SCIENCE NEWS

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THE AMERICAN CHEMICAL SOCIETY

THE general staff of one of the most important divisions of American scientific and industrial war effort, gathered in Detroit on April 12 for the annual spring meeting of the American Chemical Society. For five days they will discuss accomplishments up to now, and plan future campaigns.

Rubber, high-octane gasoline, steel and the light metals, new anti-malarial drugs, foods and their vitamins—these and other equally war-significant subjects are up for discussion. A great many of the newer discoveries in chemistry, as in other sciences, are not to be discussed publicly; but there are plenty of nonconfidential facts and data to make a very full week's business for the several thousand members of the society who will be there. There are so many papers to be presented—some 325 altogether—that it was necessary to divide the meeting into 15 section to permit them all to be heard and discussed.

Honors for long campaigning and medals for distinguished service will not be lacking. A feature of the Wednesday afternoon general session will be the presentation to 14 veteran chemists of special diplomas certifying 50 years of continuous membership in the society. At the same session the Borden Award in the chemistry of milk will be presented to Dr. Earle O. Whittier, of the Bureau of Dairy Industry, U. S. Department of Agriculture. Professor Herbert E. Carter, of the University of Illinois, will receive the Eli Lilly Award in biochemistry.

Spoils of war will be on display—a great array of chemical patents owned in enemy countries, which have been seized by the Alien Property Custodian and are now available for use by American industry on the payment of a nominal fee. The custodian has guaranteed protection to any American user, against possible legal action by their present owners after peace has been concluded. There seems to be especial interest at the present time in patents on drugs and textiles. The intense preoccupation with dyestuffs, that marked chemical thinking in World War I days, is notably lacking now: in the quarter-century between the two wars America achieved chemical independence in that field.

A NEW SYNTHETIC RUBBER

THE development of a new kind of synthetic rubber which will help meet essential war needs has been announced by the Bell Telephone Laboratories. This new material, christened "Paracon," looks and feels like ordinary rubber, has a high resistance to damage by oil or gasoline, and is superior to natural rubber in resistance to heat, light and oxidation. It is inferior to natural rubber in resistance to steam, alkalis and acids.

In the raw state, Paracon is unusually adapted to moulding into intricate shapes. It is useful not only as a replacement for rubber, but in particular as for material for special application where its combination of unique properties is required. The aircraft industry is an example.

Paracon can be derived from agricultural products and coal products, or from coal and petroleum sources. It can therefore add to the present supply of rubber substitutes without interfering with the production of those already under way.

Synthesis of Paracon was accomplished by Dr. C. S. Fuller and Dr. B. S. Biggs and their associates in the Bell Telephone Laboratories. Several months ago, after Paracon had been demonstrated practicable at the laboratories, information was made available to the Baruch Rubber Committee and the War Production Board. Details as to the process involved were turned over to several chemical manufacturing companies to enable quantity production, and the Resinous Products and Chemical Company is now producing Paracon.

AIR PLANE TESTING TUNNEL AT WRIGHT'S FIELD

MANUFACTURED gales with velocities up to 600 miles an hour and controlled temperatures down to 67 degrees below zero Fahrenheit are expected in a new aircraft testing tunnel to be built soon at Wright Field. The giant air conditioning plant is being asesmbled under the direction of J. G. Bergdoll Jr., chief engineer of the York Ice Machinery Corporation. It will produce four million cubic feet of refrigerated air a minute. A man in ordinary winter clothing could survive only a few minutes if he were placed directly in the path of the refrigerated air stream. Even if his body could withstand the 600-mile force of the gale, he would be frozen stiff in a few minutes.

The tunnel will be shaped like the letter "O" and will be 600 feet long. The gale will be made by a 40,000 horsepower motor. The rapidly moving air will pass through cooling coils in which are circulated tons of a calcium chloride solution chilled to 40 degrees below zero by two giant refrigeration machines. These cool the air to seven degrees below zero.

Mr. Bergdoll stated that in making a stratosphere test, models will be placed in a steel compartment in the throat of the tunnel, an airtight door closed, and air pumped out, lowering the pressure to stimulate atmospheric conditions at various altitudes. It will be lowered from the normal sea level pressure of 14.7 pounds per square inch to less than 2.7 pounds, to simulate pressures found at altitudes of above 40,000 feet. In the new wind tunnel, temperature of the air stream drops naturally from seven degrees below to 67 degrees below zero as the tunnel narrows down from its widest part in the center to the smallest opening at the throat. This narrowing has the effect of transforming static into velocity pressure. It actually lowers the pressure while the speed of the gale is increased, resulting in a terrific temperature drop without the need for additional refrigeration equipment.

HIGH-SPEED METHOD OF SAWING HARD AIRCRAFT METALS

AIRCRAFT metals are being sawed at extremely high speeds by a new method was announced by Arthur A. Schwartz, of the Bell Aircraft Corporation, at the Milwaukee meeting of the American Society of Tool Engineers.

Engineers started with a wood saw on which the blade travels 12,000 feet per minute. After making some carbon steel blades, they experimented with such factors as temper and set of the teeth. Results were surprising. "We cut non-ferrous materials and ferrous materials," Mr. Schwartz said, "soft steels and very hard steels, in fact, the harder the steel, the easier it cuts."

Two half-inch pieces of armor plate are sawed by the new device at one time. Heat generated by friction of the saw teeth is so intense that the metal is melted and most of it turns into gas.

Eighteen such saws are now in use at Bell Aircraft for such operations as trimming of aircraft metals, and making boiled plate dies.

Mr. Schwartz also suggested that cutters, used to mill aircraft metals, can be made faster, cheaper and better. He stated that six out of seven teeth on the large multi-bladed milling cutter commonly in use should be removed. Only four teeth are needed. With each taking a healthy bite, faster production and smoother finish results. This simplified machine also removes the old problem of not having enough power. Pounds of critical high-speed steel are saved; cost and time are saved; and the cutter lasts longer at faster speeds.

To further conserve high-speed steels and carbides and speed production, Mr. Schwartz recommended that engineers use a wider selection of cutting materials for metal working. Cast alloys have not been used as much as they should, he asserted. Tantung, one of the alloys, is now giving better results in certain phases of aircraft production than the usual highspeed steel or carbide.

ITEMS

MAGNESIUM in major quantities, can be obtained from an immense deposit of dolomite near Las Vegas, Nev., in the Boulder Dam area, according to the U. S. Bureau of Mines. It has developed a process for converting the dolomite (a magnesium-containing limestone) into magnesia, and also an electrolytic method for extracting the pure magnesium from the latter compound. Sufficient engineering data are already in hand to justify the erection of a small commercial-scale plant to process the dolomite and thus pave the way for full development of the great beds by private industry. One privately owned plant already operating in the vicinity is using magnesite that has been hauled more than 1,000 miles by a roundabout route from another dolomite deposit in Nevada, and it is believed that the expense of delays thus involved might be obviated through the development of magnesite-producing establishments at the Las Vegas site, where available dolomite amounts to an estimated 400,000,000 tons.

WARM yellow radiance is given off by a new fluorescent material which possesses the power of absorbing invisible ultraviolet rays and transforming them into visible light. It is expected to have wide application in the future lighting of homes, stores, factories and theatres. The yellow glow is more agreeable to many persons than the harder, bluish-white light produced by most present fluorescent lamps. "The new material not only produces a light of a radically new color, but it also retains, unlike previous fluorescents, the power to emit light even if the materials contain impurities in the form of iron or nickel." The announcement was made by the American Optical Company, in whose laboratory the new discovery was made by Dr. W. A. Weyl, a member of the research staff and professor of glass technology at Pennsylvania State College. The substance glows without the addition to its composition of an activating agent like manganese, a necessary element in present fluorescents." Zinc oxide and vanadium pentoxide, combined by a controlled low-temperature heating process, are used in the new fluorescent substance. The material may be made more economically and easily in comparison with those previously discovered. It is still a laboratory development and not yet available to the public.

A BETTER vaccine for protection against typhoid fever may result from research at the Biochemical Research Foundation of the Franklin Institute, reported by Dr. Ellice McDonald, director, in his annual report of the Foundation's activities. Using chemical and physical methods to split the typhoid fever germ into many portions, the scientists obtained some starch-containing fractions of typhoid fever germs which were non-poisonous to mice. These fractions are believed to be the outer covering of the typhoid germs which normally serve to protect the germs against the white blood cells of the body's defenses. The outer covering of the germ also contains the substance, called antigen, against which the body develops specific defense mechanisms called antibodies. Isolation of a non-poisonous, antigenic substance from the germs may mean that this substance can be used as a vaccine against typhoid fever, instead of the whole germ.

JAPAN has one of the richest sources of high-grade toluene, raw material for TNT, in the oil from the great fields in Borneo, is stated by B. Orchard Lisle in the new issue of *Army Ordnance*. Mr. Lisle was formerly an editor of technical oil journals, and is now with the U. S. Army Air Forces. Bornean crude oil is exceptionally high in toluene content, he states, and extraction with equipment now operating in Japan is easy. It is probable that the Japanese are already using at least some of the oil from Borneo, for the wells there are relatively shallow and easily re-drilled; and it is not certain that during the first rush of the Jap invasion they were thoroughly demolished. The foresighted enemy planners also had oil-field experts openly in training for the conquest which they as openly stated they intended to undertake.