● PSF: Subject File

Report to the President Dec 1940
Industrial Materials Dept.
Advisory Commission to the Council of Natl. Defense

PSF: Council of National Defense

CONFIDENTIAL REPORT TO THE PRESIDENT

Industrial Materials Department

visory Commission to the Council of National Defense

Initial Six Months' Report

June 1 - December 1, 1940

Edward R. Stettinius, Jr., Commissioner

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PSF:- Council of National Defense

Subject File "C"

Box 142

December 19, 1940

The President
The White House
Washington, D. C.

Dear Mr. President:

On May 28, 1940, you asked me to serve as the Commissioner in charge of industrial materials on the proposed Advisory Commission to the Council of National Defense.

I was advised that the functions of my department would be to analyze material sources and recommend action designed to insure a continuous and adequate flow of industrial materials from their sources to points of fabrication or use in defense preparations. In the case of materials found to be strategic, critical, or essential, this department was to do everything possible to facilitate the accumulation of stock piles, the increase of domestic production, or the development of other methods to insure an adequate supply, where thorough study indicated the necessity of special action.

I present herewith a report of the work accomplished by the Industrial Materials Department in its first six months, June 1 to December 1. The report, following this letter, is presented in two sections:

1. Personnel and organization

This contains an organization chart of the Department's personnel on December 1, with earlier charts showing the successive stages of our development. For easy reference I have added a list of our present and past personnel, giving each man's business or professional connection.

2. Studies of red-flag industrial materials

Each material found to be strategic, critical, or essential is the subject of a separate study, which can be readily located by opening at the proper index tab. A brief narrative text is accompanied by statistical diagrams showing the background of accomplishment and the status at December 1.

In reviewing this report, I believe you will recognize that we have always kept in mind the total industrial problem; that is, we have considered civilian as well as military requirements.

Our first project was a study of the Army and Navy defense programs, with the aim of determining in respect to industrial materials what and how much would be required to manufacture the proposed items of those programs, with due regard to the continuing needs of the civilian population. At the same time, we worked toward our objective from the opposite angle by studying the availability of material supplies both here and abroad. Comparing results, we were able to focus attention on bottlenecks or "red flag" conditions. Wherever an urgent red flag appeared, specially qualified personnel was obtained to study the situation intensively and take immediate action to remedy the condition, with the results here made available to you.

Many materials were found on thorough study to present no current problem of supply, and such materials are therefore not discussed in this report.

As it was natural to expect, our task has been complicated by the frequent shift in our objectives in terms of finished products, due partly to the daily increasing requirements of Great Britain, and partly to changes in Army and Navy specifications and requirements. These difficulties are continuing, will continue, and may increase. Since you are familiar with these limitations upon ideal accomplishment, we have thought it more useful in this report to concentrate on specific information as to the degree of achievements within ascertainable objectives. In this connection, I want to emphasize that we have received the full cooperation of the War and Navy Departments, their various bureaus and committees.

I early recognized that one of our chief responsibilities was to organize for cooperative effort between this department and the other six departments of the Commission. It was particularly necessary to determine a line of demarcation between this department and Mr. Knudsen's Production Department. In conversation with him, I agreed with his suggestion that, generally speaking, his group would assume responsibility at the point where materials begin to be cut up. By that definition, my department assumed jurisdiction over such materials as steel, tin, aluminum, rubber, hides, textiles and chemicals.

In the case of problems of considerable importance to both the Production and Industrial Materials Departments, studies were carried on by one and made available to the other. Examples are the survey of available power, conducted by our department in conjunction with the Federal Power Commission, and contracts for new construction, studied by the Production Department.

Many subjects have been investigated jointly by various departments of the Commission, with participation by our personnel. I might cite the related questions of accelerated depreciation of emergency facilities, and of types of contract to be entered into in connection with the erection of such facilities; labor relations in defense industries; price fluctuations in important industrial materials, such as wood pulp and lumber; production of nitrogen compounds; and establishment of priorities.

Early in the work of the Commission when it became apparent that a close coordination of all the procurement agencies of the Government would aid greatly in the solution of our defense problems, a committee was appointed to study the matter. As a result Mr. Nelson, who was then head of the Procurement Division of the Treasury Department, was appointed by Executive Order as Coordinator of National Defense Purchases. Since then our department has worked with him most harmoniously and, I think, effectively.

We have set up satisfactory liaison between our department and the various Departments, Bureaus, and other established agencies of the government. The direct relations of this Department with Congress have been confined largely to urging the necessary major defense appropriations, including specifically a recommendation for increased power from the Tennessee Valley Authority, to be used for the production of aluminum.

This report, on account of its arrangement, does not include mention of the work of the administrative divisions which handle the staff and liaison activities of our department. Briefly, these perform such functions as legal counsel, the preparation of economic and statistical data, recommendations on export licensing, advice on priorities, and a special study recently undertaken to determine the possible methods and value of civilian conservation and reclamation efforts in the case of certain industrial materials. The relationship between the industrial and administrative divisions within the Department, and their personnel, may be seen on the December 1 organization chart included subsequently in this report.

Regular staff meetings have been held within our Department each week. These have been attended by staff heads, division and group executives, consultants, representatives of the Army and Navy, and members of other interested departments.

I have been fortunate in securing the services of business executives with records of industrial accomplishment, and qualified specialists in certain fields such as mineralogy and chemistry. Our plan of organization from the start has been to place the industrial divisions in charge of experienced executives whose personal business connections did not involve them with the materials which their divisions were studying; on the other hand, group executives and consultants were selected because of their expert knowledge of the materials involved. In spite of the strain of high-pressure activity, and the increased business tempo, these men have given freely of their time and experience.

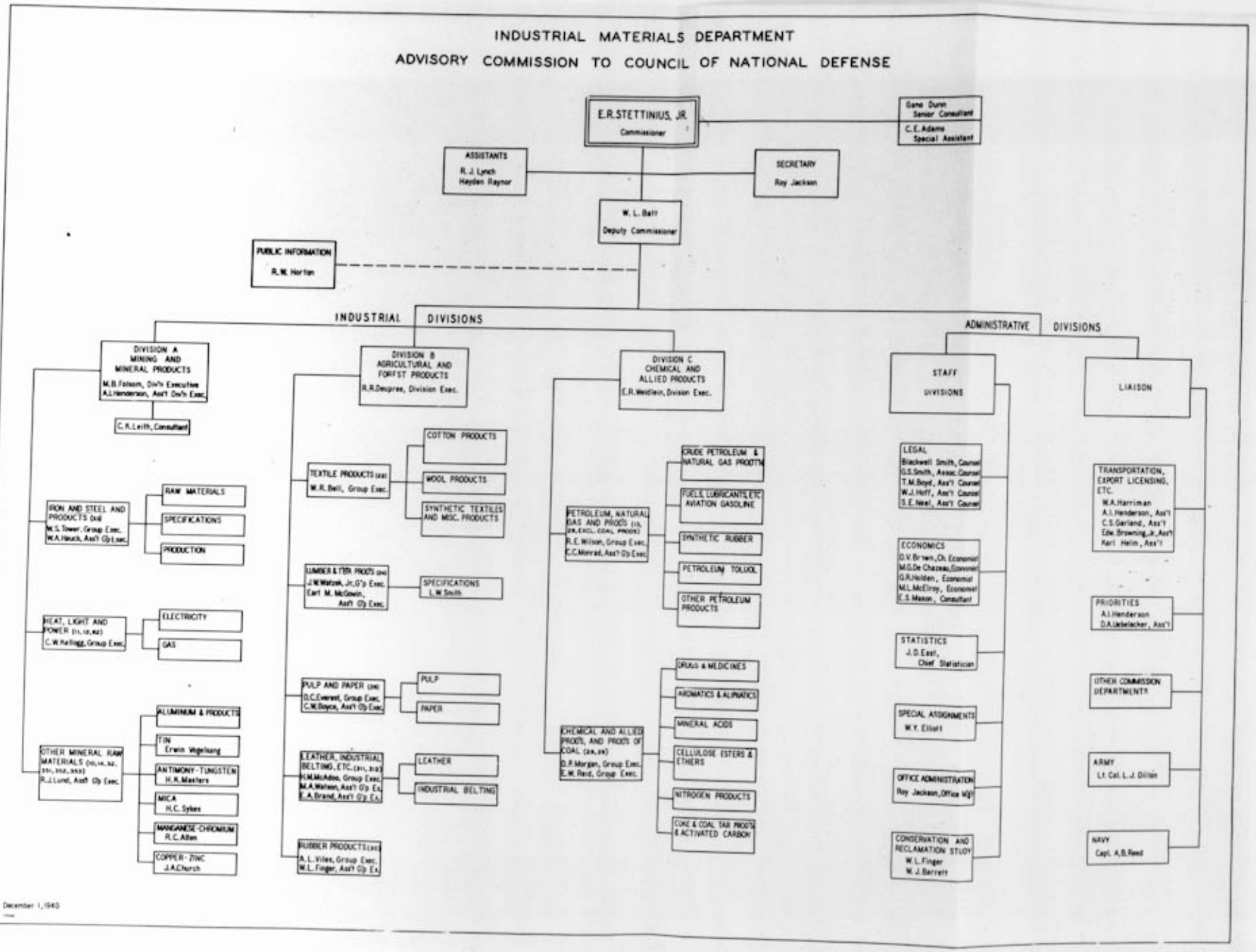
If we profit by the experience of our first six months' operation, our effort should proceed with increasing smoothness and speed. I

know that I voice the sentiments of the entire staff, as well as my own, when I thank you for affording us the opportunity to serve the country in these critical days.

Sincerely yours,

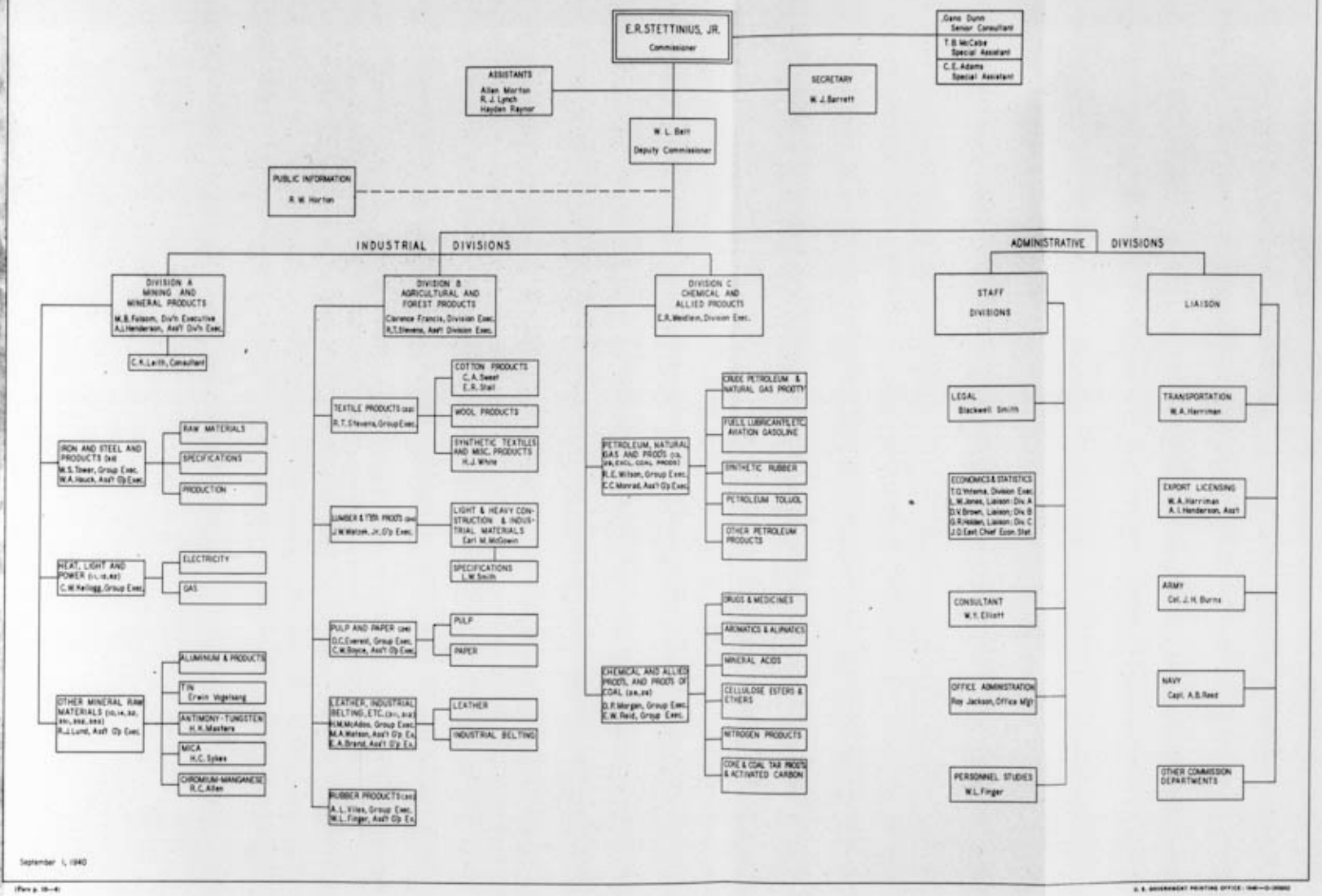
E. R. Stettinius, Jr.

INDUSTRIAL MATERIALS DEPARTMENT
ADVISORY COMMISSION TO COUNCIL OF NATIONAL DEFENSE

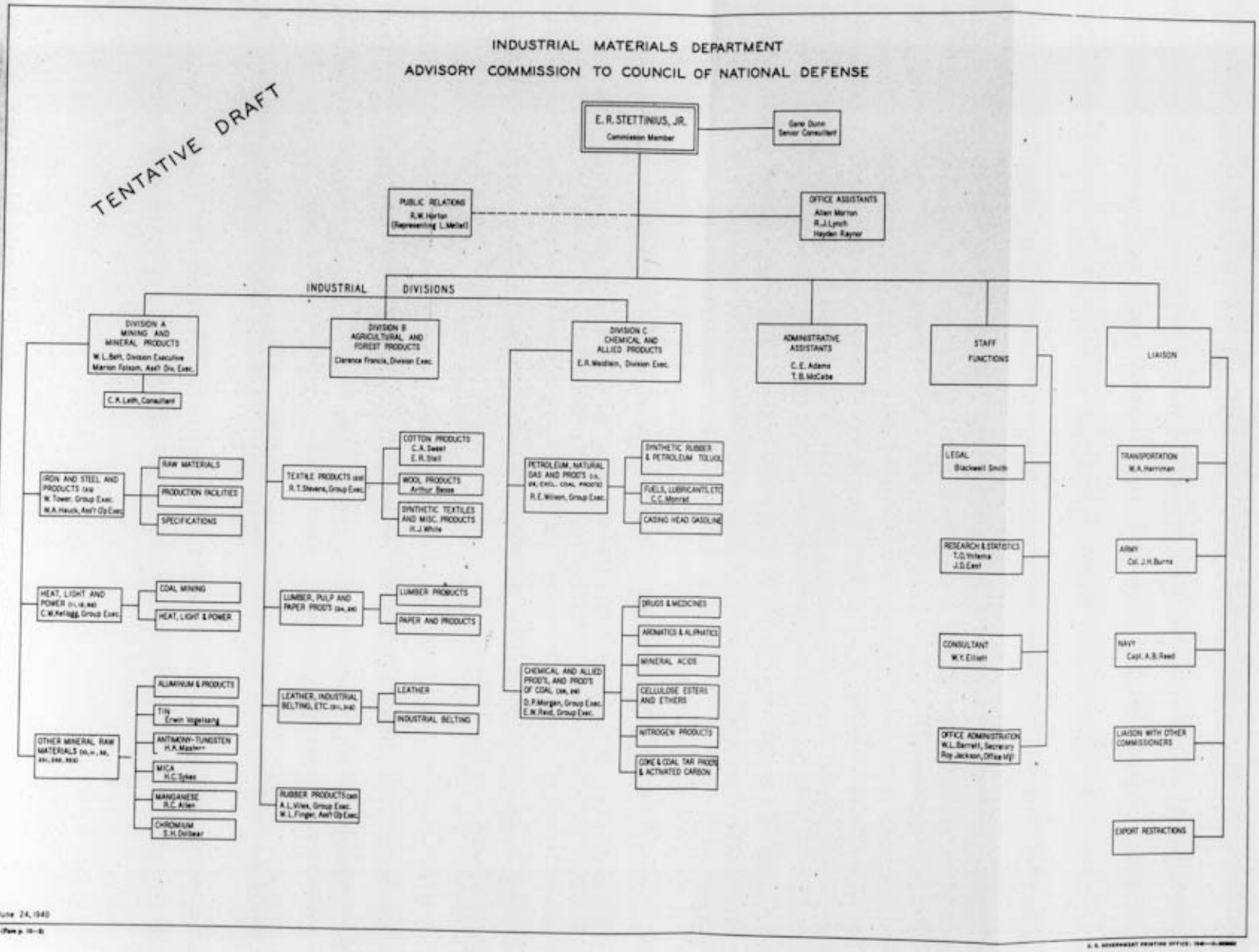


December 1, 1940

INDUSTRIAL MATERIALS DEPARTMENT
ADVISORY COMMISSION TO COUNCIL OF NATIONAL DEFENSE

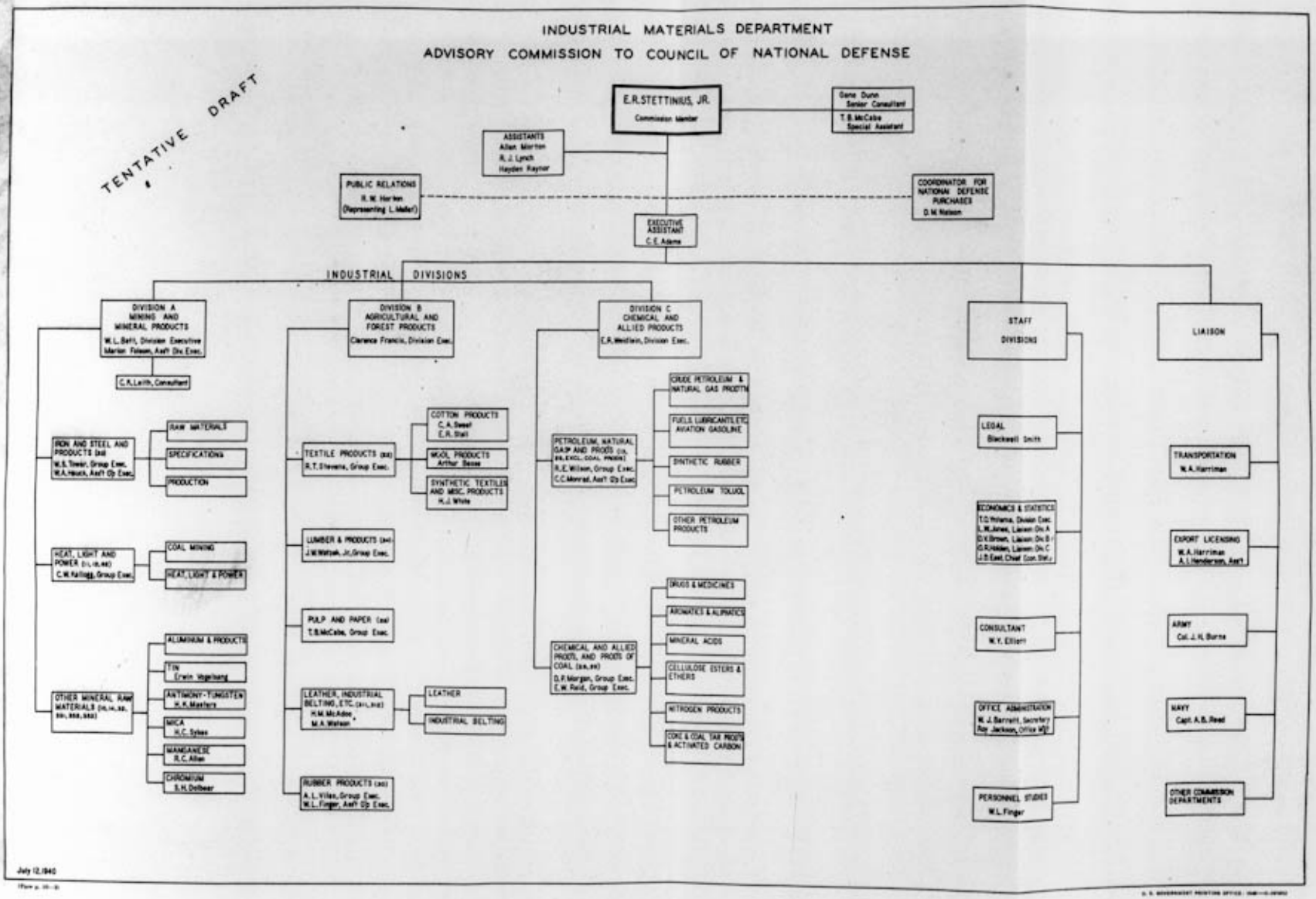


September 1, 1940


TENTATIVE DRAFT
INDUSTRIAL MATERIALS DEPARTMENT
ADVISORY COMMISSION TO COUNCIL OF NATIONAL DEFENSE
E. R. STETTINIUS, JR.
Commission Member
Gano Dunn
Senior Consultant
PUBLIC RELATIONS
R.W. Horton
(Representing L. Mellet)
OFFICE ASSISTANTS
Allen Morton
R.J. Lynch
Hayden Rayner
INDUSTRIAL DIVISIONS
DIVISION A
MINING AND MINERAL PRODUCTS
W. L. Batt, Division Executive
Marion Folsom, Asst Div. Exec.
C. K. Leith, Consultant
IRON AND STEEL AND PRODUCTS
W. Tower, Group Exec.
W.A. Hauck, Asst Op Exec.
RAW MATERIALS
PRODUCTION FACILITIES
SPECIFICATIONS
HEAT, LIGHT AND POWER
C.W. Kellogg, Group Exec.
COAL MINING
HEAT, LIGHT & POWER
OTHER MINERAL RAW MATERIALS
ALUMINUM & PRODUCTS
TIN
Erwin Vogelsang
ANTIMONY-TUNGSTEN
H.K. Masters
MICA
H.C. Sykes
MANGANESE
R.C. Allen
CHROMIUM
S.H. DuBois
DIVISION B
AGRICULTURAL AND FOREST PRODUCTS
Clarence Francis, Division Exec.
TEXTILE PRODUCTS
R.T. Stevens, Group Exec.
COTTON PRODUCTS
C.A. Sweet
E.R. Stett
WOOL PRODUCTS
Arthur Besse
SYNTHETIC TEXTILES AND MISC. PRODUCTS
H.J. White
LUMBER, PULP AND PAPER PRODS
LUMBER PRODUCTS
PAPER AND PRODUCTS
LEATHER, INDUSTRIAL BELTING, ETC.
LEATHER
INDUSTRIAL BELTING
RUBBER PRODUCTS
A.L. Viles, Group Exec.
W.L. Finger, Asst Op Exec.
DIVISION C
CHEMICAL AND ALLIED PRODUCTS
E.R. Weidlein, Division Exec.
PETROLEUM, NATURAL GAS AND PRODS
R.E. Wilson, Group Exec.
SYNTHETIC RUBBER & PETROLEUM TOLUOL
FUELS, LUBRICANTS, ETC.
C.C. Monrad
CASING HEAD GASOLINE
CHEMICAL AND ALLIED PRODS, AND PRODS OF COAL
D.P. Morgan, Group Exec.
E.N. Reid, Group Exec.
DRUGS & MEDICINES
AROMATICS & ALIPHATICS
MINERAL ACIDS
CELLULOSE ESTERS AND ETHERS
NITROGEN PRODUCTS
COKE & COAL TAR PRODS & ACTIVATED CARBON
ADMINISTRATIVE ASSISTANTS
C. E. Adams
T. B. McCabe
STAFF FUNCTIONS
LEGAL
Blackwell Smith
RESEARCH & STATISTICS
T.O. Yntema
J.D. Ezell
CONSULTANT
W.Y. Elliott
OFFICE ADMINISTRATION
W.L. Barrett, Secretary
Roy Jackson, Office Mgr
LIAISON
TRANSPORTATION
W.A. Harriman
ARMY
Col. J.H. Burns
NAVY
Capt. A.B. Reed
LIAISON WITH OTHER COMMISSIONERS
EXPORT RESTRICTIONS
June 24, 1940

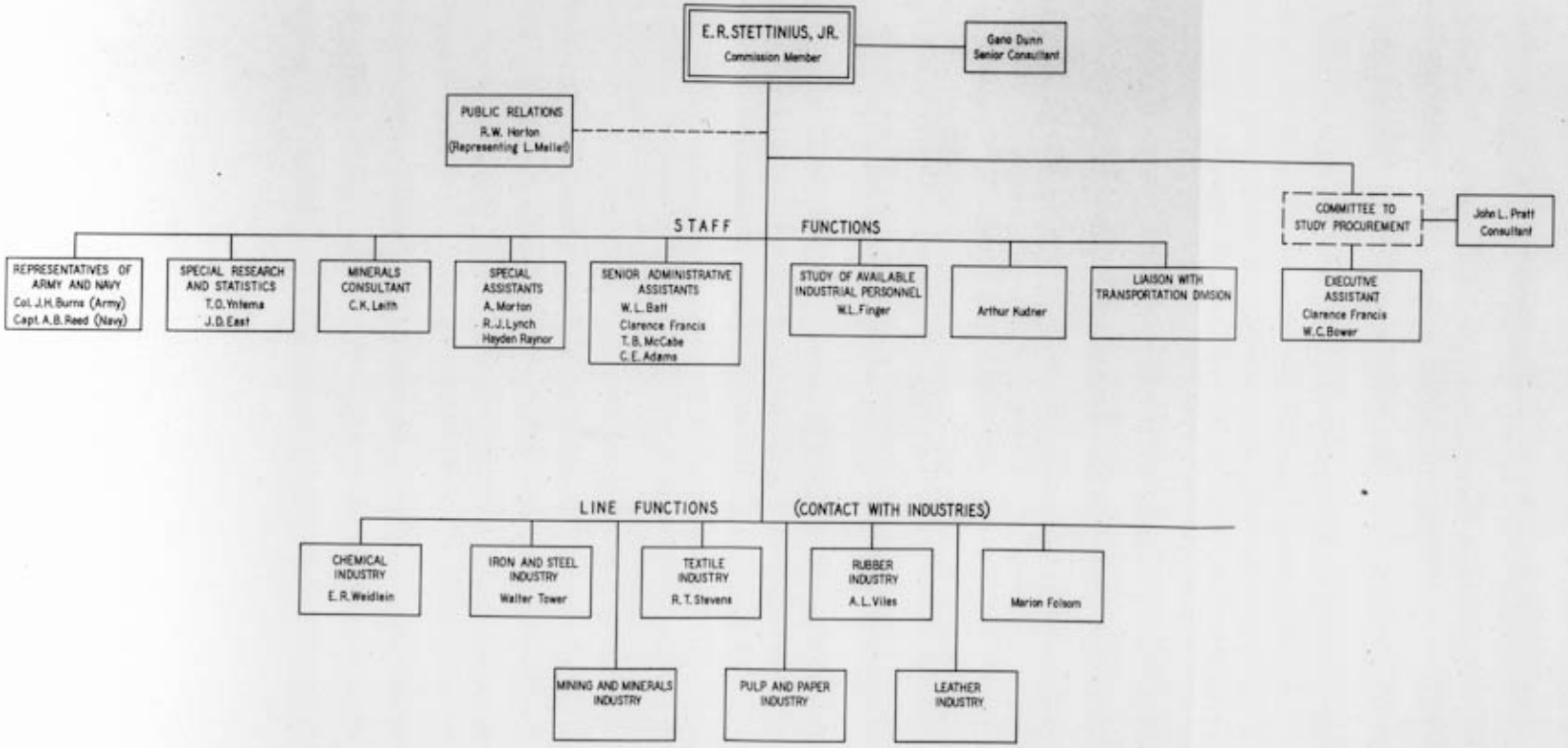
INDUSTRIAL MATERIALS DEPARTMENT
ADVISORY COMMISSION TO COUNCIL OF NATIONAL DEFENSE

TENTATIVE DRAFT



July 12, 1940

ORGANIZATION DIAGRAM OF
INDUSTRIAL MATERIALS DIVISION
ADVISORY COMMISSION TO COUNCIL OF NATIONAL DEFENSE



June 10, 1940

PRESENT PERSONNEL

Name	Previous Connection
Adams, C. E.	Chairman - Air Reduction Company, Incorporated
Allen, R. C.	Executive Vice President - Oglebay Norton & Co.
Barrett, W. J.	Metropolitan Life Insurance Company
Batt, W. L.	President - SKF Industries
Bell, W. R.	President - Ass'n of Cotton Textile Merchants of N.Y.
Boyce, C. W.	Vice President - Northwest Paper Company
Boyd, T. M.	Attorney
Brand, E. A.	General Attorney - Tanners' Council
Brown, D. V.	Assoc. Prof. of Economics - Mass. Inst. of Tech.
Browning, Edward, Jr.	George H. McFadden & Brother
Church, J. A.	Director - Ducktown Chemical and Iron Co.
de Chazeau, M. G.	Professor of Commerce - University of Virginia
Deupree, R. R.	President - Procter & Gamble Company
Dillon, Lt. Col. L.J.	Ordnance Department, United States Army
Dunn, Gano	President - J. G. White Engineering Company
East, J. D.	U. S. Steel Corporation
Elliott, W. Y.	Professor of Government - Harvard University
Everest, D. C.	President - Marathon Paper Mills Company
Finger, W. L.	Ass't to President - Rubber Manufacturers Ass'n.
Folsom, M. B.	Treasurer - Eastman Kodak Company
Garland, C. S.	Alex Brown & Sons
Harriman, W. A.	Chairman - Union Pacific Railroad
Hauck, W. A.	Assistant to President - Lukens Steel Company
Helm, Karl	Arthur Kudner Advertising Agency
Henderson, A. I.	Cravath, DeGersdorff, Swaine & Wood
Hoff, W. J.	Assistant Corporation Counsel, New York City
Holden, Gronville	Economist - Eastman Kodak Company
Jackson, Roy	Ass't. Sales Manager - U. S. Steel Export Co.
Kellogg, C. W.	President - Edison Electric Institute
Leith, C. K.	Professor of Geology - University of Wisconsin
Lund, R. J.	Editor - American Mining Congress Journal
Lynch, R. J.	U. S. Steel Corporation
Mason, E. S.	Professor of Economics - Harvard University
Masters, H. K.	Vice President - Charles Hardy, Incorporated
McAdoo, H. M.	President - United States Leather Company
McElroy, M. L.	Department of Commerce

McGowin, Earl M.	Vice President - W. T. Smith Lumber Company
Monrad, C. C.	Professor of Chem. Engineering - Carnegie Institute
Morgan, D. P.	Scudder, Stevens & Clark
Neel, Samuel	Department of Justice
Raynor, Hayden	U. S. Steel Corporation
Reed, Capt. A. B.	Assistant to Chairman - U. S. Maritime Commission
Reid, E. W.	Fellow - Mellon Institute
Smith, Blackwell	Wright, Gordon, Zachry and Parlin
Smith, G. S.	Attorney - Dechert, Smith and Clark
Smith, L. W.	National Lumber Manufacturers Association
Sykes, H. C.	Chairman of Board - Mica Insulator Company
Tower, W. S.	President - American Iron & Steel Institute
Uebelacker, D. A.	Ford, Bacon, & Davis
Viles, A. L.	President & Gen'l Mgr., Rubber Mfr's Association
Vogelsang, Erwin	Malcolm Bowley & Company
Watson, M. A.	Executive Vice President - Tanners' Council
Watzek, J. W., Jr.	Crossett, Watzek, Gates Industries
Weidlein, E. R.	Director - Mellon Institute
Wilson, R. E.	President - Pan American Petroleum Company

FORMER PERSONNEL
(Still Available For Consultation)

Name	Previous Connection
Besse, Arthur	President - National Ass'n Wool Manufacturers
Bower, W. C.	Vice President - New York Central Railroad
Burns, Col. J. H.	Ordnance Department - United States Army
Dolbear, S. H.	Wright, Dolbear & Company
Francis, Clarence	President - General Foods Corporation
Hewes, Thomas	Hewes, Prettyman, Awalt & Smiddy
Jones, L. W.	Professor of Economics - Bennington College
Kudner, Arthur	Arthur Kudner Advertising Agency
McCabe, T. B.	President - Scott Paper Company
Morton, A. W.	Vice President - Koppers Company
Pratt, J. L.	Director - General Motors Corporation
Stall, E. R.	President - F. W. Poe Manufacturing Company
Stevens, R. T.	President - J. P. Stevens Company, Inc.
Sweet, C. A.	Vice President - Wellington Sears Company
White, H. J.	E. I. duPont deNemours & Company
Yntema, T. O.	Professor of Statistics - University of Chicago

DANGER POINTS EXISTING JUNE 1ST IN INDUSTRIAL MATERIALS AND ACTION BEING TAKEN TO ELIMINATE THEM

■ DANGER POINT (ACTUAL OR POTENTIAL SHORTAGE)
? POSSIBILITY OF DANGER POINT (UNDER STUDY)
■ ACTION BEING TAKEN

Materials	Danger Point		Action Being Taken			
	Under Curr. Procur. Progr.	Under Max. War Effort	Stock Pile Being Accum.	Prod'n Facil. Being Incr.	Substi-tutes Being Devel.	Other Action Under Way
STRATEGIC						
ANTIMONY	■	■	■	■	■	■
CHROMITE	■	■	■	■		■
COCO. SH. CHAR					■	
MANGANESE ORE	■	■	■	■	■	■
MANILA FIBER		■	■			■
MERCURY	■	■	■	■		
MICA	■	■	■	■	■	■
NICKEL						
QUARTZ CRYSTAL	■	■	■			■
QUININE	■	■	■		■	
RUBBER	■	■	■	■	■	■
SILK		■			■	■
TIN	■	■	■	■	■	■
TUNGSTEN	■	■	■	■	■	■
CRITICAL						
ALUMINUM		■		■		■
ASBESTOS	■	■	■			■
CORK		■				■
GRAPHITE	■	■	■		■	■
HIDES (CATTLE)		■				■
IODINE						■
KAPOK						
OPIUM						
OPTICAL GLASS		■		■		■
PHENOL						
PLATINUM		?		■	■	■
TANNING MAT'LS						
TOLUOL		■	■	■		
VANADIUM				■		■
WOOL		?	■			■

Materials	Danger Point		Action Being Taken			
	Under Curr. Procur. Progr.	Under Max. War Effort	Stock Pile Being Accum.	Prod'n Facil. Being Incr.	Substi-tutes Being Devel.	Other Action Under Way
OTHER						
BERYLLIUM						
CADMIUM						
CALFSKINS		■			■	
CHLORINE		■		■		■
COBALT						■
COPPER	■	■	■	■		■
COTTON LINTERS		■	■	■	■	■
COTTON TEXTILES		■	■		■	■
FLAX		■	■		■	
FLUORSPAR						
HELIUM						
IND. DIAMONDS	■	■	■			■
LEAD						
LUMBER						■
MAGNESIUM		■		■		■
NITROGEN COMP		■		■		■
100 OCTANE GAS		■	■			■
92 OCTANE GAS		■				■
POTASH		■		■		■
STEEL (AR. PLATE)	■	■		■		
STEEL (OTHER)		■		■		
SULFURIC ACID		■		■		■
TITANIUM						
URANIUM						
WOOD PULP		?				■
ZINC	■	■		■	■	■
ZIRCONIUM						

National Defense Advisory Commission - Industrial Materials Department - December 3, 1940

PRINCIPAL USES FOR INDUSTRIAL MATERIALS

ATERIALS	USES
TRATEGIC	
TIMONY	Storage Batteries, Bearing Metal, Type Metal
ROMIUM	Alloy Steels, Refractories, Electroplating
CO. SH. CHAR	Gas Masks
NGANESE ORE	Steel Manufacture
NILA FIBER	Cordage
RCURY	Chemicals, Detonators, Elect.Contr. Instruments, Lamps
CA	Electrical Generators, Radios, Airplane Spark Plugs
CKEL	Alloy Steels, Electroplating
ARTZ CRYSTAL	Radios
NINE	Medicinal Purposes
BBER	Tires, Tubes, etc.
K	Powder Bags, Parachutes
	Tinplate, Solder, Bearing Metal
NGSTEN	Tool Steel, Electrical Filaments, Bullet Alloy
ITICAL	
UMINUM	Aircraft, Automobiles, Building Construction
BESTOS	Brake Linings, Clutch Facings, Insulation, Gaskets
RK	Insulation, Stoppers, Marine Goods
APHITE	Lubricants, Crucibles, Dry Batteries, Paints
ES (CATTLE)	Shoes, Harness
INE	Antiseptics
POK	Life Saving Equipment, Upholstery, Mattresses
UM	Morphine and Other Pain Relieving Drugs
ICAL GLASS	Field Glasses, Cameras, Fire Control Instruments
ENOL	Plastics, Explosives
TINUM	Chemical Manufacture, Electrical Contacts, Dental Work
NING MAT'LS	Tanning Leather
LUOL	Explosives, Plastics, Dyes, Motor Fuels
ADIUM	Alloy Steels, Chemical and Glass Manufacture
OL	Clothing, Blankets

MATERIALS	USES
OTHER	
BERYLLIUM	Special Copper Alloys
CADMIUM	Iron and Steel Plating, Bearing Metal
CALFSKINS	Shoes, Leather Products
CHLORINE	Chemicals, Bleaching, Water Treatment, Military Gases
COBALT	Alloy Steels, Paints, Paraffin Manufacture
COPPER	Wire, Electrical Instruments, Ammunition
COTTON LINTERS	Smokeless Powder, Rayon, Lacquers
COTTON TEXTILES	Clothing, Tire Fabrics, House Furnishings
FLAX	(Fiber) Linen and Cordage; (Seed) Linseed Oil
FLUORSPAR	Steel Manufacture, Ceramics, Hydrofluoric Acid
HELIUM	Balloon Gas, Light Bulbs, Radio Tubes
IND. DIAMONDS	Abrasives, Cutting Tools
LEAD	Batteries, Ammunition, Cable Coverings, Paints
LUMBER	Building Construction, etc.
MAGNESIUM	Deoxidizing, Pyrotechnics, Light Alloys
NITROGEN COMP'S	Explosives, Fertilizer
100 OCTANE GAS.	Aviation Fuel
92 OCTANE GAS.	Aviation Fuel
POTASH	Fertilizer, Chemicals
STEEL (AR.PLATE)	Ships, Tanks, Armored Cars, Airplanes
STEEL (OTHER)	Practically every industry and in countless products
SULFURIC ACID	Fertilizer, Petroleum Refining, Steel Manufacture, etc.
TITANIUM	Paints, Ceramics, Alloys, Welding-rod Coatings
URANIUM	Ceramic Coloring, Copper Alloys
WOOD PULP	Paper, Paperboard, Explosives
ZINC	Galvanizing, Paints, Brass and Other Alloys, Die C'st'gs
ZIRCONIUM	Welding-rod Coatings, Ceramics

nal Defense Advisory Commission - Industrial Materials Department - December 3, 1940

Antimony

ANTIMONY

It is estimated that emergency requirements for a two-year period with a maximum war demand would amount to 42,000 short tons of antimony metal. Present industry stocks are placed at 10,440 tons and it is estimated that domestic production could be expanded to 6,000 tons in two years and we could import 26,000 tons. Thus the total supply apparently in sight for the two-year period is 42,440 tons, slightly above the estimated requirements.

The government stock pile recommended for emergency requirements has been raised to 18,000 tons. To date purchases have amounted to 6,250 tons, which are now at New York in process of weighing, sampling and delivery. The quantity necessary to complete the stock pile is to be acquired by R.F.C.

On the whole, the antimony situation is progressing in a fairly satisfactory manner. Stocks in the hands of producers, consumers and dealers have been increased by larger domestic production and imports from the Western Hemisphere. Mexico is capable of further increase in production and imports from South America during 1940 have been on a considerably larger scale. Chinese metal will again be available with the opening of the Burma road.

December 3, 1940

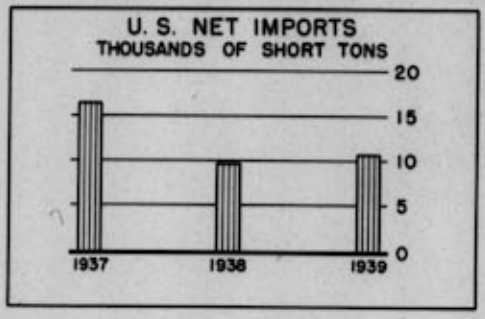
ANTIMONY

(PRINCIPAL SOURCES OF U.S. IMPORTS - MEXICO, BOLIVIA AND CHINA)

1939 BACKGROUND

Domestic Production	929	S.T's
Net Imports	10,680	"
Apparent Consumption	11,609	"

(Industry stocks Oct. 31, 1940 - 10,440 S.T's)

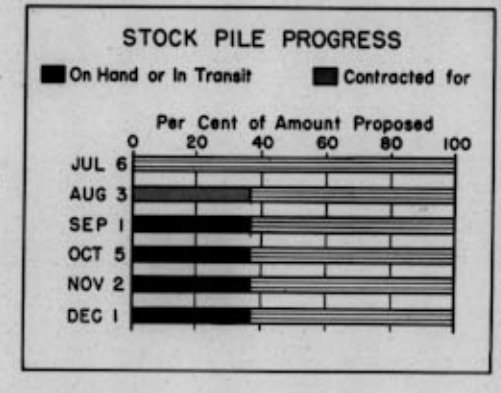


WAR REQUIREMENTS - MAX. EFFORT

First Year	21,000	S.T's
Second Year	21,000	"

GOVERNMENT STOCK PILE

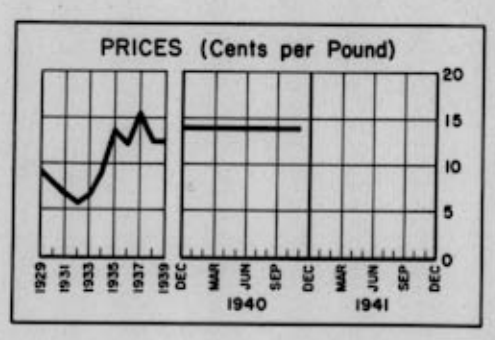
Amount Proposed	18,000	S.T's
On Hand or In Transit	6,250	"
Contracted for	0	"



COMMENTS

Large portions of antimony alloys, such as antimonial lead, and babbitt and type metals, return for refining and re-use. Production of secondary antimony in 1939 amounted to 9,810 short tons.

Imports from Mexico and South America (mostly Bolivian) in 1939 amounted to 6,530 tons and 3,102 tons respectively



Armor Plate
(Heavy)

ARMOR PLATE (HEAVY)

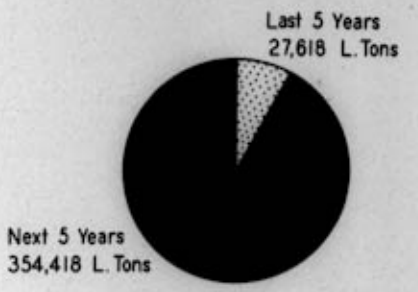
Heavy armor plate is used largely in naval construction. To meet requirements, considerable additional capacity has been provided at the plants of Bethlehem, Carnegie-Illinois and Midvale, and at the Charleston Navy plant. The situation is now generally satisfactory.

December 3, 1940

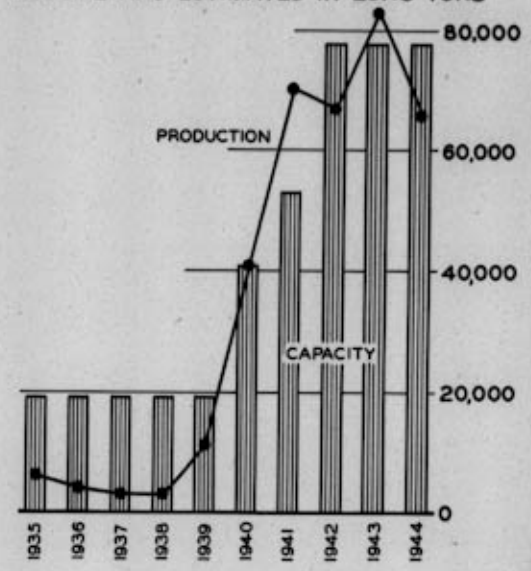
ARMOR PLATE (HEAVY)

3"-20" THICK

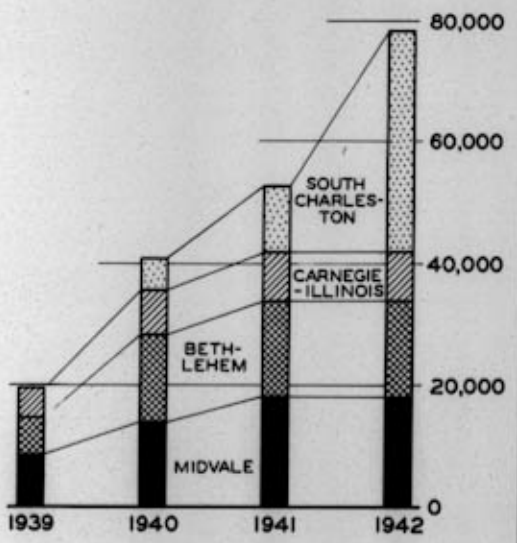
NAVY REQUIREMENTS
1935 - 1944



PRODUCTION AND CAPACITY
ACTUAL AND ESTIMATED IN LONG TONS



INCREASES IN CAPACITY
IN LONG TONS



COST OF CAPACITY INCREASES AND TIME OF COMPLETION

	1940 (Mid-Year)		1941 (Mid-Year)		1942 (Year-End)	
	L. Tons Incr.	Cost (000 $)	L. Tons Incr.	Cost (000 $)	L. Tons Incr.	Cost (000 $)
MIDVALE	5,400	1,800*	4,200	2,650‡	—	—
BETHLEHEM	8,280	1,343† 700*	1,450	500‡	—	—
CARNEGIE	2,340	1,225*	900	400‡	—	—
SO. CHARLES.	5,400	1,350†	5,400	2,662†	25,000	35,000†
TOTAL	21,420	6,418	11,950	6,212	25,000	35,000

*Requested amortization from Treasury
†Government funds
‡Financial arrangements yet to be made

National Defense Advisory Commission - Industrial Materials Department - December 3, 1940


Armor Plate
(Light)

ARMOR PLATE (LIGHT)

Light rolled face-hardened armor is used in tanks, aircraft, and, to a limited extent, in certain naval vessels. Additional capacity has been provided at the Diebold, Disston, and American Car and Foundry plants to meet tank and aircraft requirements. The situation is satisfactory but consideration is being given to further increases in capacity to meet prospective increased requirements.

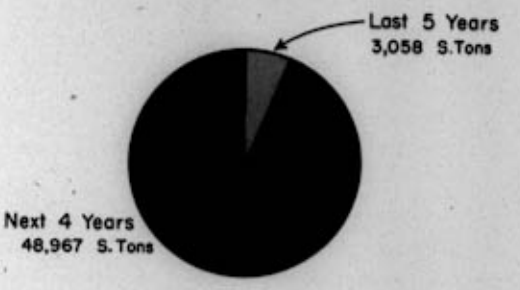
Conferences are being held by the Production Division and the War Department looking toward revisions of estimated requirements and specifications for tanks. Revised schedules are not available at this time, however, and it is impossible to make revisions in capacity requirements as shown in the chart opposite until they are received.

December 3, 1940

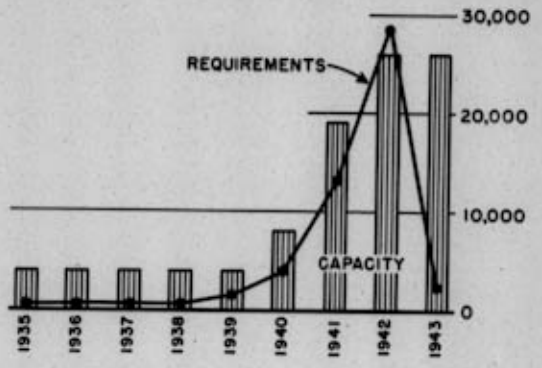
ARMOR PLATE (LIGHT, FACE-HARDENED)

¼" - 3" THICK

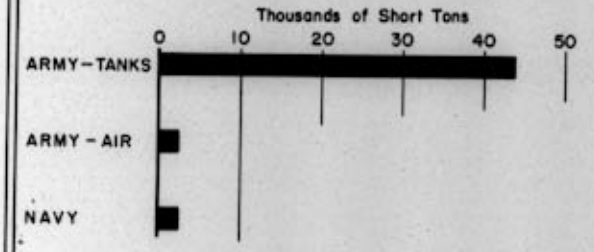
ARMY-NAVY REQUIREMENTS
1935-1943



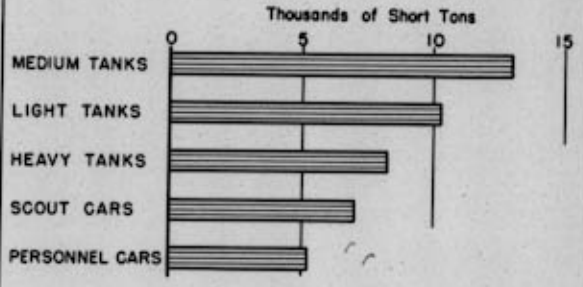
REQUIREMENTS AND AVERAGE CAPACITY
SHORT TONS



DISTRIBUTION OF REQUIREMENTS
CURRENT MUNITIONS PROGRAM



ARMOR PLATE FOR TANK PROGRAM



TENTATIVE CAPACITY EXPANSION
SHORT TONS PER YEAR

COMPANY	PRESENT CAPACITY	EXPANDED CAPACITY
DISSTON	1,500	3,600
DIEBOLD	1,200	5,100
CARNEGIE-ILLINOIS	1,500	6,000
AMERICAN CAR & FOUNDRY	1,500	7,200
SIMONDS	-	?
JESSOP	600	1,800
VAN DORN	600	1,200
ALLEGHENY-LUDLUM	?	?
BREEZE	300	300
ATKINS	0	1,200
TOTAL	7,200	26,400

COMMENTS

Maximum cost of capacity expansion is estimated at $5,000,000.

Cast steel armor, homogeneous steel and Pluromelt (Allegheny-Ludlum product) may be used as substitutes for face-hardened rolled armor plate.

British experience with homogeneous and cast armor plate indicates that these materials may be used as substitutes for face-hardened armor plate.

Bauxite and Aluminum

ALUMINUM

As the defense program has progressed and new information was obtained on military needs, revisions have been made in the estimated aluminum requirements. As of November 28, estimates were as follows:

Requirements	Calendar Year 1941	Fiscal Year Ending June 30, 1942
Total Aircraft as of Nov. 19, 1940	228,000,000 lbs.	292,000,000 lbs.
Other Military	60,000,000 "	44,000,000 "
Total Military	288,000,000 "	336,000,000 "
Exports	12,000,000 "	12,000,000 "
Civilian Req. stabilized, 1940 level	380,000,000 "	380,000,000 "
Total Requirements	680,000,000 "	728,000,000 "
Total Req. with Civilian Req. inc. by 15.8% in 1941 over 1940 and by 23.3% in 1942 over 1940	740,000,000 "	813,000,000 "
Total Supply	724,000,000 "	817,000,000 "

With the increases which the Aluminum Company proposed at the plants in Vancouver, Alcoa and Massena, and with the new plant which the Reynolds Company is constructing at Sheffield, Alabama, the estimated supply of ingot as of July 1, 1941 and July 1942, is as follows:

	July 1941 rate	July 1942 rate
Aluminum Company of America	670,000,000 lbs.	770,000,000 lbs.
Reynolds Metals Company	20,000,000 "	60,000,000 "
Total Primary	690,000,000 "	830,000,000 "
Secondary	80,000,000 "	85,000,000 "
TOTAL	770,000,000 "	915,000,000 " per yr.

It is thus indicated that there will be sufficient supply in ingot aluminum to take care of military requirements as now estimated, plus present civilian requirements, with enough surplus to permit a substantial increase in civilian requirements or in military requirements if needed. In general the fabricating facilities of the industry are being expanded to meet the increasing requirements.

Imports of bauxite from Dutch Guiana have been increasing and as new mines are expected to be in operation there next month imports should be sufficient for building up stocks in this country. Should we be cut off from Dutch Guiana, the supply of bauxite in Arkansas would be sufficient to take care of our requirements for at least seven years. Mining facilities could be expanded in time to meet requirements.

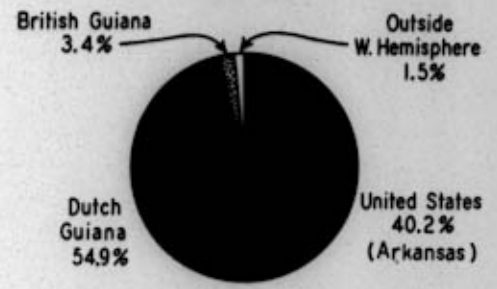
(See exhibits on following two pages.)

December 3, 1940

BAUXITE AND ALUMINUM

SOURCES OF U.S. SUPPLY OF BAUXITE

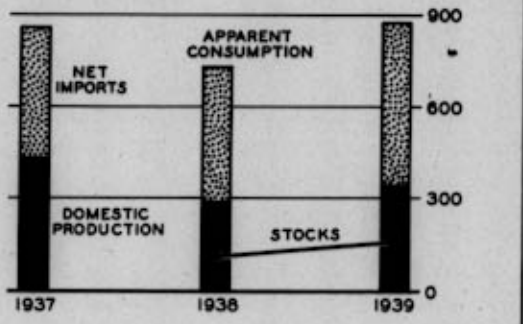
YEAR 1939



Domestic ore reserves are ample for all domestic needs for some time to come

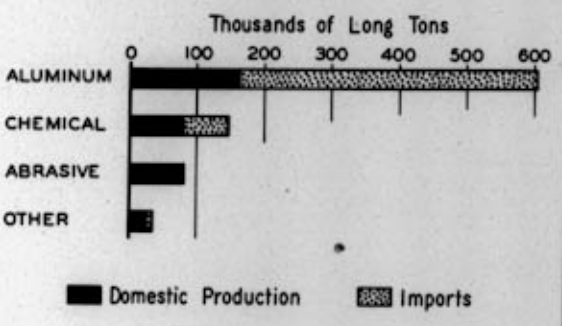
CONSUMPTION AND STOCKS OF BAUXITE

THOUSANDS OF LONG TONS



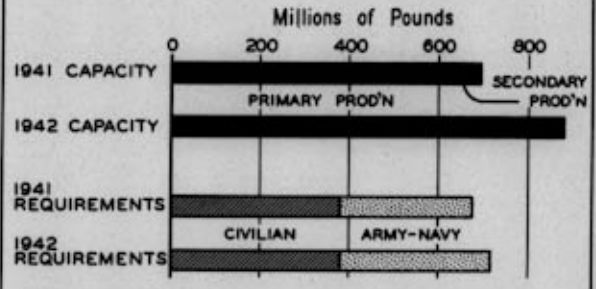
CONSUMPTION OF BAUXITE- BY INDUSTRIES

YEAR 1939



CAPACITY AND EST. REQUIREMENTS

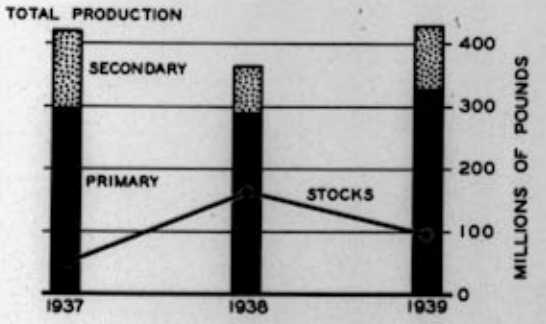
PRIMARY AND SECONDARY ALUMINUM



Civilian requirements assumed to remain at 1940 level
Army-Navy requirements cover British airplane program.

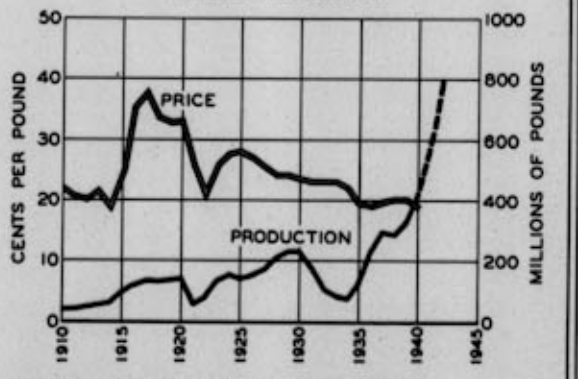
PRODUCTION AND STOCKS

(PRIMARY AND SECONDARY ALUMINUM)



PRICES AND PRODUCTION

PRIMARY ALUMINUM

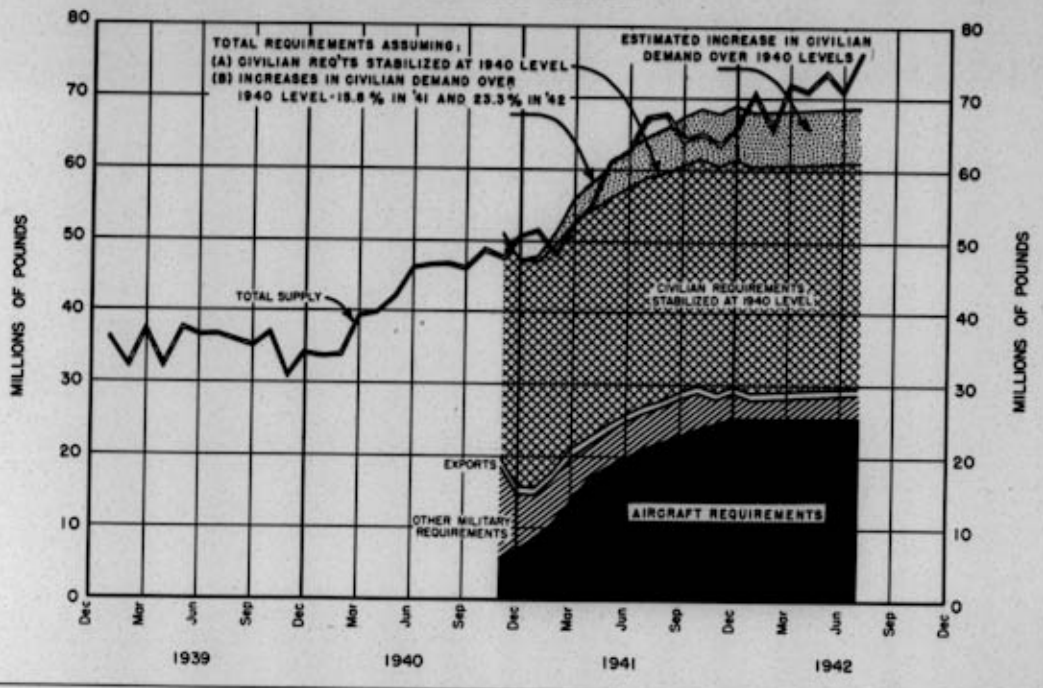


1941-1942 production estimated at capacity

National Defense Advisory Commission - Industrial Materials Department - December 3, 1940

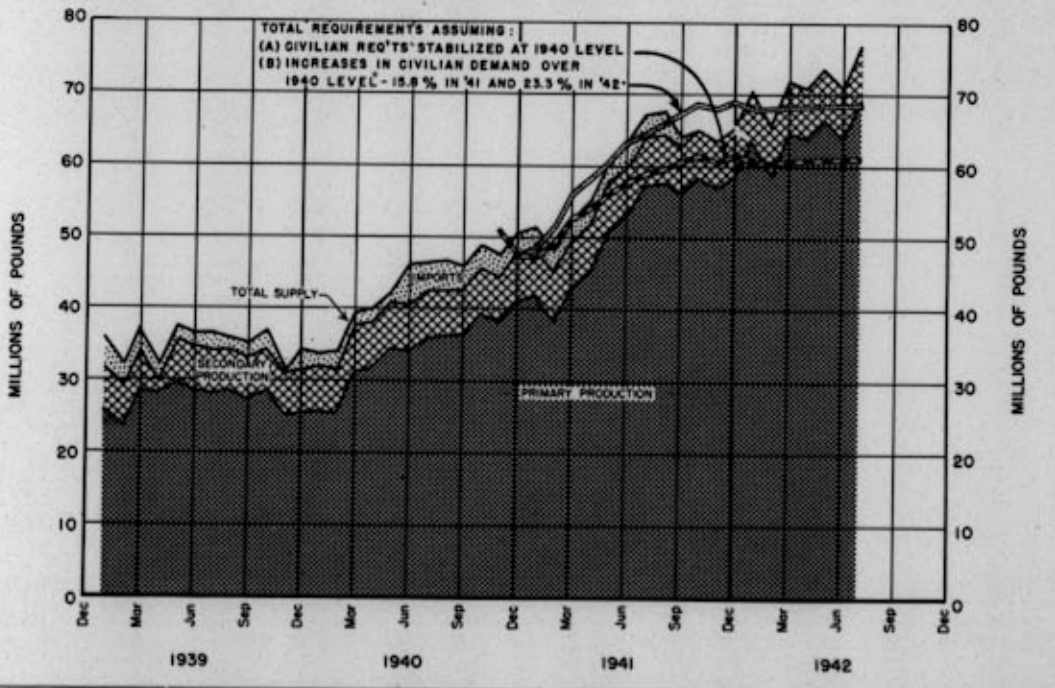
ALUMINUM – ESTIMATED MONTHLY REQUIREMENTS VS TOTAL SUPPLY

JANUARY, 1939 – JULY, 1942

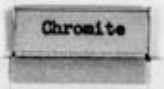


ALUMINUM – ESTIMATED MONTHLY SUPPLIES VS TOTAL REQUIREMENTS

JANUARY, 1939 – JULY, 1942



National Defense Advisory Commission - Industrial Materials Department - November 27, 1940


Chromite

CHROMITE

A study of the domestic chromite situation indicated that a Government stock pile of 870,000 long tons would meet a two-year emergency. Purchases were small at the beginning of the program, and it was decided that under the purchasing restrictions operative at that time the complete program could not be carried out. Revised specifications and purchasing procedure were accordingly recommended and considerable progress has subsequently been made, even though international conditions have been further disturbed. We have contracted for 283,000 tons to date, or approximately one-third of the total.

Meanwhile every effort has been made to keep industry well supplied and to aid in keeping its stocks as high as possible. In spite of the recent very high rate of consumption, which in October exceeded 50,000 tons, industry stocks amounted to 625,000 tons on October 31, the latest date for which data are available. Thus at the October rate of consumption industry has more than a year's supply on hand.

Virtually all of the chromite consumed in domestic industry comes from foreign sources. It does not follow, however, that we have no domestic sources of ore. In general, our domestic deposits are off-grade and remote from consuming centers. These factors have precluded economic exploitation in the past. As a result of the increasing difficulty in obtaining boats for movement to this country and the very high freight rates, as well as the increased demand, attention is now being focused on domestic reserves.

Many domestic areas have been explored in the past and additional appropriations have made possible an acceleration of these activities in the last year. The most important indicated reserves appear in Oregon and California and particularly in southern Montana.

The ore is off-grade but according to the Bureau of Mines is amenable to concentration. Negotiations are now well under way with responsible private parties seeking the development of these reserves on a significant scale. The possibility of exploiting known resources in other areas is also under consideration.

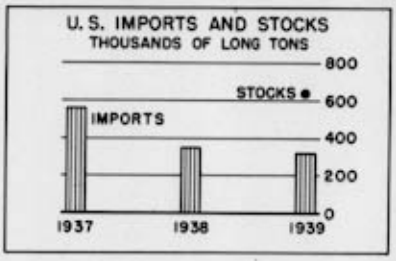
CHROMITE

(PRINCIPAL SOURCES OF U.S. IMPORTS - SOUTHERN RHODESIA, PHILIPPINES AND CUBA)

1939 BACKGROUND

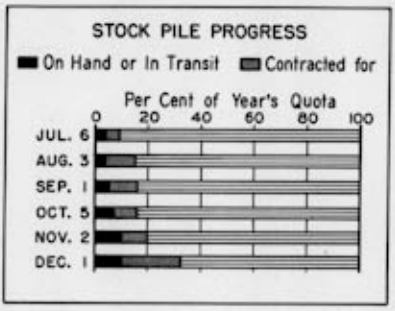
Domestic Production	3,614	L.T's
Imports	321,445	"
Apparent Consumption	325,059	"
Industry Stocks - Dec. 31st (Stocks Oct. 31, 1940 - 658,026 L.T's)	638,809	"

Note:- Data on imports, consumption and stocks include ore equivalent of ferro-chromium.



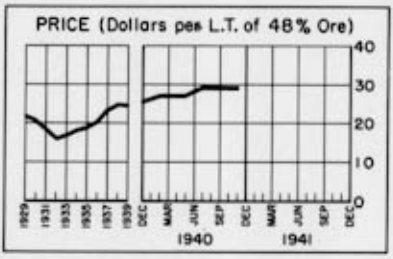
WAR REQUIREMENTS - MAX. EFFORT

First Year	580,000	L.T's
Second Year	580,000	"



GOVERNMENT STOCK PILE

Amount Proposed	870,000	L.T's
On Hand or In Transit	88,957	"
Additional Contracted For	194,500	"

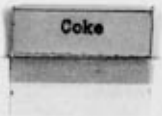


COMMENTS

Adequate supplies of refractory grade ores are available from Cuba and the Philippines, but the amount of high grade ores from these sources is limited.

Imports of high grade ore are being restricted because of tight shipping conditions. However, the quantity of industry stocks lessens the stringency of the situation.

Substantial deposits of usable grade chromite are found in U.S., but such deposits are generally of the lower grades. National Defense Advisory Commission and interested parties are studying methods of developing the extensive chromite reserves of Montana.


Coke

COKE

Coke requirements have increased considerably during the past six months as the result of sharp increases in operations of the steel industry. At the present time consumption is running at a relatively high level in comparison with production.

Many new coke ovens are now under construction and still further expansion is planned. Coke capacity will be considerably increased within the next year; upon completion of the expansion program available supplies should be adequate for requirements. In the meantime a large number of old beehive coke ovens have been started up and the resulting production affords considerable relief.

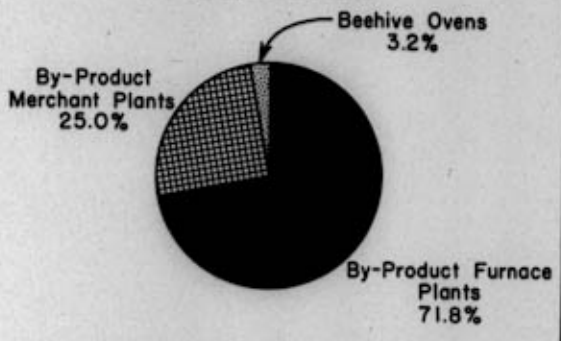
Arrangements have recently been made with British officials, which provide that some of their ships coming to the United States for supplies will carry coke as ballast, for sale in the United States. This is a very satisfactory and helpful arrangement for both countries.

December 3, 1940

BY-PRODUCT AND BEEHIVE COKE

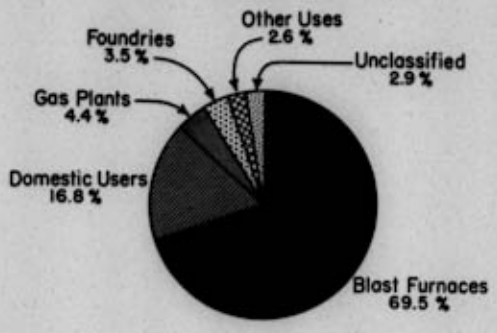
U. S. PRODUCTION - 1939

44,326,641 NET TONS

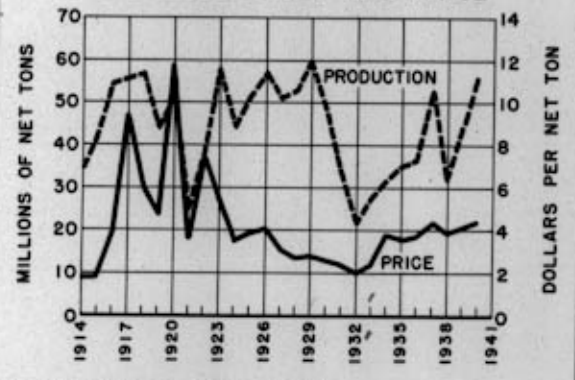


By-product furnace plants sell primarily to iron and steel companies
By-product merchant plants sell primarily on open market

U.S. CONSUMPTION - 1939

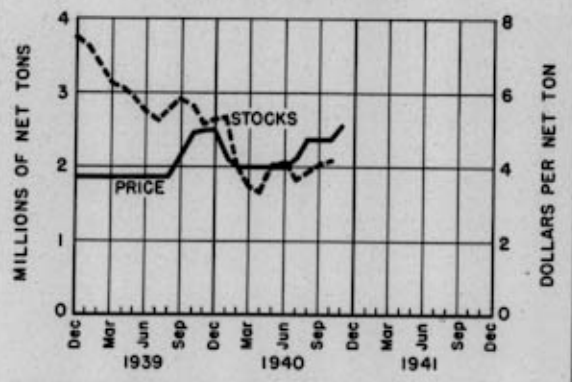


U. S. PRODUCTION AND PRICE



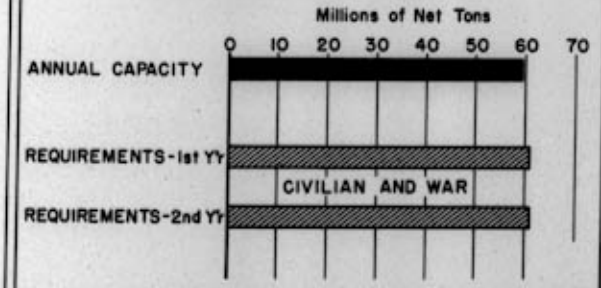
Data for 1940 are partly estimated
Price data are for beehive furnace coke at Connellsville

STOCKS AND PRICE



Producers' stocks are of by-product coke at end of month
Price data are for beehive furnace coke at Connellsville

MAXIMUM WAR REQUIREMENTS AND DOMESTIC CAPACITY



COMMENTS

Present capacity (20% less than in 1920) is below war-time requirements.

Requirements can be met by:

(1) Substituting other fuels for domestic use.

(2) Constructing additional by-product ovens. (Between 400 and 500 are now being built and a regional survey is being made to determine where others will be needed.)

(3) Increasing imports from Great Britain.

National Defense Advisory Commission - Industrial Materials Department - December 3, 1940

Copper

COPPER

On the basis of estimates of requirements it was originally expected that probable supplies of copper would be adequate for defense needs. Recent record sales and the resulting stringency in metal available for nearby delivery, however, revealed clearly the effect of defense orders and served as a danger signal.

Another survey was made in cooperation with the industry of prospective requirements and supply. It now appears probable that there will be a moderate shortage in 1941, estimated at 50,000 to 100,000 tons.

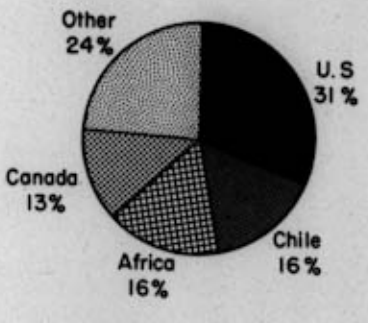
A large supply of foreign copper is easily accessible, particularly in the Western Hemisphere, and quantities have been regularly imported for processing and re-export. Foreign copper is now required for domestic use in view of the probable shortage. Acquisition by the Government of a small revolving stock of 10,000 to 15,000 tons of imported copper has been recommended, to be sold to domestic consumers as shortages develop and to be replenished accordingly. Appropriate procedure for this acquisition is now being developed.

As part of the general program of conserving our domestic supply it has been recommended that copper in raw and refined forms, and in primary fabrications (including alloys), be placed on the list of materials subject to export control.

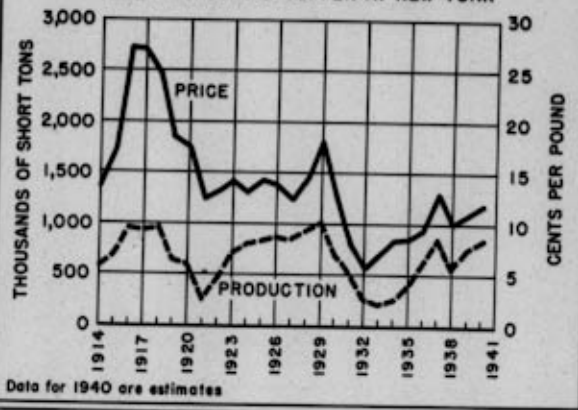
December 3, 1940

COPPER

WORLD PRODUCTION
1939

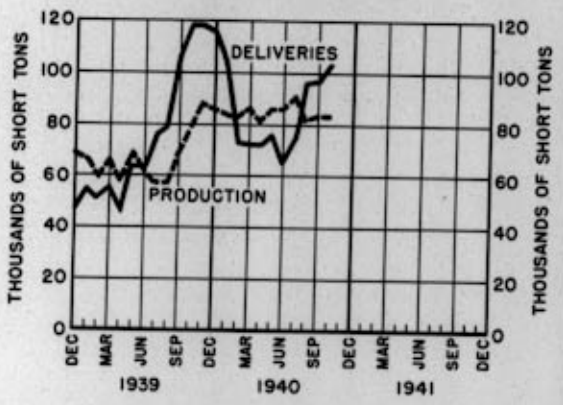


U.S. PRODUCTION AND PRICE
SMELTER PRODUCTION FROM DOMESTIC ORES
PRICE OF REFINED COPPER AT NEW YORK

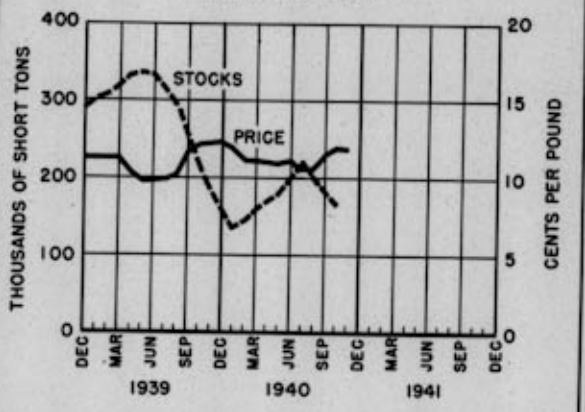


Data for 1940 are estimates

U.S. PRODUCTION AND DELIVERIES
REFINED COPPER



U.S. PRODUCERS' STOCKS AND PRICE
REFINED COPPER

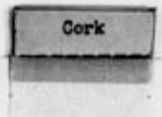


COMMENTS

Annual capacity of U.S. mines is estimated at 950,000 tons, of which over 80% can be produced at a cost of 11 cents a pound or less.

Two-year maximum effort requirements of 2,400,000 tons exceed estimated production of 1,900,000 tons. However, available stocks, secondary production and possible imports would probably prevent a serious situation from developing.

Marked correlation exists between price and production. However, a price advance similar to that of 1914 to 1917 appears unlikely since English requirements are now largely obtained from Canadian and Rhodesian mines developed since the last war. Furthermore, any substantial increase in price would stimulate imports of low cost Latin American copper.


Cork

CORK

The supply of cork is being threatened by the interruption of shipping from the Mediterranean and the growing scarcity of shipping facilities. Entry of Greece into the war has further reduced available shipping capacity. Production in Spain this year, furthermore, is reported to be substantially below normal.

Imports into the United States during 1940 have been at a high rate but the accumulation of stocks of raw cork has been held down by the high rate of fabrication into finished products. Stocks of unmanufactured cork wood and ground cork in this country as of November 1 amounted to 54,818 short tons, 2,776 tons larger than July 1 stocks.

A supply of cork has been discovered in Brazil, four pounds of which have been sent here and are now being tested by the Bureau of Standards. It is thought that this Brazilian cork may be used for the purposes for which grinding cork is used.

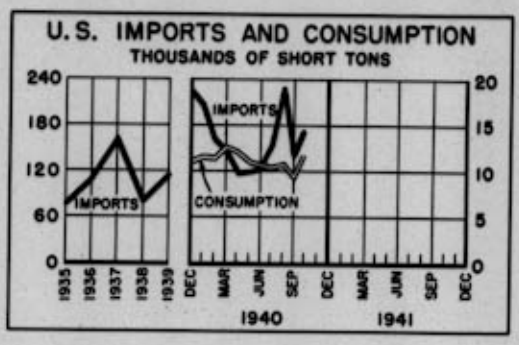
December 3, 1940

CORK

(PRINCIPAL SOURCES OF U.S. IMPORTS - PORTUGAL, SPAIN AND ALGERIA)

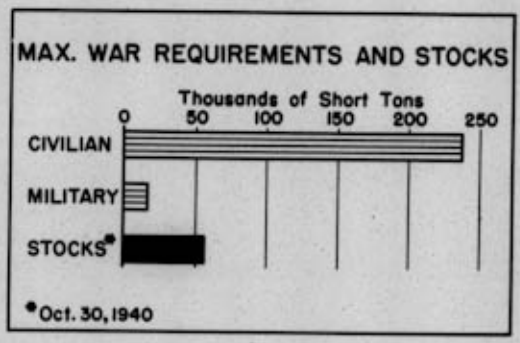
1939 BACKGROUND

Imports for Consumption	113,787 S.T's
Stocks - Dec. 31st	48,430 "
(Stocks Oct. 30, 1940 - 54,818 S.T's)	



WAR REQUIREMENTS - MAX. EFFORT

First Year	126,684 S.T's
Second Year	126,684 "



COMMENTS

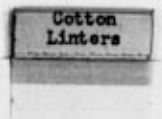
Commercial cultivation of cork has failed in areas other than near the Mediterranean.

Access to foreign sources of supply is uncertain because of U.S. neutrality legislation, wartime blockades, and shortage of shipping facilities.

While present stocks are equal to only 5 months' normal use, they are approximately three times direct Army-Navy requirements for a two-year maximum effort.

Substitutes are available for many civilian uses and would permit considerable conservation in an emergency.

Despite heavier imports in recent months, stocks increased but slightly due to the loss by fire of some 9,500 tons owned by Crown Cork and Seal Company.


Cotton
Linters

COTTON LINTERS

Cotton linters are used in the manufacture of cellulose from which smokeless powder, rayon, cellophane, and other products are made. Mattresses are also stuffed with the higher grade of linters.

The supply of cotton linters for one year of defense is adequate, but for a second year of maximum defense effort there will not be enough for both civilian and Army-Navy needs. Conferences have been held with cotton linters producers, bleachers, explosives manufacturers, and governmental representatives to consider ways and means of solving this problem.

Present linters production and bleacher capacity both exceed requirements. It was the consensus that present excessive capacity be utilized to the fullest extent to accumulate a stock pile. E. I. du Pont de Nemours and Company and the Hercules Powder Company were selected to purchase and store the stock pile of bleached pulp for Government account when it is ready. Authority from the Government, authorizing these purchases, has been granted to the named companies. It is estimated that approximately 35,000 tons of bleached pulp will be available for purchase by midsummer.

Under certain conditions the War Department approves the use of alpha cellulose from wood pulp in munitions manufacture. This can be produced from wood pulp in large quantities. Thus, despite the possibility of a shortage of cotton linters, there would be ample supplies of alpha cellulose from wood pulp for smokeless powder production. Even if new facilities for making alpha cellulose from wood pulp are necessary, they can be built as quickly as new capacity for making smokeless powder.

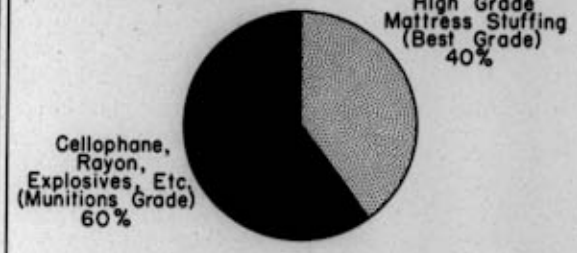
December 3, 1940

COTTON LINTERS

(FIBERS LEFT ADHERING TO COTTON SEED AFTER GINNING)

U.S. PRODUCTION – 1940

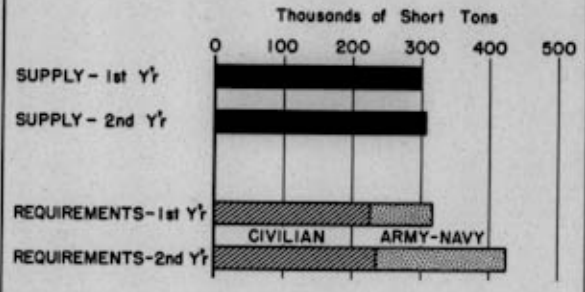
COTTON LINTERS - 321,600 SHORT TONS



Data are for crop year ended July 31st

U.S. SUPPLY AND MAX. REQUIREMENTS

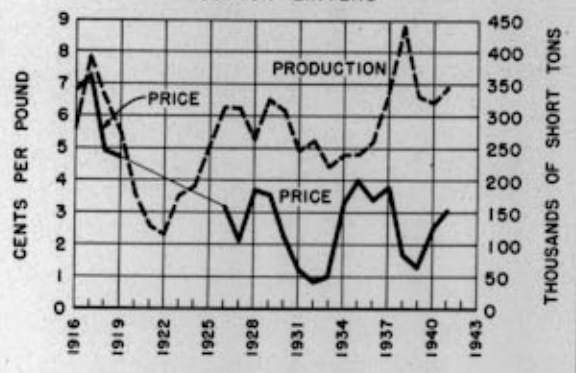
COTTON LINTERS PULP



Data are expressed in terms of the equivalent of munitions pulp
Supply includes production and imports
Requirements include exports to Canada and United Kingdom
Loss in making pulp from linters is 20 to 30%

U.S. PRODUCTION AND PRICE

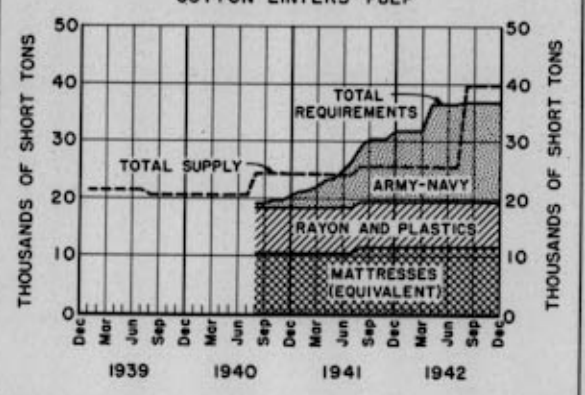
COTTON LINTERS



Data are for crop years ended July 31st (1941 partly estimated)

ESTIMATED MONTHLY REQUIREMENTS

COTTON LINTERS PULP



COMMENTS

Defense use of cotton linters is principally in making smokeless powder.

Estimated production is inadequate for second year civilian and munitions requirements.

Shortage can be met by:

(1) Substituting wood pulp or cotton.
(2) Increasing imports from Latin America
(3) Reducing industry stocks.

National Defense Advisory Commission - Industrial Materials Department - December 3, 1940

Electric Power

ELECTRIC POWER

Extensive studies of power requirements arising out of the defense program have been made. Specific additional power requirements total 978,350 kw, including the additional power which will be needed for: aluminum, textiles, shoes, airplanes, cantonments, ordnance department, ammonium nitrate, electric furnaces, ferro alloy furnaces, neoprene, tin smelter, chlorine and poison gases.

In addition to these specific major power items there are many auxiliary industries whose defense power requirements must be considered. A survey of these industries is now being made by the Federal Power Commission in cooperation with the electric utility companies. Questionnaires have been sent to about 25,000 industrial power users, representing 80 per cent of the total volume of such business. Results of the survey will be available in a few weeks.

Latest figures on the plans for new generating capacity, private, public and industrial, are:

During 1940	1,906,000 kw
During 1941	3,664,000 kw
During 1942	2,412,000 kw
Total for 3 years	7,982,000 kw
Annual average	2,661,000 kw

This projected increase in capacity clearly indicates that the power industry, both private and public, is alive to the magnitude and importance of the task imposed upon it. The annual increase in capacity of 2,661,000 kw compares with annual increases of 700,000 kw in the last war period (1914-1919), 1,265,000 kw in the post-war period (1921-1929) and 650,000 kw in the depression period (1930-1938).

Several inquiries or requests for priority in the purchase of electrical equipment have been received from utilities. It appears that so far there is no substantial delay or displacement of non-Army or Navy work in the factories of manufacturers of generating equipment but the anxiety of other customers is genuine.

Considerable progress has been made in the prevention of damage to power plants and systems by sabotage. Legislation for State adoption, providing for penalties for sabotage on public utility services, has been referred to the States.

December 3, 1940

Gasoline

AVIATION GASOLINE

An early study, based on estimated demands for aviation gasoline by the Army and Navy, led to a recommendation that about 7½ million barrels of 100 octane fuel be accumulated for Government account by the end of 1941. Subsequently, the War Plans Division of the Army lowered its estimated requirements. In consequence, it is now recommended that 3 million gallons of 100 octane fuel be stored during 1941, and a program has been nearly completed to carry this into effect.

It is anticipated that a small increase in the capacity for producing 100 octane gasoline will be required to meet domestic and export demands by the first of 1942. According to a survey of the U. S. Bureau of Mines, the present producing capacity is about 30,000 barrels per day. This will be increased to 32,000 barrels by April, 1941.

Requirements for 91 octane, or aviation training grade gasoline, have not been definitely determined by the Army. Present plant capacity is 25,000 barrels daily under existing practice. With several months' notice this capacity could be greatly increased by the modification of existing facilities and practice. The Bureau of Mines is undertaking a survey of the important types and sources of crude oils in this country to determine the feasibility of augmenting the yield of this type of gasoline. It may be necessary to increase the allowable production of certain grades of crude oil, and it is the Bureau's purpose to accumulate information for use in the event this becomes desirable.

Tetraethyl lead is an essential ingredient of high octane gasoline. It is made in few plants, largely adjacent to the Atlantic Coast. To overcome the consequences of damage to the producing facilities or loss of stocks of this important material, the Ethyl Gasoline Corporation has agreed to distribute large quantities to more widely scattered oil refining companies.

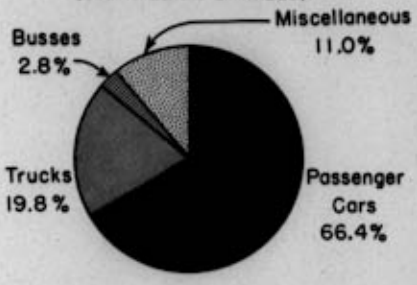
A committee of terminal engineers from the oil industry has made a comprehensive study of various designs for the storage of aviation gasoline and fuel oil for the Army and Navy. The report containing their findings has been transmitted to the appropriate officials, and it is anticipated that most of the tankage erected will be of the general type suggested by the committee.

December 3, 1940

GASOLINE

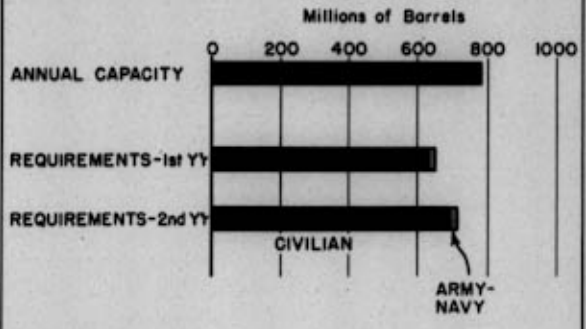
U. S. CONSUMPTION OF GASOLINE - 1939

(553 MILLION BARRELS)



Airplane consumption was less than 1.0%

CAPACITY AND MAXIMUM REQUIREMENTS OF GASOLINE,* EXCLUDING AVIATION GASOLINE

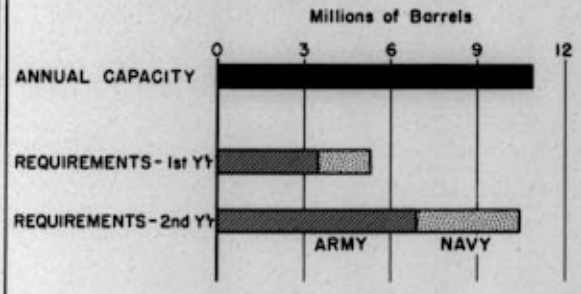


*73 octane or below

Civilian requirements were estimated by Industrial Materials Dep't

AIRPLANE FIGHTER AND BOMBER FUEL

(100 OCTANE)

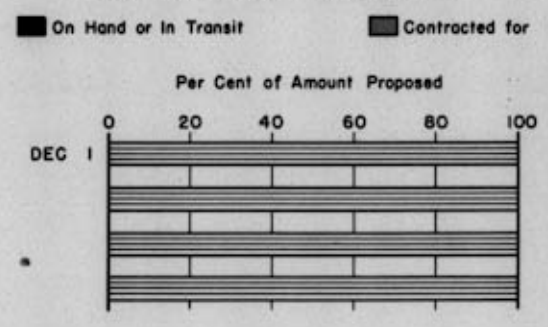


Data include fuel for observation and final training planes

Requirements data are for maximum war effort

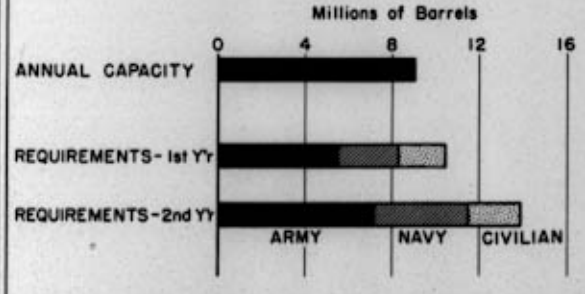
100 OCTANE STOCK PILE PROGRESS

(3,052,900 BARRELS RECOMMENDED)



PRELIM. TRAINER AND CIVILIAN PLANE FUEL

(91 OCTANE)



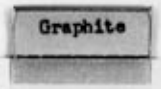
Civilian data include requirements of commercial planes

Requirements data are for maximum war effort

COMMENTS

Capacity for 100 octane gasoline is materially less than maximum short term intensive combat needs plus export commitments. Industrial Materials Department has recommended that 2,000,000 barrels of the proposed reserve be accumulated during the first half of 1941.

Capacity for 91 octane gasoline is less than requirements. Output can be readily doubled at slightly higher cost.


Graphite

GRAPHITE

The original recommendation made by the Defense Commission was for the accumulation of a Government stock pile of 2,000 short tons of Madagascar flake graphite, the type favored by manufacturers of crucibles used in various vital metallurgical operations. This was to be undertaken only when depleted stocks held by dealers and consumers were rebuilt sufficiently.

Expanding industrial needs now running in the neighborhood of 3,000 tons per year led to an upward revision of the stock pile recommendation to 6,000 short tons, but subsequent studies have shown that use of possible substitutes for crucible graphite will not justify a stock pile of more than 2,000 tons. The Munitions Board has no objection to the original stock pile recommendation of the Defense Commission but makes no affirmative recommendation.

The small amount of Madagascar flake in transit for Metals Reserve Company on November 30 was purchased for English interest, but is not to be taken over by the English. With the scheduled arrival, early in December, of the vessel carrying this shipment, industry stocks will amount to over 4,500 tons, or about 1½ years supply, since the boat is bringing some 3,400 tons consigned to industry.

Present British blockade of Madagascar precludes further shipment of flake graphite from that source, and at the close of November a canvass was being made of industry to ascertain whether certain grades of lump and ship crystalline graphite from Ceylon could be substituted suitably for the Madagascar variety in crucible manufacture. The British are anxious to supply shipments from Ceylon, sizeable parts of which production have recently been going to Japan.

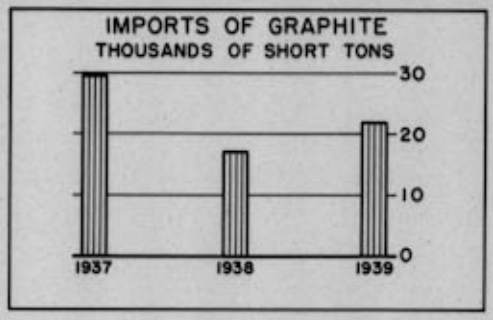
December 3, 1940

GRAPHITE

(PRINCIPAL SOURCES OF U. S. IMPORTS - MADAGASCAR AND MEXICO)

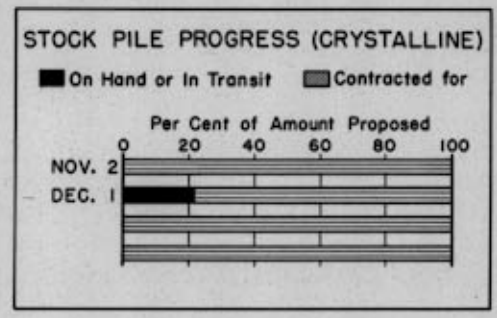
1939 BACKGROUND

Domestic Production (Est.)	3,000	S.T's
Imports	20,537	"
(Amorphous 18,675 S.T's; Crystalline 2,862 S.T's)		
Apparent Consumption	23,537	S.T's



WAR REQUIREMENTS - MAX. EFFORT

First Year	17,881	S.T's
Second Year	17,019	"

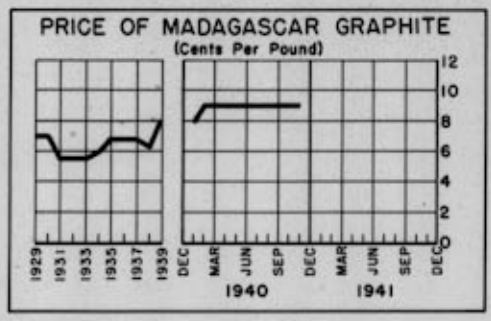


GOV'T STOCK PILE (CRYSTALLINE)

Amount Proposed	2,000	S.T's
On Hand or In Transit	453	"
Additional Contracted for	0	

COMMENTS

Amorphous graphite, comprising about 90% of all graphite used, presents no serious problem as it is obtained largely from Mexico.



Crystalline graphite, of one particular grade, is essential for certain industrial uses and can only be obtained from Madagascar or, in a slightly different though suitable form, from Ceylon.

A stock pile of crystalline graphite is being accumulated. Current industry stocks equal approximately 18 months supply.

Hides
(Cattle)

HIDES AND LEATHER

Although the United States is a large producer of hides, some supplies must be imported. Imports of cattle hides have come chiefly from South America, while calf skins have been imported from Europe, Oceania, and other sources. No difficulty has been experienced in obtaining cattle hides from South America, but imports of calf skins have been reduced as a result of the European conflict. The export licensing of calf skins has been recommended.

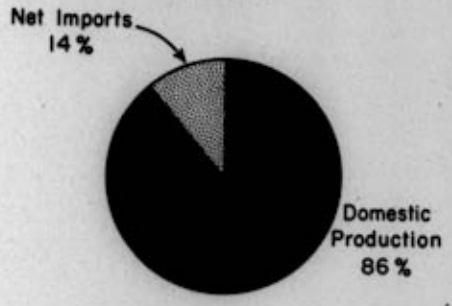
A comprehensive survey of the capacity of the leather industry is under way and the results should be available before the end of the year. On the basis of present information it is believed that no capacity problem exists. However, care is necessary in the placing and timing of Government orders so that temporary bottlenecks are avoided and supplies obtained as early as possible.

The leathers required for service shoes are somewhat different from those used in commercial lines. The Industrial Materials Department has helped to coordinate Government purchases with the available supplies of these leathers. In addition, a survey has been made of existing producers who are not now tanning leather for the Army, but who could produce such leather without great difficulty if necessary.

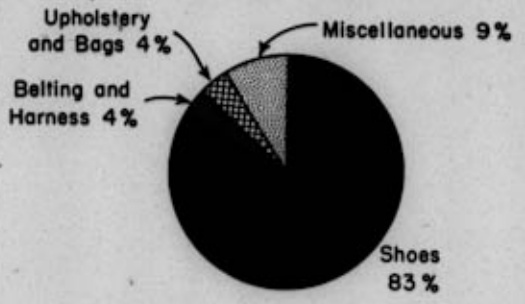
Recommendations have been made for changes in sole leather specifications in order to increase the supply of available material. Studies are now in progress that may permit further recommendations along this line.

CATTLE HIDES

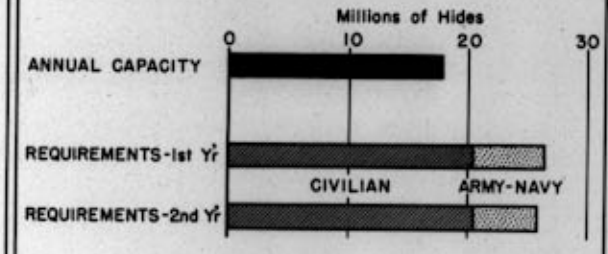
SOURCE OF HIDES TANNED
YEAR 1939



USES OF CATTLE HIDE LEATHER
1937-1939 AVERAGE

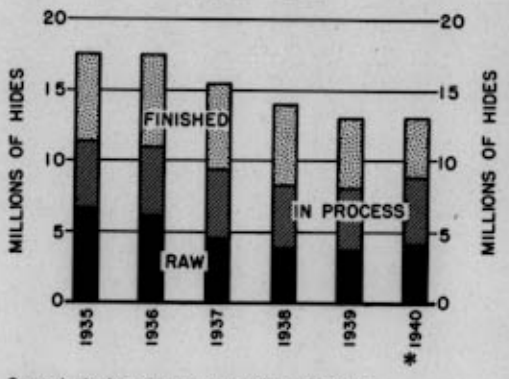


MAXIMUM WAR REQUIREMENTS AND DOMESTIC CAPACITY



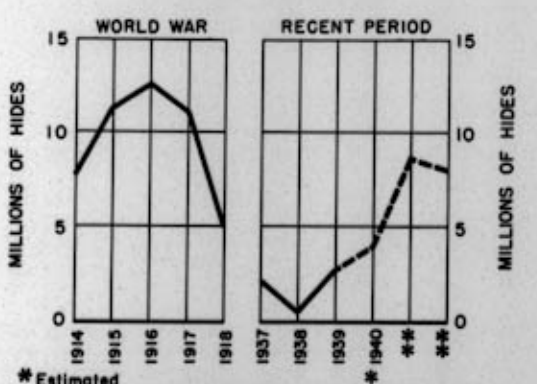
Data include kips for side leather

STOCKS
END OF YEAR



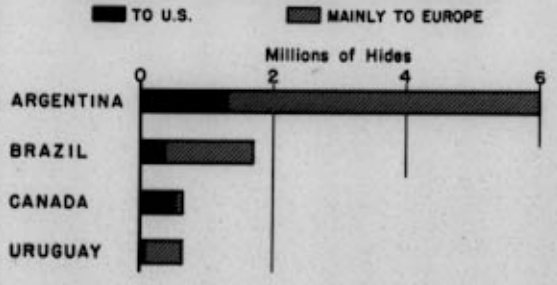
Current stocks are near operating minimum
*Oct. 31st

U.S. NET IMPORTS



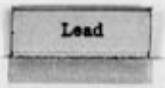
*Estimated
**Estimated imports needed for maximum war requirements for 1st and 2nd years following M-day

EXPORTS OF PRINCIPAL EXPORTING WESTERN HEMISPHERE COUNTRIES



Data include types of hides generally used in U.S. Other types would be available for emergency use

National Defense Advisory Commission - Industrial Materials Department - December 3, 1940


Lead

LEAD

Up to the present time, no problems have appeared in the supply and distribution of lead. Consultation with the leading authorities on lead supply has developed an assurance of adequate resources, and in confirmation of this assurance, the users of lead have not reported any difficulty in filling their needs. The situation will continue to be watched, however, to guard against any unexpected effects of the increasing defense load.

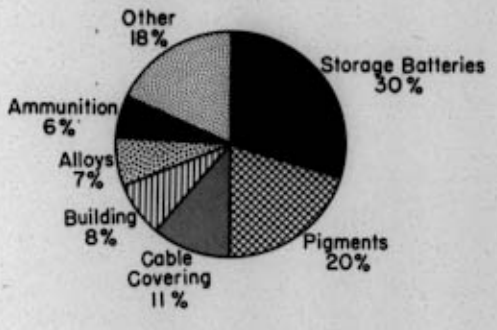
December 3, 1940

LEAD

(PRINCIPAL SOURCES OF U.S. IMPORTS - MEXICO, PERU, AND CANADA)

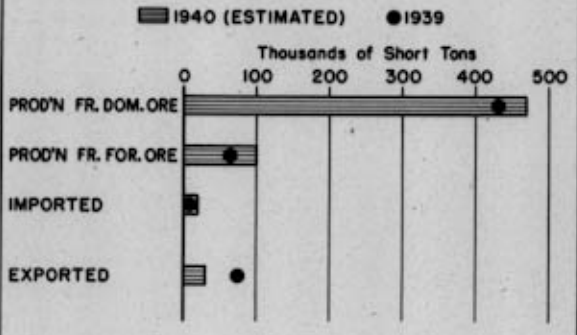
USES OF LEAD

1939



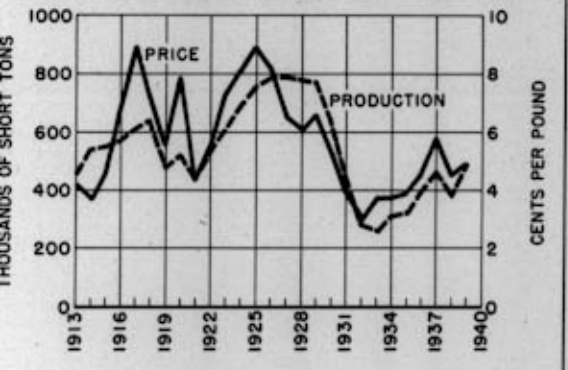
U.S. PRODUCTION, IMPORTS AND EXPORTS

REFINED LEAD



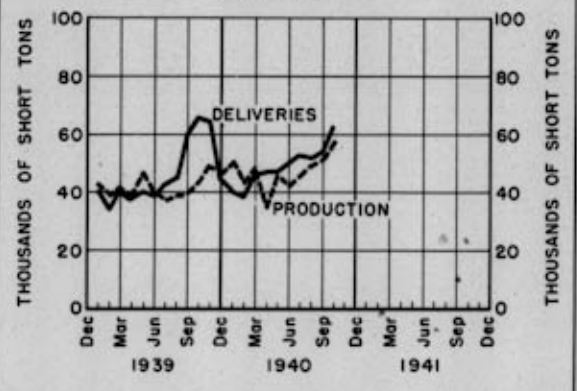
PRODUCTION AND PRICE

PRODUCTION OF PRIMARY LEAD; PRICE AT ST. LOUIS

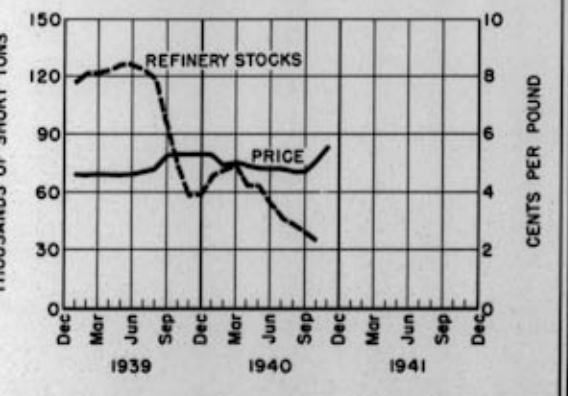


PRODUCTION AND DELIVERIES

REFINED LEAD



REFINERY STOCKS AND PRICE



COMMENTS

Domestic mine capacity is about two-thirds maximum requirements. The additional ore needed can be obtained from Mexico and Canada.

Domestic smelting and refining capacity is probably adequate for maximum war needs.

Large surpluses of lead and lead ore have accumulated, as a result of the war, in Mexico and in bonded warehouses in Texas.

No substantial increase in lead prices is expected.

Over 50 per cent of U.S. lead exports have been going to Japan.

Lumber

LUMBER

Total lumber requirements for national defense purposes, including the Army, Navy and national defense housing programs, are estimated at 2,775,000,000 feet. Purchases to date approximate 1,650,000,000 feet, leaving a remainder of 1,125,000,000 feet to be bought over a period of at least six months. As the industry is now running at the rate of 2,500,000,000 feet a month it is not expected that completion of the defense purchases will present any difficult problem.

Progress has been made in developing more orderly defense buying of lumber. At the start of the cantonment construction program competitive buying by camp contractors resulted in a rise in prices. Subsequently all buying was centralized in the Quartermaster Corps. This was followed by a downturn in prices of the kind of lumber used for cantonment construction.

Production and deliveries in the Pacific Northwest have been slowed down by labor difficulties in that area. Although the effects to date have not been particularly serious the strike movement has tended to spread and might in time affect the defense program. The Labor Division has cooperated with the lumber group in attempting to clear up the situation.

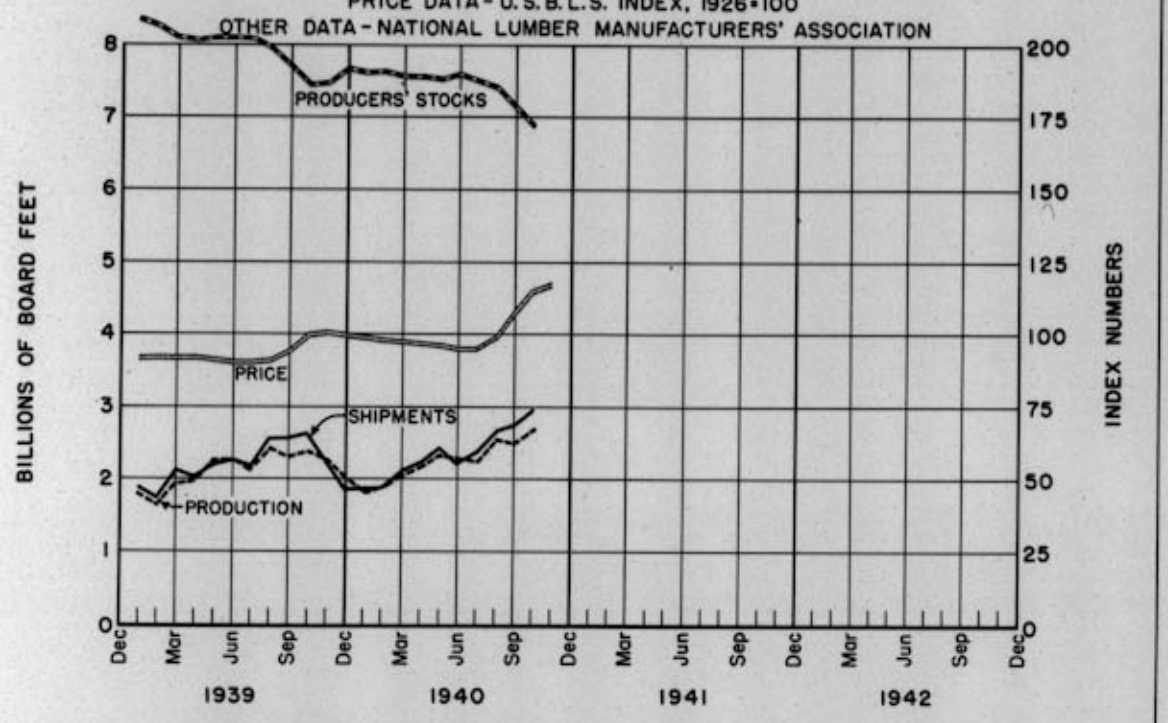
Special studies have been made of possible shortages in specially imported forest products such as teak, lignum vitae and balsa. There seem to be no serious problems in connection with these three as adequate supplies or substitutes are assured.

December 3, 1940

LUMBER

PRICE DATA - U.S.B.L.S. INDEX, 1926=100

OTHER DATA - NATIONAL LUMBER MANUFACTURERS' ASSOCIATION



ional Defense Advisory Commission - Industrial Materials Department - December 3, 1940

Magnesium

MAGNESIUM

Pig Metal: It is estimated that total requirements for magnesium, including exports to Britain as well as our own military needs, will amount to approximately 20,000,000 pounds in the fiscal year 1941 and 33,000,000 pounds in the fiscal year 1942. These data are based on the latest surveys of military requirements and on the most recent information on exports. Civilian requirements constitute a very small proportion of total requirements for magnesium.

Total domestic production is estimated at approximately 20,000,000 pounds in the fiscal year 1941 and 34,000,000 pounds in the fiscal year 1942.

On the basis of present information it is thought that primary ingot capacity will have to be increased still more, particularly if dislocation of other industries is to be avoided. Conferences are scheduled with Dow Chemical Company and other possible producers to consider this problem further.

Fabricating Capacity: Increases in foundry capacity already scheduled appear on the surface to be adequate to meet sand castings requirements. There is a question, however, as to whether the various fabricators can actually attain the capacity planned. There is also a question as to whether or not projected capacity may not be overestimated on account of the change in the character of production. Conferences have been scheduled with aircraft producers and magnesium foundries in order to determine the exact situation. After these conferences have been held recommendations will be made as to whether or not foundry capacities should be increased.

Investigation of magnesium powder requirements and capacities shows a large deficit in capacity over the whole period under consideration. Magnesium powder finds little use in civilian commerce, and it is consequently found difficult to interest manufacturers in increasing their powder-making capacity on a commercial basis. Accordingly, results of the investigation have been turned over to the Army-Navy Munitions Board, together with the recommendation that they get into direct communication with the various existing and potential fabricators in this field.

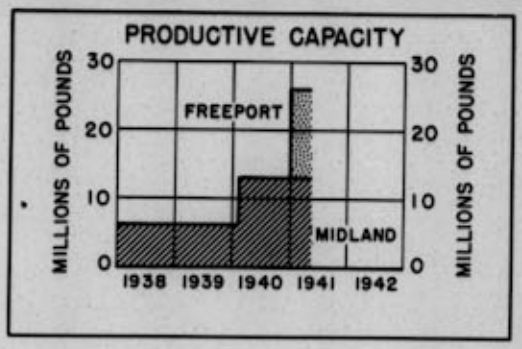
December 3, 1940

MAGNESIUM

(SOURCE OF U.S. SUPPLY- DOW CHEMICAL PLANTS AT MIDLAND, MICHIGAN AND FREEPORT, TEXAS)

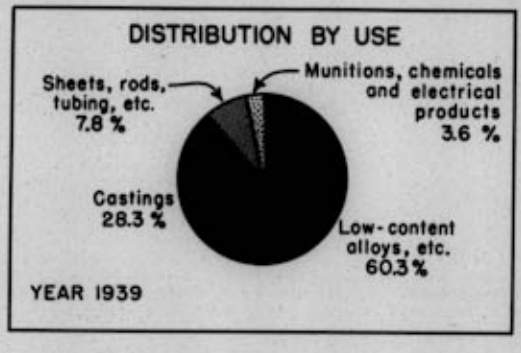
1939 BACKGROUND

Domestic Production	6,700,000	Lbs.
Withdrawals from Stock	3,950,000	"
Domestic Consumption	6,526,000	"
Exports	4,124,000	"



WAR REQUIREMENTS-MAX. EFFORT

First Year	14,000,000	Lbs.
Second Year	22,000,000	"

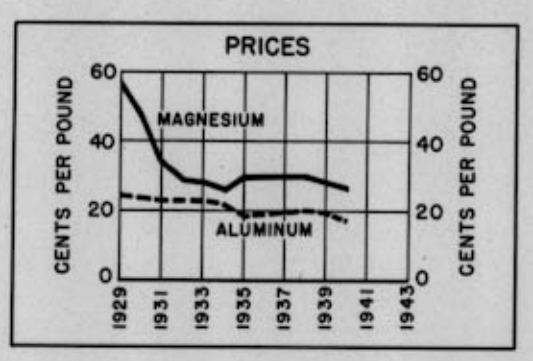


COMMENTS

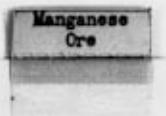
Consumption of magnesium has increased greatly during recent years in the manufacture of alloys requiring lightness and strength. Reduction in price and improvement in corrosion resisting qualities have contributed to the expanding use.

Alloys are of two main types– the high magnesium content alloys containing up to 96 per cent of the metal, and the low magnesium content alloys combining as much as 10 per cent magnesium with aluminum.

Unlimited raw materials are available in sea water, underground brine and magnesite ore (Washington).



Expansion of productive capacity at Midland and completion of plants at Freeport will be sufficient to meet the demands for airplanes and other uses anticipated in 1942.


Manganese
Ore

MANGANESE ORE

It has been estimated that a government stock pile of 1,800,000 long tons of ferro-grade manganese ore will be needed for a two-year emergency period. Contracts have been awarded to date for approximately 2,250,000 tons. It is certain that sizable amounts of the domestic tonnage contracted for will never be delivered, and the tightening shipping situation may result in non-deliveries of parts of the foreign contracts. For this reason Metals Reserve Company has already made contracts for tonnages which exceed the stock pile recommendation.

Demands for a two-year period are estimated at 2,570,000 tons. The difference between the estimated demand and the proposed amount of the stock pile can be made up by domestic and Cuban production and by savings resulting from changes in metallurgical practice. These changes have been worked out by the Technologic Committee on Manganese and can be put into operation when necessary.

Domestic production of high grade manganese ore suitable for the manufacture of ferro-manganese is in normal years very small, averaging about 5 per cent of total consumption. A much larger tonnage is available, however, at prices now prevailing. Surveys have been made of the possibilities of increasing domestic production, and as the shipping emergency continues to develop more emphasis will be placed on domestic procurement.

Although contracts have been let for 1,200,000 tons of domestic ore for the stock pile none has been delivered because production must await erection of plants for making high grade concentrates from low grade ore. Four plants are now under construction and two are projected, all being built by private capital.

The Bureau of Mines is erecting two pilot plants and is planning a third, under a $2,000,000 appropriation for laboratory and plant studies.

Deliveries to industry and Government during the last six months have slightly exceeded consumption. Should foreign sources of manganese ores be cut off at once, total stocks now in this country, plus domestic production, imports from Cuba and metallurgical economies would sustain the steel industry for two years.

December 3, 1940

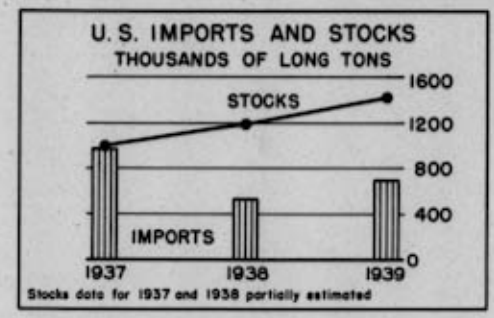
MANGANESE ORE (FERRO-GRADE)

(PRINCIPAL SOURCES OF U.S. IMPORTS - GOLD COAST AND U.S.S.R.)

1939 BACKGROUND

Domestic Production	29,307	L.T's
Imports	703,896	"
Indicated Consumption	733,203	"
Industry Stocks - Dec. 31st	1,412,798	"
(Stocks Oct. 31, 1940 - 1,517,532 L.T's)		

Note: Data on imports, consumption and stocks include ore equivalent of ferro-manganese and silico-manganese.

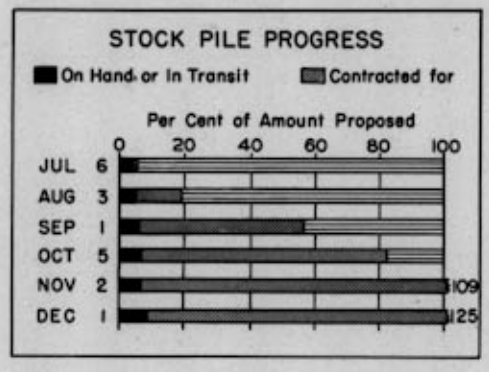


WAR REQUIREMENTS - MAX. EFFORT

First Year	1,285,000	L.T's
Second Year	1,285,000	"

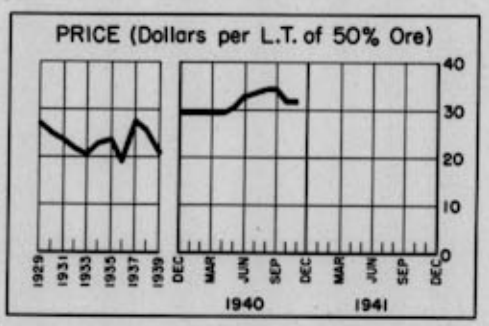
GOVERNMENT STOCK PILE

Amount Proposed	1,800,000	L.T's
On Hand or In Transit	166,497	"
Additional Contracted for	2,090,537	"

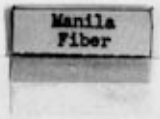


COMMENTS

Domestic production is being encouraged through higher prevailing prices. Although 1,200,000 tons for Government stock pile has been contracted for, it is certain that only a part of this amount will be delivered.



Larger imports from Cuba may be expected, in keeping with contract between RFC and Cuban-American Manganese Corporation calling for the purchase of 25,000 to 65,000 tons per year for 3 years starting 1941, with the agreement that Cuban-American expand plant capacity from 100,000 to 130,000 tons per year. Increased imports from Brazil can be obtained by improving local railroad facilities.


Manila
Fiber

MANILA FIBER

For marine usage there is no satisfactory substitute for manila fiber. Total stocks in this country and in transit are approximately 40,000 tons as compared with two-year maximum effort requirements of 139,337 tons. A stock pile is being acquired toward a tentative objective of 20,000 tons, but it is hoped that 55,000 tons can be obtained ultimately.

Efforts are being made to expedite the accumulation of the stock pile, in view of the uncertain outlook in the Far East, but no satisfactory method of quick enlargement has yet been found.

Some manila fiber is now being produced by the United Fruit Company in Panama and conferences have been held with a view to increasing this output. This development will serve as a nucleus which could be enlarged in case of need.

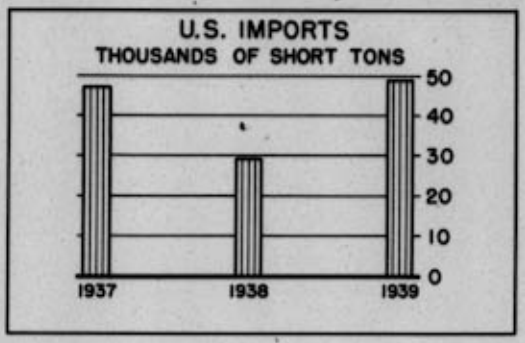
December 3, 1940

MANILA FIBER

(PRINCIPAL SOURCE OF U.S. IMPORTS - PHILIPPINES)

BACKGROUND

Net Imports - 1939	48,680	S.T's
Industry Stocks - Sept. 30, 1940	25,900	"

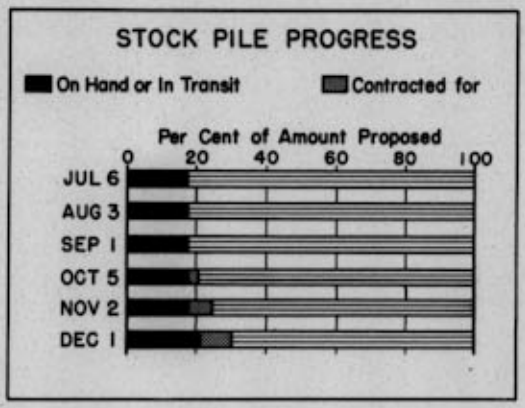


WAR REQUIREMENTS - MAX. EFFORT

First Year	70,982	S.T's
Second Year	68,355	"

GOVERNMENT STOCK PILE

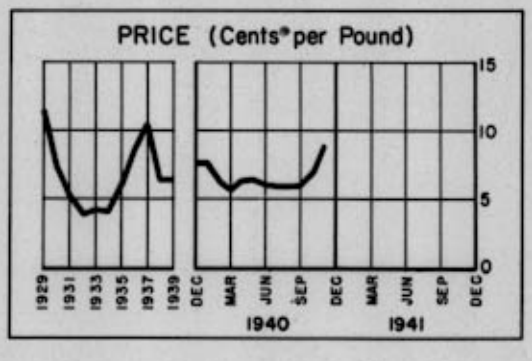
Amount Proposed	20,000	S.T's
On Hand or In Transit	4,333	"
Additional Contracted For	1,732	"



COMMENTS

Manila fiber is produced commercially principally in the Philippines, with minor amounts in the Netherlands Indies. It can be cultivated in Central America, but from 2 to 3 years would be required to develop a substantial source of supply.

On December 1, 1940 there were 21,012 tons on hand in the Philippines, and stocks in transit to the United States were some 10,000 tons.



There is no satisfactory substitute for manila fiber for making the kind of rope essential for marine cordage. However, substitution would be possible for certain other uses.

Mercury

MERCURY

As a safeguard against unforeseen changes in domestic production, which was running about on a par with consumption, it was recommended originally by the Industrial Materials Department that the Government accumulate a stock pile of 10,000 flasks of mercury for a two-year emergency. Net requirements for a two-year emergency (counting on moderate use of substitutes) are estimated at 80,000 flasks, and domestic production was originally estimated at 35,000 flasks per year. Procurement Division has contracted for 5,750 flasks for delivery in 1941.

High prices prevailing in 1940 have resulted in a phenomenal rise in domestic production, the rate prevailing in September and October amounting to about 43,000 flasks on a yearly basis. This is considerably ahead of domestic consumption which, during the same months, was at the rate of about 28,000 flasks per year. Industry stocks have risen to about 15,000 flasks, prices have softened, and careful control has been exercised over exports.

The Munitions Board has lowered its stock pile recommendation from 18,000 flasks to 10,000 flasks (suggesting to Procurement the transfer of funds thus available to the chromite account), and has further suggested that, in view of production conditions outlined above, no further purchases be made. The Industrial Materials Department will soon confer with the Munitions Board regarding this, and Procurement will make no purchases in the meantime.

December 3, 1940

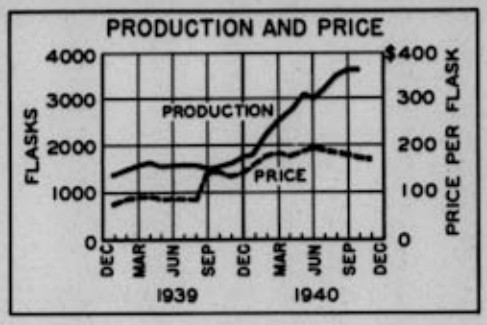
MERCURY

(PRINCIPAL SOURCES OF U.S. IMPORTS - SPAIN, ITALY AND MEXICO)

1939 BACKGROUND

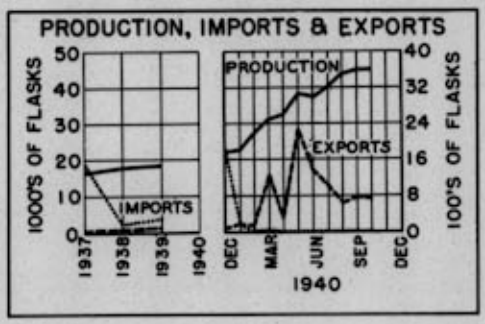
Domestic Production	18,633	Flasks (76 lbs. ea.)
Imports for Consumption	3,499	"
Exports	1,208	"
Apparent Consumption	20,924	"
Industry Stocks-Dec. 31st	12,976	"

(Stocks Oct. 31, 1940 - 14,055 Flasks)



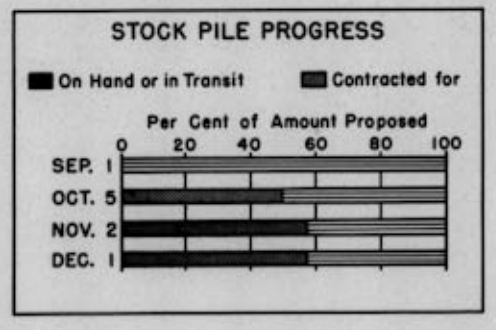
WAR REQUIREMENTS - MAX. EFFORT

First Year	40,000 Flasks
Second Year	40,000 "



GOVERNMENT STOCK PILE

Amount Proposed	10,000	Flasks
On Hand or In Transit	0	"
Contracted for	5,750	"



COMMENTS

Domestic production at the current rate should be sufficient to cover probable war requirements, and purchases for stock pile have secondary priority.

Domestic ore reserves, although of low grade, appear ample for some time to come.

In the 6 months prior to the inauguration of export licensing (July 2, 1940), about one-half of the unusually heavy exports went to United Kingdom and about one-fourth to Japan.

Mica

MICA

A government stock pile of 4,700 short tons of block mica and splittings has been recommended to meet a two-year emergency.

Industry stocks, which now approximate 3,500 tons, combined with domestic production and imports from South America during a two-year period would be almost sufficient for maximum needs. In view of the possibility of the depletion of industry stocks at some critical period, however, it is believed that the stock pile should be completed.

Approximately 275 tons have been purchased for the stock pile from the British Government for immediate shipment from Great Britain. Negotiations are now being conducted with the British Government for the purchase of 2,725 tons of mica from Indian sources, which is the balance of the amount authorized under Public 117. This will leave 1,700 tons to be purchased at a later date.

Progress has been made in the exploration of increased use of domestic mica. Extensive surveys have been completed of the New England and North Carolina fields by the Geological Survey. Samples from 100 or more North Carolina openings have already been tested by the Bureau of Standards for power factor, with generally excellent results.

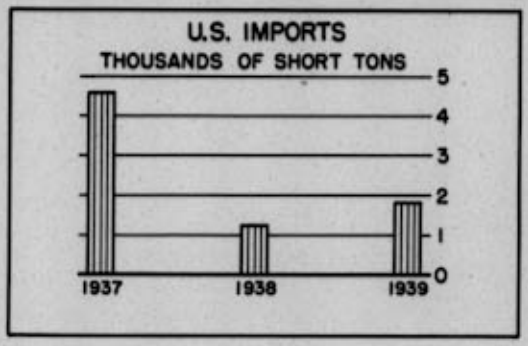
Samples from two North Carolina mines have also been submitted for commercial size tests to the three leading manufacturers of transmitter condensers. After the results of these tests become available ways and means for investigating the productive possibilities of the mines will be considered.

MICA (Block and Splittings)

PRINCIPAL SOURCES OF U.S. IMPORTS - INDIA AND BRAZIL

1939 BACKGROUND

Domestic Production (Block only)	407 S.T's
Imports	1,839 "
(Block 451 S.T's; Splittings, etc. 1388 S.T's)	
Estimated Consumption	2,570 S.T's
Industry Stocks - Oct. 31, 1940	3,432 "
(Block 653 S.T's; Splittings 2779 S.T's)	

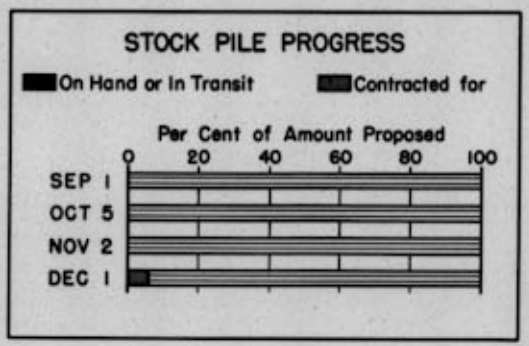


WAR REQUIREMENTS - MAX. EFFORT

First Year	2,700 S.T's
Second Year	2,700 "

GOVERNMENT STOCK PILE

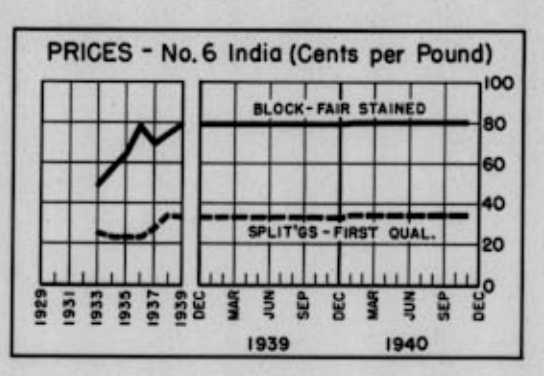
Amount Proposed	4,700 S.T's
(Block 700 S.T's; Splittings 4000 S.T's)	
On Hand or In Transit	0 S.T's
Contracted For	273 "



COMMENTS

Purchase of 3,000 tons of mica is under negotiation by the Procurement Division.

Geological Survey and Bureau of Mines are exploring possibilities for increasing domestic production.



Imports from South America during a two years emergency are estimated at 550 tons of block mica.

Because of low labor costs mica splittings are normally obtained entirely from India.

Nitrogen Compounds

NITROGEN

In peace or in war, nitrogen, in the form of ammonia, compounds of ammonia, and other derivatives, is a vital factor in the national economy. Nitrogen derivatives are used in fertilizers, in refrigeration, in the manufacture of nitric acid for explosives, and for other industrial purposes. Nitrogen in the form of sodium nitrate is extensively utilized in fertilizers, in explosives, and in other important products.

The principal source of nitrogen is the air. Ammonia and nitrates are obtained from it by synthesis. Substantial amounts of ammonia are obtained as a by-product in coal-coking, and of sodium nitrate by importation from Chile. Nitrogen in the form of cyanimid is also imported from Canada.

With the completion of expanded plant facilities under construction, the supply of nitrogen compounds will be adequate to meet the maximum requirements of the present national defense program, including civilian needs, for the next 24 months.

The largest demand is for fertilizer mixing. During the spring season of peak agricultural demand the requirements greatly exceed the current output. But, due to the production of nitrogen compounds exceeding requirements in the slack consuming seasons, with resulting stock accumulation, no concern need be felt about the possibility of even a temporary shortage.

In order to avoid shortages in the supplies of certain types of nitrogen compounds, it may be necessary to divert certain forms of nitrogen from one channel of use to another. For example, it may be desirable temporarily to substitute Chilean nitrate as a raw material in uses where synthetic ammonia or its derivatives are now employed. By this means synthetic ammonia could be released for purposes for which it is especially adapted.

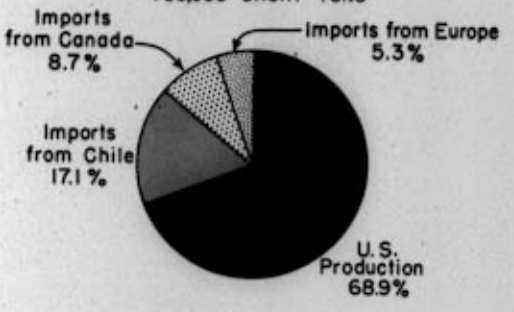
The nitrogen compound industry deserves much credit for its voluntary accumulation of ample reserve stocks and for its willingness to increase producing capacity for requirements that may be temporary.

NITROGEN COMPOUNDS

(ALL DATA ARE EXPRESSED IN TERMS OF THE EQUIVALENT OF NH_3)

U.S. SUPPLY - 1940

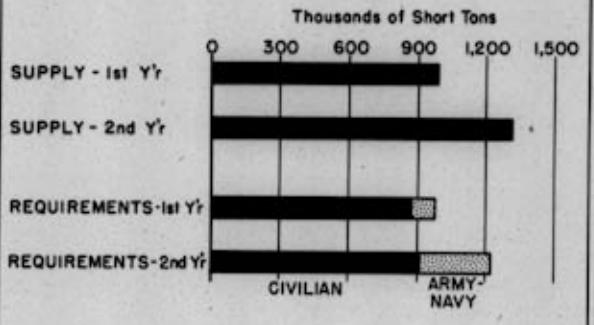
785,800 SHORT TONS



Data are for year ended June 30, 1940

SUPPLY AND MAXIMUM REQUIREMENTS

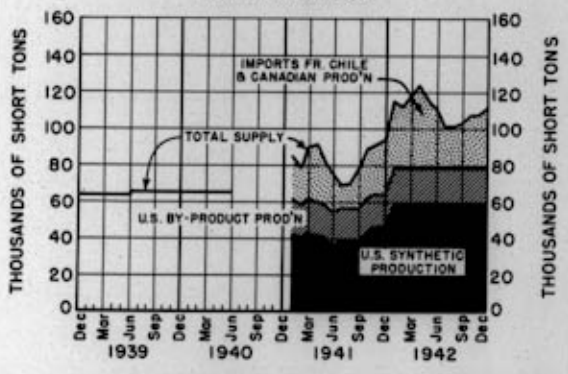
U.S. AND CANADA



Supply includes mainly U.S. production and imports from Chile.

ESTIMATED MONTHLY SUPPLY

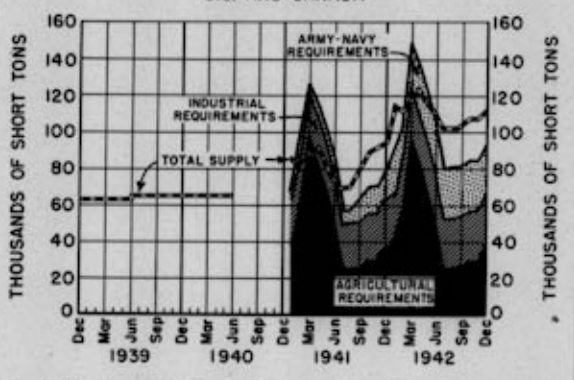
U.S. AND CANADA



Data for fiscal years 1939 and 1940 exclude some Canadian production.

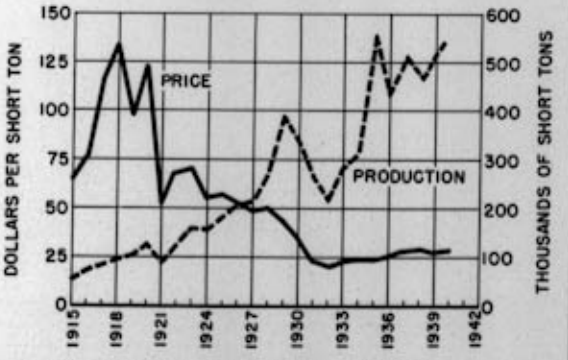
ESTIMATED MONTHLY REQUIREMENTS

U.S. AND CANADA



Data for fiscal years 1939 and 1940 exclude some Canadian production.

U.S. PRODUCTION AND PRICE



Production for 1940 is for year ended June 30th
Price data are for ammonium sulphate.

COMMENTS

Nitrogen compounds are essential for agricultural and industrial uses, as well as for munitions for defense.

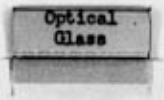
Domestic capacity is inadequate at present, but the deficiency will be met by:

(1) New synthetic capacity already under construction.

(2) Imports of sodium nitrate from Chile.

Industrial Materials and Agricultural Departments of Defense Commission have recommended accumulation in Chile of a 300,000 ton sodium nitrate stock pile.

National Defense Advisory Commission - Industrial Materials Department - December 3, 1940


Optical
Glass

OPTICAL GLASS

Recent increases in domestic capacity for the production of optical glass, combined with further increases scheduled for the near future, give assurance that the critical situation which confronted this country in the first World War will not be repeated. Upon completion of the present expansion program, our productive capacity will be well in excess of estimated maximum requirements in an emergency. After the first of April, when two new furnaces are scheduled for completion, there will be sufficient capacity to take care of possible increases in requirements for the Army, the Navy, and the British.

Stocks on hand plus the production of existing plant facilities are more than adequate to take care of total estimated requirements for the first year of an emergency.

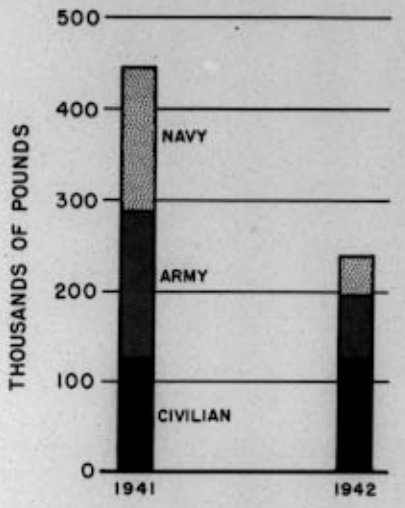
Difficulty might arise in obtaining quick delivery of certain orders, and the suggestion has been made to the Coordinator of Purchases that efforts be made to change certain specifications.

After an investigation brought out the danger of a bottleneck developing in the manufacture of optical instruments, the situation was called to the attention of production officials.

December 3, 1940

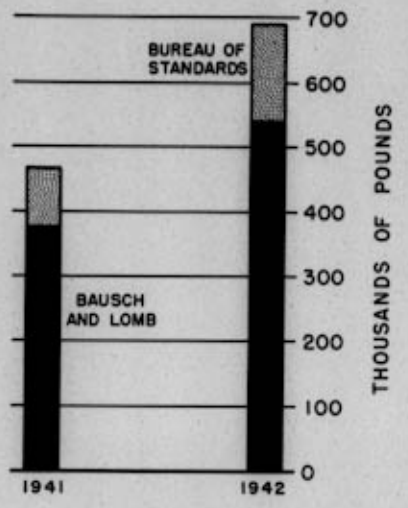
OPTICAL GLASS

ESTIMATED REQUIREMENTS
TWO YEAR MAXIMUM EFFORT



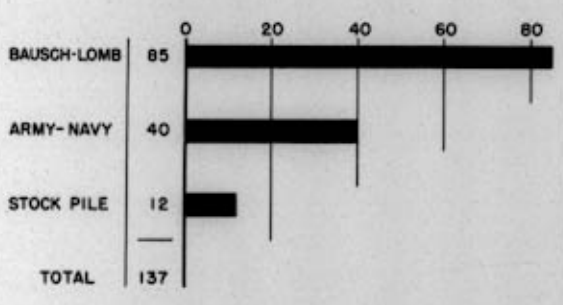
Fiscal Years Ending June 30th

ANNUAL CAPACITY



Fiscal Years Ending June 30th

RESERVE STOCKS
THOUSANDS OF POUNDS



Data are as of July 1940

CAPACITY INCREASES
POUNDS

DATE	B. & L.	B. of S.	TOTAL
JULY 1, 1940	192,000	60,000	252,000
SEPT. 1, 1940	384,000	60,000	444,000
JAN. 1, 1941	384,000	60,000	444,000
MAR. 1, 1941	384,000	150,000	534,000
MAY 1, 1941	540,000	150,000	690,000

Petroleum

PETROLEUM PRODUCTS
(Other Than Aviation Gasoline)

The productive capacity and storage facilities for fuel oil on the Atlantic Coast are limited. To meet the requirements of major naval maneuvers in the Atlantic Ocean, it has been recommended to the Navy that a reserve stock of about 10 million barrels of fuel oil be accumulated in that region.

Information has been secured regarding the costs of producing hydrocarbon synthetic rubber and the type of products available. The data have been transmitted to the RFC, now charged with the responsibility for determining and financing the most desirable processes for producing synthetic rubber.

The estimated requirements of other petroleum products for the Army and Navy have not been received. It has been suggested to the Army and Navy Munitions Board that they establish an advisory committee to cooperate with the petroleum committee of this Board in securing reasonably accurate estimates of the needs for other petroleum products. In this way future difficulties, particularly in the field of lubrication, could be eliminated.

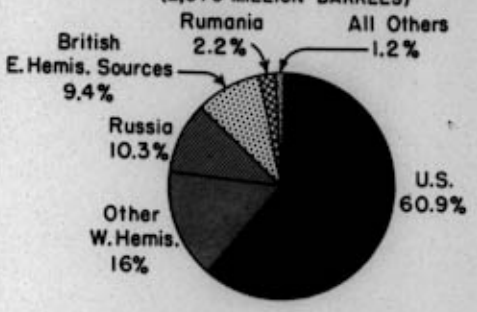
The Secretary of the Navy has asked the American Petroleum Institute to appoint several committees for the purpose of studying the problems of oil storage and refinery protection. In pursuance of this request a policy committee and regional committees have been designated by the Institute. These groups will cooperate with local defense organizations and corps area commanders with a view to decreasing the hazard of damage to the facilities of the industry from sabotage and bombing.

December 3, 1940

PETROLEUM

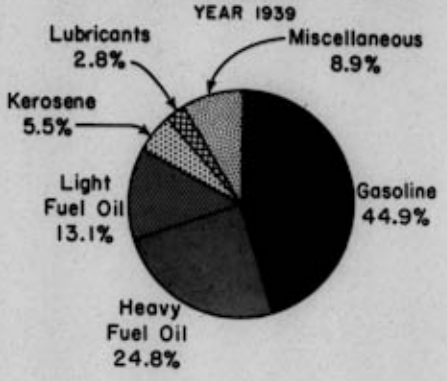
WORLD PRODUCTION - 1939

(2,076 MILLION BARRELS)

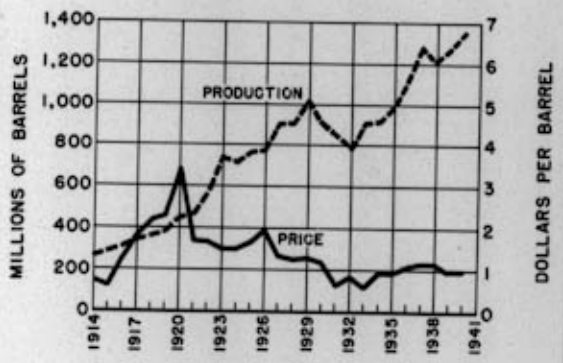


HOW PETROLEUM IS USED

YEAR 1939

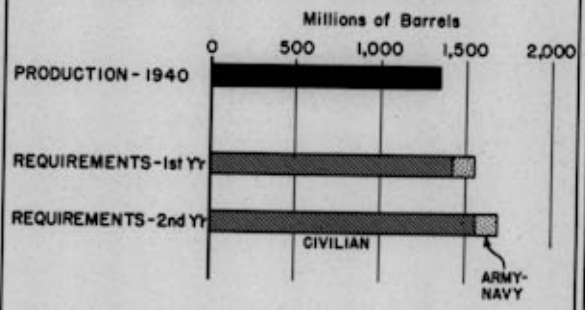


U. S. PRODUCTION AND PRICE



Data for 1940 are partly estimated

MAXIMUM WAR REQUIREMENTS AND DOMESTIC PRODUCTION



Production partly estimated; requirements estimated by Ind. Mat'ls. Dep't.

COMMENTS

Petroleum is indispensable in modern life and for defense on land, sea and in the air.

Production in 1940 is establishing a new high record. Requirements for 1941 and 1942 will be still higher.

U.S. reserves are ample for maximum requirements. If necessary, production from existing wells could be increased, new areas could be brought in and marginal production could be stimulated by a price advance.

U.S. refineries are now operating at about 75% of capacity.

Although productive capacity is ample, maintenance of an uninterrupted supply in growing quantities for civilian and defense needs, demands careful attention.

National Defense Advisory Commission - Industrial Materials Department - November 9, 1940

Potash

POTASH

Several weeks ago a survey of potash producing capacity, stocks, and consumption indicated that there would be a slight deficit in the 1940-41 fertilizer season, and a deficiency in the 1941-42 season that might reach approximately 130,000 tons. This presupposed the continuation of exports at the rate which prevailed during the middle of 1940, and the full utilization of present stocks.

The producers are adding to their capacity to help meet the shortage. It was concluded that, if exports except to certain countries were eliminated, the relationship between supply and requirements would be improved. It was made clear that in emergencies run-of-mine salts, available in large quantities, could be used in fertilizers where the buyers are willing to use them and pay the freight.

Representatives of the industry in conference have shown a desire fully to cooperate with the Government, and have expressed their willingness to take whatever steps may be necessary to meet domestic needs.

It has been recommended that the exportation of refined potash salts be prohibited, and that export licenses be granted only for crude run-of-mine salts.

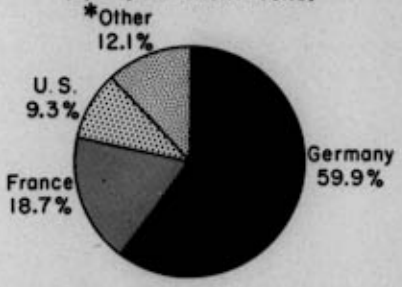
December 3, 1940

POTASH

(ALL DATA ARE EXPRESSED IN TERMS OF THE EQUIVALENT OF K_2O)

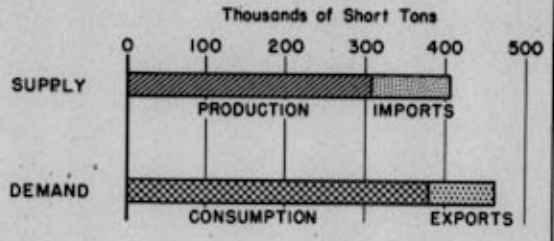
WORLD PRODUCTION - 1938

(3,417,000 SHORT TONS)

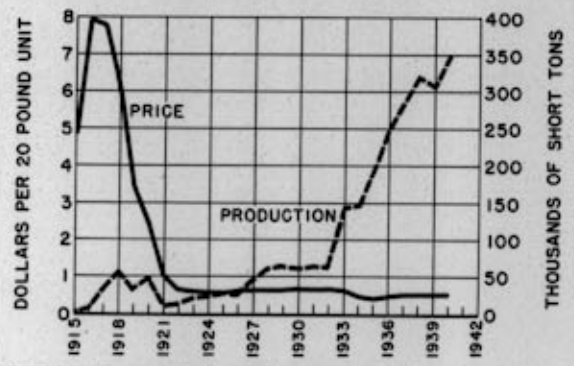


*Mainly Russia and Poland

U.S. SUPPLY AND DEMAND - 1939

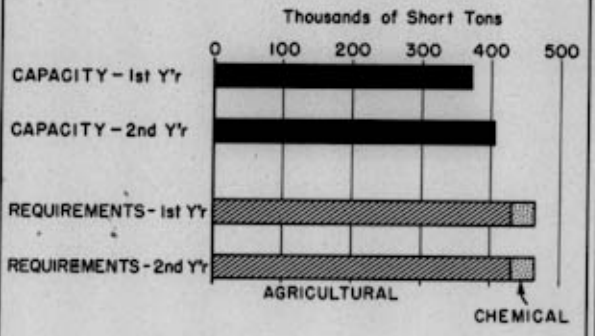


U.S. PRODUCTION AND PRICE



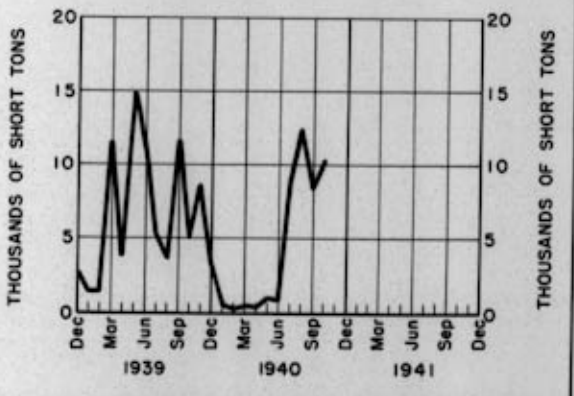
Prices are for muriate of potash per unit of K_2O
Data for 1940 are partially estimated

CAPACITY AND MAX. REQUIREMENTS



Requirements include needs of Cuba, Puerto Rico, Hawaii & Canada
Requirements are for fertilizer years ending May 31st

EXPORTS



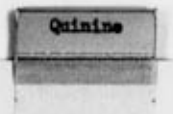
COMMENTS

While mine capacity is ample, plant refining capacity is short of maximum requirements.

Imports from sources formerly available have been cut off by the war.

The expected shortage can be met as follows:

(1) By restricting exports
(2) By increasing plant capacity
(3) By reducing industry stocks


Quinine

QUININE

Quinine is obtained from cinchona bark which grows in the East Indies and in some South American countries. As the South American bark contains 1% or less of quinine sulfate equivalent, it is an uneconomical source of this drug. The cinchona bark from the East Indies contains from 6% to 7% of quinine sulfate derivative. Most commercial quinine enters the market from the East Indies.

Analysis of the quinine situation points to a possible shortage. Medical officers of the Army state that malaria was unusually prevalent in 1940 and that large quantities of quinine have been and would be required. Accordingly, it was recommended to the Army and Navy Munitions Board that a stock pile be accumulated. It was decided that this stock pile should be purchased by the Procurement Division of the Treasury Department. It was recommended that 7,200,000 ounces of quinine be accumulated, and this recommendation has been carried out. Approximately 5,000,000 ounces have been received in this country, and shipping facilities are being provided to transport the remainder as quickly as possible. Some of these purchases have been of pure quinine sulfate and others of the cinchona bark, itself, which is processed in this country.

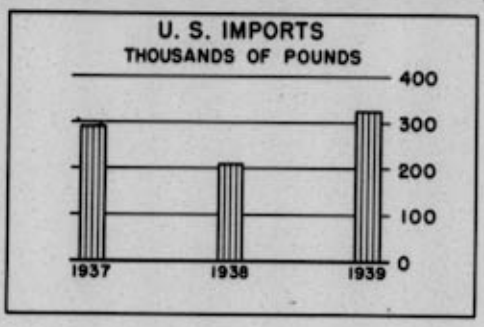
Bolstered by this stock pile, the quinine held by private industry should be ample for any emergency. It is estimated that, under normal conditions, the supply is sufficient for approximately 2½ years.

December 3, 1940

QUININE (SULPHATE OR EQUIVALENT)
(PRINCIPAL SOURCE OF U.S. IMPORTS – NETHERLANDS INDIES)

BACKGROUND

Imports – 1939	323,917 Lbs.
Industry Stocks – Nov. 1, 1940	275,000 "

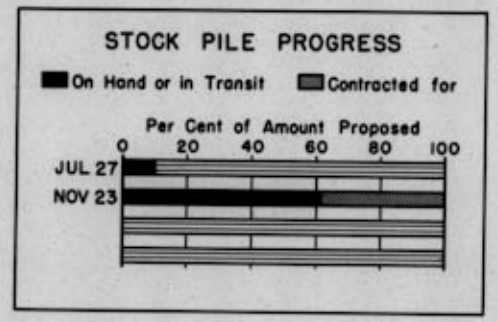


WAR REQUIREMENTS – MAX. EFFORT

First Year	324,723 Lbs.
Second Year	317,432 "

GOVERNMENT STOCK PILE

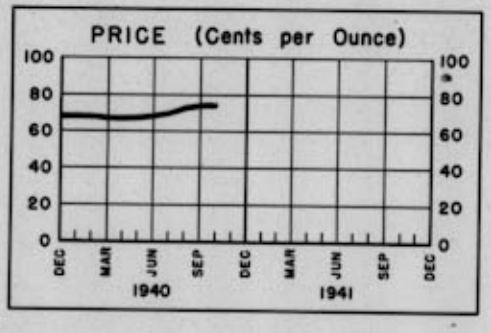
Total Amount Proposed	601,940 Lbs.
On Hand or In Transit	368,607 "
Additional Contracted for	233,333 "



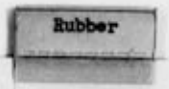
COMMENTS

The principal use of quinine is in the prevention and treatment of malaria. It is essential for this purpose.

Practically all of U.S. requirements of quinine are obtained from the Netherlands Indies, either in a refined form or in cinchona bark to be processed in this country. A small amount is extracted from cinchona bark imported from South America.



In an emergency, some substitution of synthetic materials would be possible. Also, existing stocks could be conserved through limiting use in patent medicines, elixirs and hair tonics.


Rubber

RUBBER

Present stocks of crude rubber and of finished rubber products, ius crude rubber afloat for this country, represent about 12 months' upply. With maximum use of reclaimed rubber and by curtailment of ivilian consumption this supply could be made to last 20 months or nger. Within this period it would be possible to erect synthetic rub-er plants capable of supplying our emergency needs.

The Government stock pile of rubber, including that obtained under ie Rubber-Cotton Barter Agreement and that bought by the Rubber Reserve mpany, now consists of 86,000 long tons in this country, 57,000 tons loat, and 19,000 tons bought but not yet afloat. The total of 162,000 ns compares with the recommended ultimate amount of 416,000 tons. rchases have been suspended for four weeks because of a rise in the rket price above the stipulated range. Scheduled increases in rubber oduction quotas will make additional rubber available and should bring e market price back within the buying range.

Industry stocks have increased since June by approximately 50,000 ns beyond normal stocks.

Conferences with representatives of the reclaiming and scrap rubber dustries indicate that our output of reclaimed rubber could be in-oased almost immediately from 186,000 tons a year at present, to ap-oximately 300,000 tons a year with existing plants. By plant expan-on the production could be further increased to approximately 600,000 ns a year in stages from three to twelve months, and it is estimated at the supply of scrap rubber would be sufficient to produce at that te for two or three years.

Formal recommendations on emergency production of synthetic rubber ve been made, and it has been agreed that responsibility for acting on these recommendations rests with the R.F.C. Engineering estimates l other data collected by the Defense Commission have been turned over the R.F.C. which has continued its negotiations with producers of syn-etic rubber, but no arrangements for emergency production have been ncluded.

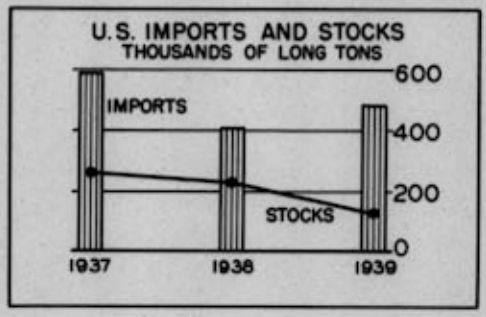
A new commercial plant that will double the productive capacity of oprene, a type of synthetic rubber that is highly important in the duction of certain airplane parts and other defense needs, is now ng brought into production. This will help relieve the temporary rtage that has developed in Neoprene as a result of the defense pro-m.

ember 3, 1940

RUBBER
(PRINCIPAL SOURCE OF U.S. IMPORTS - EAST INDIES)

1939 BACKGROUND

Net Imports	486,491	L.T's
Consumption	592,000	"
Industry Stocks - Dec. 31st (Stocks Nov. 30, 1940 - 174,000 L.T's)	125,800	"

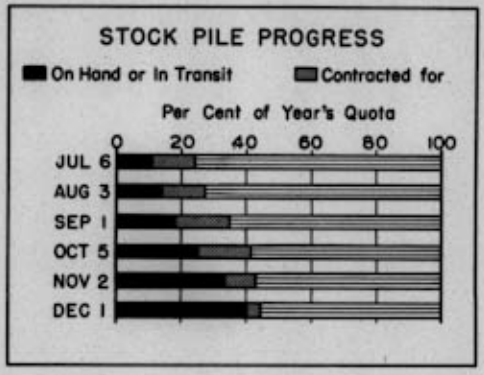


WAR REQUIREMENTS - MAX. EFFORT

First Year	700,000	L.T's
Second Year	700,000	"

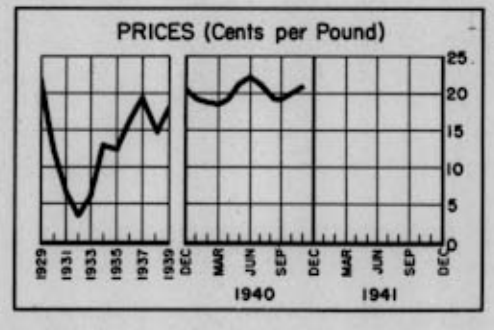
GOVERNMENT STOCK PILE

Total Amount Proposed	416,000	L.T's
Quota by June 30, 1941	356,000	"
On Hand or In Transit	142,605	"
Additional Contracted For	18,708	"



COMMENTS

Rubber for stock pile is being acquired under the 86,000 ton cotton-rubber barter agreement, and by Rubber Reserve Co. under purchase agreement for 150,000 tons for delivery during 1940, and an additional 180,000 tons during 1941, at 18 to 20 cents a pound.

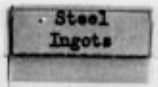


Production of reclaimed rubber (present plant capacity about 300,000 tons per year with 186,000 tons produced in 1939) can be doubled within one year.

Stocks of crude rubber and finished rubber products in this country, plus rubber afloat, represent twelve months' supply. By maximum use of reclaimed rubber and curtailment of civilian consumption, this supply would last considerably longer.

Production of synthetic rubber is now about 5,000 tons per year. Arrangements are in progress to increase this amount substantially within 18 months.

Central and South America as supplemental sources of supply are being studied, but possibilities are not encouraging.


Steel
Ingots

STEEL INGOTS

Our analysts have assembled most of the available information on raw steel requirements and capacity short of an engineering investigation. Below are furnished the salient figures:

Capacity	Millions of net tons
Present steel ingot output rate	79
Present rated capacity	83
American Iron and Steel Institute estimate of maximum working capacity, assuming certain step-ups in scrap and pig iron	85
Steel ingot capacity expansions in process, available in 1942, approximately	1.5

During 1940, capacity has been increased from 81.8 to 83.0 million tons. Of the 1,200,000 tons increase, 900,000 tons was in electric furnace steel, an increase of 50% in electric steel capacity.

Requirements	Millions of net tons
Historical points of reference:	
Previous peak (1929) output approximating domestic plus export demand	63
Average output last ten years	38
1939 output	53
Possible requirements in fiscal year 1942:	
Possible civilian demand, assuming $90 billion annual income	71.5
Estimated direct defense and export (primarily British) demands	20.2
TOTAL	91.7

December 3, 1940

Steel
Scrap

STEEL SCRAP

Constant study has been given to the steel scrap problem in an endeavor to assure an adequate supply at a fair price. In line with this policy, objections have been consistently offered to indiscriminate exports. It is gratifying to note that exports in November were sharply lower than in recent months.

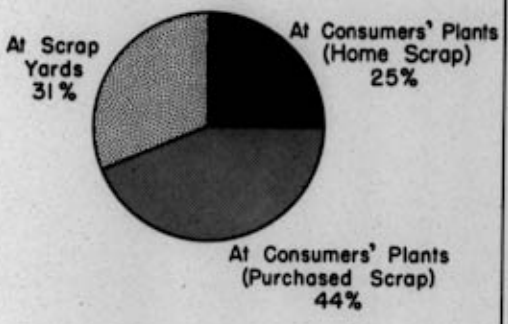
Demand for scrap has been increased by the continued near-capacity operating rate of the steel industry. The price of scrap tends to fluctuate with the rate of operations and, consequently, the recent trend of scrap prices has been upward. Higher prices tend to increase the volume of scrap moving to market, since the higher level makes it commercially possible to move scrap from less accessible areas where collection costs are relatively greater. The available supply of scrap thus tends to vary automatically as changes take place in economic conditions.

December 3, 1940

STEEL SCRAP

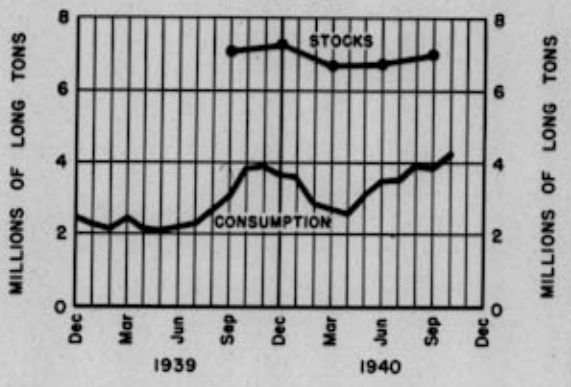
SCRAP STOCKS

APPROX. 7,000,000 LONG TONS – SEP. 30, 1940



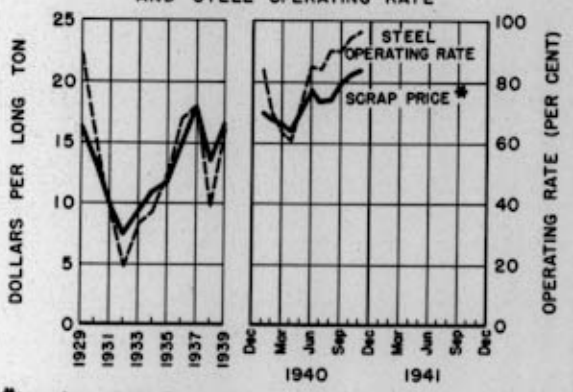
DOMESTIC CONSUMPTION AND STOCKS

BY MONTHS



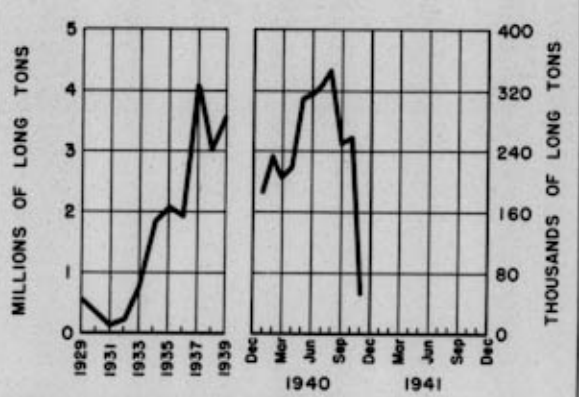
SCRAP PRICE

AND STEEL OPERATING RATE



*Iron Age composite

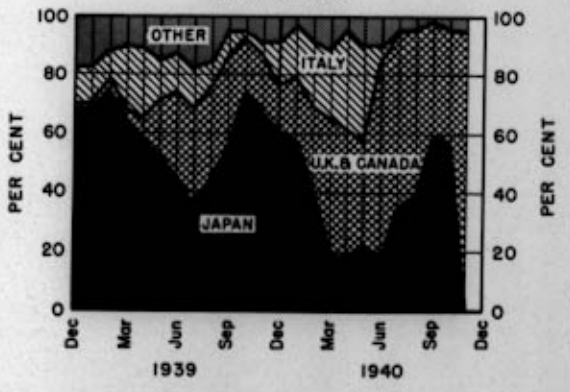
SCRAP EXPORTS



Data for Nov. 1940 partially estimated

PERCENTAGE DISTRIBUTION OF EXPORTS

BY COUNTRIES



COMMENTS

Roughly, equal parts of scrap and pig iron are used in the production of open hearth steel.

Heavy quantities of scrap move continuously to the market. The volume entering the market is largely dependent upon the prevailing price.

Exports of all steel scrap are now under license control.

Normally steel industry uses about 80% of scrap consumed.

National Defense Advisory Commission – Industrial Materials Department – December 3, 1940

TIN

Total supplies of tin on December 1, actually here and afloat, amounted to 88,210 long tons. These included 42,636 tons in consumers' warehouses (an increase of 21,525 tons since January 1); 6,623 tons at New York warehouses and docks; 22,636 tons afloat from foreign countries; and a 16,315 ton stock pile in warehouse.

Although all of the tin producing countries represented on the International Tin Committee agreed to raise production to a 130% quota, the Dutch East Indies alone have reached this quota. This lag has occurred in spite of our agreement to purchase 75,000 tons at 50¢ a pound in the 1941 fiscal year. The amount accumulated in our stock pile to date is consequently less than was expected, but the increase in consumer stocks is satisfactory.

A contract was signed on November 4 between Bolivian producers and the Metals Reserve Company for the purchase of tin ores and concentrates containing 18,000 tons of tin per annum for five years. This covers practically the entire output of Bolivia except that of the Patino interests, which reportedly have contracted to sell their entire output for the next ten years to the British Government.

As we are now assured for the first time in history of a steady supply of tin ores, plans are being made for the establishment of a smelting industry under government auspices. A report on the technical problems involved has been made and negotiations are now under way on plant construction. On the completion of these plans we shall have a new industry, useful in normal times as well as in emergency.

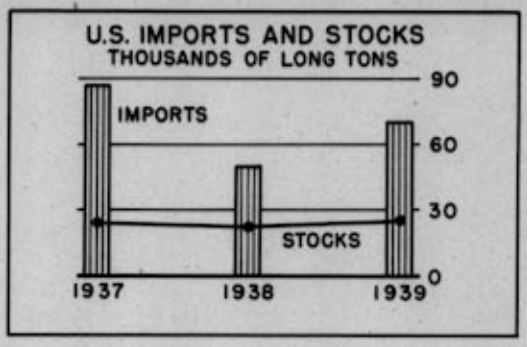
Although the movement of tin to this country is now at a record rate the situation could change suddenly. Consequently plans have been prepared, in cooperation with steel companies, can companies and promoters of substitutes, concerning tin substitutes and conservation. Further research is being carried on in preparation for any emergency which might arise.

December 3, 1940

TIN
(PRINCIPAL SOURCE OF U.S. IMPORTS - EAST INDIES)

1939 BACKGROUND

Domestic Production	34 L.T's
Imports	70,102 "
Apparent Consumption	70,460 "
Industry Stocks - Dec. 31st	24,902 "
(Stocks Oct. 31, 1940 - 49,259 L.T's)	

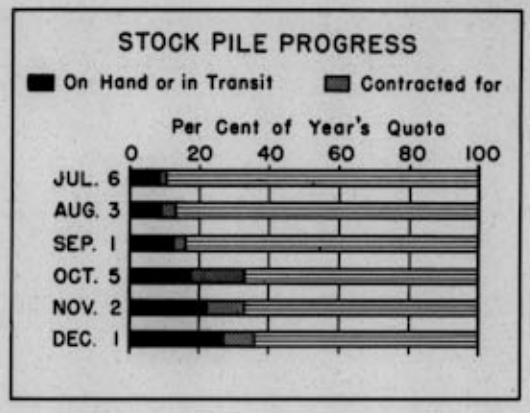


WAR REQUIREMENTS - MAX. EFFORT

First Year	102,500 L.T's
Second Year	102,500 "

GOVERNMENT STOCK PILE

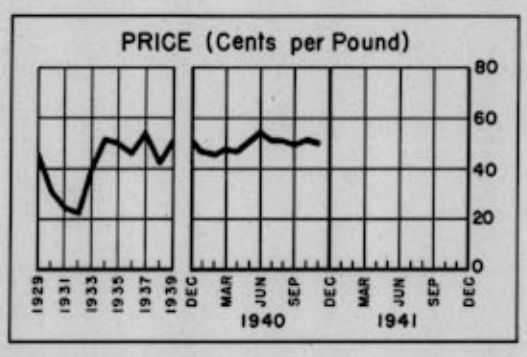
Total Amount Proposed	159,400 L.T's
Quota by June 30, 1941	82,000 "
On Hand or In Transit	21,735 "
Additional Contracted For	7,450 "



COMMENTS

Purchase agreement between RFC and International Tin Commission provides for purchase of all tin offered up to 75,000 tons during year ending June 30, 1941 at 50 cents a pound.

Purchases from Bolivian ore producers have been negotiated for annual deliveries, over a 5 year period, of approximately 45,000 tons of tin concentrates equivalent to about 18,000 tons of refined tin. It is expected that plans for the provision of domestic smelting facilities will be concluded within a short time.



Conservation in use of tin through use of substitutes, etc., and increased production of secondary tin (now about 25,000 tons per year) are under study as necessary measures, should source of primary supply be interrupted.

Toluol

TOLUOL

If proper reserve stocks of toluol are accumulated in the near future, the present and prospective capacities for making this important war chemical assure an adequate two-year supply for the manufacture of TNT.

The by-product coke ovens have been the main source of supply. There has been a small increase in the output of these ovens, but much of this added supply is being absorbed by the British Purchasing Commission.

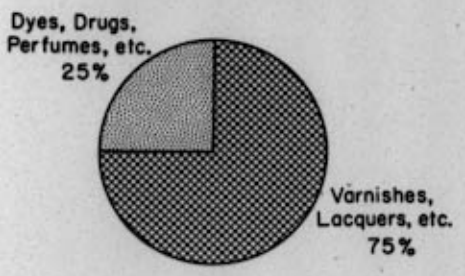
Reliance for meeting the greatly increased Army and Navy requirements that will start about the middle of 1941 is being placed upon petroleum refineries. One petroleum refinery started producing toluol in December, 1940. Another Government-owned plant in which toluol will be made is scheduled to reach the producing stage about October, 1941. It is associated with a petroleum refinery at Baytown, Texas. If these plants succeed in producing satisfactory toluol in anticipated quantities, and if the product can be satisfactorily nitrated, as is confidently expected, an ample supply of this indispensable war material is guaranteed.

For contingencies, the operators of the TNT plants have been requested to purchase at market prices, but not exceeding 30¢ per gallon, current surplus toluol production to the total amount of 10 million gallons.

TOLUOL

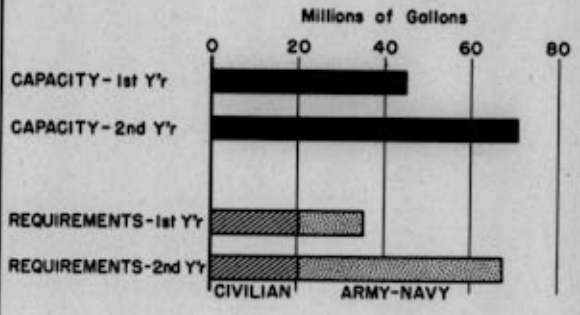
U. S. CONSUMPTION - 1939

20,000,000 GALLONS



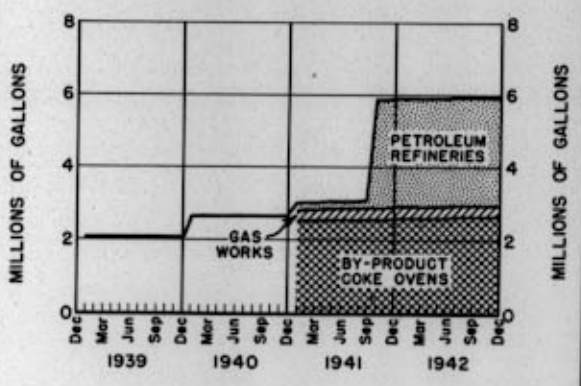
Quantity used in manufacture of TNT was negligible

CAPACITY AND MAX. REQUIREMENTS

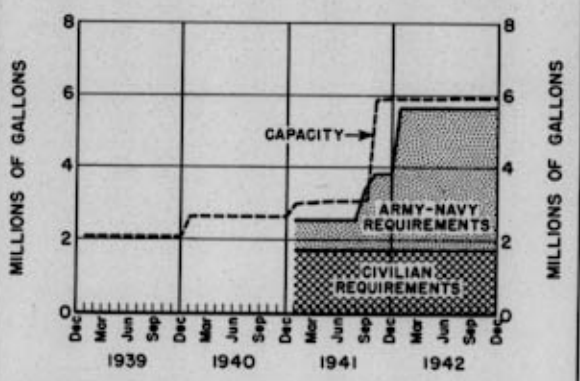


Requirements include exports to Canada and Great Britain

ESTIMATED MONTHLY CAPACITY

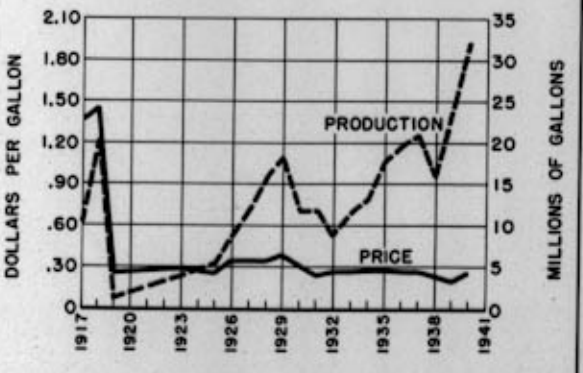


ESTIMATED MONTHLY REQUIREMENTS



Requirements include exports to Canada and Great Britain

U. S. PRODUCTION AND PRICE



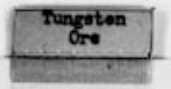
COMMENTS

Defense use of toluol is principally in making TNT for shells and bombs.

Existing capacity is inadequate to meet second year maximum requirements.

Deficiency will be met by new capacity now under construction.

As an added safeguard accumulation of 10,000,000 gallons of reserve stock is recommended by Industrial Materials Department.


Tungsten
Ore

TUNGSTEN ORE

Total requirements of tungsten ore for a two-year emergency period are estimated at 25,000 short tons. Accumulation of a 13,000 ton stock pile has been recommended and domestic production will supply an estimated 12,000 tons.

Including present industry stocks, and assuming that sources outside the Western Hemisphere are cut off, supplies apparently in sight for a two-year period are moderately in excess of the estimated requirements.

As of December 1 there had been received or contracted for 11,257 tons for the stock pile, leaving only 1,743 tons to be acquired.

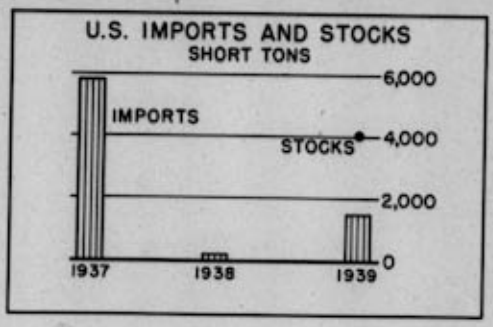
Arrangements have been made to transfer some ore from government to industry to take care of emergency needs of the rapidly growing armament and defense program.

The plant erected by private capital for cleaning off-grade ores is now in operation and deliveries of cleaned concentrates will begin in January.

TUNGSTEN ORE (60% WO_3)
(PRINCIPAL SOURCE OF U.S. IMPORTS - CHINA)

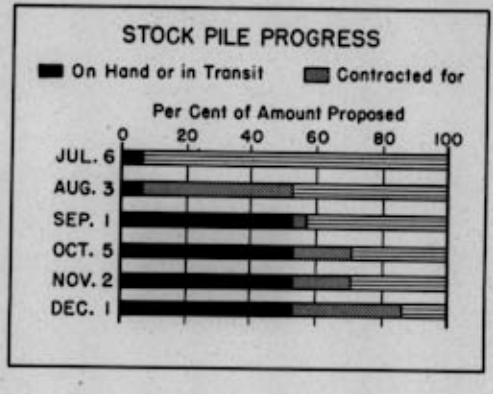
1939 BACKGROUND

Domestic Production	4,287 S.T's
Net Imports	1,398 "
Apparent Consumption	5,685 "
Industry Stocks - Dec. 31st	4,038 "
(Stocks Oct. 31, 1940 - 4,827 S.T's)	



WAR REQUIREMENTS - MAX. EFFORT

First Year	12,000 S.T's
Second Year	13,000 "



GOVERNMENT STOCK PILE

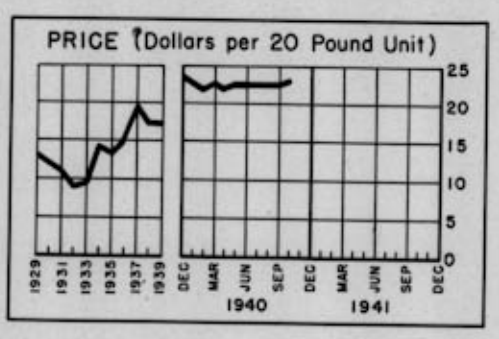
Amount Proposed	13,000 S.T's
On Hand or in Transit	6,918 "
Additional Contracted For	4,339 "

COMMENTS

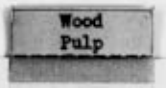
Recent re-opening of Burma Road has considerably improved the situation.

Government projects to explore domestic production possibilities are in progress.

Financial assistance in developing access to Bolivian ore reserves is under consideration.



Possibilities of substitution of molybdenum in the manufacture of high speed tools (tungsten's major use) appear limited.


Wood
Pulp

WOOD PULP AND PAPER

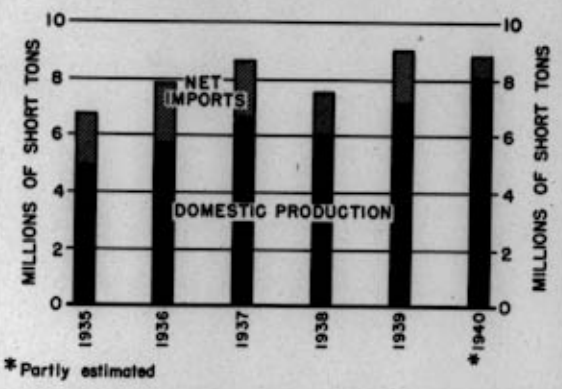
With the invasion of Norway in April 1940, customary shipments of important amounts of wood pulp from Scandinavia were interrupted. Since then, the United States has offset a good portion of the loss through greater domestic production and increased imports from Canada. In the case of unbleached pulps, however, production and imports have failed to keep pace with consumption. Stocks of these grades have been depleted and some shortages may occur during the first half of 1941. To gauge the seriousness of possible shortages, another survey of the industry will be undertaken in the near future by the Industrial Materials Department.

Wood pulp prices rose following the beginning of the war in September 1939 and they advanced further after the invasion of Norway. On July 23, 1940 a meeting was held between a member of the Price Stabilization Department and representatives of the industry. It was agreed that further price increases should be influenced only by actual changes in essential costs. Subsequently, contract prices for pulp have remained unchanged and the substantially higher spot prices have declined. Coincidentally, paper demand has been reduced and prices have weakened.

It is expected that paper production and consumption in 1941 will exceed the peak levels of this year. Although some new capacity is being added by the industry, the excess of capacity over consumption should be substantially reduced. Sudden increases in demand could easily result in temporary shortages and price rises, at least in some grades. However, it is believed that over longer periods available capacity is amply sufficient to meet anticipated needs. The problem is one of spacing properly any extraordinary demand as a result of defense activities. Requirements for defense purposes are being investigated with this thought in mind.

WOOD PULP

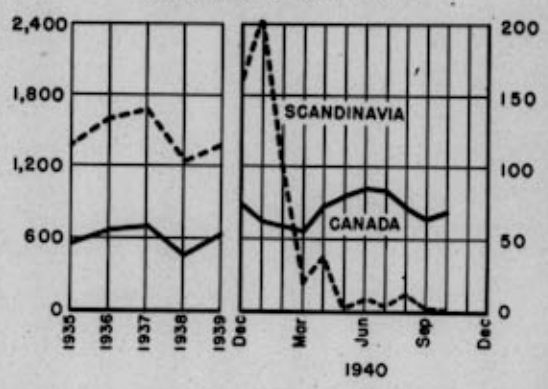
APPARENT U.S. CONSUMPTION



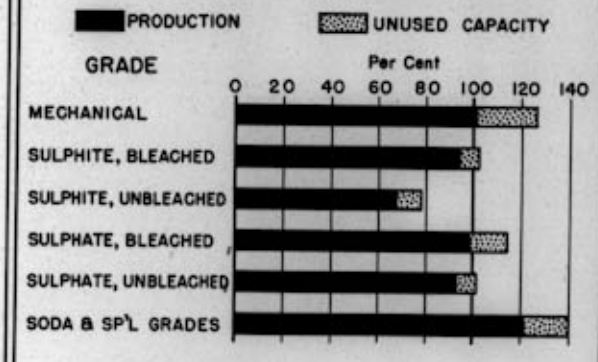
*Partly estimated

U.S. IMPORTS BY SOURCE

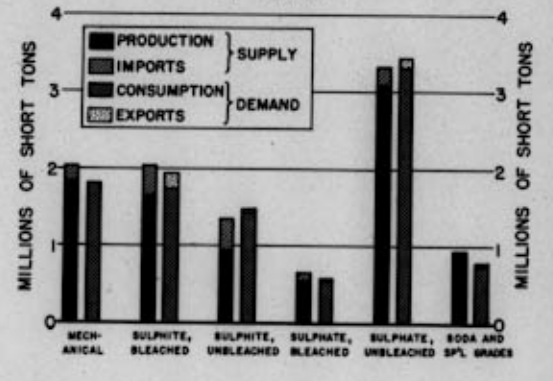
THOUSANDS OF SHORT TONS



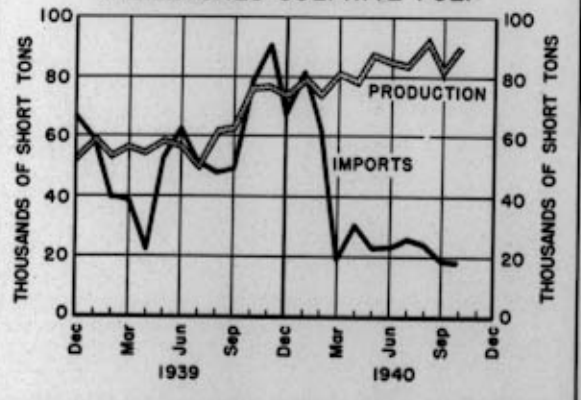
EST. 1940 PROD'N AND UNUSED CAPACITY IN PER CENT OF CONSUMPTION



ESTIMATED 1940 SUPPLY AND DEMAND BY GRADES



PRODUCTION AND IMPORTS OF UNBLEACHED SULPHITE PULP



COMMENTS

Possibilities of substitution of grades with surpluses (especially sulphates) for grades with shortages exist in many cases.

The use of waste paper as a substitute for pulp is increasing and can be expanded substantially.

Stocks of pulp are about 3 months' supply.

The apparent shortage in unbleached sulphite pulp is being reduced by the increase in domestic and Canadian production.

Wool

WOOL

Although this country is a large producer of wool, some wool must be imported, even in normal times. As assurance against an emergency, negotiations have been completed with the British Government for the storage in this country of 250,000,000 grease pounds of Australian wool. This wool will be owned by the British Government, but the United States will pay all charges involved in its transportation and storage. The formal agreement was signed early in December and it is believed that shipments in volume from Australia will start this month.

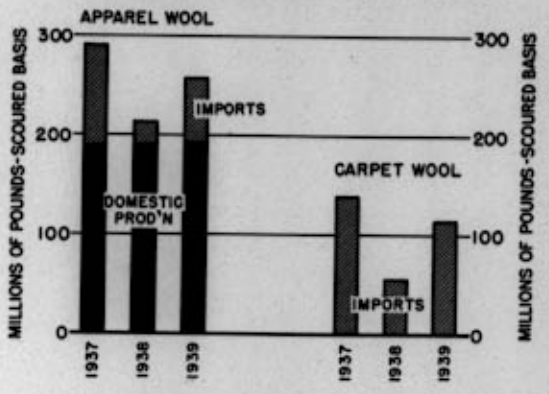
Until recently, Army specifications called for 100% domestic wool. Heavy Army orders for woolen goods in recent months caused the price of domestic wool to rise out of proportion to the price of foreign wool. A change in Army specifications, however, now permits the use of foreign wool and the Navy Department has adopted the same procedure. This change has prevented a further widening of the spread between domestic and foreign wool prices and aided a better distribution of government business throughout the industry.

Facilities of the woolen manufacturing industry have so far proved adequate to supply both civilian demand and the large Army requirements.

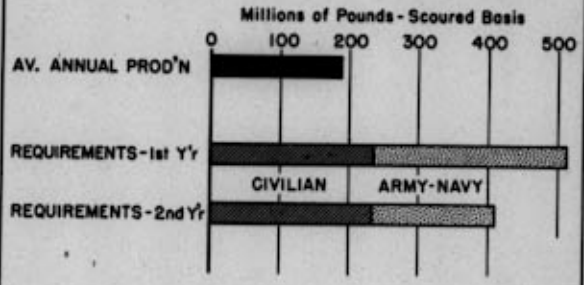
December 3, 1940

WOOL

U.S. WOOL PRODUCTION AND IMPORTS

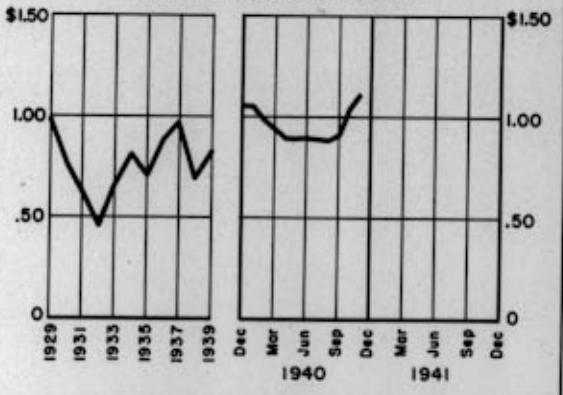


MAX. WAR REQUIREMENTS FOR APPAREL WOOL AND AVERAGE DOMESTIC PRODUCTION



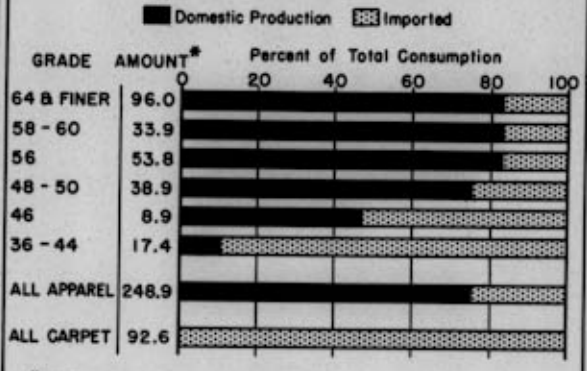
Requirements are estimates of Army-Navy Munitions Board, converted to a scoured basis

PRICE - Fine Domestic Wool at Boston Per Pound, Scoured Basis



U.S. WOOL CONSUMPTION - SOURCES & GRADES

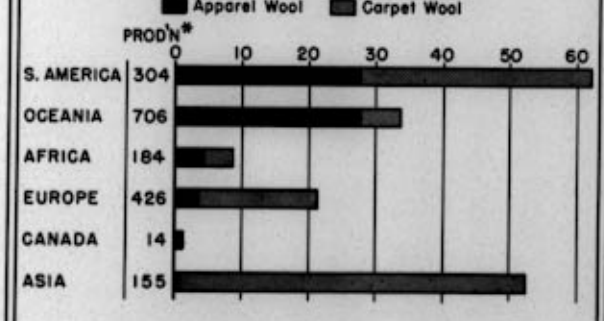
YEARLY AVERAGE 1936-38



*Millions of Pounds - Scoured Basis

U.S. IMPORTS BY SOURCE - 1939

MILLIONS OF POUNDS - SCOURED BASIS



*Converted to scoured basis by using 50% of grease basis data

COMMENTS

Arrangements have been made for the storage in this country of a reserve stock of British-owned Australian wool amounting to 250 million pounds, grease basis, (approximately 140 million pounds, scoured basis).

Deficit between domestic production and maximum requirements can be met by increasing U.S. production and imports from South America.

In an emergency, distinctions between grades can be largely neglected.

Zinc

ZINC

As soon as the first estimates of defense requirement appeared it was recognized that the mine output of zinc concentrates would probably be adequate, but that domestic smelting capacity constitutes a bottleneck which will necessarily limit supply until additional facilities can be provided. Foreign production, although an important resource in the basic supply of concentrates, does not afford any immediate relief from the shortage in smelting capacity, because, except for one zinc smelter in Mexico shut down on account of labor trouble, and the Canadian plants working on Empire requirements, there are no important foreign smelters in the Western Hemisphere. For the same reason, an emergency stock of slab zinc is not obtainable from foreign sources.

The only remedy, therefore, is an expansion of domestic smelting capacity, coupled with such minor expedients as may be found from time to time to meet the shortage in the interim. This expansion is already under way, and is expected to raise the monthly production of the primary smelters from about 64,000 tons at the end of 1940 to 73,000 tons in the middle of 1941. For any rate of requirement hitherto foreseen, the latter production should leave comparatively little margin of shortage, for which further expansion has been discussed. Estimates of requirement have recently been expanded, however, and the subject is now being completely reviewed.

The collateral question of brass sheet-rolling capacity, pertinent to requirements of cartridge brass, has also been very recently raised and is under review.

In order to prevent the loss of domestic supplies by exports not consonant with the defense program, it has been recommended that zinc be placed on the list of materials subject to export control.

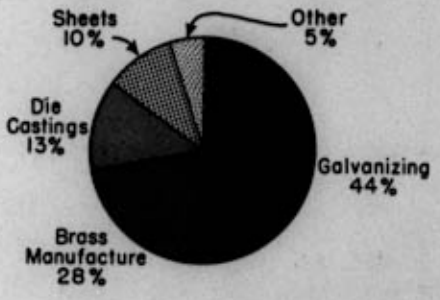
December 3, 1940

ZINC

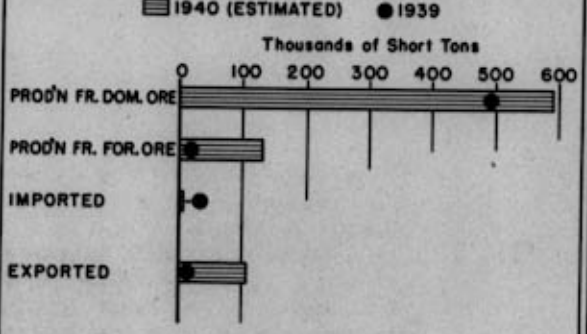
(PRINCIPAL SOURCES OF U.S. IMPORTS - MEXICO, PERU AND CANADA)

WHERE ZINC IS USED

1939

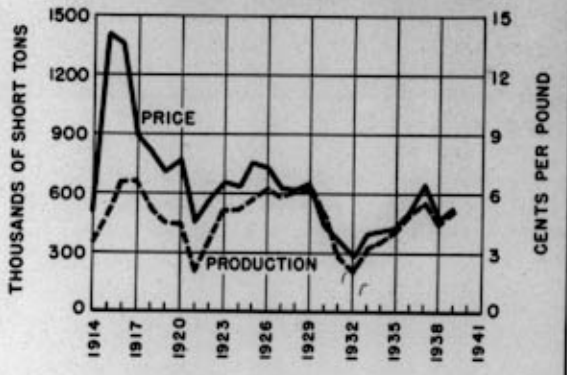


U.S. PRODUCTION, IMPORTS AND EXPORTS



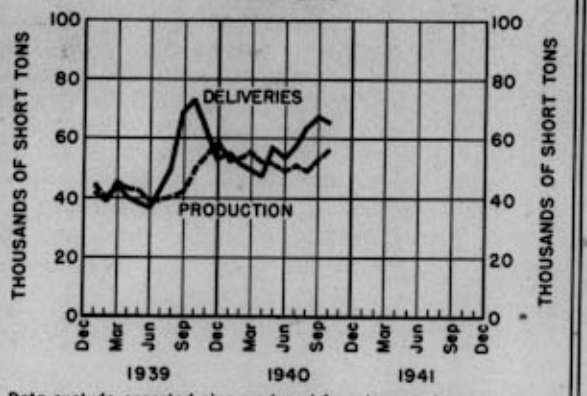
PRODUCTION AND PRICE

PROD'N OF PRIMARY ZINC; PRICE AT E. ST. LOUIS



PRODUCTION AND DELIVERIES

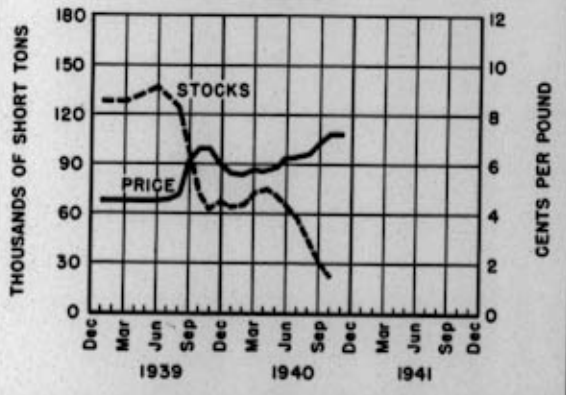
SLAB ZINC



Data exclude exported zinc produced from imported ores

PRODUCERS' STOCKS AND PRICE

SLAB ZINC



COMMENTS

Sufficient domestic ore is probably available for maximum war efforts. (Foreign ores are imported because of low cost.)

Smelter production is now virtually at capacity but facilities are being expanded to meet increasing needs.

Current heavy exports are largely to England.

The drop in producers' stocks of 60% since April 1940 has not been due to inventory accumulation by consumers.

National Defense Advisory Commission - Industrial Materials Department - December 3, 1940

Other Materials

ASBESTOS

Two-year emergency requirements for long fiber asbestos, available only in South Africa, have been estimated at 20,000 short tons. The Munitions Board does not concur in the Defense Commission's recommendation for a stock pile and the question is now before the Metals Reserve Company, with no decision arrived at to date. Meanwhile no government purchases have been made.

Heavy imports by industry in August, September and October, totaling 6,600 tons, indicate sizable increases in industry stocks.

Shorter asbestos fibers available in Canada can possibly be substituted for the African long fibers, although at increased cost and lessening of efficiency. In view of this possibility, however, it is felt that urgency of accumulating a stock pile of asbestos is not as acute as it is in the case of some other commodities. Canadian production is larger in 1940 than in 1939 and a greater proportion is available to the United States as the result of the loss of European markets.

The effect of the increasing scarcity of shipping capacity on asbestos supplies is being studied, and detailed analyses are being made of industry requirements based on fiber length and grade.

December 3, 1940

COTTON AND COTTON TEXTILES

For most purposes the supplies of raw cotton are more than adequate to take care of all requirements, both military and civilian, and to provide substitutes for other fibers.

In regard to the extra-long staple cotton required for the present balloon program of the Navy, however, preliminary investigation indicates that only about 20% of requirements is on hand or in sight. Most of the cotton suitable for balloon use comes in small quantities from the British West Indies, Puerto Rico, Cuba and the Fiji Islands. None is grown in this country. At the present time imports are somewhat restricted by import quotas. A recommendation has been made to the Tariff Commission that the quotas on cotton of balloon grade be suspended during the emergency. This recommendation has the full approval of all concerned and appropriate action is expected shortly.

The cotton textile industry has been confronted with large government orders at the same time that the civilian demand has been at the seasonal peak. The chief difficulties in production have appeared in tentage and khaki twill uniform cloth. To relieve the pressure on mills, a number of acceptable substitute materials have been worked out with the Quartermaster. These substitutes will permit the distribution of the business more widely over the existing equipment.

For the two months of October and November, cotton consumption was over 1,500,000 bales, which is a record figure for any two successive months.

December 3, 1940

DIAMOND DIES

Careful study has indicated that demands of the wire drawing industry can be adequately met by domestic production of dies larger than .0015 inches in diameter. Manufacture of finer sizes down to .0004 inches has centered in France, however, and it is increasingly difficult to obtain supplies from there, with the distinct possibility that future shipments may cease altogether. Requirements of industry for these fine sizes amount to about 12,000 dies per year.

The problem of establishing a domestic industry to manufacture these small sizes has been discussed with present manufacturers of the larger sizes, many of whom are prepared to take the necessary steps to expand their operations, train the needed workers, install new types of machinery, and do the required experimental work to establish this new industry. Many will require some form of modest financial aid from the Government, and a survey is now being made to indicate individual needs along these lines, together with best estimates of the number of small dies each considers it possible to produce four, eight and twelve months hence. Stocks are low, and efforts are being made to lend all possible assistance in obtaining additional supplies from France.

December 3, 1940

FLAX AND LINEN PRODUCTS

The military importance of flax arises principally from its uses in parachute webbing, lacing cord for training planes, and shoe thread. New supplies of the desired quantities have been restricted through the blockade of flax-growing European countries. Since only a small amount of flax is produced in this country, our needs must now be met from inventories.

Arrangements have been completed whereby the industry has allocated 769,000 pounds of flax yarn, a substantial quantity, for Government requirements. Most of this quantity has already been specified and a study is being made of future requirements. Recent statements of the Bureau of Aeronautics of the Navy, and the Air Corps of the Army indicate satisfaction with substitute products made either of specially treated cotton yarn or nylon. Flax, therefore, can no longer be considered a serious problem.

December 3, 1940

INDUSTRIAL DIAMONDS

Needs of industry for industrial diamonds were estimated at $6,000,000 worth for a two-year emergency (the value of diamonds amounting to $5,100,000 and crushing bort $900,000), and recommendation was made by the Industrial Materials Department for purchase of a Government stock pile of this amount. The Munitions Board recommended purchase of $3,000,000 worth, and will raise no objection to purchase of remainder, though making no affirmative recommendation.

Procurement Division of the Treasury, after careful preparation, set up purchase procedure to follow suggestions made by the Industrial Materials Department, acting with best advice available, as to specifications and size allocation for industrial needs, and appointed a committee of two experts to inspect and advise in the actual purchase. Painstaking investigation showed these men fully qualified in every respect to handle this assignment. Various events have transpired, however, beyond the control of the Defense Commission, which made it appear desirable to the Coordinator of Purchases to release the inspection committee from its duties and to postpone Government purchase of diamonds temporarily. Factors cited in this decision were (1) reportedly heavy shipments of diamonds to the United States in recent months for safe keeping (impossible to measure these), (2) a marked rise in the market following rumors of probable Government purchases, (3) the desire to formulate a definite policy as to where the stones should come from (sources: South Africa, Brazil, and possible potential output from the United States), and (4) restiveness by certain consumers over the fear that their needs were not adequately met in the stockpiling program, leading to their desire for a much larger inspection committee.

Metals Reserve Company will take no action until the temporarily delayed purchasing program of Procurement is completed.

December 3, 1940

JEWEL BEARINGS

Needs of industries manufacturing watches, chronometers, meters, and a great variety of fine instruments--large numbers of each of which are vital in the defense program amount to about 100,000,000 jewel bearings per year. There is the possibility of further demands in connection with certain developments in the ordnance and aeronautical fields.

Facilities are either installed or planned which will meet emergency needs for manufacturing the larger jewels used in meters and certain types of instruments, but the small jewels are manufactured only in Switzerland. The danger of supplies being cut off from this source in the future is obvious. Manufacture of synthetic corundum from which jewels are made has also centered in Europe, but the problem of procuring this from domestic sources is not serious.

In order to insure the requisite flow of small jewels to industries dependent on their use, studies were under way on November 30 as to the advisability and possibility of (1) purchasing a Government stock pile of 50,000,000 jewels at a cost of about $1,000,000, and (2) organizing an industry in the United States of sufficient size to cut enough small jewel bearings to supply domestic requirements. The latter will take at least six months to start on a moderate scale, and a year or more to operate at the necessary rate. Present stocks are estimated at no more than a six months' supply.

Since funds are not available under Public 117, purchase of the stock pile and financing of the industry will have to be handled by R.F.C.

December 3, 1940

PLATINUM GROUP METALS

Careful study of the platinum situation indicated that no stock pile is necessary. Emergency requirements (excluding jewelry) for these metals for 2 years are 115,000 ounces platinum, 4,000 ounces rhodium, and 2,000 ounces iridium. Domestic sources, principally Alaska, will supply about 50,000 ounces platinum, together with small amounts of rhodium and iridium, and military stocks on hand total 25,000 ounces. Large crude supplies are available from Canada, with refining facilities in the United States ample for needs, and refiners' stocks on hand are estimated at about 71,000 ounces platinum, 6,000 to 9,000 ounces rhodium, and 8,000 to 9,000 ounces iridium.

Close surveillance is being maintained over developments affecting these metals, and industry will be promptly notified of any abnormal requirements that may develop to allow ample time for these to be met with minimum market disturbance.

December 3, 1940

QUARTZ CRYSTALS

In order to meet requirements for a two-year emergency it is recommended that the Government purchase a stock pile of 106,900 pounds of quartz crystals. Since there is no domestic production these supplies must be met by imports--virtually all from Brazil, the world's principal source. Industry stocks as of August 1, 1940, were 52,344 pounds--practically a year's supply. Specifications have been recommended by the Defense Commission, passed by the Munitions Board, and virtually the entire stock pile has been contracted for by the Procurement Division (Navy reserve stocks of 4,900 pounds are included in the stock pile recommendation).

As of November 30, 104,170 pounds were contracted for, and 19,595 pounds delivered. Arrangements have been completed by the Procurement Division to speed up inspection service with the cooperation of the Bureau of Standards, and additional inspection facilities to expedite this work further were recently arranged through a reliable private laboratory in New York.

December 3, 1940

SILK

The principal military uses for silk are for parachutes and powder bags. Parachutes require quality silk, while powder bags are manufactured from low-priced waste silk.

The amount of silk of parachute quality on hand and afloat to the United States is greatly in excess of maximum effort requirements. The situation in regard to waste silk, however, is uncertain. The Navy has reasonably adequate supplies of this material, but the stocks of the Army are relatively small.

A report submitted by the Textile Division on June 29 recommended the purchase of 3,000,000 pounds of waste silk for the Army. Subsequently this recommendation was withdrawn on the basis of a statement by a representative of the Army Ordnance Department that cotton powder bags could be satisfactorily used. Information has just been received, however, that this may not be entirely the case. A new survey is being made to determine if any action should be taken.

December 3, 1940

VANADIUM

It has been decided that no stock pile of vanadium is necessary. Estimated requirements for a two-year emergency are from 6,000,000 pounds of vanadium (maximum) to 4,000,000 pounds (minimum). The amount available from domestic sources at present is about 4,000,000 pounds, and this production can be expanded rapidly when and if necessary. Additional ample supplies are available on short notice from Peru.

Present industry stocks amount to about 2,000,000 pounds. All in all, the situation is considered satisfactory, and there seems no cause to fear any shortage of this material.

December 3, 1940

MISCELLANEOUS CHEMICALS AND DRUGS

Acetylene and Oxygen: Acetylene and oxygen are used principally for welding. The increased shipbuilding and other construction and production programs will greatly augment the demand. A survey of the industry indicates that there will be no shortages. New plants have been completed during the past 6 months, and additional facilities are now being constructed. The evidence is that the increased facilities will more than meet demands.

Activated Carbon: Producing facilities for activated carbon of the type suitable for gas masks are entirely inadequate to meet the Army's requirements.

As a result of conferences with the Chemical Warfare Service and the manufacturers of the commercial types of activated carbon, it was decided to increase greatly the present facilities. First, the Chemical Warfare Service granted educational orders to the two existing firms. Then they proceeded to negotiate contracts for new plants. One new plant, to consist of one activated carbon unit and two whetlerite units, with a capacity of 5 tons per day, will be located at Zanesville, Ohio. Another of similar capacity will be located at Fostoria, Ohio.

The present activated carbon plants are using all of their facilities to produce the type of carbon required by the Chemical Warfare Service and are not accepting any commercial business until such time as the new plants are placed in operation. The willingness of the commercial producers to eliminate their normal business in order to assist in the emergency is praiseworthy.

Alcohol (Ethyl): The advisability of storing molasses for the production of ethyl alcohol has been investigated. It was found that imports of molasses from the West Indies will be accelerated with the increasing demand for ethyl alcohol. Consequently, there does not appear to be any reason for the accumulation of stocks.

A survey of the capacity for producing ethyl alcohol indicates that there are ample idle facilities to meet both commercial and Army and Navy requirements. A preliminary investigation of closed plants and idle facilities among the beverage producers indicates that, upon comparatively short notice, if needed, additional capacity could be made available.

The rapid increase in alcohol consumption during the past 90 days indicates the desirability of a resurvey. It is possible that some of the idle facilities may be required in 1941.

Antimony Sulfide: Antimony sulfide is an essential ingredient of primers. It is purchased in the form of standard 70% Chinese "needle," or liquated antimony sulfide. It is used in all Army ammunition primers and in most of the primers made by private manufacturers. About 5 pounds of the lump material yield 1 pound of granular antimony sulfide that will meet Army specifications.

Experiments in the last war and during the past year have shown that it is difficult to make antimony sulfide from Bolivian or Mexican ores equal in quality to Chinese product. For some reason the primers do not have the same sensitivity, and the synthetic material has proven to be entirely unsatisfactory.

It has been recommended to the War Department that they purchase adequate stockpiles from China. The National Defense Research Committee has been asked to initiate an intensive research program for the development of synthetic antimony sulfide equal in quality for primers to the Chinese product.

Belladonna: There is a supply of this drug in the United States sufficient to meet about 6 months' needs. Normally, it is imported from Hungary, Jugoslavia, Italy, Rumania, and Germany. Experiments have shown that it can be grown in California, Virginia, and Minnesota, and steps are being taken so to increase the plantings during the coming season as to meet domestic requirements. There may be a temporary shortage, but it is expected that the inventories held by wholesalers and retailers will meet requirements until a new crop of leaves and roots is grown.

Ergot: This essential drug is obtained from a mould growth on rye. Spain is the principal producing country, but some of the drug is obtained from Germany, Poland, Portugal, and Russia. The present supply in the United States is enough for about 6 months. Vigorous efforts are being made by the industry to obtain additional quantities. There was a short crop during the past season and, due to the war, difficulty has been encountered abroad in collecting the material and transporting it to ports. There are no satisfactory substitutes for ergot. Before the present war started small domestic supplies were produced, and it is thought that this production can be increased to an extent sufficient to meet about 25% of the normal domestic requirements. The output will depend much upon the infection of the rye crop, and the 1940 crop is reported to have had an abnormally low percentage of mould growth.

Fish Liver Oils: The Subcommittee on Fish Liver Oils is making a complete survey of this product as a source of Vitamins A and D. The preliminary report indicates that there will not be a shortage during the coming season of heavy consumption that extends into the spring of 1941. Developments are in progress for providing natural Vitamins A and D from new sources and for the wider utilization of synthetic Vitamin D. It is not anticipated that there will be any shortage of these essential vitamins.

Iodine: Iodine is obtained principally from Chile. There is some domestic production. Stocks of Chilean iodine held by importers now amount to 425 tons. Twenty-five tons more are held privately, and three hundred tons have been purchased in Chile. These latter Chilean purchases have not yet been delivered at United States ports. Domestic production is approximately 125 tons and domestic consumption about 400 tons annually. The supply is enough for approximately 2½ years.

Opium: The Subcommittee on Narcotics has consulted Commissioner Anslinger of the Bureau of Narcotics to determine the quantity of raw opium in the United States. It is indicated that the supply amounts to from 2½ to 3 years' requirements.

Paints and Oils: A general survey of the paint industry shows that no shortage is likely.

Investigation of the availability of certain types of drying oils indicates that there may be a shortage of tung or Chinawood oil. Fairly satisfactory substitutes, however, are available. Since the Navy uses this material, it has been recommended that they promptly purchase their requirements. The recent opening of the Burma road will result in the shipment of some of this oil to the United States. An estimate by the Department of Commerce indicates that the domestic production was slightly higher this year than last and that in 1941 it will be about 50% above normal.

Flaxseed production during the past season established a new record, and in consequence no concern need be felt regarding the immediate adequacy of the linseed oil supply. Moreover, imports of flaxseed from South America during the first 6 months of 1940 were large. At present there is an excessive supply of linseed oil. In view of probable enlarged demands, it is hoped that the Department of Agriculture will encourage increased production of flaxseed during the coming season.

Quite a number of other oils are used in the paint industry, but the volume is small, and fair-sized stocks are available. These oils are not essential to the production of paints, and there are satisfactory substitutes from domestic sources.

After certain chemical treatment, soya bean oil is usable in increasing amounts by the paint industry. The production of this oil has been large during the past season.

Red Squill: This drug is essential for the control of rats. It is the only known material that is non-toxic to man and domestic animals but fatal to rats. Practically all of this drug is imported from Italy and Algeria. The normal annual requirement is approximately 225,000 pounds. Stocks in this country are about 40,000 pounds. An acute shortage is expected. Means are being considered to import more of this drug, and an investigation is being made to find substitutes.

Senna Leaves: The present supply is adequate for about 12 months. Since 85% of requirements is normally imported from British India and 15% from the Anglo-Egyptian Sudan, no difficulty is anticipated in importing needed quantities. Army and Navy requirements for the drugs extracted from senna leaves will be twice normal civilian requirements. It is reported that normal supplies are available in producing localities. Stocks in the United States will be increased as rapidly as the production becomes available.

Strontium Chemicals: Several of the strontium chemicals used in pyrotechnics and tracers are considered essential by the War Department. Most of the celestite, the ore from which strontium chemicals are produced, used in the United States, is imported from England. At present approximately 9 months' supply of this ore is in private hands in the United States. There are domestic deposits of celestite and strontianite ores which can be readily utilized. As the deposits are in Texas and the Rocky Mountains, the handling charges would be higher than for the British ore.

One company is manufacturing strontium chemicals exclusively for the Army and Navy. It has been recommended that the facilities of this manufacturer be increased enough to provide the full requirements for these chemicals.

Sulfuric Acid: There is sufficient ordinary domestic sulfuric acid capacity to meet present and projected requirements.

It will be necessary to add facilities for producing sulfuric acid of oleum grade and to determine methods for economically handling the recovered acid at the munitions plants. As information is obtained on the location and capacities of the munitions plants, a survey of the situation is made and a report prepared.

Thus far reports have been received for the smokeless powder plants at Radford, Virginia, and Charleston, Indiana. These surveys indicate that there is sufficient sulfuric acid in the areas to meet the demands, and that the recovered acid can be utilized locally. There is sufficient 20% oleum to meet the demand, but consideration is being given to the 40% oleum production. One of the operators has stated that it prefers to use the 40% grade. If this is agreeable to the War Department, additional facilities will be required to produce this grade. If it appears more economical to use the 40% than the 20% oleum, doubtless the needed new capacity will be added by the existing acid plants in the areas.

Surveys are also being made of the sulfuric acid needs of the TNT plants at Wilmington, Illinois, and Weldon Springs, Missouri. At Wilmington the indications are that there is ample producing capacity in the area and that the recovered acid can be readily utilized. The Weldon Springs district presents some difficulty in the disposal of the recovered acid, and may require longer hauls than the other areas.

A list of the other chemicals, drugs, and pharmaceuticals required by the Army and Navy for the rearmament program is appended.

The requirements for drugs and pharmaceuticals are small in comparison with civilian needs. It is important, however, that desirable drugs as well as chemicals be continuously available for the protection of both the public health and the welfare of Army and Navy personnel. To accomplish this the Army and Navy Munitions Board has appointed nine subcommittees to function under the Drugs Resources Advisory Committee. These subcommittees have completed part of their surveys but, as they cover a large variety of products, more time will be needed for complete reports. The needs of the Army and Navy for many chemicals are likewise small, and the present producing capacity appears ample. Nevertheless, these subjects are being studied to verify or disprove these impressions.

Acetic Acid
Acetone
Acetylene Tetrachloride
Alcohol, Butyl
" , Methyl
Barium Salts
Benzol
Calcium Chloride
" Resinate
Camphor
Carbon
" Tetrachloride
Chloride of Lime
Chloroform
Coal Tar
Copper Oxide
Dibutylphthalate
Diethylphthalate
Ether
Ferrous Chloride
Formaldehyde
Glycerine
Helium
Hydrochloric Acid
Lime
Manganese Dioxide
Mercurous Chloride
Methanol
Monochloracetic Acid
Naphthalene
Oxalic Acid
Phenol
Phosphoric Acid
Phosphorus, Red and White
Phthalic Anhydride
Potassium Aluminum Sulfate
" Chloride
" Chromium Sulfate
" Dichromate
" Metabisulfite
Pyroxylin
Resins (rosin)
Shellac
Soda, Caustic
Soda Ash
Sodium Acetate
" Bicarbonate
" Bisulfate
" Chlorate
" Oxalate
" Sulfide
Strontium Carbonate and Nitrate
Sulfur
" Monochloride
Tin Dioxide (if tin is available)
Zinc Stearate

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