

developed headache and fever of 102 degrees Fahrenheit within twelve hours, from which he quickly recovered.

The Baltimore investigators feel it is important to give a large amount of the chemicals during the first 24 hours of treatment. Usually they gave them in divided doses: first a dose of Prontylin in tablet form, to be chewed up and followed by a drink of water, and later injections of Prontosil solution. The method for calculating the dosage according to the body weight of the patient was given the physicians at the meeting. The physicians were also cautioned against giving any saline laxatives during Prontosil treatment.

Case Reports

Among the cases reported by Drs. Long and Bliss were the following:

A 33-year-old patient at the Johns Hopkins Hospital suffering from infectious abortion with pelvic peritonitis. Beta hemolytic streptococci found in the uterus. The patient was gravely ill with a temperature of 106.4 degrees Fahrenheit on the day of treatment with Prontosil. She had two transfusions of citrated blood. Temperature was normal 17 hours after beginning of treatment. Recovery from the infection was uneventful.

A seven-year-old girl at the Union Memorial Hospital, Baltimore, suffering with erysipelas in the left leg. The child was gravely ill, the erysipelas spreading in spite of transfusion and antitoxin. Prontosil was given on the third day of illness and the temperature was normal within 28 hours. Recovery uneventful.

A 24-year-old young woman at the Johns Hopkins Hospital suffering with acute tonsillitis due to beta hemolytic streptococcus infection. Prontosil was given by mouth and hypodermically on the fourth day of illness. In 30 hours the temperature was normal and in 48 hours the throat was normal. The patient was discharged on the fifth day of the illness with throat cultures negative for beta hemolytic streptococcus.

Infected Ears

A 6-year-old girl, patient at Sydenham Hospital (contagious disease hospital of the Baltimore City Health Department) suffering with scarlet fever, cervical adenitis (infected glands) and otitis media in both ears. The ear drums had been lanced a number of times and both ears were discharging pus abundantly. She had a septic type of temperature, running up to 104 degrees Fahrenheit. Prontosil was given by mouth.

The temperature fell to normal in 24 hours and the ears were clear in three days.

Science News Letter, November 28, 1936

MEDICINE 35 Per Cent Success in Use of Spray for Polio

ABOUT one-third of those persons who used the alum picric acid nasal spray as a preventive of infantile paralysis during the epidemic in Southern states last summer were protected against the disease by this spray.

This appears from the first report of results with the spray. The report was given by Dr. Charles Armstrong, U. S. Public Health Service officer who developed the spray, at the meeting of the southern branch of the American Public Health Association.

While these results are somewhat disappointing to Dr. Armstrong and his associates, investigations are now under way which it is believed will give a more effective method of prevention in time for use next summer. Improvements along two lines are expected. One will be to make the chemical solution less irritating. The other will be to improve the method of administering it.

The picric acid-alum solution when sprayed into the nose acts to protect against infantile paralysis by setting up a barrier so that the virus cause of the disease cannot get through the lining of the nose to the olfactory nerve along which it makes its way to the brain and spinal cord.

Monkeys Protected

Monkeys—24 out of 25—have been protected against the disease by this method. The spray was used on a large scale on children and young adults during the outbreak in the South last summer. Since September, Dr. Armstrong has been gathering reports on its use. The fact that it was used by laymen as well as physicians complicated the situation considerably, because the layman in many cases did not use the spray as effectively and thoroughly as a physician would have. The results show, among other things, that the method is not suitable for use except by physicians, Dr. Armstrong commented.

A house-to-house survey was made of 20 representative districts in Birmingham and 7 districts in surrounding Jefferson County. In this group, 5,010 persons out of a total of 8,093 used the

spray at least once. (The directions were to use it every other day for a week and then once a week for the duration of the epidemic.) If the same rates prevailed in the entire area of Birmingham city and Jefferson County, 270,000 persons were sprayed and 160,000 were not, it is calculated.

In the sprayed group 7 cases of infantile paralysis developed. In the unsprayed group, 8 cases developed. Calculating the number among the sprayed group who might have been expected to get the disease on the basis of the percentage among the unsprayed who developed it, Dr. Armstrong got a ratio of 16 to 21.7. This indicates that about one-third, or 35 per cent, were protected by the spray.

Untoward symptoms and transitory complaints of headache, nausea, burning of the nostrils and the like were reported by 885 of 4,631 sprayed persons. In the entire area where the spray was used, 7 cases of hypersensitiveness to the spray were reported. All of the persons reporting unpleasant effects recovered from them.

Science News Letter, November 28, 1936

SURGERY

Discover Safe Kind of Surgery for "Bleeders"

A SAFE method of performing surgical operations on "bleeders" and a sort of automatic safety mechanism within their own bodies which helps protect them from fatal hemorrhage were described by Dr. Barnes Woodhall, resident surgeon of the Johns Hopkins Hospital, at the meeting of the Southern Medical Association.

This new knowledge was obtained from experience with a young Spanish lad who suffers from hemophilia, the dangerous hereditary malady which also afflicts male members of the family that once ruled Spain. The Count of Covadonga, formerly heir to the Spanish throne and a sufferer from this disease, nearly died recently of a hemorrhage that followed a minor surgical operation. Electrosurgery might have spared him this almost disastrous experience, it appears from the cases Dr. Woodhall reported.

By using a high frequency electroscalpel and coagulation unit, which seals the blood vessels as the tissues are cut, surgeons at the Johns Hopkins Hospital were able safely to amputate a thumb of the (*Turn to page 349*)



COMING IN

Here is the 1936 television receiver. The mirror in the lid of the instrument forms a sort of screen, reflecting the images as they are received.

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16-year-old compatriot of the Count of Covadonga. A blood transfusion was given at the time of the operation as a precautionary measure. There was no hemorrhage either during or following the operation and the wound healed normally.

Removal of the thumb was required because hemorrhage into the joint had destroyed the joint and bone tissue and resulted in a tumor containing blood which was very painful and threatened to burst through the skin.

Coagulation of the tissues by electricity at the time of the amputation not only prevented hemorrhage but greatly reduced the clotting time of the patient's blood, Dr. Woodhall reported. The blood in hemophiliacs clots very slowly, and that is why small cuts or injuries may result in loss of so much blood that the patient dies. Before the amputation, a sample of the Spanish lad's blood took five hours to clot. After the amputation, this time was reduced to five minutes.

This suggested that the cauterization by electricity mobilized the thromboplastic substances in the body which make blood clot when it is shed following injury. To test this theory, a small portion of skin and tissues beneath it on the right thigh were partially cauterized a month after the amputation. On the third day following this, the clotting time had fallen from four and a half hours to three and a half

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hours, and on the fourth day to one and a half hours.

Following the experience with the Spanish boy, electrosurgical methods were used to extract an impacted tooth in another patient suffering from hemophilia. Seven of this patient's male relatives had died of hemophilia and two of his brothers had been treated in the hospital for the condition. Immediate hemorrhage following extraction of the tooth was completely checked by high frequency electrocoagulation, Dr. Woodhall reported.

This patient's case also showed the possible existence of an automatic safety mechanism that apparently at times protects bleeders from fatal hemorrhages and suggests a method of treating them. The day after the tooth extraction, the patient had two large hemorrhages under the skin. One was around the face, as a result of the local anesthesia given him, and the other involved his entire left arm following puncture of a vein for a blood test. Coincidentally with these hemorrhages, a marked fall in the clotting time of his blood occurred. A similar reduction of the clotting time had been noticed before on this same patient following hemorrhages under the skin.

The hemorrhage itself evidently called up extra blood-clotting thromboplastic substances which served to protect the patient from further dangerous bleeding. Injection of thromboplastic substances from the bleeder's own blood might, it appears, be a valuable procedure.

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dation. This consists of an engineer, the noted Dr. C. F. Kettering, two physicists, Drs. Vernon Albers and Harry Knorr, a chemist, Dr. Paul Rothenmund, a biologist, Dr. O. L. Inman, director of the laboratories, and several assistants. At the meeting of the National Academy of Sciences on the Campus of the University of Chicago members of this group reported newest progress.

One of the most important forward steps yet taken at their laboratory has been the synthesis, not of chlorophyll itself, but of one of its simpler building-blocks, porphin. With iron added, porphin becomes hemin, a blood pigment. With magnesium replacing the iron, porphin becomes phyllin, a green leaf pigment. A considerable number of porphin compounds have been elaborated, and in each it has been found possible to add either iron or magnesium

● RADIO ●

December 1, 5:15 p.m., E.S.T.
AMERICAN FURS—Frank Ashbrook of
 the U. S. Bureau of Biological Survey.

December 8, 5:15 p.m., E.S.T.
COAL AT WORK—Dr. A. C. Fieldner
 of the U. S. Bureau of Mines.

In the Science Service series of radio discussions led by Watson Davis, Director, over the Columbia Broadcasting System.

to the molecule, forming the blood and leaf analogues. The making of these compounds does not lead directly to the solution of the riddle of chlorophyll, but they do throw light on it, and also may yield information of value in other fields, such as chemistry and medicine.

Seeking Precursors

Chlorophyll is an exceedingly complex compound, and quite certainly does not spring into existence at a single bound. But thus far almost nothing has been discovered of its beginnings. By very painstaking extractions from the leaves of plants grown in the dark, it has been possible to obtain a very small quantity of a "proto-chlorophyll," the chemical and physical nature of which is now under investigation.

Chlorophyll is not a single substance, but twins, known respectively as chlorophyll A and chlorophyll B. In ordinary green plants there is about three times as much of the A kind as of the B. But the Antioch scientists have lately discovered that in the pale leaves of plants grown in the dark there will be twenty or more parts of A to one of B. When the plants were exposed to the light and began to turn green, the proportions began to change, and to approach the normal 3-to-1 ratio.

Spectroscopic studies on chlorophyll have often been made with leaf extracts in a glass vessel, to see what kinds of light are absorbed—a most important matter for science, since the absorption of light and the transformation of its energy is chlorophyll's whole reason for being. But this was extracted chlorophyll—presumably dead chlorophyll. Drs. Albers and Knorr have tried an ingenious method for getting a spectroscopic reading on active chlorophyll still in the living cell. They placed one-celled green plants under a microscope, and then applied the spectroscope to that. They learned that chlorophyll has not one but several "favorite" wavelengths, which it absorbs more strongly than it does other light. These wavelengths are not the

same for all species of plants, nor even for different individuals of the same species. There seem to be several factors, as yet not understood, governing this "choiciness" on the part of chlorophyll.

Science News Letter, November 28, 1936

EVOLUTION

Jawbone of Unknown Beast Disputes Darwin's Theory

DARWIN'S natural selection theory got severely bitten by a 45 million year old jawbone at the meeting of the National Academy of Sciences.

The jawbone once belonged to an unknown beast of prey that roamed the American West in late Eocene times, quite early in the age of mammals. Dr. William Berryman Scott, noted paleontologist of Princeton University, told of the fossil and explained its significance.

The fossil, a lower jawbone, was sent to Dr. Scott for examination by the Carnegie Museum in Pittsburgh. At first it seemed to be a new species of sabertooth cat, though that in itself was surprising, for Eocene is much too early for such animals. But closer examination, especially of the teeth, showed that it was an entirely different kind of a beast, which Dr. Scott termed a "most amazing imitation of a sabertooth." Once before, an imitation sabertooth of still another kind of animal had been found in South America.

This repetition of the sabertooth anatomy and way of life in three widely different kinds of animals, Dr. Scott explained, constitutes a striking case of what scientists call convergent evolution. The probabilities are almost nil that such near identity could take place on a basis of purely chance variations, as is postulated by the natural selection theory of Darwin.

Science News Letter, November 28, 1936

STANDARDS

Agree on 16-Millimeter Motion Picture Film

A WORLD-WIDE agreement which makes it possible to interchange sound motion picture film and equipment of the 16-millimeter, home movie type, is announced by the American Standards Association. The standards of America are adopted.

Science News Letter, November 28, 1936

An inch was originally as long as a man's thumb is broad.