

wonderful, complicated life you can see in a drop of water. Beads go for drops and bubbles, rods and tubing for strands of protoplasm, bristles and stalks. His work is so beautiful it leaves you gasping with incredulity.

Another device that has been tried with considerable success in both this country and Germany is the turning of small animals, like insects, lizards and small snakes, into models in wax by the basically simple process of slowly impregnating them with hot paraffin. While they are still warm they are bent and posed into the exact positions desired, and then the wax is permitted to

chill and stiffen. After this, the surplus wax is gently scraped and brushed away. The animals are left with their natural colors and high glitter, which they would quickly lose if they were pickled in the traditional jars of alcohol or formalin solution. If they are not exposed to unreasonably high temperatures they will keep forever; paradoxical preparations, wax models, yet the real thing.

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Science News Letter, September 7, 1935

#### PUBLIC HEALTH

## Federal Survey of Chronic Illness to Start Oct. 15

**F**EDERAL study of chronic illness throughout the country is getting under way, and the house-to-house canvass in 19 states to collect information is scheduled to start Oct. 15.

The study will be directed by George St. J. Perrott, statistician of the U. S. Public Health Service. In his office workers are already busy preparing and revising charts, tables and forms for collecting data. However, the study, for which \$3,450,000 was appropriated, is really a WPA project and 90 per cent. of the personnel will be taken from the work relief rolls of the various states.

In between looking at charts and giving suggestions to his assistants, Mr. Perrott explained the reason for this gigantic health inventory.

The front is changing in man's battle against disease. Part of this is due to the advances in science. Powerful weapons are at hand with which to hold in check if not actually to demolish such old foes as yellow fever, smallpox, diphtheria and the deficiency diseases like scurvy, rickets and pernicious anemia.

Part of the change in front results from the appearance and spread of relatively new diseases such as epidemic encephalitis, infantile paralysis, influenza and dental fluorosis.

Another reason for the change in front in the disease fight, and one likely to be of increased importance in the future, is the change in age of the population.

The American people are growing older. There are more middle-aged and older persons in the country and fewer children and young adults. This means

that as a whole the population is outgrowing the childhood diseases and other ailments of an acute nature and becoming more prone to the chronic diseases which appear in middle life. Cancer, heart disease, rheumatism and disabilities resulting from industrial accidents and disease are becoming more important as health problems.

Far-sighted public health officials are alive to this changing front in disease warfare, and already are beginning preparations for the fight on these old foes whose importance is increasing year by year.

The first step, getting accurate knowledge of the enemy's strength and position, is now being taken in the WPA project directed by the U. S. Public Health Service. A gigantic health inventory of the country is to be made. This will tell how many people in America suffer from chronic illness or physical disability; the geographic distribution of such illness; how much time is lost from work as a result of these conditions; and how these illnesses and disabilities affect the capacity of the patient and his family to remain self-supporting.

Some of the information will be obtained from records of hospitals and sick benefit associations. The rest will come from the house-to-house canvasses of 750,000 families selected to be representative of the general population of various income levels. Besides chronic illness, data will be collected on physical disability, such as blindness, deafness and loss of limbs or other crippling.

The U. S. Public Health Service has



#### MUNITIONS MAKERS

*Preparing ammunition for the welfare of medical science against disease, two laboratory workers dissect the spinal cord of a Rhesus monkey from which infantile paralysis vaccine is prepared. The operation is performed after the animal has been killed painlessly and must be carried out under sterile conditions.*

already been making an intensive study of the importance and effect of chronic ailments on the capacity of the patient and family to remain self-supporting. The new health inventory will be correlated with this study so as to obtain further data on this phase of the chronic illness problem.

From the knowledge thus acquired the federal health officials hope to attain a strategic position for a successful fight against disease at the new front.

The states selected for the inventory are Washington, Oregon, California, Utah, Minnesota, Missouri, Illinois, Michigan, Ohio, Pennsylvania, Maryland, Virginia, New York, New Jersey, Massachusetts, Georgia, Alabama, Louisiana and Texas.

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#### PLANT PATHOLOGY

## Dutch Elm Disease Found In Indiana and Virginia

**D**UTCH elm disease is still a potential menace outside the zone around New York City where the major eradication efforts have to be concentrated because of the gravity of the infestation there. Two isolated outbreaks, one of nine infected trees in Indianapolis, Ind., the other of two trees in Norfolk, Va., have been reported to the U. S. Department of Agriculture. These trees have been destroyed, and scouts are hunting in their

respective neighborhoods for others that may still be bearing the disease.

The scouting and eradication campaign conducted by the Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, has now reached impressive proportions. In the infested area, covering parts of Connecticut, New York and New Jersey a total of over 1700 square miles has been scouted to date, and specimens from more than 30,000 suspected trees have been collected and sent in to the laboratories for examination. About a third of these have received positive identification and the trees have been destroyed.

In all this work, the Federal forces are receiving full aid and cooperation from state and local authorities.

*Science News Letter, September 7, 1935*

## CHEMISTRY

## Increase in Research Projects Hints Economic Gains

**I**NCREASING magnitude of chemical research is the latest sign pointing to improved economic conditions, Prof. E. J. Crane of Ohio State University, head of the American Chemical Society's international reporting system, announced that during the first six months of 1935 the number of research projects completed was ten per cent. greater than in the first half of 1934. Abstracts of chemical reports from all parts of the world totalled 20,342 this year, as compared to 18,664 during the first six months last year. A staff of 400 men scattered over the globe is required to keep the abstracts of chemical research up to date.

According to the latest figures available to the Society's committee on unemployment there are some 931 trained chemists without employment at the present time, and an additional 683 who have been driven out of the chemical work into other fields. This situation is not believed to be hopeless, despite the fact that the number of chemists was augmented by 5,800 college graduates during the years 1933 and 1934. It is the committee's belief that the major unemployment difficulty is among chemists over thirty-five years of age whose places are being taken by younger men.

Kansas City, Mo., will be the scene of the Society's ninety-first meeting in the spring of 1936, and Pittsburgh will welcome it for the ninety-second meeting in the fall of 1936. The spring and fall meetings of 1937 will be held in Chapel Hill, N. C., and Rochester, N. Y., respectively.

*Science News Letter, September 7, 1935*

## GENERAL SCIENCE

# Government Aid Demanded For Research in Pure Science

**T**HE UNITED STATES Government, because of its failure to recognize the importance of sponsoring theoretical scientific research, is in danger of losing out in the race for fundamental discoveries upon which the future progress of the nation, industrially and otherwise, must depend.

A warning to this effect was issued recently by Dr. Roger Adams, President of the American Chemical Society in his presidential address before that organization's ninetieth meeting at San Francisco.

Dr. Adams said, in part: "Active participation of industry in the development of a national program of pure science to assure continued industrial progress is demanded, and the government should be a leader in this movement. The federal government, although it spends a staggering amount of money each year for applied research, at no time has shown a proper respect for research in pure science, even in its own bureaus."

To indicate the importance of theoretical research, Dr. Adams said: "The basic and fundamental information for over

ninety-five per cent. of our industrial processes has been originally discovered and described by university investigators in pure science."

Among countless examples he cited the development of the dye and aluminum industries, and the production of ammonia, X-rays, insulin, procaine and other anesthetics, war gases, rare gases such as helium for balloons or dirigibles and neon for illuminated signs, tantalum, an inexpensive substitute for platinum, and other substances such as titanium, tellurium, and gallium.

Among recent discoveries in pure science which are not yet but will some day be of importance to industry, he referred to heavy hydrogen and heavy water, and the many facts now being learned about the structure of atoms.

In conclusion he asked: "Is it not time to recognize the handicaps under which our scientific research in the United States has been accomplished and to seek the factors contributing to the improvement of pure science so it may be on a par with applied science?"

*Science News Letter, September 7, 1935*

## ENGINEERING

## Thin Aluminum Foil Highly Efficient as Heat Insulator

**T**HIN aluminum foil is found to be a highly efficient heat insulator in experiments being conducted in the torrid heat of Egypt, where tests include the metal for use in tropical helmets, the linings of tents and corrugated iron buildings.

Dr. G. P. Crowden of the London School of Hygiene and Tropical Medicine reports his Egyptian tests (*Bulletin of Hygiene*, April).

Laboratory experiments showed that a single such diaphragm of aluminum foil medially placed in an inclosed one-inch air space has the heat-insulating value equivalent to that of one inch of cork. In practical experiments conducted in corrugated iron buildings in Egypt, the temperature on the inner surface of a 3-ply lining was 12 degrees Fahrenheit lower than that on the inner surface of

the corrugated iron; while in a similar building which was provided with metallic insulation of aluminum foil in addition to the 3-ply lining, the temperature of the inner lining surface was 23 degrees Fahrenheit lower than that of the inner surface of the corrugated iron, and the air temperature of the latter building was 3.6 degrees Fahrenheit lower than that of the first.

Interesting results have also been obtained with the use of aluminum foil as a lining for tropical helmets. Laboratory experiments showed that the temperature inside a helmet lined with the foil was as much as 20 degrees Fahrenheit lower than in an otherwise similar helmet but having the usual fabric lining.

Dr. Crowden also emphasizes the value of reinforced aluminum foil for use in lining tents in hot countries. Field ex-