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 Rothemund, 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 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.

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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.

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.

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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.

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