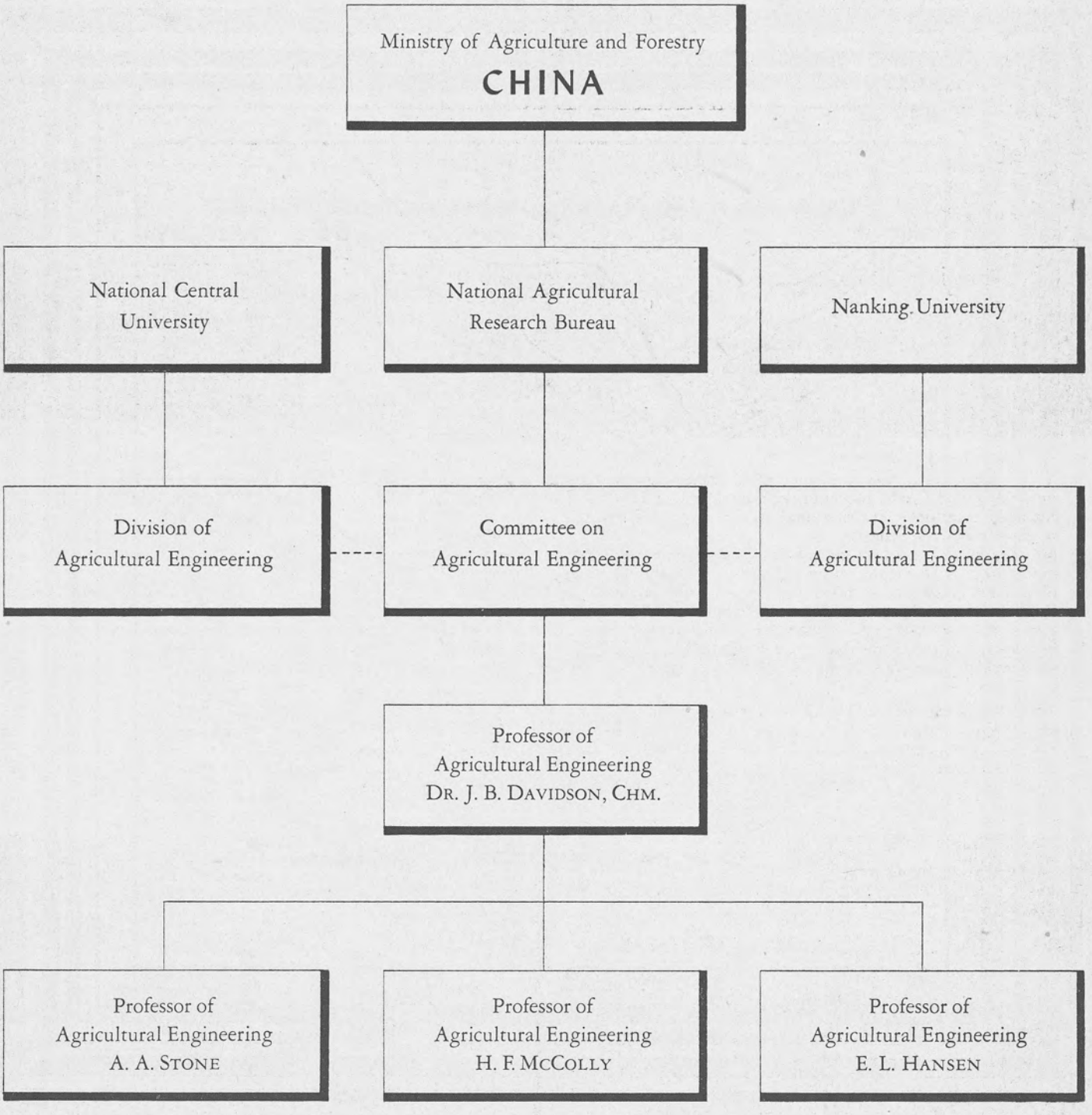
Mr. Yen, who started on the road to renown when he turned a mud village in China into the world's most successful laboratory of mass education and social reconstruction, with some 400,000 illiterate peasants as his willing collaborators and "guinea pigs," was Harvester's guest when the Company welcomed the first of two groups of Chinese students who are under Harvester sponsorship, studying advanced courses in agriculture and agricultural engineering in American universities.

Himself educated in the United States, "Jimmy" Yen one night had an "earthshaking idea"—that of forming a basic vocabulary of about one thousand of the more than 40,000 characters in the Chinese language, and using the key characters to teach Chinese coolies to read and write.

His efforts have proved so successful, largely through training leaders to teach others, that since the start of the war in China 27,000,000 Chinese have been taught to read and write, and "Jimmy" Yen believes it entirely possible to wipe out illiteracy in China within the next 10 years.

•

The original ten Chinese students of agriculture and agricultural engineering, winners of scholarships sponsored by International Harvester Company for three years of advanced study in American universities, are greeted in Chicago by Fowler McCormick (standing at extreme right), chairman of the Board of Directors, J. L. McCaffrey (standing, fourth from left), president, and G. C. Hoyt (standing, second from right), vice president in charge of Foreign Operations. At present ten students are attending the University of Minnesota and the other ten are at Iowa State College.


Ministry of Agriculture and Forestry
CHINA
National Central University
National Agricultural Research Bureau
Nanking University
Division of Agricultural Engineering
Committee on Agricultural Engineering
Division of Agricultural Engineering
Professor of Agricultural Engineering
Dr. J. B. Davidson, Chm.
Professor of Agricultural Engineering
A. A. Stone
Professor of Agricultural Engineering
H. F. McColly
Professor of Agricultural Engineering
E. L. Hansen

AGRICULTURAL AREAS OF CHINA

——— National Farms

– – – – – Demonstration Farms

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CLASSIFICATION OF KODOCHROMES.

I. Pictures related to the work of the Committee.

1. Agr'l Eng. Bldgs. and Staff.
4. Cereals- Crops
5. Crafts
7. Cultivation
13. Fiber crops
15. Farm buildings - Storage
16. Farm tools and machines- Chinese
22. Harvesting, threshing
23. Housing, farm
26. Irrigation
28. NARB
29. Plowing
31. Pumping
33. Rural Industry
34. Sanitation
36. Seeding
40. Tractors
41. Transportation
42. Well drilling
43. Work animals
44. Miscellaneous

II. Special subjects.

S. Voyage to China
F. Shanghai
G1. NARB and vicinity
G2. Purple Mountain
H. NARB House and our neighbors
I. Nanking and vicinity
K1. Szechwan
K2. Gorges
K3. Chungking
K4. Peipei
K5. Tukianyien
K6. Yangtze River
L. Hangchow
M. Wusih
N. Chuhsien
O. Taiyuan, Shansi
P. Kuling
Q. Chekiang and Kiangsi Provinces
6. Voyage home
R. Pa Kwa Chao Island

Classification of China Pictures

Section I

A. Pictures related to Chinese Agriculture and the work of the Committee on Agricultural Engineering (Alphabetical arrangement)

1. Agr'l. Eng. Building and Equipment-Land
2. Agr'l. Eng. Staff
3. Animal Husbandry - Dairying
4. Cereals crops
5. Crafts -
6. Crop processing, mills
7. Cultivation
8. Demonstrations
9. Drainage
10. Education
11. Erosion control
12. Factories
13. Fiber crops
14. Farm buildings, livestock
15. Farm buildings, storage & drying of grain
16. Farm machines, Chinese
17. Farm tools, Chinese
18. Fertilizers
19. Forestry
20. Fuels
21. Groups, Persons
22. Harvesting & threshing, gathering
23. Housing, Farm
24. Housing demonstration houses
25. Horticulture - Fruits

Classification of China Pictures, Cont.

26. Irrigation
27. Materials, construction mfg.
28. National Agricultural Research Bureau, Grounds and Bldgs
29. Plowing
30. Power - wind, water, etc. Tractors
31. Pumping & water ladders
32. Reclamation
33. Rural Industry
34. Sanitation
35. Secondary tillage
36. Seeding - Planting
37. Sericulture
38. Soil Conservation
39. Sugar cane
40. Tractors
41. Transportation
42. Well drilling
43. Work animals
44. Miscellaneous

Section II

Special Subjects
arranged chronologically

B Christmas 1946, Denver

C McCollys leave Ames

D Davis and San Francisco Calif.

E Voyage to China

F Shanghai

G1 National Agricultural Research Bureau & vicinity
G2 Purple Mountain

Classification of China Pictures, Cont.

H Narb House and our Neighbors

I Nanking and vicinity

J Peiping-trip to

K Szechwan, ~~Chungking, Chengtu~~

K2 GORGES
K3 CHUNGKING
K4 PEIPEI
K5 TUKIANYIEN
K6 YANGTZE RIVER

L Hangchow trip to

M Trip to Wusih

N Trip to Chuhsien

O Trip to Shansi, Taiyuan

~~P Veishea, Iowa State College 1948~~

P Vacation in Kuling

Q Chekiang & Kiangsi Provinces

R Pa Kwa Chao Island

S Voyage Home

A - List 35 mm

A0 Compost pile on farm near, Peiping
A1 Type of hoe used on NARB Substation, Peiping
A2 Plow used on NARB Substation
A3 Heavy hoe, NARB Substation
A4 Farm yard, near Peiping
A5 Preparing food in farm yard
A6 Farm family, near Peiping
A7 Donkey
A10 Plow
A12 Farm yard
A15 Grave yard
A17 Typical sow
A18 A peddlar call at International House

B - List

B3 River shore at Chungking
B4 Feeding steel billet into furnace
B5 The steel mill
B6 Workers garden
B8 Chungking from the Yantze River
B13 Entrance to underground war shop
B15 A carriage at the river station
B20 Challet de necessita

C - List

C4 Grave yard
C7 Overloaded bus
C9 Winding spindles
C11 Spinning
C12 Bridge needing repair
C13 Salt well
C14 Salt well basin
C28 Small water fall along the Yantze River
C32 A gorge on the Yantze

D - List

D7 River Boat on Yantze
D17 A river city
D18 River boats
D9 River boat
D11 Gorge on Yantze
D33 Gorge on the Yantze

Film strips

A Peiping
B Szechuan, Pictures at Chungking
C " Pictures on bus trip
D " Yangtze River
E Yangtze River & New Years Dance

NUMERICAL LIST OF NEGATIVES

and Classification into Groups

No
1. 'Bon Voyage', SS Gen. Meigs
   San Francisco, Jan. 24, 1947
2. Bay Bridge, San F. to Oakland
3. San Francisco, Good Bye
4. Jennie D. on SS Gen. Meigs
5. Passengers, SS Gen. Meigs
6. Our party, at sea
7. Robert Hansen and Chinese friend play checkers
8. The Wake of SS Gen. Meigs
9. Pacific ocean, from SS Gen. Meigs
10. Pacific ocean, sea and sky
11. Nearing Shanghai, Feb. 8, 1947
12. Pilot comes aboard SS Gen. Meigs
    7.45 Feb. 8, 1947
13. U.S. Battleships in Shanghai harbor
14. River bank near Shanghai
15. Boats meet S.S. Gen. Meigs
16. Park near Shanghai
17. Narb House SW
18. Narb House SE
19. Ruins, old Administration Building, NARB
20. Agr'l. Eng. Building, NARB Feb. 1947
21. Shop Building, NARB
22. Experimental plots, NARB
23. Well drilling equipment
24. Buffalo plowing, NARB
25. SS Gen. Meigs in Shanghai Harbor
26. SS Gen. Meigs in Shanghai Harbor
27. Barge of condemned U.S. Army food
28. Chinese boats following above
29. Good bye to Prexy, Univ of Shanghai
30. In Chinese garden Shanghai
31. In Chinese garden Shanghai

J - Jennie's B/r
✓ Printed mounted
— [illegible]

NUMERICAL LIST OF NEGATIVES - continued

No

32. Water buffalo, near Narb House
33. Water buffalo plowing, NARB
34. Ruins of former Administration Building NARB
35. Water buffalo plowing, NARB
36. Water buffalo pulling cart, NARB
37. Home at NARB, hedge started
38. Home at NARB, hedge started
39. New Northeast from home, Narb House Mts and stadium
40. New North from home, Narb House Sun Yat Sen's tomb
41. New East from home, NARB Building
42. New East from porch
43. New East from window
44. New Southeast from home, Narb House, Men watching buffalo & harrow
45. Water ladder in use near Narb house
46. Buffalo and harrow, NARB
47. Village east of NARB
48. Village east of NARB
49. Farm house
50. Plowing with swing hoe, - tich pa
51. Night soil, donkey train from Nanking
52. Buffalo plowing east of NARB
53. Woman gathering roots for fuel
54. Archie Stone plants an arbor vita at Agr'l. Eng. Building
55. Howard McColly plants
56. Ed. Hansen plants
57. Jennie Davidson plants
58. Estes McColly plants
59. Group participating in tree planting Mar. 24, 1947
60. J.B. Davidson plants an arbor vita

NUMERICAL LIST OF NEGATIVES - Continued

No
61. Pump house at NARB
62. Water tank at NARB
63. Sun Yat-sen's Tomb, The setting
64. " "
65. " "
66. " "
67. " "
68. " "
69. " "
70. " "
71. Plowing bermuda grass sod NARB 1/60A per day
72. Plowing bermuda grass sod NARB 1/60A per day
73. Planting tress NARB Mar. 22, 1947
74. Narb House from hill
75. Esther and Ching on bridge
76. Looking NW from Narb House
77. View Northeast from Narb House
78. Margaret Davidson's picture on the mantel
79. Boats on Yangtze at Nanking
80. Boats at Pukow accross Yangtze from Nanking
81. Crossing from Pukow to Nanking site of cave in
82. Fochow Creek in Shanghai, Apr. 12,1947
83. Wanpoo River in Shanghai, "
84. Buffalo plowing at NARB, Apr. 1, 1947
85. " " " " "
86. Birthday cake, Howard F. McColly & Kay Hansen, Apr. 6, 1947
87. L.T. Woo Family with self, Shanghai Apr. 13, 1947
88. L.T. Woo daughter, Shanghai Apr. 13,1947
89. L.T. Woo Family, " " " "

NUMERICAL LIST OF NEGATIVES - Continued

No

√ 90. Chinese children at Narb House with Margaret & Janet McC.
√ 91. Chinese children
√ 92. Feather duster pedler at Narb House
√ 93. Water boy at Narb House
√ 94. View to the south from Narb House
95. " " " north from " " over cauliflower field
√ 96. View to the northeast from Narb House
√ 97. Damaged buildings and bomb shelter, NARB
98. Dormatory at NARB
99. Esther by a red-bud tree
100. Entrance to NARB
√√ 101. Temple opposite pergoda on Purple Mountain
√ 102. Pergoda and temple on Purple Mountain
— — 103 a b L.T. Woo family, Shanghai, Sunday Apr. 13, 1947
— — 104. Mr. Chang and self, Demonstration Farm Mgis House, Apr. 14, 1947
— — 105. Mr. & Mrs. Chang, Mr. Woo at Demonstration Farm Mgis House
— — 106. Quanset huts at NAEC Shanghai 4-14-17
— — 107. Grading at NAEC Shanghai
— — 108. Plowing test with tieh pa NARB 4-26-47
— — 109. "
— — 110. "
√ 111. Buffalo in front of Narb House
√ 112. Two buildings at NARB, damaged during war, one repaired
√ 113. War damage, reconstructed building
114. Dormatory at end of drive NARB
√ 115. Narb House from demonstration building site
116. Sericulture Building NARB
117. Four servants and Jennie at Narb House
√ 118. ditto
√ 119. Hsu and Jennie at Narb House
√ 120. Wu " " " " "
√ 121. Loh " " " " "

NUMERICAL LIST OF NEGATIVES - Continued

No
122. Shrine in field, south of NARB
123. Buffalo and boy, near NARB
124. Japanese monument, south of Nanking
125. Monuments along road to cemetary, South of Nanking
126. Water-ladder, south of Nanking
127. Dr. P.W. Tsou at NARB., Shop Bldg. in back ground, May 13, 1947
128. Young bull being broke, East of NARB
129. One man lifting water NARB
130. Water ladder - four men NARB 100 gpm- 3 ft lift
131. Man and woman lifting water
132. Arrival of first shipment of equipment NARB
133. Mr. Ku of Andersen, Meyer & Co. at Wusih
134. Launch on Lake Tai Wusih
135. Peggy Stone has an interesting audience
136. Chinese junk on Lake Tai
137. Factory National Agricultural Implement Co. Wusih
138. Demonstration of Diesel engine and pump Wusih
139. Dr. Tung and Family
140. Office of National Agricultural Implement Co., factory Wusih
141. Plowing with yellow ox, South of NARB
142. Carrying sheaves of wheat to threshing floor
143. Water ladder, six-man team, NARB
144. " " , " " " "
145. Smoothing soil in rice paddy, NARB
146. Fishing in canal south of NARB
147. Transplanting rice
148. Plowman driving ox and carrying plow
149. First shipment of equipment, unloaded in Shop

NUMERICAL LIST OF NEGATIVES - Continued

No.

150. Silk worm culture, NARB
151. " " " "
152. Making cinder concrete blocks for demonstration house
153. International K1 pickup trucks
154. Harvesting with sickle, East of NARB
155. Demons tration of Farmall A and plow to PPC
156. Harvesting wheat with sickle, East of NARB
157. Threshing with flail south of NARB
158. Garden farming, looking east from NARB
159. Carry grain to threshing floor
160. Loading the donkey with grain
161. " " " " "
162. Collecting gavels of grain cut with sickle
163. Threshing east of NARB (probably sent to Mr. Hoyt)
164. Mulbersy grove NARB
165. Silk worms before spinning, NARB
166. Cocoons on straw rack
167. " " " "
168. Moths, silk worm
169. Jeep load of freight for McColly's and Davidson's
170. Bombed build under repair, NARB
171. Tung trees in yard at Narb House
172. Tomb east of Nanking
173. Dormatory at NARB
174. Chiang Chi-chieck's home, east of Nanking
175. Stairway in park, west of Narb House
176. Lo- the "boy" - by fire place, Narb House
177. Fire place with holly hawks, East Narb House
178. Esther McColly with flowers, Narb House
179. " " " "
180. Jennie Davidson " " " "
181. Children at demonstration house site
182. " "
183. Men at work on lawn, Narb House
184. Purple Mountain from Narb House
185. Jimmie Cricket baskets

NUMERICAL LIST OF NEGATIVES, - Continued

- 186. Woman harvesting wheat with sickle, east of NARB
- 187. "
- 188. Planet Jr. mower, Chen Li
- 189. McCormick-Deering Combine on Central Training Corps land
- 190. McCormick-Deering Combine on Cotton Bureau field
- 191. McCormick-Deering Combine on Central Training Corps field
- 192. Demonstration of combine Central Training Corps
- 193. Demonstration of combine Central Training Corps
- 194. Threshing with combine Central Training Corps
- 195. Threshing with buffalo, NARB
- 196. Hoeing with hand hoes, Hort. Dept. NARB
- 197. Hoeing with wheel hoes, Hort. Dept. NARB
- 198. Cultivating cotton, buffalo, NARB
- 199. "
- 200. Water ladder, Rice Dept., NARB
- 201. Cradle, Chinese type, NARB
- 202. Threshing floor Shaolingwei
- ? 203. Chinese plow and buffalo no good
- 204. Farmers and their wives plowing with tieh pa
- 205. Farmall A and plow - Robert Chen
- 206. Farmall A and combine, Howard McColly
- 207. McCormick-Deering combine used as thresher
- 208. Farmall A and McC. D. drill, Central Training Corps
- 209. Wheel hoe in use Cotton Bureau
- 210. Planet Jr. tractor and Archie Stone
- 211. " " " " Fang F.C.
- 212. " " " " Chen Li

NUMERICAL LIST OF NEGATIVES - Continued

No.

213. Water ladder south of NARB
214. Blacksmith shop, village east of NARB
215. Blacksmith shop, traveling shop
216. Howard & Esther McColly, wedding aniversary Jun. 22, 1947
217. Crickets on the mantle; Narb House
218. Chinese neighborhood children, Independence Day 1947
219. Neighbors, West Narb, Mr. & Mrs. McColly
220. Children at Narb. Independence Day 1947
221. McColly Family - 21st wedding aniversary
222. Willow outside Narb House
223. Weeders on lawn, Narb House
224. Fireworks at Narb House July 4th 1947
225. Planet Jr. tractor NARB
226. " " " "
227. " " " & drill-soy beans NARB
228. Planet Jr. tractor and three-row drill NARB
229. Buffalo team
230. McC-Deering drill-soy beans NARB
231. " " "
232. Pouring floor, demonstration farm house NARB
233. Ford tractors Chu chung
234. " " " "
235. Making earth road by hand
236. Party at Chu Chung, Incharge of Wu Thiem-Ming, Exten. Dept.
237. Village on way to Chu Chung
238. Another village on road to Chu Chung

NUMERICAL LIST OF NEGATIVES - Continued

239. Farmall A and cultivator Soy beans, Robert Chen, Aug. 47
240. Farmall A and drill Soy beans
241. Central Agr'l. Machine Works Nanking Aug. 1947
242. Central Agr'l. Machine Works blacksmith shop
243. Central Agr'l. Machine Works blacksmith shop
244. Central Agr'l. Machine Works foundry
245. Unloading stone, for Hort Storage Bldg. NARB Aug. 1947
246. General view over fields, NARB
247. Jennie D. at NARB House
248. " " " " "
249. Robert Hansen and Margaret McColly digging fish worms
250. Janet McColly
251. Margaret McColly
252. Margaret hunting chicken
253. Robert Chen and fiance, NARB
254. Pavillon south of NARB
255. Class from Nanking University NARB
256. Ed. Hansen begins work on demonstration house
257. Buffalo at rest, NARB
258. Transplanting rice, NARB
259. Planet Jr. tractor, cultivating, NARB
260. Testing power of buffalo, Howard McColly and Frank Ko
261. Farmall A and trailer, hauling road material
262. Plowing under soy beans, NARB
263. Skymaster Plane at Peiping
264. Main Building, NARB Substation Peiping
265. View from top of Main Building no good
266. Hibiscus and farm manager Sun
267. Corn field and visiting party
268. Howard McColly in millet
269. Team of mules in station field
270. Pumping water with donkey

NUMERICAL LIST OF NEGATIVES - Continued

No.

271. Jennie Davidson at International Club, Peiping
272. Our party at International Club
273. Looking accross lake from Summer Palace
274. Temple of Clouds, Summer Palace
275. View accross lake from temple of clouds
276. Lunch in park Summer Palace
277. View accross lake at Yen-ching University
278. Not identified
279. Curtain wall of draggons
280. Pump house, Sub-station
281. Chinese plow, "
282. Covering roller "
283. Spraying equipment "
284. Big hoe "
285. Hand tools - forks
286. Farm house, Peiping
287. Roof detail, International Club
288. Court, " "
289. Entrance, " "
290. Jennie D. in court, International Club
291. Columns and Lab. Bldg. Yen-ching University
292. Crashing the gate to the Forbidden City
293. Winter Palace
294. " "
295. Scene in the Forbidden City
296. Path on NARB Grounds
297. "
298. "
299. "
300. Howard McColly and J.B.D. with money for Peiping trip
301. Demonstration house at NARB
302. Lawn at Narb House

NUMERICAL LIST OF NEGATIVES - Continued

No.

303. Harvesting rice on road to Ripe Lake
304. Drying rice " " " " "
305. Watchmen in field, NARB
306. Building an adobe wall near, NARB
307. Wheel barrow transporting rice
308. Donkey carrying rice
309. Water ladder, Ripe Lake
310. Drying corn in village near Nanking
311. Planet Jr. plowing rice stubble, N.Y. Gan
312. Planet Jr. plowing rice stubble, N.Y. Gan
313. Gravely tractor and dividers for mowing rice
314. Gravely tractor and dividers for mowing rice
315. Gravely tractor in field
316. " " and rotary plow
317. Farmall A and plow, reducing levees Robert Chen
318. Farmall A and plow
319. Drilling broad beans, Farmall A & MeC. D. drill, Phillip Tu
320. I.H.C. Combine harvesting broad beans
321. " "
322. Load of rice straw on cart, NARB
323. Wedding at General's Tomb, NARB
324. Two Chinese women and children
325. Wedding procession, NARB
326. Brides sedan
327. Wedding procession in distance
328. " " " "
329. " " " "
330. Winter's fuel supply

NUMERICAL LIST OF NEGATIVES - Continued

No
331. Chinese boys at Narb House
332. Flowers at Narb House
333. Mrs. McColly in flowers Narb House
334. Chicken house used by refugee, NARB
335. Moon cakes
336. " "
337. Agr'l. Eng. Bldg. & bomb shelter
338. Home of bride of wedding procession
339. " " " " " "
340. Amah bearing gift for bride
341. New Bureau School building
342. Men working near school
343. Janitress and son
344. " son and 2nd boy
345. Tempory Bureau school
346. " " "
347. J.B.D. at top of steps, Park, NARB
348. Narb House Nov. 10, 1947
349. Three guests at Chinese dinner, Nov. 10, 1947
350. Three guests at Chinese dinner, Nov. 10, 1947
351. Three guests and McCollys
352. " " " "
353. Pagoda and stadium in distance
354. J.B.D. at edge of fox hole, Park, NARB
355. Jennie Davidson in old trench
356. Slide at new school
357. Children on new slide
358. Load of hay for fuel.

This page in Jennie file

NUMERICAL LIST OF NEGATIVES - Continued

No.
359. Store in Shaolingwei
360. Coolies asked for picture with flowers
361. Coolies asked for picture with flowers
362. Crowd and chrysanthemums at Ampetheater
363. Stage at Ampetheater
364. Crowd at "
365. Shaolingwei, home town in China
366. Janitress who asked for picture
367. Richardson's boy
368. Guards and boy
369. Janitress at quonset apts
370. Man, wife, baby friend at quonset apts
371. Deepening creek bed for fertile soil
372. " " " " " "
373. Woman who requested picture
374. Kitchen upstairs Narb House
375. View from store room Narb House
376. " " " " " "
377. Fireplace Narb House
378. Corner in living room, Narb House
379. Stream bed deepened and fertilizer saved
380. Children who wanted picture
381. Harvesting Mung beans, Farmall A and Combine
382. Removing soil from creek bed, NARB
383. " " " " " "
384. " " " " " "
385. Chrysanthemums show at Tomb Park
386. Pulverizer and tractor, Gen. Train. Corps
387. Field at Cen. Train Corps
388. Framing storage shed, NARB

List of pictures

389 Farmall A plowing at Central Training Corps
390 "
391 "
392 "
392 "
394 Rake, National Univ. of Chekiang, Hangchow
395 Harrow, bottom side up "
396 Plow "
397 Plow , Same as above
398 Hand tools, forms of "tepah pa"
399 Hoes
400 Rice storage at National Univ of Chekiang
401 Group at Mu See Tow Lake, Reclamation Project
at Community House, in rain Feb. 1948
402 Drainage ditch and general view
403 Main Building, National University of Chekiang, Hangchow
404 Rake for distributing grain on threshing floor
405 Woo and Tu at Shrine
406 Ferry on way to Mu See Tow Reclamation project
407 Group at Village
408 Woo, Tu and Ko at N. Univ of Chekiang
409 Sedan Chair for trip over the mountains, J.B.D.
410 " " " " " " " , Committee
411 Test of new 5 HP engine at N.A.E.C. Designed by Lee, May 12,48
412 Power house - Diesel engines
413 A.E. Com., former trainees staff with Mr. Tzo N.A.E.C.
414 " " " Riggs "
415 Former trainees
416 Former trainees and J.B.D.
417 Entrance gate, N.A.E.C.
418 " " "
419 Tractors in storage AMOMO yard, Shanghai, May 12, 1948
420 Machinery " " " " " " " "
421 Pumps and well casing
422 " " " "
423 A field unit AMOMO Ford Tractor Trailer Plow etc.
424 Sen Yat Sun Circle and Statue Nanking May 29, 1948
425 Wheat Harvest, Shaolinwei June 5, 1948
426 Wheat Harvest, McC. D. No. 52 Harvester thresher

427 A threshing floor as of old. South east of Chuhsien, June 19, 1948
428 A ricksha caravan by which a seven mile trip to a resettlement project north of Chuhsien was made, June 19, 1948
429 Five miles from the city of Chuhsien,many fields were not planted to crops
430 The caravan of six rickshas and guards stop to survey the fields
431 Same as 430
432 Dr. O.J. Goulter, supervisor of resettlement project examines cedar seedling transplanted by relief labor
433 The valley to be resettled. The hills are ten miles away.
434 The compound of farm houses where we had lunch on June 19, 1948
435 The caravan stops for a rest on the road to Chuhsien, June 19 1948
436 Outdoor kitchen at refugee camp near Chuhsien

437 The refugee camp in Chuhsien, July 19, 1948

438 S.S. President Cleveland. Return of Harvester Fellows June 21, 1948

439 U.S. Destroyer in Shanghai Harbor, July 7, 1948

440 U.S. Destroyer in Shanghai Harbor " " "

441 Twelve coolies carrying a load of sheet metal, July 7, 1948
442 Tai Ho Tien, Peiping July 8, 1948
443 White Dagoba in Pai Hai Park
444 Nine Dragon Wall, Pei Hai Park
445 The white Dagoba, Pei Hai Park
446 Steel Mill, Taiyuan July 9, 1948
447 Steel Mill, " " " "
448 Tests of pumps, Farm machine factory, Taiyuan
449 Mower, Deering pattern, made by Japanese at Taiyuan, July 9, 1948
450. Group of hosts at Taiyuan
451. C.A.T. Planes. Our plane for Peiping
452. C.A.T. Planes. Our plane for Peiping
453. Silk Tapestry Emporors Room, NARB Substration Peiping
454. Summer Place Park
455. Farmall Cub- cultivating sweet potatoes, NARB
456. Farmall Cub- cultivating sweet potatoes, NARB
457-a. Flooded area along the Yantze Aug. 2, 48
457-b. Flooded area along the Yantze Aug. 2, 48
458. We go ashore at Kuikiang, Aug. 3, 48
459. Pergoda along the Yantze
460. Preparing to be carried up Mount Lu Shi

461. Along the Yantze River, Sept. 27, 48
462. Looking Methodist Valley from the mountain across the valley
463. Looking toward "The Gap" from the west side of the mountain
464. "Main Street" at the Gap
465. The main corner in The Gap, clock, temperatures in Kuling and the principal cities of China
466. A lock smith plies his trade in Kuling
467. A Taoist monk at the cave of the immortals
468. Road into Kuling (no negative)
469. A class in Farm Equipment, National Central University, Oct. 1948 J.B.D. talking, Neg. A.A.S.

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462. Looking Methodist Valley from the mountain across the valley
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R Trip to Chekiang and Kiangsi Provinces

470 Farmer's Day, AMOMO, Shanghai a part of visitors seated in a circle. Oct. 16, 1948
471a Farmer's Day, AMOMO, Shanghai Field demonstration 16/10/48
471b Farmer's Day, AMOMO, Shanghai Field demonstration 16/10/48
472 Farmer's Day, AMOMO, Service tractor
473 Farmer's Day, AMOMO, well drilling drilling machine
474 Farmer's Day, AMOMO, Factory made tieh pah 16/10/48
475 AMOMO officials at Hangchow Field Station 18/10/48
476 AMOMO officials at Hangchow Field Station 18/10/48
477 AMOMO officials inspect drainage project project 19/10/48
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479 AMOMO Regional Office, Chekiang, Custom plowing 18/10/48
480 AMOMO Regional Office, Chekiang, Field Station hulling rice, 18/10/48
481 AMOMO Regional Office, Chekiang, Field Station Scutching jute 18/10/48
482 Scutching jute by hand, Hangchow 18/10/48
483 Scutching jute by hand, Hangchow 18/10/48
484 AMOMO Kiangsi Regional Hdqrts. Nanchang 21/10/48
485 AMOMO Kiangsi Regional Office Living quarters Deh An
486 AMOMO Kiangsi Regional Office Deh An, rental 1 million CNC per year owned by I.C.M.
487 Bridge, Nanchang
488 Harvesting and threshing rice, Kiangsi, 22/10/48
489 Hulling and polishing mill, Deh An
490 Hauling wood, Shanghai, 17/10/48
491 AMOMO Regional Director Lin & party leave Nanchang to visit Shangkao Farm 23/10/48
492 Restaurant where we had lunch 23/10/48
493 Rice land of Kiangsi south of Nanchang
494 View over the 5000 mow of land offered AMOMO to farm
495 Washing scene in Hangchow East Lake 25/10/48

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497 Fred Gan and A.A. Stone with Rototillar

498 Jennie and Esther on the APD Transport, Horace A. Bass, Nanking to Shanghai, Nov. 15, 48

499 The wake of the SS Horace A. Bass

500 Group with Dean C. H. Chang at Uni. Nanking Farm, Nov. 4, 48

501 Group with Dean Chang at the Uni. of Nanking Farm, Nov. 4, 48

502 Leveling land at the Uni. of Nanking Farm.
503 Earth wall construction on Uni. of Nanking Farm.
504 Lighters surround Flying Arrow, Shanghai, Dec. 5, 1949
505 Transferring cargo, lighter to Flying Arrow, Shanghai
506 Taku Bar
507 Fusan, Korea
508 Flying Arrow, Fusan, Korea

509 Public Bldgs. Hong Kong, Jan. 2, 1949

510 Landscaping, Hong Kong, Jan. 2, 1949

511 Harbor, Hongkong, Jan. 2, 1949

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Numerical list of pictures - continued.

512 Iwo Jima
Dec. 29, 1948

513 Mr. and Mrs. Phillip Tu
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Hong Kong, Jan. 2, 1949

514 Hong Kong Harbor
Jan. 2, 1949

515 Howard & Esther McColly
Jan. 15, 1949

516 Janet & Margaret

517 a-c Hong Kong Harbor

518 Harbor police boats
Manila, Jan. 19, 1949

519 Assist. Eng. Brown & 1
crew member leave ship, Manila
520 as above

521 as above

522 Crew at play, Flying Arrow
Jan. 20, 1949

523 Life boat drill
Flying Arrow

524 Dressed in life boats

525 Residence, Amritlal D. Sheth

526 Farm buildings, Sheth farm

527 Repairing FD 14 & Farmall M
Sheth farm

528 Women carrying stone
Near Sheth farm, Feb. 3, 1949

529 Rock crusher, Near Sheth farm
Note women carrying stone

530 Harvesting sugar cane, Sheth farm

531 Sugar cane mill, Sheth farm
Feb. 3, 1949

532 Evaporating pans for sugar
Sheth farm, F2b. 3, 1949

Numerical list of pictures - continued.

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Sheth farm, Feb. 3, 1949

Numerical List of Pictures, continued

The voyage home.

533 Residence, Sheth Plantation, Bombay

534 Refugees homes in Bombay

535 Children in refugee camp, Bombay

536 Volkart Brothers service shop, Bombay

537 Northwestern R R Station, Karachi

538 Street scene, Karachi

539 Camels at work, Karachi

540 S S Indian Shipper in Karachi Port

541 Fishing boats in harbor, Karachi

542 Street scene, Karachi

543 Camel hitched to wagon, Karachi

544 Camels carrying firewood, Karachi

545 Group of natives, Karachi

546 Government Building, Karachi

547 Government guest house, Alexandria

548 Lunch hour for stevedores, Alexandria

549 Harbor, Naples

550 Naples from bay

551 Warehouse, Naples

552 Flying Arrow and our party, New York
March 21, 1949

Extra pictures, no negatives

Harvest scene

Chinese cultivator

Harvesting with long handled sickle

Water lift and donkey

101

69

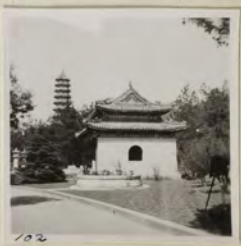
67

65

67

68

70



102

361

359

174

70

173

75A

75B

75C


371


379


387


334


343


344


341


342


386


337

A 1

Agr'l. Eng. Building, NARB Feb. 1947

Arrival of first shipment of equipment NARB

Shop Building, NARB

Framing storage shed, NARB

Field at Cen. Train. Corps.

Grading at NABC Shanghai

A 1

Narb House SE
SW

Ruins, old Administration Building
NARB

A 1

Group participating in tree planting, Mar. 24, 1947

Estes McColly plants

J.B. Davidson plants an arbor vita

Archie Stone plants

Ed. Hansen plants

A 1

Jennie Davidson plants

Howard McColly plants

J.B. Davidson plants

Planting trees, NARB Mar.22, 1947

Hoeing with hand hoes, Hort. Dept. NARB

Hoeing with wheel hoes, Hort. Dept. NARB

Wheel hoe in use Cotton Bureau

Cultivating cotton, buffalo, NARB

Cultivating cotton, buffalo, NARB

A7

259

Planet Jr. tractor, cultivating
NARB

XA.9

10

469. A class in Farm Equipment, National Central University, Oct. 1948 J.M.D. talking, Neg. A.A.S.

A 12

Blacksmith shop, village east of NARB

Blacksmith shop, traveling shop

Factory, National Agricultural Implement Co. Wusih

Office

241

Central Agr'l. Machine Works
Nanking, Aug. 1947

242

Central Agr'l. Machine Works
Blacksmith Shop

Central Agr'l. Machine Works
Blacksmith Shop

Central Agr'l. Machine Works
foundry

Drying rice on road to Ripe Lake

Drying corn in village near Nanking

Rice storage at National Univ of Chekiang

A2

A2 Plow used on NARB Substation

A10

A10 Plow

307

Plow, Chekiang

306

Plow, Chekiang

16

A-17

Harrow, bottom side up, Chekiang, Hangchow

Rake, National Univ. of Chekiang, Hangchow

Rake for distributing grain on threshing floor

41

A1 Type of hoe used on NARB Substation, Peiping

Hoes

398

Hand tools, forms of "tepah pa"

tech

17

17

Chinese plow, Sub-station

Covering roller Sub-station

Big hoe

Hand tools - forks

Spraying equipment Sub-station

Hoes

Hand tools, forms of "tapah pa"

Hand tools designed by Mr. K.S. Fang

Sawing logs, Cotton Bureau (S. n.)

Woman gathering roots for fuel

127

Dr. P.W. Tsou at NANB., Shop Bldg. in back ground, May 13, 1947

265

Class from Nanking University NANB

236

Party at Chu Chung, Incharge of Wu Thiem-Ming, Exten. Dept.

Minister Tsou and party at N.A.R.B. nn

Talking to visitors nn

Group at N.A.R.B. nn

The com. on A.E. nn

Visitors are interested

Chen Li & Frank Ko

413 A.E. trainees at N.A.E.C. Shanghai nn

Harvester Fellows, Stone residence (S.n.)

Group of children, NARB (S.n.)

194. Threshing with combine Central Training Corps

195. Threshing with buffalo, NANKING

201. Crude Chinese type, HANKOW

202. Threshing floor SHANGHAI

206. Farmall A and combine, Howard County, KOA

207. McCormick-Deering combine used as thresher

314. Gravely tractor and dividers for mowing rice

315. Gravely tractor in field

315. Gravely tractor and dividers for mowing rice

315

315. Gravely tractor in field

320

320. I.H.C. Combine harvesting broad beans

321

321. I.H.C. Combine harvesting broad beans

381. Harvesting Mung beans, Farmall A and Combine

Carrying sheaves of wheat to threshing floor

Harvesting wheat with sickle, east of NARB

Harvesting with sickle, east of NARB

Threshing with flail, south of NARB

Carry grain to threshing floor

Loading the donkey with grain

Loading the donkey with grain

Woman harvesting wheat with sickle, east of NARB

Woman harvesting wheat with sickle, east of NARB

188. Planet Jr. mower, Ghion Ll

Collecting gavels of grain cut withsickle

189. McCormick-Deering Combine on Central Training Corps land

190. McCormick-Deering Combine on Cotton Bureau field

191. McCormick-Deering Combine on Central Training Corps field

192. Demonstration of combine Central Training Corps

193. Demonstration of combine Central Training Corps

46. Village east of NANS

47. Village east of NANS

237. Village on way to Chu Chung

238. Another village on road to Chu Chung water buffalo

49. Farm house

286. Farm house, Peiping

152. Making cinder concrete blocks for demonstration house

232. Pouring floor, demonstration farmhouse NARB

256. Ed. Hansen begins work on demonstration house

366. Building an adobe wall near NARB

34. Ruins of former Administration building, NARB

264. Main Building, NARB Substation Peiping

22. Experimental plots, NARB

70. Plowing with swing hoe, - tieh pa

72. Plowing bermuda grass sod NARB 1/60A per day/man

71. Plowing bermuda grass sod NARB 1/60A per day/man

108. Plowing test with tieh pa 4-26-47

109. Plowing test with tieh pa 4-26-47

110. Plowing test with tieh pa 4-26-47

29

155. Demonstration of Farmall A and plow to PPC

204. Farmers and their wives plowing with tieh pa

205. Farmall A and plow - Robert Chen

210. Planet Jr. tractor and Archie Stone

211. Planet Jr. tractor and Fang K.S.

225. Planet Jr. tractor NARB

226. Planet Jr. tractor NARB

243. Ford tractors Chu Chung

234. Ford tractors Chu Chung

302. Plowing under soy beans, JARR

311. Planet Jr. plowing rice stubble, N.Y. Gan

312. Planet Jr. plowing rice stubble, N.Y. Gan

316. Gravely tractor and rotary plow

317. Farmall A and plow, reducing levees, Robert Chen

318. Farmall A and plow

390. Farmall A plowing at Central Training Corps.

391. Farmall A plowing at Central Training Corps.

392. Farmall A plowing at Central Training Corps.

393. Farmall A plowing at Central Training Corps.

389. Farmall A plowing at Central Training Corps.

455. Farmall Cub- cultivating sweet potatoes, NARB

456. Farmall Cub- cultivating sweet potatoes, NARB

45. Water ladder in use near Narb House

126. Water ladder, south of Nanking

138. Demonstration of Diesel engine & pump, Wusih

143. Water ladder, six-men team. NARB

129. One man lifting water NARB

130. Water ladder - four men NARB 100 gpm- 3 ft. lift

131. Man & woman lifting wa...

144. Water ladder, six-men team, NARB

200. Water ladder, Rice Dept. NARB

213. Water ladder, south of NARB

270. Pumping water with donkey

309. Water ladder, Ripe Lake

34. Buffalo plowing, NARB

32. Water buffalo, near Haro House

33. Water buffalo plowing, NARB

35. Water buffalo plowing, NARB

36. Water buffalo pulling cart, NARB

40. Buffalo and harrow, NARB

84. Buffalo plowing at NARB, April 1, 1947

85. Buffalo plowing at NARB, April 1, 1947

[illegible]. Buffalo plowing east of NARB

123. Buffalo and boy, near NARB

128. Young bull being broke, East of NARB

141. Plowing with yellow ox, South of NARB

(nn) B11-1-NG. Entering - - - L

Make two copies
one for labels

with Phillip Tu

L1(nn) B11-1. NG Entering a boat for a trip on West Lake, Hangchow
Feb-18 1948

L2(nn) B11-2, NG In Boat on West Lake.

L3(nn) B11-3, NG, West Lake Pavillion

L4(nn) B11-4, NG West Lake Pavillion (Pavilion)

L5(nn) B11-5, NG West Lake Pavillion

L6(nn) B11-6. NG West Lake

L7(nn) B11-7. NG West Lake

L8(nn) B11-8. NG West Lake

L9(nn) B11-9. NG West Lake. Phillip Tu

L10(nn) B11-10. NG West Lake, Hangchow

L11(nn) B11-11. NG. West Lake, Hangchow

L12(nn) B11-12. NG West Lake, Hangchow

L13(nn) B11-13. NG West Lake, Hangchow

L14(nn) B11-14. NG West Lake, Hangchow

L15(nn) B11-15 NG West Lake, Hangchow

Nucleus

L-1, (NN) Entering a boat
for a trip on West Lake
with Phillip Tu, Hangchow

NN = no negative

SPACING SHEET

OVER

Howard McColly & J.B.D. with money for Peiping trip

Not identified

View across lake from temple of clouds

Looking across lake from Summer Palace

Columns & Lab. Bldge. Yen-ching University

Court, International Club

Crashing the gate to the Forbidden City

Winter Palace

Winter Palace

212. Planet Jr. tractor & Archie Stone Chen Li

229. Buffalo team

386. Pulverizer & tractor, Cen. Train. Corps.

387. Field at Cen. Train. Corps.

386. Pulverizer & tractor, Cen. Train. Corps.

227. Planet Jr. tractor & drill-soy beans, NARB

228. Planet Jr. tractor and three-row drill, NARB

230. McC-Deering drill-soy beans, NARB

258. Transplanting rice, NARB

231. McC-Deering drill-soy beans, NARB

240. Farmall A & drill Soy beans

319. Drilling broad beans, Farmall A & McC. D. drill, Phillip Tu

147. Transplanting rice

C51. Night soil, donkey train from Nanking

153. International K1 pickup trucks

261. Farmall A & trailer, hauling road material

308. Donkey carrying rice

322. Load of rice straw on cart, NARB

307. Wheel barrow transporting rice

42

C23. Well drilling equipment

145. Smoothing soil in rice paddy, NARB

148. Plowman driving ox and carrying plow

257. Buffalo at rest, NARB

260. Testing power of buffalo, Howard McColly & Frank Ko.

269. Team of mules in station field

Buffalo and harrow, NARB
Negative, Mrs. J.B.D

Buffalo and plow, NARB
Negative, Mrs. J.B.D.

106. Quanset huts at NAEC Shanghai 4-26-47

122. Shrine in field, south of NARB

146. Fishing in canal, south of NARB

158. Garden farming, looking east from NARB

383. Removing soil from creek bed, NARB

305. Watchmen in field, NARB

235. Making earth road by hand

382. Removing soil from creek bed, NARB

384. Removing soil from creek bed, NARB

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494 View over the 5000 mow of land offered AMOMO to farm

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495 Washing scene in Hangchow East Lake 25/10/48

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496 Selling food at a station, Kiangsi

497 Fred Gan and A.A. Stone with Rototillar

E

Voyage to China

'Bon Voyage', SS Gen. Meigs
San Francisco, Jan. 24, 1947

Bay Bridge, San F. to Oakland

San Francisco, Good Bye

Pacific ocean, from
SS Gen. Meigs

The Wake of SS Gen. Meigs

Robert Hansen and Chinese friend play checkers

Park near Shanghai

Pacific ocean, sea & sky

Our party at sea

Passengers, SS Gen. Meigs

Jennie D. on S.S. Gen. Meigs

Nearing Shanghai, Feb. 8, 1947

Pilot comes aboard SS Gen. Meigs
7.45 Feb. 8, 1947

Voyage to China

14 River bank near Shanghai

U.S. Battleships in Shanghai harbor

Boats meet S.S. Gen. Meigs

SS Gen. Meigs in Shanghai Harbor

SS Gen. Meigs in Shanghai Harbor

F. Shanghai

C27. Barge of condemned U.S. Army food
C28. Chinese boats following above
C29. Goodbye to Prexy, University of Shanghai
83. Wanpoo River in Shanghai
82. Fochow Creek in Shanghai, April 12, 1947
103a. L.T. Woo Family, Shanghai, April 13, 1947
103b. L.T. Woo wife, daughters, Shanghai, April 13, 1947
88. L.T. Woo daughter, Shanghai, April 13, 1947
104. Mr. Changha and self, Demonstration Farm Mgrs House, Apr. 14, 1947
105. Mr. & Mrs. Chang, Mr. Woo at Demonstration Farm Mgrs House

F

Barge of condemned U.S. Army food

Chinese boats following above

F

Goodbye to Prexy, University of Shanghai

Wanpoo River in Shanghai

Fochow Creek in Shanghai
April 12, 1947

At Farm Managers
Residence MOAF
Farm, Shanghai nn

L.T. Woo Family, Shanghai
April 13, 1947

L.T. Woo daughter, Shanghai
April 13, 1947

L.T. Woo daughter, Shanghai
April 13, 1947

Mr. Chang and self, Demonstration Farm Mgrs House, Apr. 14, 1947

Mr. & Mrs. Chang, Mr. Woo at Demonstration Farm Mgrs House

G. National Agricultural Research Bureau & vicinity

416

415

412

414

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H. Narb House and our Neighbors

E36. Farmers from nearby village call at NARB House on New Years Day, 1948
E34. A dance on the lawn by farmers from nearby village, NARB House, Jan. 1, 1948
E32. The dance staged on the lawn at NARB House, Jan. 1, 1948
E31. "The Bride". Farmers dance at NARB House, Jan. 1, 1948

H all

E 36

Farmers from nearby village call at NARB House on New Years Day, 1948

H

E 34

A dance on the lawn by farmers from nearby village, NARB House, Jan. 1, 1948

E 52

The dance staged on the lawn at NARB House, Jan. 1, 1948

E 51

"The Bride". Farmers dance at NARB House, Jan. 1, 1948

I. Nanking and vicinity

254. Pavillon south of N.A.R.B.
385. Chrysanthemums show at Tomb Park
124. Japanese monument, south of Nanking
125. Monuments along road to cemetary,

Pavillon south of N.A.R.B.

Chrysanthemums show at Tomb Park

Japanese monument, south of Nanking

Monuments along road to cemetary, South of Nanking

J. Peiping-trip to

268. Howard McColly in millet
267. Corn field and visiting party
266. Hibiscus and farm manager, Sun
443. White Dagoba in Pai Hai Park
442. Tai Ho Tien, Peiping July 8, 1948
445. The white Dagoba, Pei Hai Park
444. Nine Dragon Wall, Pei Hai Park
300. Howard McColly and J.B.D. with money for Peiping trip
278. Not identified
275. View accross lake from temple of clouds
273. Looking accross lake from Summer Palace
291. Columns & Lab. Bldge., Yen-ching University
288. Court, International Club
292. Crashing the gate to the Forbidden City
293. Winter Palace
294. Winter Palace
263. Skymaster Plane at Peiping
289. Entrance, International Club
288. Court, International Club
271. Jennie Davidson at International Club
272. Our party at International Club
292. Crashing the gate to the Forbidden City
276. Lunch in park Summer Palace
274. Temple of Clouds, Summer Palace
295. Scene in the Forbidden City
279. Curtain wall of draggons
277. View accross lake at Yen-ching University
A18. A peddlar call at International House
A0.C Compost pile on farm near Peiping
A4. Farm Yard, near Peiping
A6. Farm family, near Peiping
A12. Farm yard
A15. Grave yard
A17. Typical sow

J

Howard McColly in millet

Corn field and visiting party

Hibiscus and farm manager Sun

443. White Dagoba in Pai Hai Park

442. Tai Ho Tien, Peiping July 8, 1948

445. The white Dagoba Pei Hai Park

444. Nine Dragon Wall, Pei Hai Park

Temple of Clouds,
Summer Palace

Scene in the Forbidden City

Curtain wall of dragons

View across lake at Yen-ching
University

A18 A peddlar call at International House

A0 Compost pile on farm near Peiping

A-0

A0

A4

A4 Farm yard, near Peiping

A6 Farm family, near Peiping

A6

A12 Farm yard

A12

A15

A15 Grave yard

A17 Typical sow

A17

K. Szechwan, Chungking, Chengtu

B3. River shore at Chungking
B4. Feeding steel billet into furnace
B5. The steel mill
B6. Workers garden
B8. Chungking from the Yantze River
C4. Grave yard
C7. Overloaded bus
C9. Winding spindles
B13. Entrance to underground war shop
B15. A carriage at the river station
B20. Challet de necessita
C11. Spinning
C12. Bridge needing repair
C13. Salt well
C14. Salt well basin
C28. Small water fall along the Yantze River
C32. A gorge on the Yantze
D33. Gorge on Yantze
D11. Gorge on Yantze
D9. River boat
D7. River boat on Yantze
D18. River boats
D17. A river city

B3 River shore at Chungking

B3

B4

B4 Feeding steel billet into furnace

B5 The steel mill

B5

B6 Workers garden

B8 Chungking from the Yantze River

B13 Entrance to underground war shop

B15 A carriage at the river station

B20 Chal et de necessita

C4 Grave yard

C4

C7

C7 Overloaded bus

C9 Winding spindles

C9

C11 Spinning

C12 Bridge needing repair

C13 Salt well


C14

C14 Salt well basin


C28

C28 Small water fall along the Yantze River


C32

C32 A gorge on the Yantze

D33 Gorge on Yantze

D11 Gorge on Yantze

D9 River boat

D7 River boat on Yantze

D18 River boats

D17 A river city

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Skymaster Plane at Peiping

Jennie Davidson at International Club

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Entrance, International Club

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Court, International Club

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Our party at International Club

Crashing the gate to the Forbidden City

Lunch in park Summer Palace

Com. on A.E. at Szechuan

In sedan chair to be carried over the mountain nn

L. Hangchow trip to

406. Ferry on way to Mu See Tow Reclamation project
401. Group at Mu See Tow Lake, Reclamation Project at Community House, in rain, Feb. 1948
405. Woo and Ko at Shrine
408. Woo, Tu and Ko at N. Univ. of Chekiang
407. Group at Village
403. Main Building, Nat. U. of Chekiang, Hangchow
L-13. West Lake, Hangchow
L-14. West Lake, Hangchow
L-15. West Lake, Hangchow
L-1. Entering a boat for a trip on West Lake with Phillip Tu, Hangchow Feb. 18, 1948
L-2. In boat on West Lake
L-3. West Lake Pavilion
L-4. West Lake Pavilion
L-5. West Lake Pavilion
L-6. West Lake
L-7. West Lake
L-8. West Lake
L-9. West Lake, Phillip Tu
L-10. West Lake, Hangchow
L-11. West Lake, Hangchow
L-12. West Lake, Hangchow

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West Lake, Hangchow

West Lake, Hangchow

L-14

L-15

West Lake, Hangchow

L-1

Entering a boat for a trip on West Lake with Phillip Tu, Hangchow Feb. 18, 1948

L-2

L-2

In boat on West Lake

L-3

L-3

West Lake Pavilion

L-4

West Lake Pavilion

L-5

West Lake Pavilion

L-6

West Lake

L-7

West Lake

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West Lake

L-9

West Lake, Phillip Tu

L-10

West Lake, Hangchow

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West Lake, Hangchow

L-12

West Lake, Hangchow

M. Trip to Wusih

134. Lunch on Lake Tai Wusih
135. Peggy Stone has an interesting audience
136. Chinese junk on Lake Tai
C31. In Chinese garden, Shanghai
C30. In Chinese garden, Shanghai
79. Boats on Yangtze at Nanking
81. Crossing from Pukow to Nanking site of cave in
80. Boats at Pukow accross Yangtze from Nanking
139. Dr. Tung and Family
133. Ku of Andersen, Meyer & Co. at Wusih

M

Lunch on Lake Tai Wusih

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Dr. Tung and Family

Mr. Ku of Andersen, Meyer & Co. at Wusih

N. Trip to Chuhsien

427. Threshing floor Chuhsien, June 18, 1948
428. Ricksha caravan on the way to Chuhsien Resettlement Project
429. Uncultivated fields, five miles from Chuhsien
430. Caravan of six rickshas and guards
431. Same as 430
432. Dr. O. J. Goulter examines a cedar planted by relief labor , June 20
433. The valley to be resettled 10 miles to mountains
434. The compound of the farm houses where we had lunch on, June 1948
435. The caravan stops for a rest on the road to Chuhsien, June 19, 1948
436. Outdoor kitchen at refugee camp near Chuhsien
437. The refugee campin Chuhsien

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Ricksha caravan on the way to Chuhsien Resettlement Project

435

Caravan of six rickshas and guards

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Caravan of six rickshas and guards

Same as 433

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The valley to be resettled, 10 miles to mountains

431 Same as 434

Dr. O.J. Goulter examines a cedar planted by relief labor June 20, 1948

Threshing floor Chuhsien June 18, 1948

The compound of the farm houses where we had lunch on June 1948

435

The caravan stops for a rest on the road to Chuhsien, June 19, 1948

436

Outdoor kitchen at refugee camp near Chuhsien

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The refugee campin Chuhsien

O. Trip to Shansi, Taiyuan

450. Group of hosts at Taiyuan
451. C.A.T. Planes. Our plane for Peiping
452. C.A.T. Planes. Our plane for Peiping
453. Silk Tapestry Emporors Room NARB Substation Peiping
454. Summer Place Park
447. Steel Mill, Taiyuan, July 9, 1948
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448. Tests of pumps, Farm machine factory, Taiyuan
449. Mower, Deering pattern, made by Japanese at Taiyuan, July 9, 1948

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X
F. Iowa State College
1948 Veishea

1. Preparing the Agr'l. Eng. yard exhibit
2. Daisy the talking cow
3. A E Float, 1947
4. 1948 Exhibit being assembled
5. Float 1948, Line of parade Fritey Hall
6. Farm Structures Exhibit
7. " " "
8. Rural Electrification Exhibit
9. Soil & Water Conservation Exhibit
10. Agr'l. Eng Demonstration Field, 16 acres, Ontario Road
11. Field Day at A.E. Demonstration Field, May 1948
12. Field Day at A.E. Demonstration Field
13. Field Day at A.E. Demonstration Field
14. Farm Structures Exhibit
15. " " "
16. Rural Electrification Exhibit

Preparing the Agr'l. Eng. yard exhibit

Daisy the talking cow

A. E. Float, 1947

1948 Exhibit being assembled

Float 1948, Line of parade, Tritey Hall

C. Johnson
G. Thompson

Farm Structures Exhibit

Farm Structures Exhibit

Rural Electrification Exhibit

Soil & Water Conservation Exhibit

10

Agr'l. Eng. Demonstration Field, 16 acres, Ontario Road

11

Field Day at A.E. Demonstration Field May 1948

12

Field Day at A.E.
Demonstration Field

13

Field Day at A.E.
Demonstration Field

14

Farm Structures Exhibit

15

Farm Structures Exhibit

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Rural Electrification Exhibit


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45¹7 [illegible]


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462a


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462b

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457-a. Flooded area along the Yantze Aug. 2, 48

457-b Flooded area along the Yantze Aug. 2, 48

K6

S, Trip Home from China

S

498 Jennie and Esther on the APD Transport, Horace A. Bass, Nanking to Shanghai, Nov. 15,48

499 The wake of the SS Horace A. Bass

500 Group with Dean C. H. Chang at Uni. Nanking Farm, Nov. 4, 48

501 Group with Dean Chang at the Uni. of Nanking Farm, Nov. 4, 48

502 Leveling land at the Uni. of Nanking Farm.

503 Earth wall construction on Uni. of Nanking Farm.

504 Lighters surround Flying Arrow, Dec. 5, 1949

505 Transferring cargo, lighter to Flying Arrow, Shanghai

506 Taku Bar

507 Fusan, Korea

508 Flying Arrow, Fusan, Korea

509 Public Bldgs. Hong Kong,

511 Harbor, Hongkong, Jan. 2, 1949

510 Landscaping, Hong Kong,

512 Iwo Jima
Dec. 29, 1948

513 Mr. and Mrs. Phillip Tu
and party
Hong Kong, Jan. 2, 1949

514 Hong Kong Harbor
Jan. 2, 1949

516 Janet & Margaret

515 Howard & Esther McColly
Jan. 15, 1949

517 a-c Hong Kong Harbor

518 Harbor police boats
Manila, Jan. 19, 1949

519 Assist. Eng. Brown & 1
crew member leave ship, Manila

520 as above

521 as above

522 Crew at play, Flying Arrow
Jan. 20, 1949

523 Life boat drill
Flying Arrow

524 Dressed in life boats ?

Extra pictures, no negatives

Harvest scene

Chinese cultivator

Water lift and donkey

525 Residence, Amritlal D. Sheth

526 Farm buildings, Sheth farm

527 Repairing TD 14 & Farmall M
Sheth farm

528 Women carrying stone
Near Sheth farm, Feb. 3, 1949

529 Rock crusher, Near Sheth farm
Note women carrying stone

530 Harvesting sugar cane, Sheth farm

531 Sugar cane mill, Sheth farm
Feb. 3, 1949

532 Evaporating pans for sugar
Sheth farm, F2b. 3, 1949

533 Residence, Sheth Plantation, Bombay

534 Refugees homes in Bombay

535 Children in refugee camp, Bombay

536 Volkart Brothers service shop, Bombay

537 Northwestern R N Station, Karachi

538 Street scene, Karachi

539 Camels at work, Karachi

540 S S Indian Shipper in Karachi Port

541 Fishing boats in harbor, Karachi

542 Street scene, Karachi

543 Camel hitched to wagon, Karachi

544 Camels carrying firewood, Karachi

545 Group of natives, Karachi

546 Government Building, Karachi

547 Government guest house, Alexandria

548 Lunch hour for stevedores, Alexandria

549 Harbor, Naples

550 Naples from bay

551 Warehouse, Naples

552

552 Flying Arrow and our party, New York
March 21, 1949

check sheet

LIST OF PHOTOGRAPHS

No. of Neg.	Subject
D 400	Grain storage bins of bamboo mats.
G 89	Steel grain storage tank.
D 311	Plowing with garden tractor.
D 193	Demonstration of combined harvester thresher.
D 200	The Chinese water ladder.
D 285	Native Chinese hand farm tools.
D 430	Uncultivated farm land.
D 141	Plowing with the yellow ox.
D 51	Night soil donkey train.
D 196	Hoeing, the usual method of cultivation.
D 434	Compound in village.
D 266	Habiscus fiber crop. Pieping.
D 267	Corn, Pieping.
D 268	Millet, Pieping.
A 0	Compost pile.
A 2	Native plow of North China
A 6	Well-to-do farm family, three generations.
D 142	Carrying sheaves to threshing floor.
D 204	Plowing with "toh pieh"
D 157	Threshing with flail.
D 427	Threshing with stone roller drawn by buffalo.
D 202	Threshing floor.
D 269	Transplanting rice.
G 98	Harvesting rice.
G 82	Diesel engine and 5-inch Carver pump. Saved 200 acres of flooded in summer of 1948.
G 37	Modern planter.
G 31	Sulky rake pulled by buffalo.
G 56	Leveling land for irrigation after plowing out old levees.
G 109	Native harrow and buffalo.
G 90	Demonstration house.
G 107	Drying corn, Shaolingwei.
G 87	Wheat field, Agr'l Eng. fields, Shaolingwei.
G 88	Chart, Exchange of surplus.
G 89	Chart, Influence of power.
G 128	Rototiller on rice land.
G 27	Remaking fields and leveling.
G 28	Pergoda near NAMB.
G 40	Cultivating cotton.
G 62	Drilling rice in field prepared dry and flooded after seeding.
G 4	Interior farm machinery laboratory, NAMB.

S 241	Harvesting wheat with sickle.
S 87	Native Chinese planter.
S 561	Rack for carrying cane.
S 574	Transporting pigs by wheel-barrow.
S 558	Current wheel and water lift.
S 389	Native mill.
S 94	Night soil pit.
S 487	Soil when dry becomes very hard due to lack of humus.
S 187	Plowing with yellow ox, North China
S 493	Removing soil from bottom of pond.
S 315	Money for a trip.
S 97	Manual saw mill.
S 443	Herding ducks.
S 115	Moving night soil to fields.

54 54 54

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S 556	Current wheel and water lift.
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2	S 87	Native planter
3	S 551	Rack for carrying cane
4	S 574	Transporting fuel by wheelbarrow
5	S 556	Current wheel and water lift
6	S 329	Native mill
7	S 94	Night soil pit
8	S 487	Soil when dry becomes very hard due to lack of humus
9	S 187	Plowing yellow ox with clime
10	S 493	Removing soil from bottom of pond
11	S 315	Mercy for a thief
{	S 423	Tin Shop (for M.S
	S 293	Blacksmith shop " "
~~12~~	~~S 250~~	~~threshing floor; Buffalo drawing stone roller~~
12	S 97	Sawing
13	S 443	Herding duck
14	S 115	Moving night soil to field

Neg No. Subject

14
~~13~~
18
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Extra prints available

	No.		
	1	D 142	Carrying sheaves to threshing floor
	2	D 204	Plowing, Teh Pvek
	3	D 157	threshing with flail
	4	D 427	Threshing, stone roller drawn by buffalo
	5	G 117	~~Moving seat roller~~
5	6	D 202	threshing floor — Enlargement
6	7	D 258	transplanting rice
7	8	G 98	Harvesting rice
8	9	G 82	Hallet Diesel engine & 5-inch Carver pump (saves 300 acres of flood rice)
9	10	G 37	modern flume
10	11	G 31	Sulky rake pulled by buffalo
	12	G 91	~~Rice harvesting N.A.R.B~~
11	13	G 56	Leveling land for irrigation
12	14	G 109	Native harrow and buffalo
13	15	G 90	Demonstration house
14	16	G 107	Drying corn near Shaohingwei
15	17	G 67	Wheat field Shaohingwei
16	18	G 88	chart – Exchange of overflow
17	19	G 89	chart – Influence of fence
18	20	C 128	Rototiller on rice land
19	21	G 88	Remaking fields and leveling
20	22	G 28	Pergola near N.A.R.B
21	23	G 40	Cultivating cotton
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23	25	G 4	Interior Machinery Laboratory N.A.R.B

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No	Neg	Size	Subject
1 ✓	D400	2¼x2¼	Bamboo grain storage, being of bamboo mats
2 ✓	G29	4x5	Grain storage tank
3 ✓	D311	2¼x3¼	Plowing garden tractor
4 ✓	D193	2¼x3¼	Combine demonstration
5 ✓	D200	"	Water ladder
~~6~~ ✓	~~D431~~	~~"~~	~~Farm house court~~
7 ✓	D285	"	Native hand tools
8 ✓	D.430	"	Uncultivated acres
	D-97		wheel hoes
9 ✓	D141		plowing yellow ox
10 ✓	D51		Night soil team
11 ✓	D196		Hoeing
12 ✓	D434		Compound village
13	35mm Film A Exp 0		Compost pile
14	" " Exp 6		A well-to-do farm family, three generations
15	.2		Native flour as used in the North
	~~D141~~		~~Plowing with yellow ox. Shaotingwai~~
16	D200.		Water ladder NARB
17	D266		Hibiscus Peeping
18	D267		Corn Peeping
19	D268		Millet Peeping

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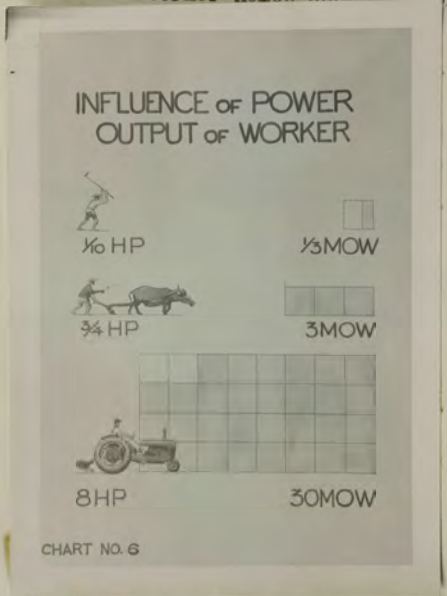
D. "Pumping" water for irrigation with manual power and the water ladder. Power is furnished by two six man teams which work alternately.

E. Pumping water with a five horse-power Diesel engine. This small plant has more than ten times the capacity of the plant shown in D.

H. Chart illustrating how increased production of the farm worker helps economic conditions.



I. Chart illustrating how thw use of power influences the productive output of the farm worker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549-

It's a good thing
you folks took
some good
pictures.
Best regards
Roy

Arnold Yerkes
7/12/49