

GENERAL SCIENCE

Science Previews

1946 will bring enlarged and accelerated resumption of pure and applied research and announcements of steps toward conquest of important diseases.

By WATSON DAVIS

► THE YEAR 1946 will be crucial for science and technology applied to a world at peace. There will be announcements, as there have been in several instances in past years, of significant steps toward the conquest of important diseases or introduction of new techniques of industrial importance.

Even more important in the long view will be the accelerated and enlarged resumption of pure and applied research in many fields neglected during the war when all the energies of scientists and engineers were devoted to war.

The release of atomic energy and the many problems that it has presented to a startled and fearful world will during 1946 continue to be a matter of major concern. How successfully this situation is handled from an international standpoint will largely determine whether the world will have another war in 10 to 25 years.

Fundamental Research

A National Research Foundation that will give fundamental research in physics, chemistry, biology, medicine, psychology and other fields the moral and financial support of the people through Congressional enactment will in all probability be established early in the year. This will make possible in universities, laboratories and other institutions the sort of earnest and hard-hitting research that directed at war has brought such significant results. Only the short-sightedness of factions of scientists if they continue to insist upon a certain kind of administrative set-up for the government support will seriously delay this most important step in science's reconversion.

During 1946 there will be the first applications of atomic energy for industrial power if the legal and policy difficulties of releasing atomic energy for such use are solved.

The immense amounts of radioactive materials produced as a by-product of the manufacture of plutonium, one of the atomic elements, will present new

possibilities of treating cancer and other diseases, and there will also be ample amounts of radioactive tracer elements to use in the exploration of the nature and origin of many other diseases and physiological processes.

The world systems of air transport for passengers and materials built during the war will go into peacetime service and the interchange of peoples between previously remote portions of the world will be accelerated. Air passenger service will benefit from the development of bombers and transport planes that was accelerated by the war and many new or reconditioned planes of large capacity will become available.

Further steps in the development of jet and rocket propulsion for aircraft will be taken in research laboratories, with the consequence that many of the most advanced types of fighters and bombers used in the war will begin to become obsolete.

Upon drawing boards and in experimental models there will be the beginnings of commercial as well as military craft that will fly faster than the speed of sound at high altitudes.

From the electronics of the war will come more techniques for the use of automatic machinery in factory and home. Very small radio tubes such as used in the proximity fuze make possible radio sets of small size which may be commercially available about the middle of the year. Military walkie-talkie experience will be applied to a citizen's radio service which uses short-range portable radio combined transmitters and receivers to keep moving vehicles and boats and remote locations in communication with other such apparatus or linked into regular telephone lines.

The radio location network, known as loran, that allows ships and planes to determine position by receiving special timed radio impulses, will be continued after its war installation to guide peace-time traffic. Although less useful in peace, radar will be used as an anti-collision device.

Prediction of radio transmission conditions, dependent upon solar phenom-

ena and earth atmospheric conditions, will allow practical forecasts several months in advance.

From intensive research now in progress, expect some important developments in our understanding of cancer. List also on the medical timetable of the future the possibility of better chemical treatments of tuberculosis as the result of some of the new drugs under development.

Streptomycin, the newer antibiotic, is likely to come into larger commercial production for use on kinds of infections that are not effectively treated by the sulfa drugs and penicillin.

Further Disease Study

One great class of disease causes, the viruses, have as yet not been checked by chemotherapeutic agents and among the many new drugs being explored there is the hope that during 1946 one that has promise of virus disease control in human beings will be found.

Medical care and the promotion of health among the people is a major unsolved problem, made more difficult by the vested interest attitude of the medical profession and their opposition to any plan for paying for preventive and curative medicine by the social security method. During the year a practical method of giving better medical service to all, with government supervision, may be enacted by Congress.

Colleges Will Be Filled

The colleges and universities of the nation will be filled to overflowing with veterans and war workers who are returning to get science and technology training needed so urgently by our industries and laboratories. The proved fruitfulness of science will attract to scientific studies even larger numbers of college students.

The matter of universal military training may not be resolved until Congress and the nation as a whole has had a chance to integrate the military preparedness of the country with the necessary peace-time education and training which, because of the whole-people aspects of any future war, becomes as important as conventional military training.

With the return to civilian life of psychologists and psychiatrists and the

release of formerly classified information, we may expect new developments useful to industry and public mental health.

Industrial machines as well as automobiles and airplanes will be designed so as to be more suited to the men and women that operate them. This will result in a lessening of fatigue and nervous irritation.

There may be a widespread tendency to train foremen and supervisors by newly developed techniques to consider the human needs of their employees in placing them so as to make best use of their abilities, in arranging working groups in such a way as to avoid frictions, in encouraging participation in planning of work and in arranging working conditions so as to avoid unnecessary nervous strains.

New sciences for the study of the psychology and mental illnesses and disorders of nations, groups and social classes may be born.

The connection between ordinary fatigue, nervous exhaustion, and mental illness will be explored and may result in finding some chemical factor in mental breakdown. This may point the way toward a new treatment.

Exploratory expeditions in all fields will begin to take the field again. The large amounts of scattered real estate that we have had to take over, especially in the Pacific, will be a challenge and an opportunity to field scientists all the way through the alphabet, from anthropology to zoology.

More Soiless Gardens

Further installations of soiless gardens will be made on desert islands, where Americans will have to be stationed to take care of military and civil airfields.

Pesticides (DDT, ANTU, 1080, 2-4-D, etc.) will come into general use, as manufacturing facilities are released from military demands. Much more research will have to be done on these: (1) to learn their most effective use, (2) to find their limitations, (3) to discover thresholds of safety for contact with human beings, domestic animals, wildlife, harmless or beneficial insects.

New insect pests and plant diseases may break through our quarantine barriers, due to increased air travel. Greater vigilance will be necessary to try to prevent this; ruthless and costly extermination campaigns must be carried out if a major pest does get in.

Air transportation may begin to bring



MEDICINE ADVANCES—The public will benefit greatly from medical research in the future. This scene in the Naval Medical Research Laboratory at Bethesda was selected to typify the activities expected to continue in Navy, Army and civilian medical research institutions.

in some of the tropical fruits and other products our men had a chance to get acquainted with overseas, like mango-steen, cherimoya, etc. Here again, vigilance against pests and diseases will be needed.

There will be at least a beginning of restored trade in war-scarce tropical commodities, especially rubber, drugs (especially quinine), and spices (especially black pepper); overseas sources of other goods, such as Manila hemp, Chinese tea, tung oil, also from China, copra and all the palm oils, camphor from Formosa will be making their bid for restoration of normal markets. Bulk tropical commodities like sugar will return as shipping becomes available.

Restoration Aid

Restoration of European agriculture and livestock industry will be helped by shipments of seed and breeding stock from U. S. A. and other war-spared lands.

Using its developments and production for war, industry should during 1946 bring forth many new devices, machines, products and processes. Plants devoted to airplane manufacture can be expected to give birth to new kinds of

assembled houses and new makes of automobiles. Television farther advanced and seeing more effectively in near-darknesses may be announced and put into use.

Better and more easily developed color photography will be released for amateur and professional use, while important developments in removing much of the personal element from printing three- and four-color photographic processes may be announced.

Even the atom bomb will have its effect on industry even if atomic energy is not used industrially or bombs do not wipe out civilizations. The advances made in technical methods during the atom bomb development have made available thousands of improvements to industry.

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An adult has in his body about 1.4 pounds of *phosphorus* which must be constantly replenished by means of foods consumed.

When using *luminous paint*, new brushes are recommended because it is difficult to clean used brushes from traces of old paint that might be detrimental to the luminous material.