OCEANOGRAPHY

Roughest Ocean Bottom Between Korea, New Guinea

➤ THE ROUGHEST place in the world, topographically speaking, is the stretch of sea bottom and islands that lie between Korea and New Guinea. It was a rough place during the late war, too—especially rough on the Japs as they got pounded back from the farthest south of their conquests.

Partly as a result of the many soundings taken by our warships as they cruised in that region, a new chart of the world's most rugged ocean bottom has just been published by the Hydrographic Office of the U. S. Navy.

It shows the world's deepest wrinkle, a 40,000-foot difference in elevation between the bottom of the Mindanao trench and the tops of the highest mountains in the eastern Philippines. There is a whole chain of such ocean-bottom trenches, off Japan, the Bonins, the Marianas, Yap and the Palaus, with northward extensions as far away as the Aleutians. Total length of the chain is more than 6,000 miles.

This area is also the world's roughest region in volcanic and earthquake activity. Earthquakes and volcanic eruptions are both more numerous and more violent there than elsewhere. One of the greatest earthquake disasters in history, the Tokyo Bay shock of 1923, took place near the northern end of the Korea-New Guinea region. And by far the most terrific volcanic explosion, that of Krakatao in 1883, occurred a little to the west of its southern end.

Science News Letter, August 2, 1947

ENGINEERING

Gas-Turbines May Lead Airplane Propulsion Field

➤ GAS-TURBINE engines are destined to play an increasingly important part in airplane propulsion, judging from discussions at the meeting of the Institute of the Aeronautical Sciences in Cleveland. Special problems being encountered were discussed by experts.

The great increase in activity in the aircraft gas turbine field in recent years has focussed attention on problems associated with the attainment of very high efficiency of the various turbine components, John E. Talbert and J. C. Smith, Wright Aeronautical Corporation, told the engineers. Design work is progressing at a rapid rate, they declared.

Combustion chambers for gas turbines are developed rather than designed, William R. Hawthorne, Massachusetts Institute of Technology, told the group. Early in the design of an engine, he stated, it is necessary to settle the overall arrangement and major external dimensions of the combustion system, for these in turn influence the general arrangement of the engine. He presented a method for determining the influence of combustion chamber dimensions on the engine performance.

Operation of aircraft gas turbines involves many factors requiring automatic compensation, such as wide variation in ram pressure, temperature, turbine speed and altitude, stated M. A. Edwards and D. Thompson, General Electric Co.

These and other variables must be satisfactorily controlled to give the best performance and reliability for this type of power-plant. The control system must make available the maximum range and rates of change in thrust, at the same time safeguarding continuous stable operation of the turbine and compressor. The control of jet nozzle area and propeller pitch are very important factors in this respect.

Science News Letter, August 2, 1947

MEDICINE

Vitamin D Treatment For Rickets Dangerous

➤ SOME PRESENT applications of vitamin D in the treatment of rickets in children are unsafe and may produce severe damage.

This has been disclosed by animal research by Dr. Agnes Fay Morgan, nutrition expert in the University of California College of Agriculture.

Dr. Morgan made her tests by feeding a single large dose of vitamin D to eight young dogs, from 29 to 34 days old, which were affected by rickets. She fed them 150,000 to 250,000 units of vitamin D per pound of body weight. Their diet otherwise was well balanced.

Damaging effects became apparent immediately, and so severe was the reaction that three dogs died within two weeks and a fourth three weeks later.

Dr. Morgan pointed out that infants frequently are given from 50,000 to 100,000 units of vitamin D per pound of weight to combat rickets, the total dose often being 600,000 units.

The lower dose for humans is not enough smaller to warrant complete confidence in the safety of this rickets treatment, Dr. Morgan asserted.

Science News Letter, August 2, 1947

IN SCIENC

ZOOLOGY

Indian Elephant Babies Come to Philadelphia Zoo

See Front Cover

➤ TWO BABIES, each weighing about 1700 pounds, journeyed from Ceylon to the Philadelphia Zoo. Estimated to be two and a half years old, they are both Indian elephants. Patsy, five feet and five and a half inches tall, tops Peggy by two inches.

Patsy and Peggy are good live lawnmowers; they prefer grass to other kinds of food.

Science News Letter, August 2, 1947

RESOURCES

Government Buys Control Of Helium from Navajos

➤ HELIUM gas in the Rattlesnake oil field on the Navajo Indian Reservation in New Mexico is now under the control of the U. S. government, by agreement with the Navajo tribe and two private oil companies.

The Rattlesnake field, covering some 7,800 acres, produces gas containing 7.63% of helium, considerable carbon dioxide, and a large amount of nitrogen. This concentration of inert constituents renders the natural gas noncombustible.

In acquiring the rights to the field the government will pay the Indian tribe $147,799 as advance royalty and rental for 25 years, and will pay $166,594 to the oil companies for rights in their prior leasehold interests in the area.

Construction of a helium plant to process this gas was started by the U. S. Bureau of Mines in April, 1943. The demand for helium for war purposes was over by the time the plant was completed a year later. It was left in standby condition, but can be operated when needed.

The United States is the sole producer in the world of helium gas, the safety gas used in balloons and dirigibles. Other plants are in Texas and Kansas, a total of three. Two of these are now in standby condition. The Exell, Texas, plant alone can meet all present peacetime demands.

Science News Letter, August 2, 1947

E FIELDS

MEDICINE

Dose of BAL Reduces Lead in Bloodstream

➤ LEAD in the human bloodstream can be reduced in concentration with dramatic suddenness by single doses of BAL, the British antidote for the deadly war gas, lewisite, developed in this country during World War I. This has been demonstrated in the laboratories of the University of Cincinnati college of medicine by Drs. Henry W. Ryder, Jacob Cholak and Robert A. Kehoe.

Using seven human subjects whose blood contained lead in varying concentrations, they were able to produce a steep drop in blood-plasma lead in about seven minutes. Activity of the kidneys in getting rid of lead seems to have been increased, for the poisonous metal appeared in their secretion in higher concentration within an hour, with a return to the pre-dose level in from eight to 24 hours.

Unfortunately, BAL cannot be recommended outright for treatment of lead poisoning. The three researchers point out that this chemical, whose full name is dithiopropanol, is a "potentially dangerous drug." Repeated doses of it caused such disagreeable symptoms as high blood pressure and general muscular aching. They do regard it, however, as "potentially of great physiological importance."

Details of the work are published in *Science* (July 18).

Science News Letter, August 2, 1947

MECHANICS

Germans Make Combination Boring, Milling Machine

➤ GERMANY produced few new types of machine tools during the war, but one development discovered since has possible uses in America. It is a combination boring and milling machine for use in metal shaping in which one operation follows another without removal of the metal being worked from the machine. Details of the machine were revealed by the U. S. Department of Commerce.

Boring and milling machines are widely used in metal industries. They are usually separated. Bores or drill holes are made for many purposes. Milling consists of machine processes of cutting and shaping for special uses.

In the German development, the combination boring and milling machines were made to increase precision and save resetting the work from machine to machine. Work is moved onward from one set of cutters to the next. Time is saved in the process, but the particular advantage is the precision resulting from the relief from the necessity of moving materials from one machine to another. A report of this machine and other new German machine tools may be obtained from the department for six dollars in photostat, or two dollars in microfilm.

Science News Letter, August 2, 1947

ENGINEERING

Peat As Fuel To Lower Iron Concentrates Costs

➤ PEAT FOR FUEL might be used to reduce at low cost the low-grade iron ores of Minnesota into concentrates for shipping when the high-grade ore of the Mesabi range is exhausted, the American Society of Civil Engineers was told at Duluth, Minn., by Robert L. Fitzgerald of the Duluth Steam Corporation.

He described experimental work on the use of peat already under way. Half the nation's peat deposits are in northern Minnesota, adjacent to the state's famed iron ranges, he said. Coal for the purpose would have to be obtained from distant points.

Russia, he stated, is processing from 50 to 60 million tons of bog peat into gas and power to serve industrial needs. High peat transportation costs are eliminated by converting the peat into electric power and fuel gas at the site of the bog. Production of the fuel has been greatly stepped up by mechanical handling. Soviet chemists are determining means by which various chemicals can be obtained from the peat.

Mr. Fitzgerald told the engineers about Minnesota work in forming peat into pellets, which may "be the answer to the local metallurgical use of this abundant supply of local low-grade fuel." Peat containing 85% moisture can be easily formed into pellets, he said, the size of which can be controlled. The smaller sizes dry rapidly, and the dried pellets are hard and will not fracture when subjected to rough handling.

Science News Letter, August 2, 1947

ENTOMOLOGY

Insecticidal Wallpapers Kill Flies on Contact

➤ WALLPAPER that kills flies that try to roost on it, and wrapping paper that will do the same thing to any insect nosy enough to investigate your groceries are among the newest things in DDT anti-insect tactics. Samples of such paper have been received for testing by the Bureau of Entomology and Plant Quarantine in Washington. The tests, however, will be conducted in the Bureau's laboratory at Savannah, Ga.

DDT is a known impregnant of these "fortified" papers. Apparently, however, something else has been added that has a quicker knockdown effect; for though DDT is sure, it is a bit slow. Chlordane, a quick-acting insecticide already in commercial production, seems the likeliest possibility.

It is claimed that samples of the new insecticidal wallpaper as much as two years old are still sure death to flies alighting on them.

Science News Letter, August 2, 1947

PUBLIC HEALTH

Polio Cases Below Normal As Epidemic Fear Lessens

➤ INFANTILE paralysis cases were less than half the five-year median figure for the week ending July 19, and the danger of a polio epidemic this summer is diminishing.

Total cases reported to the U. S. Public Health Service for the week ended July 19 were only 157, compared with a five-year median of 369. The week's cases showed an increase over the preceding week, when 125 cases were reported, but they were far below the 666 cases of polio for the corresponding week last year.

This year's total cases are only 1,575 through July 19, compared with five-year median of 2,048 and last year's 3,256.

In bad polio years, the number of cases usually begins to soar before this time, Public Health Service officials pointed out. There may yet be outbreaks of infantile paralysis in some localities, but this looks like a healthy summer for the nation as a whole.

California was reported to have the most cases, 24, while Ohio and New York have jumped to 13.

Science News Letter, August 2, 1947