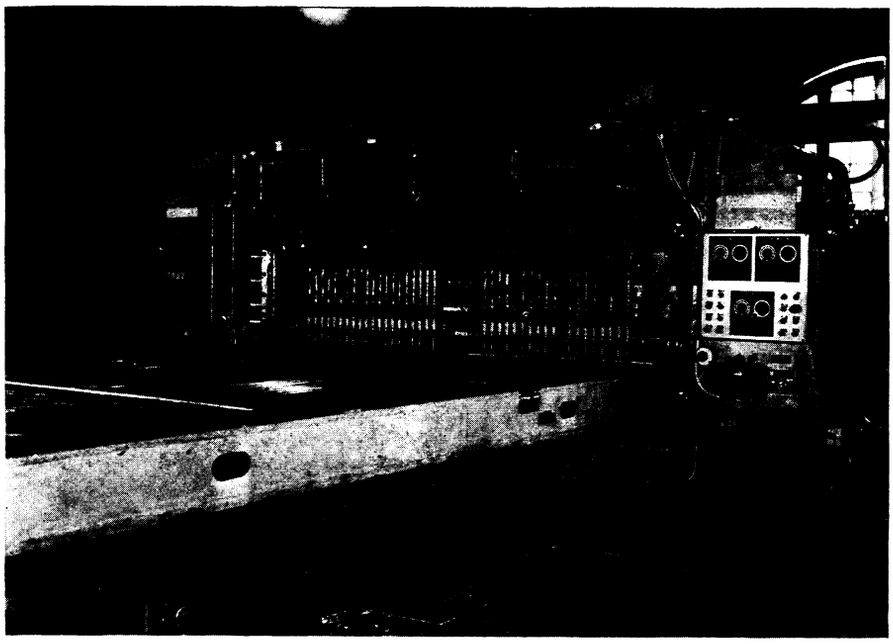

***LARGEST SPOT WELDER**—Battery of welding electrodes on this new multiple electric spot welder can make up to 48 welds at a single stroke. It is used in making streamlined railway passenger cars in the Chicago plant of the Pullman-Standard Car Manufacturing Co. Table under the electrodes moves forward carrying the metal sheets to the correct position for the electric strokes that "sew" bracers or stiffeners to them. A unique electric eye arrangement makes the operation automatic.*

AGRICULTURE

Research in Agriculture

Scientific research by Federal agencies and in cooperation with states on a greatly expanded scale is aim of Agricultural Research Act.

➤ SCIENTIFIC research in agriculture will undergo an enormous expansion under the provisions of the new Agricultural Research Act recently signed by President Truman. The $9,000,000 authorized in the bill is for beginnings only; expenditures are to be increased until at the end of five years they will total $61,000,000 annually.

Of this sum, $20,000,000 will be turned over annually to the state experiment stations, to be added to the present yearly grants under the Bankhead act of approximately $7,000,000. Another $15,000,000 a year is to be expended by the Department of Agriculture itself on research looking toward wider and more efficient uses of agricultural products. At present the four Regional Research Laboratories get $1,000,000 each, and additional sums are spent on utilization research in other places such as the Forest Products Laboratory at Madison, Wis.

Something new has been added to the type of research to be supported by the Department of Agriculture in a third category, in which an eventual annual outlay up to $6,000,000 is authorized by the new bill. The Secretary of Agriculture, cooperating with the states, may contract with outside institutions or individuals for special research projects, following the pattern set during the war by the Office of Scientific Research and Development. Similar peacetime research programs involving the cooperation of non-governmental laboratories and scientists have already been undertaken by the Army and Navy.

Finally, $20,000,000 a year is authorized for research in the broad field of marketing. Investigations may range all the way from a study of fungi that spoil fruits and vegetables in transit or storage to compilation of statistics to aid economists in cutting down the price spread between producer and consumer.

The initial $9,000,000 contemplated in the bill is only authorized, not appropriated. Before the work can ever begin, the next Congress will have to make some money actually available. In the meantime, however, research heads in the Department are making surveys and preparing preliminary budgetary estimates.

One of the biggest headaches for the planners is the question of finding the trained personnel to carry on the research. Even for the relatively modest program which the initial overall total of $9,000,000 will support, it will be difficult to find researchers. The young men who should have been in college and graduate-school work during the past five years have been in the armed forces and have not received the training they should have for the efficient use of the money.

The corps of research workers who will be needed to make the full $61,000,000 really useful to the country when it becomes available five years hence are now seniors in high school. They can hardly be ready for the money when it is ready for them if in the meantime they are compelled to lose time as draftees sweeping barracks or digging foxholes on summer maneuvers.

Science News Letter, August 24, 1946

ELECTRONICS

Phosphor in Lead Makes Infra-Red Rays Visible

➤ A TINY bit of lead added to zinc sulfide, a phosphor material that glows after exposure to light, makes invisible infra-red rays visible, a scientist of the General Electric laboratory has found. The discovery may eliminate electronic methods now used.

This easy way to change invisible rays into visible ones may be used to simplify the famous Army sniperscope and snooperscope used by soldiers during the war to see in the dark, themselves unseen. It may also simplify the receivers used on Navy vessels to read infra-red signals from other ships.

Dr. Gorton R. Fonda, responsible for the discovery, explained that waves of infra-red radiation are too long to affect the eye, while those of ultraviolet are too short. However, the ultraviolet is easily made visible by the phenomenon of

fluorescence used in the fluorescent lamp. In the lamp tube in which they are generated they fall upon the phosphor with which the tube is lined, their wave lengths are increased and they emerge as visible light.

Fluorescence by itself cannot make infra-red radiation waves shorter; it can only make them longer. However, there is an indirect way in which they can make visible light come from a phosphor.

Some phosphors, he explained, show phosphorescence; they continue to glow for a time after the original radiation has been removed. If, while this glow remains, the phosphor is exposed to infra-red, the brightness may be slightly increased. After that it quickly fades out. Dr. Fonda found that the effect, previously known to other scientists, occurs with zinc sulfide, a common phosphor, provided it contains a fraction of a per cent of lead.

Science News Letter, August 24, 1946

ZOOLOGY

Japan's Whaling Industry

The war with its sinking of Japan's whaling vessels wiped out whaling as an industry, and created a serious food shortage.

➤ JAPAN'S whaling industry, a highly important contributor to the island empire's food and commercial economies, was practically wiped out by the war. Figures from official Japanese sources show that the annual catch by Japanese whalers collapsed from a prewar figure of nearly 13,000 whales to only 531 in 1945.

Before the war, Japan had a fleet of six so-called factory ships, each capable of hauling a whole dead whale onto its deck and processing it for oil. Each of these factory ships was attended by a flotilla of small tug-like killer boats that did the actual hunting and harpooning. With this fleet, Japan stood about even with Germany but was considerably outclassed by the whaling fleets of Norway and Britain.

In addition to the factory ships, which sought whales mainly in Antarctic waters, Japan had on the home mainland several shore stations for rendering whale oil and processing whale meat, and one such station in the Bonin islands, in the Kuriles, and on the coast of Korea. Whale meat is unappetizing to Europeans and Americans, but the Japs seem to like it.

Japanese whalers in distant waters seldom brought their whale oil home. They sold it on the homeward voyage, used the proceeds to buy petroleum, loaded that into their tanks to take back and add to the war-lords' stockpile of military essentials.

After Pearl Harbor the factory ships of course could not visit the far southern whaling grounds any longer. This was a break for the whales, because Japan was the one power that refused to ratify or abide by the international agreement of prewar days for whale conservation, which even the Nazis observed—at least when people were looking. The ships, apparently converted for use as tankers, were found and sunk by Allied submarines and airplanes. It is believed that none of the six is left afloat today. The same fate overtook many of the killer boats, which were used as patrol craft and for other auxiliary purposes. Japan's whaling fleet is as thoroughly gone as her naval fleet.

Results show up strikingly in recent whale-catch figures. During the five-year period 1936-41, the number of whales of all species killed in Antarctic waters by Japanese whalers was 32,017. Japanese ships also sought whales in the Arctic during the two years just before the war; total catch for 1940 and 1941 was 1,252. For the five prewar years, the catch in home waters totaled 11,052 whales; the number had climbed from 1,217 in 1936 to 2,349 in 1941.

Then came the war, and with it the end of all factory-ship operations. Only the shore-based whaling in home waters continued. Before Pearl Harbor this apparently began to dwindle, for the 1942 catch was 1,148. In 1943 it had risen again to 1,491, and in 1944 the figure had been boosted to 2,169 dead whales.

Then came 1945, bringing total defeat and ruin: the count of whales taken for what had been the Japanese Empire was a mere 531, all in home waters.

It may prove desirable to let the Japanese catch whales again in their home waters, if only to replenish their bare national cupboard. If that is done, however, it is to be presumed that Gen. MacArthur will see to it that this time they observe international rules for whale conservation.

Science News Letter, August 24, 1946

TEXTILES

Jute Made into Wool Substitute in India

➤ SCIENTISTS in India, who have been searching for chemical processes of producing rayon, paper, and cheap woolen fabrics from jute, have developed a new material from jute fiber similar to coarse wool.

Prof. S. C. Sirkar and N. N. Saha, of the University of Calcutta, announce in the British scientific journal *Nature,* (June 22), that the new material, a hydrated cellulose, is superior to any previously developed.

During the war India's outlets for marketing its annual five-billion-pound jute crop, 98% of the world's supply, were so reduced that the India Central Jute Committee financed research to give jute new jobs to do at home.

Science News Letter, August 24, 1946

AERONAUTICS

New Regulations Mean Fewer Fires in Flight

➤ FIRES IN flight will be few indeed under new government regulations promised by the Civil Aeronautics Board. The orders, intended to eliminate practically all fire hazards in airplanes, will include requirements for additional fire-prevention apparatus, the use of non-combustible materials, and safeguards in electrical installations.

Easy access from the cabin to baggage and other compartments in the plane is regarded as essential by the CAB, so that a fire can be easily reached with fire extinguishers. Fire-detecting equipment in cargo and other compartments is another essential together with automatic extinguishers. Better extinguishers are desirable, particularly those using methyl bromide and carbon tetrachloride. These are better than carbon dioxide extinguishers, the CAB says.

The use of paper lunch and lavatory accessories constitutes a fire hazard, according to the Board. Aircraft designers will be required to place greater emphasis on the use of non-combustible materials in cabin lining, sound-proofing and waste containers.

Science News Letter, August 24, 1946