

SCIENCE NEWS

Science Service, Washington, D. C.

SCIENTIFIC EVENTS OF THE YEAR

Medical Sciences (continued)

Use of blood from the newly dead for transfusion to living persons was undertaken at the Central Emergency Hospital, Moscow, and results in nearly 1,000 cases were reported by Dr. S. S. Yudin, surgeon-in-chief.

Derivatives of morphine that are safer and more powerful than ordinary morphine were prepared by Dr. Lyndon F. Small, University of Virginia, in research directed toward development of non-habit-forming morphine. Addiction property of the new morphines has not yet been determined.

A method of preventing tooth decay by using silver nitrate to detect faults in enamel formation where decay may start was reported by Dr. E. P. Brady, Washington University Dental School.

A new alcohol, phthiocerol, isolated from the wax of the human tubercle bacillus, was reported by Professor R. J. Anderson and S. H. Stodola, Yale University, in addition to two other new alcohols, entirely different in composition from phthiocerol, isolated one each from the timothy bacillus and the leprosy bacillus.

Five wavelengths comprise the portion of ultraviolet light curative of experimental rickets by irradiation, and of these the one which is most effective rarely reaches the earth in sunshine, Professor John W. M. Bunker and Dr. Robert S. Harris, Massachusetts Institute of Technology, reported.

A method for rapid intubation of the human small intestine, developed in the medical clinic of the University of Pennsylvania, permitted the collection of pure intestinal secretion, a determination of its chemical characteristics, a study of the motor effects of morphine on the intestinal musculature and a direct investigation of glucose absorption from the bowel.

Psychology and Psychiatry

A new tool for study of the mentally ill was suggested by Dr. T. W. Forbes, New York State Psychiatric Institute, by the discovery that the psychogalvanometer, or "lie detector," can distinguish two electric waves from the skin, one of which betrays excitement in the subject even when he is unaware of feeling it.

Learning may be observed at the moment it takes place, indirectly through observation of the brain's electric potential during the process, Dr. Herbert H. Jasper, Brown University, found.

Use of the rhythmic electric impulses from the brain to locate defective areas in that organ was reported by Drs. H. H. Jasper and H. L. Andrews, Brown University.

A progressive increase in rate of human brain waves from about four and a half per second in the baby 3 months old to the adult rate of 10 or 11 per second in the 12-year-old, suggesting a parallel development of brain function, was reported by Dr. Donald B. Lindsley, Brush Foundation and Western Reserve University.

Brain waves occur in unborn guinea-pigs at least 12

days before normal birth, Drs. Leonard Carmichael, Charles S. Bridgman, University of Rochester, and Dr. H. H. Jasper, Brown University, observed.

Identical twins have identical patterns of brain rhythms, Drs. Hallowell Davis and Pauline A. Davis, Harvard Medical School, found from study of 18 twin pairs.

Brain waves may be used as a mark of distinction between individuals, Drs. Lee Edward Travis and Abraham Gottlob, State University of Iowa, found.

The hypnotic trance is not the same physiologically as natural sleep, electric potentials from human brains under the two conditions demonstrated by Drs. E. Newton Harvey, Princeton, Alfred L. Loomis and Garrett Hobart, Loomis Laboratory.

Effects of sedative and other drugs upon the brain are partially revealed by the brain's electric potentials, Dr. W. G. Lennox and Dr. and Mrs. F. A. Gibbs, Harvard University Medical School, found.

Possible use of brain waves as a tool for understanding mental deficiency was suggested by Dr. George Kreezer, Vineland Training School, who found differences in the brain rhythm pattern of Mongolian defectives below six-year mental age.

Injury to the brain cortex causes loss of mental plasticity and also of ability to make a general attack on a problem, this loss being independent of the location of the injury but proportional to its extent, Dr. I. Krechevsky, University of Chicago, learned from animal experiments.

The centers of the brain controlling instincts were located by Professor E. Grünthal, Würzburg University, Germany, in the part of the brain known as the thalamus and hypothalamus.

The reflex leg movement ordinarily made by a rat startled by a noise can be "forgotten" if the noise is repeated, it was found by Drs. Walter S. Hunter, Brown University, and C. Ladd Prosser, Clark University, who demonstrated that spinal reflexes can be extinguished and then restored.

Ability of a person to adjust the frequency of a tone until it appears exactly half as high in pitch as another was demonstrated in experiments by Drs. S. S. Stevens and J. Volkmann, Harvard University, and Dr. E. B. Newman, Swarthmore College, who built a numerical scale of psychological pitch in this way.

Experimental confirmation of the theory that tones of differing pitch are distinguished because they affect different areas of the ear's basilar membrane was obtained by Drs. Hallowell Davis, S. S. Stevens and Moses H. Lurie, Harvard University. Dr. Stevens also found that the human ear can act as radio loud speaker, converting electric impulses of the radio receiver into tunes readily identified by the "listener."

Decreased sugar in the blood increases acuity of hearing, Dr. W. J. Brogden, University of Illinois, found by x-raying the pituitary glands of dogs and by experiments with a diabetic patient.

Animals are sensitive to temperature before birth, but

the sensitivity increases during the fetal period; Dr. Leonard Carmichael, University of Rochester, found from experiments with guinea-pigs.

Monkeys have color vision equal to man's, a fact of significance to the theory of evolution, Dr. Walter F. Grether, University of Wisconsin, found.

Refined division of labor in the nervous system was demonstrated by Dr. Karl U. Smith, University of Rochester, when he observed that cats have one type of vision controlled by the visual area of the brain cortex and another dependent upon a more primitive part of the nervous system.

A 14-year-old boy retains some impression of poetry read to him in infancy, it was demonstrated experimentally by Dr. Harold E. Burt, the Ohio State University.

Startle, such as that produced by a revolver shot, causes two distinct types of emotional response—first an instantaneous involuntary and universal reaction and second a more individual socialized behavior—ultra-rapid motion pictures revealed to Dr. William A. Hunt, Connecticut College for Women, and Dr. Carney Landis, Columbia University.

The uncertainty principle of physics, which opposes the concept of determinism, was extended to include psychology by Professor Niels Bohr, physicist of Copenhagen.

Because of the way doses of glandular secretions change behavior, Dr. Roy G. Hoskins, Harvard University, proposed that "chemical conditioning" should be accepted as a new psychological principle.

Size of a social group has an important effect upon the tendency of an individual to dominate, the weaker one of a pair often becoming dominant in a larger group, Dr. A. H. Maslow, Columbia University, found from study of monkeys.

Chimpanzees can be taught to use gestures and vocalization to solicit aid from another animal in a cooperative task, Dr. Meredith P. Crawford, Yale University, found.

Rudimentary, or undeveloped, speech centers were found in the brains of the three highest apes—orang-utan, gorilla and chimpanzee, by Dr. Cornelius J. Connolly, Catholic University of America.

Seven primary elements of human intelligence were named by Dr. L. L. Thurstone, University of Chicago, as number facility, word fluency, visualizing ability, memory, perceptual speed, induction and verbal reasoning.

The functioning of attitudes in human conditioned reactions make learning thereby a very different process in human beings from what it is in animals, Dr. G. H. S. Razran, Columbia University, concluded.

Capacity for mental work is impaired at an altitude of 17,500 feet, Dr. R. A. McFarland, Columbia University, found as a member of the International High Altitude Expedition to Chile.

A mathematical genius of the lightning calculator sort was produced from an ordinary college student by giving him 75 hours of practice and special training by Drs. Samuel Renshaw, William C. Schwarzbek and Otis D. Knight, the Ohio State University.

A scale for measuring social competence, especially useful in testing those suspected of mental deficiency, was

developed by Dr. Edgar A. Doll, Training School, Vineland, N. J.

Phenobarbital, a commonly used hypnotic drug, retards learning of rats but does not affect their forgetting, Dr. Griffith W. Williams, University of Rochester, found.

Fever and also increased blood pressure and pulse rate can be produced by suggestion, Dr. M. Kershaw Walsh, University of South Carolina, reported.

Insulin was used in Europe to treat the mental disease schizophrenia, and it is claimed restored patients to sanity.

Disturbance of a part of the brain, the hypothalamus, may be the primary factor in the important mental disease schizophrenia, Drs. Isidore Finkelman and Daniel Haffron, Elgin, Ill., concluded from evidence that the hypothalamus controls oxygen consumption and other body mechanisms which are upset in the mental disease.

A new form of functional nervous disorder attacking only airplane pilots and called therefore aeroneurosis was reported by Dr. Harry G. Armstrong, U. S. Army Medical Corps.

Patients can be brought out of the death-like stupor of schizophrenia by hypodermic injection of brandy, Drs. N. V. Kantorovich and S. K. Constantinovich, Medical Institute and Psychiatric Hospital, Leningrad, reported.

A surgical procedure which blocks off a portion of the impulses to and from the prefrontal lobes of the brain was used successfully to relieve symptoms of chronic mental disease by Drs. Walter Freeman and James Watts, George Washington University Medical School. The operation was first devised by Dr. Egas Moniz, of Portugal.

Success with treatment of mental disease patients in groups rather than individually was reported independently by Drs. Paul Schilder and Loretta Bender, Bellevue Hospital, New York City.

An individual's manner of breathing is characteristic and may reveal certain emotional and physical derangements and unconscious desires, experiments showed Drs. Leon J. Saul and Franz Alexander, Chicago.

A new Committee for the Study of Suicide was organized in New York.

A new scientific organization, the Society for Psychological Study of Social Issues, was formed for the purpose of applying psychology to research on problems in the fields of politics, economics and relations between nations.

ITEMS

NEED of commercial aviation for immediate and detailed weather information is bringing about a revolution in weather service for non-flying purposes. The new type of weather reporting is of course costlier than the old, but it is absolutely indispensable if flying is to be carried on in safety. And now the same kind of weather information is beginning to be appreciated as valuable by shipping interests, farmers, dairymen, promoters of athletics and other forms of outdoor entertainment, and many other people.

HIGH-FREQUENCY radio on earth "goes blotto" when violent outbursts of hydrogen gas explode on the sun. This phenomenon, first observed by Dr. J. H. Dellinger,

of the National Bureau of Standards, has been carefully re-investigated at the Mount Wilson Observatory, using a long series of spectroheliographic plates. Records of several similar outbursts, at the observed interval of about 54 days, each lasting 15 minutes, were found. The correlation between hydrogen eruptions and radio fading is not infallible, however, for at least one pronounced eruption occurred without a corresponding fadeout. Our sun, which is a small star as stars go, and rather dim, too, has more brethren of its own kind in the heavens than have hitherto been suspected to exist.

DR. DEANE B. JUDD, of the National Bureau of Standards reports that a seasoned incandescent lamp when burned at constant voltage will gradually change color and gradually become more yellow in the light it emits.

DR. JOHN W. FINCH, director of the U. S. Bureau of Mines, points out that even without any new discoveries and with a continuation of the high 1935 consumption the proved resources of natural gas are sufficient to last 40 years.

HATCHABILITY of hens' eggs is definitely improved when the scrap meat included in their poultry ration contains a high proportion of liver, is indicated by experiments of investigators at the U. S. Department of Agriculture.

AN institute for research in animal psychology has just been opened in Munster, Westphalia, under the directorship of Dr. Werner Fischel. It is at present the only establishment of its kind in Germany; similar institutes already exist in the United States and the Netherlands.

A HYDROELECTRIC power plant built entirely under water is the boast of the town of Rostin in Pomerania. There is no powerhouse on the bank, no visible structure anywhere; everything lies in midstream below the dam, and the electricians come and go through tunnels. The underwater powerhouse is a by-product of a flood problem set by the Persante River. Its early spring freshets, bearing rafts of battering ice, formerly flooded many acres of fertile land. To reclaim this land the river's meandering course was straightened and shortened, and a low dam was built near Rostin.

HOFRAAT J. WREGG, writing in *Die Umschau*, states that Hameln in Hanover, a small city of 28,000 inhabitants, claims the honor of being the world's first community to rid its city gas supply of the dangerously poisonous carbon monoxide. This is done by mixing the gas as it comes from the producers with hydrogen, and passing over a catalyst that combines the two into harmless, readily combustible methane. Instead of the 21.4 per cent. of carbon monoxide once present in Hameln's city gas, there is now only about one per cent.

ERNEST N. MERRILL and George A. Young, both of Long Beach, Calif., have been granted a patent for a depth "thermometer" for taking the temperature thousands of feet underground. From readings already ob-

tained, scientists have been able to make a rough estimate of the age of the oldest rocks, and to infer from this result that the amount of heat which is being supplied to the earth from radioactive minerals may be much less than heretofore supposed. They have found, also, that generally the western part of the United States is hotter underneath than the eastern part of the country. This result is in agreement with the conclusions of the historical geologists that the Rocky Mountains are younger than the Appalachians.

PERSONS who are no longer permitted to buy gold have now turned to the still more expensive metal platinum for their efforts, according to *Industrial and Engineering Chemistry*. On June 1 the price of platinum was \$35 an ounce. By mid-September it was \$70 an ounce. A month later it was down to \$50 an ounce. Where once these fluctuations would have caused concern in chemical markets they have little affected the chemical industry because the precious metal is not so essential as it once was.

FORMING an evolutionary link between sponges and corals, cup-shaped animals inhabited a sea that covered the present site of the Appalachian mountains 500 million years ago. A great mass of their fossil remains has been found near Austinville, Va., by Dr. Charles E. Resser, of the Smithsonian Institution. These animals secreted limestone, as many sea creatures do, and with lime-loving seaweed of their age (the Cambrian) they were the world's first reef-formers. They are known to science as *Archaeocyathineae*, which is Greek for "old cup-bearers."

PLANT remains representing twenty-seven distinct species found in a Pleistocene, or Ice Age, deposit near Fairbanks, Alaska, have been identified for the American Museum of Natural History, New York City, by Drs. Ralph W. Chaney, of the Carnegie Institution of Washington, and Herbert L. Mason, of the University of California, working in the university laboratories. All but two of the plants represent species still living. Among the better known kinds are dandelion, buttercup, cinquefoil, phlox, sedge, birch, poplar, willow, spruce and three species of fungi.

DR. ALEXANDER WETMORE, assistant secretary of the Smithsonian Institution, reports that pigmy birds lived alongside their larger brethren in the mild climates of the middle and upper Miocene Age, 40 million years ago. Among fossils of this age, which he has been called upon to examine, are a falcon no bigger than a modern male sparrow-hawk, a parakeet only three quarters the size of the existing species, and a distant relative of the turkey, known as the *chachalaca*. The fossil pigmy form of this latter bird was only about half the size of the species that still lives in Texas. Dr. Wetmore ascribes the great abundance of bird species at that time, and the frequent appearance of pigmy forms along them, to the easy climatic conditions. When ice ages made life harder the species least able to meet the new conditions died off, leaving the diminished bird fauna of to-day.