

MEDICINE

Bacitracin Is Now Available Commercially

► BACITRACIN, the antibiotic discovered in 1945, is now available commercially, but you will need a physician's prescription to get it.

The drug has proved effective in the treatment of many skin and local surgical infections, such as boils and abscesses, often making surgery unnecessary. It also checks the growth of many gram-positive streptococci and staphylococci, as well as the pneumococcus, gonococcus, meningococcus and the spirochete of syphilis.

It was isolated by Dr. Frank L. Meleney of the Columbia College of Physicians and Surgeons from the infected wound of a patient.

Science News Letter, November 6, 1948

BACTERIOLOGY

Photograph Bacteriophage In Act of Killing Germs

► HOW bacteriophages, the "germs" that kill germs, operate has been photographed with the aid of the electron microscope at the National Institutes of Health in Bethesda, Md. by Dr. Ralph W. G. Wyckoff. His report, with three of the photographs, appears in the British journal, NATURE (Oct. 23).

Contact with the bacteriophage particles apparently kills the bacteria on which they prey, causing their protoplasm to dissolve and flow out of the bacterial body. Thereupon the particles begin to "devour" it, eventually covering the loose protoplasm and increasing their number and individual size at its expense.

This "devouring" of the bacterial protoplasm by the extremely minute particles justifies the name given to bacteriophage before the invention of the electron microscope made their direct study possible. The word bacteriophage means "bacteria-eater," and the name was applied years ago to an invisible something, beyond the reach of ordinary microscopes, that caused bacteria to dissolve and disappear.

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CHEMISTRY

New Uses for Silicones Predicted for Near Future

► OILS, greases, resins, rubber and other products of the relatively recently developed silicones, a new chemical family, are sure to be followed by many new products, the American Society of Mechanical Engineers was told in New York by K. W. Given of the chemical department of General Electric, Pittsfield, Mass. Some of these new products will be available soon.

Because of the ability of the silicones to withstand extremes of heat and cold, to

resist moisture and to remain unaffected by most other chemicals, some of their uses will be revolutionary, he said. Glass cloth soaked in silicone resin produces an electrical insulation which will withstand great heat, and silicone varnishes, enamels and paints produce finishes that resist acids, alkalis, fresh or salt water, oils and weather. A water-repelling silicone film will have many uses.

Silicones are made from organic compounds plus silicon, one of the earth's most plentiful elements. About 76% of the earth's crust is composed of silicon and oxygen, the components of sand. Studies of silicon chemistry have extended over several decades, but the development of the silicones and their applications was hastened by the wartime need of the armed services for a material resistant to heat, cold and chemical action.

In the manufacturing process, silicon is ground and mixed with certain chemicals in a reactor. Gas is formed, from which is made a liquid, the basis of silicone products.

Among these chemicals, Mr. Given stated, is one with a name of 31 letters, "polyorganohalogenopolysiloxanes." The vapor from one form of this liquid forms a sub-microscopic water-repellent film. Porous porcelain filters treated with it will permit the passage through them of compressed air, gasoline and solvents, but not water.

Other uses for this film are for windshields, camera lenses, textiles and paper. A silicone water repellent film may some day be used to treat cloth for clothing, he said. At the end of a walk in the rain the beads of water on the clothing could be shaken off, the clothes remaining neatly pressed.

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MEDICINE

Medicinal Dust-Inhalation Relieves Asthma Sufferers

► A NEW METHOD for bringing relief to asthma sufferers and for patients with bronchial spasm not due to asthma is reported by Drs. L. R. Krasno, M. Grossman and A. C. Ivy of the University of Illinois College of Medicine and the Illinois Masonic Hospital in Chicago in the journal, SCIENCE (Oct. 29).

It consists of inhalations of Norisodrine Sulfate dust from a pocket-sized inhalator. The medicine itself, known also as Aleudrin, has previously been reported effective when given in liquid form by injection, by mouth or by inhalation in a mist. The idea of using it as a dust followed the discovery that penicillin dust was a practical and effective form of giving the mold remedy for infections of the breathing tract.

Sixteen of 24 patients were able to ward off an impending attack of asthma by whiffs of the dust, inhaled through the mouth. The other eight needed other medicines in addition to the Norisodrine.

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IN SCIENCE

MEDICINE

Change in a Body Chemical Found to Accompany Cancer

► DISCOVERY that a change in the nature of a body chemical takes place during the development of one kind of cancer is announced by Drs. Christopher Carruthers and V. Suntzeff of Washington University School of Medicine, St. Louis, in the journal, SCIENCE (Oct. 22).

Heretofore scientists have found evidence only for differences in quantity of chemicals in cancerous and normal cells. The significance of these quantitative changes has been difficult to evaluate.

A change in the structure of a lipid, or fatty substance, takes place during the development of skin cancer in mice, the St. Louis scientists now announce. The change is due, they report, to a quantitative alteration of a part of the lipid material of normal and abnormally multiplying mouse skin. But the net result is a change in quality resulting in altered physical and chemical properties of the lipid.

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GENERAL SCIENCE

Science Clubs of America To Cooperate with UNESCO

► YOUNG SCIENTISTS in the nation's high schools will cooperate with students abroad in various lands under recommendations made by the natural sciences section of the U. S. National Commission on UNESCO (United Nations Educational, Scientific and Cultural Organization) at its recent Boston meeting.

International cooperation by youth of all nations in science projects will "aid international understanding and also result in the broader dissemination of information on the methods and advances of science."

Science Clubs of America, an activity of Science Service, is already directing the attention of the 15,000 science clubs in the United States and their third of a million members to the opportunity of cooperating with similar clubs abroad. Over 500 clubs abroad are affiliated with Science Clubs of America.

Plans are being made to bring clubs in America and other nations into closer contact, through the UNESCO offices in Paris and otherwise. Materials being furnished USA clubs are being sent on request to clubs in other countries.

Science Clubs International, consisting of clubs in all parts of the world and their sponsoring organizations, is in the process of formation.

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CE FIELDS

MEDICINE

Nobel Award in Medicine Keynotes Internationalism

► AWARD of the Nobel Prize in medicine to Prof. Paul Mueller of Basel for his discovery of the insecticidal value of DDT reemphasizes what scientists all know but some of the rest of us may at times forget: the fact that science knows no national boundaries.

Prof. Mueller is a Swiss, and the Geigy Company for which he works is a Swiss firm. But DDT was first made by a German, Othmar Zeidler, in 1874. The prize money comes from the fortune left by a Swede, Alfred Nobel, who first made dynamite by mixing into an inert carrier the too-sensitive liquid high explosive, nitroglycerin, which was the discovery of an Italian, Ascanio Sobrero.

America figures in the story twice. The invasion of Europe by an American insect pest, the potato beetle, was one of the prime stimuli that set Prof. Mueller to searching for a more effective insecticide. Discovery of the value of DDT for this purpose, especially its effectiveness against body lice, came just in time to enable American Army sanitarians to suppress a typhus outbreak in Naples that might otherwise have become one of the worst horrors of the world's most horrible war.

The boundary-crossing benefits of DDT continue and increase. Its use to prevent disease-carrying insects from stealing intercontinental rides on aircraft and ships is now accepted routine. It also aids mightily the efforts of entomologists to prevent the spread of insect pests of cultivated plants and domestic animals. If it could only be used to delouse political heads of their crawling fears, suspicions and hatreds, the peace dream of Alfred Nobel might be measurably closer to realization.

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BIOCHEMISTRY

Bone Growth Studied with Radioactive Phosphorus

► BONE-MAKING processes in animals can now be studied more accurately through the use of radioactive phosphorus from atomic-fission piles. Newest advance along this line is reported in the journal, *SCIENCE* (Oct. 22), by Dr. Robert S. Siffert of Mount Sinai Hospital in New York.

Radioactive phosphorus can be fed to young animals in their diet instead of ordinary phosphorus. Its presence in the growing bones can be determined by removal of bones after the death of the animal, slicing thin sections from them,

and laying these on covered photographic films until the radiations affect the sensitive emulsion just as light rays would.

Softening the bone with acid previous to slicing is a necessary part of the process. Until now, a difficulty has been that ordinary acids, such as hydrochloric, take out so much of the phosphorus that a satisfactory picture cannot be made.

Dr. Siffert has solved the difficulty by using formic acid, which is a synthetic product chemically identical with the sharp-smelling material excreted by angry ants. This takes out the hard limy substance of the bone and leaves most of the phosphorus.

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PHYSICS

Spectral Analysis Method Detects Bits of Uranium

► VERY SMALL amounts of the atomic energy atom, uranium, can be detected by a new method of spectral analysis reported to the Optical Society of America in Detroit by Dr. L. T. Steadman of the University of Rochester.

Expected to be of use in measuring uranium present in many sorts of materials, the sample is burned in the crater of an electric carbon arc and the light given off is split into its spectrum lines by a quartz spectroscope. The brightness of the uranium lines measured shows the amount of the metal present.

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METEOROLOGY

Fine Particles Carry Static Before Dust Storms

► RADIO-MESSING static runs ahead of dust storms by being carried on invisibly fine dust particles that outspeed the coarser grains, states Dr. E. W. B. Gill of Oxford University in the British scientific journal, *NATURE* (Oct. 9).

He observed this phenomenon as early as World War I, when he was in charge of a wireless station on the Salonika front. His aerials would start sparking violently when a dust storm was approaching, well before the palpable dust actually arrived. At that time, however, he did not have an explanation to fit the observations.

In his laboratory at Oxford he was able to demonstrate the phenomenon on a small scale by pouring sand through a funnel and observing the behavior of an electrometer attached to a small metal plate nine feet away. The sand particles accumulated charges of static electricity by friction as they fell, but this had no effect on the instrument. Shortly after the sand had been poured, however, the electrometer indicator began to move. Dr. Gill attributes this to the arrival of the invisibly fine, charged dust particles spreading outward from the poured stream of sand.

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OTOLOGY

"Kick-Backs" on Hearing Aids Censured by A.M.A.

► "KICK-BACKS" are now being offered doctors on hearing aids as well as on eyeglasses, the *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* (Oct. 30) reports.

Acceptance of such "kick-backs," or rebates, is strongly censured by the association.

Physicians in various parts of the country are being offered, and some have accepted, money from dealers for recommending particular makes of hearing aids, the journal reports.

"Such a transaction between the doctor and the dispenser of hearing aids constitutes a rebate and is in direct contravention of the stand of the American Medical Association in this matter," the journal states.

"It is degrading to the profession and commercializes the doctor who accepts such a 'kick-back.'"

The A. M. A. believes it is the dealers, not the manufacturers, of hearing aids that adopt this policy.

"A modified form of kick-back is the recent suggestion that a hearing aid dealer would sell only to patients whose ears had been examined by an otologist (a physician who specializes in care of the ears)," the journal points out. "The doctor's fee, according to this arrangement, would be paid by the hearing aid dealer. Presumably the cost would be passed on ultimately to the patient in the form of a higher price for his instrument."

Such an arrangement is also disapproved by the A. M. A. since it involves a payment from dealer to physician that might be interpreted or used as a "kick-back."

"To be beyond criticism in such a situation," the journal advises, "the payment to the doctor should be made by the patient himself, not by the dealer."

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PALEONTOLOGY

Turtle and Fish Fossils Dug Up in West

► FOSSIL BONES of sea creatures of 100,000,000 years ago were dug up in the West during the past summer and have been brought back to the Smithsonian Institution in Washington by Dr. D. H. Dunkle. Among them are the skull and jaws of a big sea turtle and the bones of several large fish that may have been distant cousins of today's tarpons.

These animals inhabited an ancient sea that stretched from Alaska to the Gulf of Mexico during Cretaceous time. Silts and sands of the old sea bottom, containing the bones dropped there when the animals died, have hardened into stone and been slowly raised to their present level, far from any ocean.

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