# SCIENCE NEWS

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## THE MOBILIZATION OF SCIENCE

AMERICA'S research power, as important as a national defense measure as the actual army, air force and navy, is being surveyed quietly for possible mobilization of science, as a national resource or in any emergency.

For the past few months a staff of specialists with headquarters in the building of the National Academy of Sciences in Washington has been marshalling facts and figures about just where in this nation new scientific knowledge is being sought. Leading scientists of wide acquaintance in their circles are hard at work making detailed reports and evaluations so that Uncle Sam, in peace or war, may know just where to turn when he has a puzzling scientific question to ask.

Government bureaus and university research centers, as well as industrial laboratories, are being tapped freely to produce a real census of American scientific effort. The survey was requested by the government and it is being made with federal funds, although the actual conduct of the survey is in the hands of a committee of the National Research Council, which is itself a part of the National Academy of Sciences.

Broader than a mere military preparedness measure, this research survey obviously will be of increasing usefulness as preparedness efforts are intensified.

Even if the United States escapes the actual blight of war, there are many problems of a constructive nature to which science and research can make a major contribution.

Major emergencies in the past, beginning with the Civil War or the War Between the States, brought a marshalling of science in aid of the national effort. The National Academy of Sciences was established by the Congress partly as a war measure when Lincoln was president. Out of the World War came the National Research Council, perpetuated when peace came as a national clearing house for science. When in 1933 an economic emergency arose, President Roosevelt formed a Science Advisory Board to advise the government. The National Resources Planning Board under the New Deal has given major attention to science and research. All these agencies would be expected to participate in any further mobilization of science as a part of the preparedness program.—WATSON DAVIS.

## THE NATIONAL HEALTH



A PROGRAM for national defense on our most vital and vulnerable front is presented by Paul de Kruif, in his book, "Health Is Wealth," published by Harcourt, Brace and Company.

The present threat of war does not lessen the need for enactment of a national health program. This is clear from the report of Colonel Lloyd B. Magruder, U. S. A., recruiting officer of the second corps area, that 32 per cent. of the young men volunteering for Army service in May had to be rejected as physically unfit and that 60 per cent. of those volunteering from urban centers will have to be rejected for health and other reasons.

Tanks and guns and planes can not defend a nation by themselves. Men are also needed, men whose strength has not been sapped by "hidden hunger," whose hearts have not been crippled by rheumatic fever in childhood, whose lungs have not been damaged by tuberculosis. A program for the health of the nation is part of a program for its defense. The cost of such a program, as presented by Mr. de Kruif, will save money in the long run by cutting the nation's bill for hospitalization of the mentally sick, the tuberculous, the crippled and for support of their families. Enough might even be saved to pay for part of the cost of the defense program now under way.

In war or peace, however, we need also to protect the first of those rights with the weapons of the specialist: toxoid to defend life against diphtheria, sulfapyridine and serum to defend life against pneumonia, the surgeon's knife and x-rays and radium to defend life against cancer, vitamins to defend life against the "hidden hunger" starvation. To guarantee these rights to every American, we must push our program for national health.

The program Mr. de Kruif presents is not likely to meet with opposition from the American Medical Association. It was drawn up by five Michigan physicians, three of them, Dr. Henry A. Luce, Dr. Thomas K. Gruber and Dr. L. G. Christian, members of the House of Delegates of the association, and the other two, Dr. Henry R. Carstens and Dr. A. S. Brunk, officials of the Michigan State Medical Society. All the features of a health program for which the American Medical Association has fought, maintenance of the doctor-patient relation, lack of regimentation of doctors, provision for high quality of medical care, administration by a federal Department of Health, are provided in this national health program. It has the approval of Dr. Thomas Parran, Surgeon-General of the U. S. Public Health Service.

It may even be the means for a burying of the hatchet between the government and the American Medical Association. This is strongly hinted in the section of the book describing the attitude of Supreme Court Justice Frank Murphy when, as attorney general in charge of the government's suit against the American Medical Association for violation of the Sherman Act, he was presented with the program and in turn helped to arrange for its presentation to President Roosevelt.—JANE STAFFORD.

## THE WORLD PRODUCTION OF TIN



THAT the United States has purchased 6,724 tons of tin since last November to build up a reserve stock pile of this strategic material, is shown by a survey of U. S. Treasury Department Procurement Division orders.

Despite the total of over 13,000,000 pounds at about 50 cents a pound valued at $6,500,000, the reserve is believed to be only about a tenth of the total needed reserve of the nation. Army officials are reluctant to discuss exactly what tonnage of tin the nation would like to have for potential war reserves, but some years ago the National

Resources Board fixed 60,000 tons as a minimum wartime reserve.

Last year the Straits Settlements produced nearly 31 per cent. of all the virgin tin in the world while Netherlands India produced 17 per cent. It is a significant comment on world production that the American purchases since November of last year have been virtually all from the Orient. Minor contracts have been awarded for Bolivian tin. Bolivia produces 15 per cent. of the world output, not in the form of pure tin but as tin concentrates which run from 70 per cent. to 80 per cent. tin content. This concentrate has to be further refined; an operation carried out mainly, in the past, in England and in the Netherlands. It is understood that two tin smelters are contemplated in the area of New York harbor to take over the smelting of Bolivian tin.

Tin has long been on the strategic minerals list of the United States, for American production has amounted to only about 90 tons a year, over a five-year average. The nation's requirements, on the other hand, run to nearly 100,000 tons yearly, of which about 75,000 tons must be virgin metal. The remainder consists of secondary tin obtained from scrap which collects in tin-can factories and from "junk" alloys which contain tin.

Prize tin region of the world is of course the East Indian colonies of England and the Netherlands. In this region the tin ore is cassiterite, or tin oxide, which runs as high as 78.6 per cent. tin. Mining is a simple operation by dredges, of which more than 100 are available. In addition anywhere from 50,000 to 100,000 Chinese laborers work at tin mining, according to the world demand.

## THE EARTHQUAKE ANALYZER

MOST persons, when an earthquake is once over, have no desire to repeat it, but the seismologists, who study such tremors scientifically, often want a return performance, so as to study the movements that took place. This, in effect, can be done with the new earthquake analyzer developed by Professor Arthur C. Ruge, of the Massachusetts Institute of Technology. It was described recently before the meeting in Cincinnati of the eastern section of the Seismological Society of America at Xavier University.

In many places, especially California, where earthquakes are likely to occur, "strong motion" earthquake recorders have been placed in strategic locations. The ordinary seismographs, which respond to tremors thousands of miles away, are so delicate that they can not record the effects of a local quake. The strong motion instrument lies dormant until one happens in its vicinity, then it goes into action. Dr. Ruge now has available for study such records of about 40 earthquakes, including the disastrous one at Long Beach, California, in 1933, which killed 120 persons and caused damage to the extent of $50,000,000.

With the earthquake analyzer, the wavy lines in the record are scanned by an electric eye, and are transformed into a series of electric impulses. These are fed into a galvanometer, which has a swinging mirror, adjusted to vibrate with the same characteristics as any desired building or other structure. Thus, the swaying of such a building may be measured by recording, on a moving strip of photographic paper, a spot of light reflected by the mirror. The characteristics of the swinging mirror are changed with another photo cell, or "electric eye," and can be adjusted by turning the control dials.

Professor Ruge expressed the opinion that the device will find other applications, such as analyzing rainfall or sun-spot records, or for solving difficult vibrational problems of the mechanical engineer.

## HIGH OCTANE GASOLINE

GASOLINE of high octane rating, the advantages of which have been widely advertised, is no cure-all for the ills of motor car performance, according to C. H. Van Hartesveldt and H. W. Field, of the Atlantic Refining Company, who spoke before members of the Division of Refining of the American Petroleum Institute, meeting at Fort Worth, Texas.

"When high-octane-number gasoline is used in a car which does not knock on the lower-octane material, no improvement in performance results," they stated, "and when a car that knocks is fueled with a high-octane gasoline, the knock is reduced, but no additional power or gasoline mileage is obtained unless the knock was extremely loud. For power loss the knock must be so loud that no motorist with normal hearing, driving such a car, would fail to take the car to a repair shop. These things have been known for some time, but they deserve more emphasis than they are getting in present-day advertising."

Messrs. Hartesveldt and Field urged that gasoline quality be measured by performance in cars rather than laboratory tests, which means that technical difficulties make it impossible to expect the success of recent legislative efforts to fix gasoline quality. They declared that "an increased cost of $5 a year for a motor vehicle, if used to pay for mechanical adjustments and tune-up of the engine, would result in greater owner satisfaction than this same amount of money spent in furnishing a higher-octane gasoline."

Any advantages in reducing engine knock obtained with high-octane gasoline is appreciably reduced when anti-freeze is used, was reported by Herschel G. Smith, of the Gulf Oil Corporation. "Water is a more effective coolant, due to better heat transfer from the cylinder walls, than any known anti-freeze compound." He suggested that, with engines equipped with thermostatic control on the cooling system, for best performance a setting should be made for control at a lower temperature when anti-freeze is used than with water alone.

The odor of gasoline gives no clue either to its performance or to its corrosiveness, said John Happel and S. P. Cauley, of the Socony-Vacuum Oil Company. For this reason they urged the elimination of tests now made for foul-smelling compounds called mercaptans. "The average gasoline consumer is much more conscious of factors governing gasoline performance than of the more superficial specifications which were considered significant in the past. He recognizes the importance of such items as mileage, freedom from knocking, satisfactory starting and warm-up. Just as the introduction of colored gasolines resulted in the abandonment of rigid color specifica-

tions, so the relatively small number of cases in which the consumer is in a position to be affected by gasoline odor militates against this item being of major importance in gasoline quality.''

## THE HIT-AND-RUN DRIVER PROBLEM



A PLAN for solving the problem of the hit-and-run driver was presented by Dr. Lowell S. Selling, psychiatrist of the Recorder's Court, Detroit, Mich., at the meeting in Cincinnati of the American Psychiatric Association.

A study of some fifty hit-and-run drivers brought to the Detroit court gave Dr. Selling information as to the mental state of a hit-and-run driver and from this he evolved his plan for solving the serious problem they present.

Almost half of the hit-and-run drivers (twenty out of the fifty) had unstable psychopathic personalities. A second important group were feebleminded, and another group was made up of neurotic persons who had infantile reactions and feelings of inferiority.

Dr. Selling concluded that ''any mental deviation is likely to result in fleeing from the scene of the accident.'' His recommendations for solving the hit-and-run driver problem are:

1. The feebleminded should be highly trained and coached if they are to drive at all.

2. The psychoneurotic should not be permitted to enter an automobile when in a highly unstable or upset state.

3. Persons with a bad background who are improperly equipped mentally or physically for driving should be especially warned and their problem must be dealt with in psychiatric fashion.

4. Potential traffic offenders, and these are all growing people, should be diagnosed and treated by other clinical means before they reach the age where they will commit a hit-and-run offense.—JANE STAFFORD.

## ICE-AGE ANIMALS

WHAT exactly were the first prowling, lumbering and charging beasts that early man entering from Asia had to face and slay?

A scientist on the trail of Ice-Age animals figuring in the dawn chapter of American history, some 25,000 years ago, is Dr. E. H. Colbert, of the American Museum of Natural History.

No dinosaurs, of course! The popular notion that enemy number one of early man was a ''r'aring'' dinosaur dies hard—harder than the dinosaurs did. The last unlamented dinosaur passed on some 80,000,000 years ago. Compared to that, man is a youngster, with possibly a million years to his ''past.''

But first hunters to roam America's wilderness, late in the Ice Age, had to face a circus of large and formidable beasts. No modern circus can boast any of these species.

Surely present when man arrived in the New World, Dr. Colbert concludes, were woolly mammoths and mastodons, clumsy giant sloths and giant beaver, wild horses and camels. Bison, too, were plentiful, though of a different species from bison shot by later Indians.

Among those ''probably'' present, Dr. Colbert lists giant tapirs, peccaries, saber-tooth tigers and an ancient form of jaguar.

After sharing the wilderness with man for a while, the wild creatures of that age vanished. Man may have helped them along to extinction, Dr. Colbert suspects, not only by his hunting, but by more effective exterminators, such as diseases or pests. When they died off suddenly has not yet been discovered. And Dr. Colbert says rather pessimistically, ''We may never know why these animals became extinct.''—EMILY C. DAVIS.

## ITEMS

ACCORDING to a survey of crop weather by the U. S. Weather Bureau, May was a month of little rain. In this it contrasts sharply with April, which in some sections of the country was decidedly a wet month. Even in the Southeast, however, where April was on the dry side, May also brought deficient rainfall. The one area where there was really heavy rainfall during the last week of May was where rain was most needed. There were falls of as much as four inches in portions of Arkansas, Texas and southeastern Oklahoma.

THE disastrous earthquake of Friday, May 24, in Peru, centered very close to the shoreline, probably on the sea bottom a short distance off Callao, seaport of Lima, the Peruvian capital. Seismologists of the U. S. Coast and Geodetic Survey, after studying reports wired to Science Service, gave a provisional location as in latitude 12 degrees south, longitude 78 degrees west. Time of origin was 11: 33.8 A.M., E.S.T.

THE Montana State College Observatory, under the direction of Professor Eric Therkelsen, reported no less than four earthquakes. In addition to the Peruvian disturbance, there were others at 6: 52 and 10: 58 A.M. and at 5: 00 P.M. None of these three has yet been located.

SEISMOLOGISTS of the U. S. Coast and Geodetic Survey stated, after studying instrumental records from a number of North American observatories, that a strong earthquake shock rocked the uninhabited wilderness near the Alaska-Canada boundary just south of the Arctic Circle early on Tuesday evening, May 28. The epicenter was located approximately in latitude 68 degrees north, longitude 139 degrees west. This is in the headwaters of the Porcupine River, about 50 miles east of the boundary. The region is usually considered non-seismic, or free of earthquake liabilities. Exact time of origin was 8: 57.6 P.M., E.S.T.

TINCTURE of iodine as an antiseptic for cuts should be used in the first instance, leaving mercurochrome to the physician. This advice was given, in effect, by Dr. Leonard J. Piccoli, professor of pharmacology of Fordham University and American Red Cross first aid instructor, at the Richmond meeting of the American Pharmaceutical Association. Tincture of iodine, his laboratory studies show, is at least three times more powerful as an antiseptic than the aqueous solution of mercurochrome found in most first aid kits and in family medicine chests. The 2 per cent. acetone-alcohol solution of mercurochrome used by physicians, however, is relatively as efficient as tincture of iodine.