

BIOCHEMISTRY

Chemicals Found That Stop TB-Germ Poison

► **CHEMICALS** THAT might keep the tuberculosis germ, or bacillus, from producing its poison in the body are now being tested, Drs. Hubert Bloch and Hans Noll of the Public Health Research Institute of the City of New York reported at the meeting of the National Tuberculosis Association in Los Angeles.

The poison is a fatty substance called a lipid. It is at least partly responsible for the virulence of the TB germ, and has been extracted by these scientists from the waxy, outer surface of young cultures of the germs. The substance has been purified and some of its chemical nature learned. It is not an acid and apparently contains in its molecule one atom of nitrogen.

A single injection of this substance does not cause any lethal effect in mice. Repeated injections of very small amounts, however, kill the animals. The same killing effect is produced by a single injection of this fatty substance with infection by weakened TB germs, such as BCG, which do not themselves cause a progressive disease.

Neither streptomycin nor isoniazid, two modern anti-TB drugs, prevent the germs from producing their poison. Some of the thiosemicarbazone series of chemicals appear to have this ability but they are generally too toxic for use in man.

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MEDICINE

Afterbirth Serum Gives Relief to Arthritics

► **RELIEF** of stiffness, pain, joint tenderness and swelling has been given to some arthritis patients by treatment with placental blood serum, Dr. Morris Spielberg of Brooklyn, N. Y., reports.

The placental blood serum comes from the placenta, or afterbirth.

In 10 of 15 patients given this treatment, the improvement was held for six months without further treatment. The improvement began as early as the second day in three cases. In nine patients improvement began within the first week, and one began to improve on the tenth day.

Of the 15 patients treated, three had complete remission of the disease, three showed major improvement, four showed minor response and five no response.

In his report to the American Medical Association's *Archives of Internal Medicine* Dr. Spielberg states that no new joint trouble developed and that patients had "an increased sense of well-being, more restful sleep, improved appetite and improved functional capacity and ability to carry on duties."

They lost the anxious, tense look on their faces.

The patients were women whose ages ranged from 26 to 75 years and who had had active rheumatoid arthritis from two to 31 years. Best results were obtained in the premenopausal group, the failures being in the women aged 56 to 75.

The material in placental blood serum which helped the arthritic patients is unknown. It is not, Dr. Spielberg says, either cortisone or ACTH, famous anti-arthritis hormones.

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CHEMISTRY

Sound Waves Test Hair for Permanents

► **SOUND WAVES** are a new aid to safe and successful permanent waving, Dr. D. H. Powers of Warner-Hudnut, Inc., announced at an American Chemical Society meeting in Summit, N. J.

The technique involves determining the quality of hair by measuring the speed of sound traveling along a hair while it is stretched under increasing loads.

"This sound wave technique," he said, "appears to be the only accurate method of measuring true hair elasticity before and after waving and can be applied to hair on the head.

"While waving and proper neutralization show some hair damage, the use of the sonic or sound-wave technique allows a study, for the first time, of just what damage or softening occurs and how much rebuilding is achieved by proper and improper neutralizations."

Dr. Powers warned that recent methods designed to simplify hair waving by eliminating the neutralization step involve an unjustifiable risk.

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BIOCHEMISTRY

Arthritis Drugs Give Relief From Snake Bite

► **QUICK RELIEF** of pain, swelling and fever of snakebite can be had through cortisone and ACTH, or corticotropin, famous as arthritis remedies. They may even be life-saving in cases when antivenom causes hives all over the body, as often happens, particularly if more than one dose of antivenom must be given.

This is the opinion of Drs. William W. Hoback and Thomas W. Green of Richlands, Va., based on their experience with the two hormone chemicals in treating three small children who were bitten by copperheads.

Their patients were five years and younger, an age when the outlook for recovery from snakebite is especially poor. They report their cases in the *Journal of the American Medical Association* (May 16).

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IN SCIENCE

ZOOLOGY

20 Feet of Baby Snakes From 8 Foot Boa Mother

► **TWENTY FEET** of lively, wriggling snakes have been born to an eight-foot boa constrictor in the U. S. National Zoological Park, Washington. And three couples of rare monkeys flown in from West Africa, plus two new-born Chinese water deer, have done their bit to augment the population of the national zoo.

The Central American mother boa had 20 young which Dr. William M. Mann, director of the zoo, estimated to range from 12 to 15 inches in length. Boa constrictors are viviparous, that is, they produce live young. Many species of snakes, however, lay eggs from which their young are hatched.

The three monkey couples, two pairs of mangabeys and a pair of guenons, were flown in from West Africa. Dr. Mann said he had never seen either of the species before. Both are large monkeys, restricted to Africa. The guenon gets its name from a French word meaning "a face-maker," which title he well deserves.

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METEOROLOGY

Snowfall Record Holder Is Silver Lake, Colo.

► **THE ALL-TIME** record holder for snow in the United States is Silver Lake, Colo. The town, however, had to wait 32 years after the record-producing storm for its crown.

Until now the record for 24 hours of snowfall was generally thought to be held by Giant Forest, California, which recorded 60 inches one day in January, 1933. Silver Lake, however, measured 76 inches on April 14-15, 1921. Giant Forest was also thought to have held the two-day record with 87 inches in February, 1926, but Silver Lake had 95 inches between April 13 and 15, 1921.

The four-day record, previously held by Vanceboro, Me., with 96 inches on Dec. 6-10, 1933, fell to the same storm where 100 inches came down in three days and 13 hours.

The measurements were checked by J. L. H. Paulhus of the U. S. Weather Bureau and found to be reliable. Therefore the Bureau has ruled that "the Silver Lake snowfall is being accepted as providing the highest known rates in the United States for durations to four days."

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CE FIELDS

CLIMATOLOGY

Norway's Glaciers Start to Grow Again

► FOR THE first time in 20 years, snow-covered glaciers in Norway are slowly moving forward.

Two glacial branches, part of the Svartisen and Jostedalbreen glaciers, have shown a substantial increase in ice volume during the past two years, according to Norwegian glaciologist Olav Liestol. It is too soon to tell whether these advances are indications of a change in the climate, he says.

On the whole, major glaciers in Norway have shrunk approximately 50% in total area during the past 50 years, Mr. Liestol reported recently to the Norwegian Academy of Science in Oslo.

The Nigardsbreen branch of the Jostedal glacier has shrunk more than 300 feet vertically and receded two-thirds of a mile in the period from 1937 to 1951. The Storbreen glacier in Jotunheimen shrank steadily up to 1951, but since then has shown an increase in ice volume, said Mr. Liestol.

Norway's largest glacier, Jostedal, is situated in western Norway, on the border between Nordfjord and Sogn. Its main body and extensions cover an area of about 489 square miles. The small Jotunheimen glaciers lie farther inland, in deep clefts between lofty mountain peaks.

Svartisen, located in north Norway, covers approximately 215 square miles, making it the second largest glacier in Norway today.

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ENGINEERING

"Volume Boiling" Studied To Probe Bubble Formation

► ONE OF the processes which may be involved in harnessing atomic power, "volume boiling," is being studied by engineers at the University of California at Los Angeles for the Atomic Energy Commission.

In "volume boiling" the heat source, for example, a fissionable substance, is distributed uniformly within the water. Thus the liquid is heated uniformly, and bubbles are formed in the body of the liquid. This differs from more familiar processes, such as a tea kettle, in which the heat source surrounds the water and bubbles are formed on the heating surface.

The study is concerned with fundamental aspects of bubble formation and rate of increase in size of bubbles after they are formed in the process of converting water to steam by this method.

Of particular interest is the variation in

the rate of vapor formation effected by a sudden change in heating rate. This is measured by passing a 250,000 volt X-ray beam through the boiling solution. Changes in the amount of X-ray absorption by the solution can be related to variation in the rate of vapor formation.

The research has been conducted by M. L. Greenfield, W. L. Martin, B. R. Mead, R. P. Lipkis and others of the U.C.L.A. engineering staff.

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ASTRONOMY

Discover New Material At Arizona's Meteor Crater

► DISCOVERY OF a new kind of material formed when a meteorite smashed out Arizona's famous huge crater has been made by Dr. H. H. Nininger, director of the American Meteorite Museum, Winslow, Ariz.

The new product is in the form of teardrop-shaped pieces and irregularly twisted cinder-like masses, all apparently loaded with particles of nickel-iron, Dr. Nininger reports.

Although the frothy pieces have been spotted many times before, it was always thought that they resulted from the action of nearby volcanoes. Now, Dr. Nininger states, laboratory tests have shown that instead of lava, the "bomblets" are frothy glass in which are embedded tiny spherules of nickel-iron.

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TECHNOLOGY

Photographs Help Study Explosions, Rockets, Flames

► IMPROVED PHOTOGRAPHIC methods are helping scientists study underwater explosions, rockets, welding flames, and parachute drops.

In capturing what happens when explosions occur under the sea, I. I. Taylor of the U. S. Naval Shipyard, Norfolk, Va., used extremely fast moving film and tiny grain-of-wheat lamps in a special camera.

The Society of Photographic Engineers meeting in West Point, N. Y., also heard how K. R. Stehling of Princeton's Forrestal Research Center studies the injector sprays of rockets with high speed color photography.

Flames are made to stand still for their pictures by high power flashes of light spaced only a few thousandths of a second apart. R. M. Fristrom of the Johns Hopkins Applied Physics Laboratory, Silver Spring, Md., reported.

Two synchronized cameras photographing lights on experimental parachute drops gave new data to a Goodyear Aircraft Corp. research team consisting of O. W. Loudenslager, R. S. Ross and F. T. Stimler.

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ENTOMOLOGY

Green Light on Beaches Is Firefly Love Signal

► IF YOU are moon-gazing along an Atlantic coast beach this summer and see two short green flashes of light from across the dunes, do not send for counter intelligence. You might, however, send for the nearest entomologist.

For the lights are signals, all right, but probably an interested male firefly signaling for a female of similar interests. And it may be that this firefly is one of a new species just described by Dr. Frank A. McDermott of the Smithsonian Institution.

The new green-flashing firefly, which seems to be restricted to beach and sand dune areas, was first observed at Bethany Beach, Del., last summer. It is slightly smaller than other known North American species. Although these Bethany fireflies are the only ones of the species to be reported yet, Dr. McDermott thinks it may be widely distributed along the Atlantic Coast.

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OCEANOGRAPHY

Ocean Scientists To Explore Pacific

► "EXPEDITION Trans-Pacific" will leave San Diego on July 17 for five months of exploration of scientifically unknown areas of the Pacific Ocean.

The crew of marine biologists and oceanographers aboard the research vessel Spencer F. Baird will map currents of the North Pacific, probe into its depths for clues to the nature of the ocean bottom and water masses, and collect specimens of fishes and other marine life.

The course of the Trans-Pacific expedition, sent out by the Scripps Institution of Oceanography of the University of California and sponsored by the Office of Naval Research and other Department of Defense bodies, will run from San Diego northward to the Aleutian Islands, then westward into the Bering Sea.

The Baird will then take a southerly course into the scientifically unexplored region east of Korea and Japan. She will return to home port Dec. 2, after a 16,000 mile voyage of exploration.

The Scripps Institution of Oceanography has sent out four other major ocean expeditions since 1950. In that year, Mid-Pacific expedition went to the Marshall Islands. In 1951, Northern Holiday expedition explored the Gulf of Alaska.

Shellback expedition went to Peru in 1952, and Capricorn expedition covered a wide area of the South Pacific in 1952-53.

Dr. Warren S. Wooster, who was scientific leader of Shellback and part of Northern Holiday expeditions, will lead the Trans-Pacific expedition.

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