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UNITED STATES SUPPLY OF MATERIALS FROM FOREIGN SOURCES—NONMINERALS

25 March 1947.

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THE INDUSTRIAL COLLEGE OF THE ARMED FORCES

Washington, D. C.

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UNITED STATES SUPPLY OF MATERIALS FROM FOREIGN SOURCES--NONMINERALS.

25 March 1947.

CAPTAIN WORTHINGTON: The speaker this morning is Mr. Clarence M. Purves. Mr. Purves is chief of the Statistical Coordination and Analysis Section, Regional Investigations Branch, Office of Foreign Agricultural Relations, Department of Agriculture. He also acts as vice chairman of the Committee on Foreign Crops and Livestock Statistics.

Mr. Purves has been connected with the Department of Agriculture for 20 years, during the last four of which he has written many reports and articles on world food production, supply and trade. His subject this morning is "United States Supply of Materials from Foreign Sources--Nonminerals."

I take great pleasure in introducing Mr. C. M. Purves.

MR. PURVES: Six or seven years ago I would have been more at ease before a group of this kind and would have felt much more certain of giving you a useful message than I am today. During the past seven years our military forces have been in nearly every nook and cranny of the world. No doubt, many of you have been in the areas I plan to talk about and have been connected first hand with the problems of production and distribution of the import products vital to this country. Our experiences of the past seven years have been very valuable in pointing out the importance of agricultural products from foreign countries, and in speaking of agricultural products I am thinking of them in their broadest classification which includes nearly all nonmineral products, such as lumber, pulpwood and medicinals, as well as the more common foods and fibers.

With the outbreak of war our demands for many foreign supplies suddenly increased at the very time we were shut off from our principal sources of supply. Consequently, we had to work out many substitutes, provide special means of distributing existing supplies and promote the expansion of production in many new areas. Perhaps our dependence on foreign agricultural products can be best brought out by a brief review of our imports before the war and the areas from which they were obtained.

Our domestic agricultural production is so well balanced that we are not very dependent on outside sources for many of our nonmineral products. It is mostly the specialities of the tropics and a few products come from the cooler regions of which we have the shortest supply.

During the period 1935-1939 the chief agricultural imports of the United States, in terms of dollars, were rubber, sugar, coffee, silk and vegetable oils, base paper stocks and newsprint, were about the only important nonagricultural products imported. There were many other products

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which, though not as important in dollars, were nearly as vital to the conduct of war as those mentioned above. These include hides and skins, wool, several hard and soft vegetable fibers, spices and medicinals.

Most of the commodities mentioned above were obtained from the tropical areas of southeastern Asia or in Latin American Countries. During this period nearly one-half of our total agricultural imports were obtained from the Far East, including India, and about 35 percent from the Latin American countries. Much of the remainder was from Canada, or were re-exports or by-products of tropical products from Europe. Our supply of rubber came mostly from Malaya, Java and Ceylon; our silk from Japan; sugar from Puerto Rico, Hawaii, Cuba and the Philippine Islands; and our coffee from Brazil and Central American countries.

Vegetable oils are imported from all over the world. The principal import in prewar was copra or coconut oil from the Philippines and adjacent islands, but the United States also takes about two-thirds of the cottonseed oil entering world trade and about one-third of the total exports of flaxseed, mostly from Argentina. A very large percentage of tung oil and other drying oils from China and Brazil were imported by the United States and there were some imports of palm oils from Java, Malaya and Africa. About one-third of the olive oil exports of the Mediterranean area was imported by the United States. Most of these oils are used for industrial purposes and our imports made up a large proportion of the total industrial oils in the prewar period.

The United States was also the principal importer of coarse fibers. Sisal and henequen were imported from Central America, the Netherland Indies and British East Africa, manila fiber or abaca mostly from the Philippines, and jute largely from British India. These products are very important in the manufacture of binder twine, rope, and burlap bags for bagging cotton, feeds, sugar, fertilizers, potatoes, etc. None of these products is extensively grown in the United States and when our foreign supply was threatened some drastic steps had to be taken.

Of the other products, which are particularly important from a military point of view, hides and skins are largely imported from the livestock producing countries of South America, although a large part of them are from British India, Canada, New Zealand and Australia. The United States is dependent for a large part of its wool from foreign countries, particularly in times of high demand. Most of our wool is obtained from Argentina, India, New Zealand and Australia. Our spices and medicinal products, such as cinchona and ematine, came largely from the Netherland Indies.

When the European blockade closed that continent as a market for world products, surpluses of many products began to accumulate in exporting countries. In order to protect the economies of these countries and at the same time assure a source of supply of strategic products both the United Kingdom and the United States found it advisable to protect these countries from economic

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collapse. Steps taken to stabilize coffee and wool prices are illustrations of the type of aid given and the problems involved.

In prewar, Europe was the second most important market for coffee. When this market was cut off, coffee supplies accumulated in South American countries and prices reached a very low level. Finally an inter-American Coffee Agreement was set up between the United States and the South American producers to protect the economy of these countries. In this agreement exporting countries were assured a definite price for the coffee imported by the United States and quotas were allotted to each of the exporting countries. One of the weaknesses of the agreement was that it did not contain any stipulations on the level of production in the exporting countries.

During the early stages of the war, when submarines were cruising the Caribbean area, coffee trade was seriously restricted and stock in the United States reached a very low level. As the submarine menace was overcome and the United States demand for coffee expanded for both civilian and military use, trade increased sharply and it was necessary to revise the quotas upward several times. These revisions were made on a uniform percentage basis for all countries and, since countries had not expanded their production uniformly, the quotas for some countries were in excess of their available supplies so that by the end of the war, quotas had become unrealistic. The weak points in the agreement were the underestimation of supplies that would be needed during the war and the fact that no agreement was made as to how countries should share in the expansion in exports.

Wool was another commodity in excess supply during World War II. Before the war wool prices in the United States were, on the average, about equal to prices of duty paid imported wools of comparable quantity. As the result of the Buy-American Act, which required manufacturers to use domestic wools in government contracts, prices of domestic wools in 1940 and 1941 increased much more sharply than the prices of foreign wools. With the beginning of the war in 1941, the United States began to import large quantities of wool to build up stocks in this country. In addition the British Government stored large quantities of wool in the United States. From 1943 to 1945 total wool stocks in the United States exceeded one billion pounds approximately the equivalent of a two-year normal consumption. The huge stocks, together with the fact that lower prices of foreign wools caused manufacturers to use the cheaper foreign wools wherever possible. This depressed United States prices and it soon became necessary for the Commodity Credit Corporation to purchase large quantities of domestically produced wool in order to support domestic prices. This program began in April 1943, and has been continued to date. As government contracts were filled more of the cheaper foreign wool was used. As a result foreign wool stocks have been largely liquidated but

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domestic production has piled up in the hands of the Commodity Credit Corporation. The British stockpile also has been largely exported from the United States, but large stocks of wool are held by the United Kingdom in other countries. Until recently the Commodity Credit Corporation was prohibited from selling farm commodities below parity so it has been unable to dispose of the huge stocks of wool until special Legislation is passed permitting it to sell wool in competition with foreign suppliers.

Our experience in wool shows the problems involved where a national program for stabilizing prices interferes with an international program for stabilizing prices. Since 1940 about two-thirds of the world's exportable wool supplies have been bought up by the United Kingdom at set prices in order to support the prices of wool in its Dominions. The increase in prices paid by the United Kingdom, however, was much less than prices paid by the United States. Since wartime consumption outside the United States was far less than expected, large surpluses have accumulated in the hands of the British wool control. The disposal of these large stocks, as well as the Commodity Credit Corporation stocks is one of the world's postwar problems.

In spite of the fact that our chances of not being drawn into the war became less and less as the war continued, we did very little stockpiling of nonmineral products before 1942. There was some stockpiling of wool as previously mentioned as this was partly to relieve the wool surplus. We did stockpile some rubber in 1940 and 1941 also as a result of a surplus, but our supply of raw rubber when the war began was insignificant in comparison with our war demand. One peculiarity about nonmineral products is that it is impossible to stockpile many of them because production has to be planned several years in advance of the actual need. It takes years, for example, to grow a rubber or cinchona tree. Supplies of wool, hides and skins and coarser fibers also change slowly.

With our entry into the war, we suddenly became aware of our shortage of foreign raw materials and many boards and commissions, etc., were set up to buy whatever existing supplies could be found, make shipping arrangements, plan for expansion of production in areas still open to us, and find substitutes where natural supplies were not available. We were fortunate in that two of our largest needs--for silk and rubber--were taken care of by chemists. The chemists also came to our rescue by providing synthetic quinine and other necessary medicines formally obtained from natural products.

Our need for fats and oils was taken care of by shifts in agricultural production and by this expansion we were not only able to provide for our own needs but we actually became an exporter and helped to provide the most critical needs of our Allies. The shortage of fats and oils among allied nations was one of the most critical food problems of this war. Normally

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about 35 percent of the world's exportable supplies of oils comes from Manchuria, the Philippines, Java and other southeastern Asiatic countries. The need for fats and oils was accelerated by military requirements and the high level of consumer income. The occupation of Europe greatly increased the need for fats. In many instances the supplies have been so short that countries were willing to pay almost any price to obtain fats and oils. This has made the allocation of fats and oils exceedingly difficult both during and since the war.

The shortage of sugar was another critical food problem during the war. The sugar shortage in the United States resulted partly from our supplies from the Philippines being cut off and partly from the agreement between the United Nations to pool their resources of food and other supplies in order to continue the war more effectively. Cuban crop was purchased under contract by the United States. As a part of this agreement, part of the sugar supplies which we would have been able to obtain from the Caribbean area was diverted to the United Kingdom and other needy Allies. Following the invasion of Europe, the sugar shortage became even more acute because sugar production in Europe was sharply reduced. The supply of sugar is still much below world needs.

The many trade agreements entered during the war and agencies set up to obtain supplies of raw materials from abroad have been adequately described in the handbook prepared for the Industrial Mobilization Course given by the War College last year, and in the Industrial College, Study of experience in Industrial Mobilization in World War II, dealing with purchases of materials for war contracts. The purpose of most of these agencies was to locate and purchase strategic materials in foreign countries and arrange for their transportation to the places where needed.

I would like to call your attention, however, to the work of the Combined Food Board which was one of the most important committees appointed during the war. This committee was set up in June 1942 by the President and the Prime Minister of England and was concerned chiefly with (a) the allocation of available food and food materials among the various United Nations and (b) the production and distribution of food for the United Nations in the manner calculated to require the least possible shipping tonnage. Canada was also a member of this committee and the other British Dominions were represented through the British Government.

This committee was in contact with all of the various agencies in the member countries interested in the movement of food between nations, such as the British Merchant Shipping Mission, British Food Mission, the Department of State, Board of Economic Warfare, later F. E. A., Office of Lend-Lease Administration, War Production Board, War Shipping Administration, and the Agricultural Production Administration. It was to determine the amount of food needed to meet international requirements, find sources of

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supply, shipping space, etc., and to allocate supplies to the different nations and point out where these supplies are available.

Their main function was to allocate food supplies. This committee was not a purchasing agent, it was a coordinating committee to aid in the most efficient utilization of the Allies' production and transportation facilities. During the war this committee was under tremendous pressure both from government agencies and private concerns wanting additional supplies of different food products. However, it was largely through the efficient functioning of the committee that the allied military forces were kept supplied with food and at the same time civilians in the Allied Countries were able to eat about as well and in many cases better than they had in peacetime. Where sacrifices had to be made they were apportioned among the civilians of all allied countries. (Example, sugar and fats.) This committee also aided in keeping down prices of products in international trade indirectly. In other words it was an international O. P. A.

Since operations of other boards and administrations are covered more thoroughly in the report previously mentioned, I want to tell you something about our experience in attempting to develop a supply of strategic materials in the tropical regions of the Western Hemisphere. A review of these developments not only shows the problems and time involved in building up a more readily accessible supply of strategic materials but gives some insight as to what possible materials may be available in the future from the Latin American countries.

Early in 1938 an Inter-Departmental Committee on cultural and scientific cooperation was created by the President to undertake a cooperative program for the development of economic, cultural and scientific relations in the Western Hemisphere. The 76th Congress passed laws which permitted the Department of Agriculture, as part of the Inter-Departmental Committee, to loan technicians, on a short-time reimbursable basis, to the south and central American countries and to cooperate in the establishment of experiment stations for the development of crops complementary to United States production. It was felt that an increase in the production of these commodities would give these countries greater purchasing power, and aid them in developing a more stable and diversified economy. The program moved rather slowly at first but was given impetus by the war because of the possibility of Latin America as a source of needed tropical material.

As the foreign governments were approached on their willingness to produce certain tropical products desired by the United States, they were willing and anxious to cooperate but did not have experienced men to develop the production of these products and were at a loss as to the methods for promoting research for getting the production of these commodities under way. Through cooperation with the Technical Collaboration Branch of Office of Foreign Agricultural Relations, the Department of Agriculture, set up by the Inter-Departmental Committee, a program was worked out to establish a system

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of experiment stations in several Latin American countries and to train a limited number of foreign technicians to operate these stations. Through this arrangement, experiment stations have been set up in Guatemala, El Salvador, Nicaragua, Ecuador, and Peru and an agreement for collaborative projects has been made with Brazil and Cuba and a crop research program on kenaf fibers also has been set up with the latter country. In addition an agricultural mission is being formed with Colombia and a corps of technicians is serving as field service consultants in all Latin American countries.

These foreign countries were entirely inexperienced in setting up research projects for the development of new products and in teaching their farmers how to produce these products. The first step was to find the proper place for setting up the experiment stations and the second was to find experienced scientists to get them started. The country in which the stations are set up usually provide the land, buildings, associate technicians, laborers, mechanics, and related service personnel, equipment and supplies available within the country and funds for operating expenses. The United States provides personnel for technical direction and assistance, scientific and technical equipment not available in the cooperating country and various technical publications. Often there are no experienced scientists in the U. S. Scientists have been consulted from all parts of the world and many have been brought in from foreign countries to establish these stations.

Some of the stations were established in the most inaccessible parts of South America. For example, a station was set up to promote rubber and cinchona production in one of the most inaccessible regions of the upper tributaries of the Amazon river in Peru, high in the Andes mountains. This station is a 2-day drive by automobile from the nearest source of supplies. It was not only necessary to set up facilities for experimenting in the new products but also to develop a home-grown source of food supplies for workers at the station and to build roads for contact to the outside world. Naturally such handicaps have retarded the progress of this development and the actual production resulting from these experiments was of little value during the last war.

Some of the projects started under this program require only a few years to show definite and practical results, others because of the nature of the problems investigated require many years. The objective of this program of international cooperative research is a long-range stimulation of production. The program is not designed for a short-range accumulation of stockpiles. It tends to bring living stockpiles from the form of stimulated production of strategic and critical materials in the areas of maximum military security.

#### Results by Commodities.

Early in the war, initial studies were made on the possibilities of developing several soft fiber plants in order to find a substitute for jute.

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Kenaf appeared to offer the greatest promise, and extensive experiments have been made in the culture and processing of this commodity. The main problem has been to determine the best method of fiber processing. The method of planting and the handling of the crop is now definitely known and discoveries have been made leading to the mechanization of production and decortication of the fiber. This plant grows rapidly and its cultivation could be extended to several other parts of Latin America. When more efficient equipment is developed to meet the peculiar characteristics of this fiber, it may replace jute as a product for containers for sugar, fertilizer, feeds, etc. (Experimenters say it is completely mechanized now, some a little more cautious.)

Attention is also being given to the growth of hard fibers like manila fiber or abaca. The successful control of insects and diseases is one of the current problems in their production. Sigatosis experiments are being carried on to develop abaca on abandoned banana plantations in Costa Rica and Panama. The Technical Collaboration Branch is collaborating in this research and also in assisting abaca producers in Ecuador with their problems.

Research work on the production of natural rubber is being carried on in Brazil and some of the other American Republics by the Bureau of Plant Industry. Where possible the work of the BPI has been integrated with the experiment stations of TCB. An interesting factor in the development is the steps that have to be taken to develop high-yielding disease-resistant plants in South America. First a plant with natural high rubber yield is budded on a rubber seedling with good root foundation, then when the new bud has obtained sufficient growth it is topped with a second bud of blight resistant plant material to provide a blight resistant top for the rubber tree.

The expansion of certain strategic medicinals and insecticides is also being studied in this area and considerable attention has been given to extending the production of cinchona bark (quinine) and emetine (ipecac) which were formerly obtained largely from the Netherland East Indies. Several insecticides are grown extensively in Latin America. Derris root and cube are basic materials for rotenone; they come largely from Brazil. Pyrethrum is another insecticide which is nonpoisonous to man. It was formerly obtained from China and East Africa but the chrysanthemum plant, which is the source of pyrethrum, is well adapted to the high levels of Central and South America. Considerable work also has been done trying to establish the plant commercially in the United States but because of the large amount of labor required it can only be grown economically in areas where labor can be obtained at a low cost.

In response to the acute shortage of fats and oils during the war many of the experiment stations located in the Latin American countries are experimenting in the growth of edible oils in order to enable local farmers to provide a greater proportion of their own needs as well as to provide

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oils for export. Improved varieties of several oil producing products have been introduced, including the African oil palm. If the research is successful, it is possible that the significant supplies of palm oil, palm kernel oil, coconut oil, and sesamum oil could be obtained from this area. Many high quality drying oils are being expanded in Brazil.

Because of the long-time nature of many of the projects in this enterprise it is important that they be continued over a period of years and that the products be protected economically so that production could be expanded to the point where it can successfully compete with other areas of the world which require cheap labor. Tropical agricultural research also presents many other problems which require much original research of a high caliber. Much research is needed to develop special agricultural machinery and tools to produce these products efficiently. Tropical soils and climatic conditions must be studied to find the proper areas of production for these commodities. The prevalence of disease is high in tropical areas and is one of the chief problems connected with the production of useful tropical products.

Lumber and newsprint are two other nonmineral products for which the United States depends on foreign sources of supply. (These products are not classified as agricultural products in trade statistics, and I am only casually acquainted with the problems relating to them.) Before the war, we imported large quantities of newsprint and other paper stocks from Canada, Finland, Sweden and Norway. With the blockade of Europe, efforts were made to obtain more newsprint from Canada, but the shortage of labor made it impossible for Canada to increase her supplies. In order to meet the loss of European supply, several mills were started in the United States and production of newsprint increased from 13.5 million tons in 1939 to 19.2 million in 1946 and a further increase is expected in 1947. Those familiar with the newsprint industry tell me that the United States will probably continue to produce a larger proportion of its newsprint requirements than it did in prewar.

A considerable amount of imports of woodpulp will continue mainly from Canada but domestic output of this product is also being expanded particularly in the southern States.

The imports of lumber to date have not been significant in comparison with our huge consumption. However, the Forest Service reports that we are consuming our lumber at a much faster rate than it was being replaced. For example a recent survey estimated the annual growth of saw lumber in the United States at 35.3 billion board feet whereas the drain was 54 billion board feet. This same survey estimated that the current growth of all lumber is about 13.4 billion cubic feet and that in order to meet our normal demands it should be about 20 billion cubic feet. Most of this shortage is in saw timber. Unless steps can be taken to attain the goal set by the survey of 20 billion cubic feet, any future war might find this country extremely

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short of lumber because of the long period of years required to grow saw timber. It is difficult to get people interested in a program of timber expansion as long as we have sufficient lumber to meet our domestic needs. During the past war there was a tremendous increase in our lumber requirements and there was some increase in the imports of lumber. Most of the imports were from Canada but small amounts also were received from Mexico, Ecuador, British Honduras, and such far off places as the Gold Coast of Africa and Russia.

## Summary.

To summarize briefly it is worthy to note that while the United States is much less dependent upon foreign sources of raw materials than most countries, there were many nonminerals, particularly rubber, coffee, silk, sugar and vegetable oils that were extensively imported up to the outbreak of World War II. The rapid development of synthetics during the last war has greatly reduced this dependence. It is not expected that silk will ever regain its former importance as a textile. It is of little military importance. Although synthetic rubber is not yet so good for many purposes as natural rubber, its production could be expanded rapidly and we have the natural resources for its production. Our supply of coffee and sugar is not likely to be seriously menaced as long as we have control of shipping between the Americas. Many foreign vegetable oils are better adapted to industrial uses than our domestic products, but we have proven that we can be self-sufficing in oils.

Our supplies of hides and skins and wool are by-products of the meat industry and the supply of these products may not increase as fast as our industrial demands. However, increasing numbers of industrial substitutes are being found for these commodities and the production of these could be expanded rapidly in an emergency. (Neolon, plastics)

It is also economical to import hemp when foreign supplies can be obtained but in both wars we had found that hemp production can be expanded to take care of our domestic needs. The development of kenaf, if as successful as scientists now believe, should supply us with a plentiful supply of soft fibers in near-by foreign areas and it is probable that the production of cinchona will be expanded sufficiently to take care of our most urgent needs within this hemisphere. Therefore, with the developments made by the scientists during the current war and the continued expansion in the tropical Americas, we should be better supplied with these nonmineral materials in the future than during World War II. Domestic supplies of pulpwood and newsprint also will be more plentiful but we will continue to be dependent, to some extent, upon imports. Supplies of lumber in relation to needs are likely to decline and we may become more dependent upon foreign supplies of that commodity.

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I believe that sums up the current situation on our foreign sources of nonmineral materials, but I will try to answer any questions you would like to ask.

A STUDENT: What about the supply of cork and kapok, and so forth?

Did we develop a substitute for them?

MR. PURVES: They are working on kapok down in Central America but I have not talked with any one who has worked on that program directly. I know some progress is being made in expanding production, but I believe spun glass was used as a substitute for these commodities during the war with considerable success.

A STUDENT: Have we tried to get any pulpwood out of Alaska? There is a lot of timber there right down to the water's edge—fir, spruce—a tremendous amount of it. Why not develop that?

MR. PURVES: I imagine that can be done. The population up there is pretty small. One thing about our Foreign Agricultural Section is that we know less about the outlying possessions of the United States than we do about foreign countries. I am not familiar with the Alaskan situation.

A STUDENT: With reference to the Combined Food Board, what mechanism was used to control and coordinate the price of foods after the Combined Food Board had allocated them?

MR. PURVES: The main thing was that the United States and the United Kingdom bought up practically all the world supply. By agreeing to coordinate all their buying rather than competing with each other, they were able to keep these prices down, and having control of the shipping, these other countries could not sell their supplies to anyone else. In that way we were able to stabilize the price of international commodities. That was one of the big features of the Combined Food Board--bringing these countries together and coordinating their purchases.

A STUDENT: The Combined Food Board did not set prices?

MR. PURVES: No, each country did its own purchasing, but it was agreed through the Combined Food Board what prices they would pay.

A STUDENT: A gentleman's agreement.

MR. PURVES: That is right. There was no binding agreement at all.

A STUDENT: I would like to ask why, if we had surpluses of wool here at home, it was necessary to hold prices up? Was that strictly political?

MR. PURVES: Wool is one of the strategic commodities on the list that was set up by the Secretary of Agriculture. The Steagall Amendment agreed to maintain the price of wool at parity during the war. Parity is determined

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by taking the price in the base period and multiplying that price by an index number of what the farmer pays for the commodities he buys. As prices went on up, the parity price of wool kept going up.

In the United Kingdom because of the loss of the European market, there was a surplus of wool. They stabilized the price of Australian, New Zealand and Argentine wool. As our prices kept going up, it was more and more advantageous for manufacturers to use foreign wool wherever possible, rather than domestic wool. In other words, there was not an international agreement on wool prices as there was on many other commodities.

A STUDENT: Following out the wool question, you said at one time the United Kingdom purchased about three-fourths of the entire wool stocks. What year would that have been?

MR. PURVES: They began purchasing wool as soon as the war started.

A STUDENT: But not before? In other words, when you say, "When the war started," it was about 1938?

MR. PURVES: Along about 1940.

A STUDENT: Where was this wool stockpiled? Was it stockpiled in Australia and brought into the United Kingdom?

MR. PURVES: About 500 million pounds was stockpiled in the United States. That was one of the things that worried the domestic producers during the war. They were afraid that wool might be released in this country. I am talking about 1940 and 1941 when the situation was pretty bad in Europe.

A STUDENT: Do you know what instrumentality of the British held that wool? Who bought it and how was it held?

MR. PURVES: It was bought by the British Government and bought over here and stored in bond. Now the supplies have practically all been sold or removed.

A STUDENT: It was actually a part of the United Kingdom's stockpile?

MR. PURVES: That is right. They had to keep their life line open to North America. They felt if they got cut off from Argentina or Australia, by having a surplus of wool over here, they would be assured of that supply. That is the reason for stockpiling it in the United States.

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A STUDENT: Is there anything being done to develop guanine in this country? Why cannot we do that in Florida instead of in South America?

MR. PURVES: They find it grows much better in tropical countries than it does this far north. They have been fairly successful in getting plantations started down in Central America where labor is cheaper, and it grows better.

COLONEL CLABAUGH: There was a story in the "New York Times" within the last few days about a Chinese woman developing a process for taking the gum out of ramie and making it highly competitive with the better grades of cotton and hemp. Can you comment on that?

MR. PURVES: I was talking with our specialist on ramie the other day. She was telling me about that. She said that so many times in the past they thought they had a successful means of removing the gum from ramie. It seems that if you take too much of the gum from ramie, it deteriorates rapidly. So you have to have some process that takes just the right amount; otherwise, it is not a durable commodity. At the present time it is very expensive to process ramie.

A STUDENT: Can you tell us whether a political decision has been made by local countries of South and Central America that the plantation system of extracting the raw materials has been agreed upon, or are they objecting to it?

MR. PURVES: That varies with certain commodities. They say that the best possibility of producing rubber in South America is to have nurseries that grow the disease-resistant plants and have them set out on small farms, where a farmer who has the labor can grow it. It is something like milking cows in the United States. If you had to hire labor, the small farmer could not afford to do it. But if his family can do it, he can afford it. The big problem is cheap labor.

Other things that they found worked much better on a plantation basis. One of the functions of the experiment stations down in Latin America is to find out where these things can be grown, what soils they are best adapted to, the problems of growing them, where they can be mechanized. Where machinery can be used products can be grown much better on plantations because they can cultivate and harvest the products more efficiently.

A STUDENT: Is there a government policy in Agriculture to encourage United States corporations to acquire foreign properties for production?

MR. PURVES: I do not know whether that is the policy or not.

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A STUDENT: I cannot think of the name of the process but they put the root of the plant in water, then, pour on some chemicals that the plant needs. Is it possible to use that method and expand it greatly to agricultural products in the territories where they are trying to grow stuff?

MR. PURVES: That works very well on a few plants.

A STUDENT: I know they grow tomatoes that big (indicating.)

MR. PURVES: Tomatoes are one of the products with which this method has been very successful.

A STUDENT: What is the name of that process?

MR. PURVES: Nutricultural, I believe.

A STUDENT: What is the arrangement for sending these experiment units to Central American countries?

MR. PURVES: The Latin American countries furnish all materials they can furnish, common labor, material for building the experiment stations, and land, and any technical facilities they have. We furnish specialists and technical equipment. If we do not have them in this country, we bring them in from other countries. Our main function is advice and consultation. We have set up experiment stations and an extension service. When the experiment stations find out how to grow a plant, the extension service disseminates information among farmers in the country, teaching them how it can be done in an effort to get production on a commercial basis.

A STUDENT: Our contribution is a gift to that country?

MR. PURVES: We hope to benefit from it by getting cheaper raw materials from abroad and in case of another war by having a supply that will be available within an area we feel we can protect.

A STUDENT: How is it received in those countries?

MR. PURVES: Very well. They are very anxious to cooperate but they have no specialists and do not know how to go about developing these new products.

A STUDENT: Has the guayule program been abandoned in the United States?

MR. PURVES: It either has or will be. It is not an important source of rubber and is too expensive.

CAPTAIN WORTHINGTON: Thank you very much, Mr. Purves, for a very interesting talk.

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