MEDICINE

Nobel Prize Winners

Honors for two years divided between work on vitamin K and research on electrical pictures of nerve activity and pain; Dam and Doisy share 1943 prize.

➤ THOUSANDS of men, women and newborn babies have been saved from bleeding to death and electrical pictures of human thought and pain are coming closer to practical reality as a result of the fundamental discoveries for which the Nobel Prizes in medicine for 1943 and 1944 were awarded.

Since 1938 patients with obstructive jaundice and with certain other conditions in which a dangerous bleeding tendency exists have been treated with vitamin K, the anti-bleeding vitamin. It gets its name, K, because the German and Scandinavian word for coagulation is spelled Koagulation, and this vitamin was discovered by a Danish scientist, Dr. Henrik Dam, now at Strong Memorial Hospital, Rochester, N. Y. For this discovery Dr. Dam shares the 1943 Nobel Prize in medicine with Dr. Edward A. Doisy, St. Louis University Medical School.

On May 3 of this year, Dr. Doisy and associates were granted patent rights on pure, synthetic vitamin K, culminating many years of research on the chemical structure and method of synthesizing the vitamin. Ten years before, in June of 1934, the world first learned of the existence of this vitamin.

"Possible existence of another hitherto unknown vitamin, with ability to prevent hemorrhage, is seen in experiments reported by Dr. Henrik Dam, of the Biochemical Institute, Copenhagen," Science Service told its readers on June 26, 1934. (See SNL, July 21, 1934.)

"Chicks fed an experimental diet developed a disease very much like scurvy, the chief features being extensive internal hemorrhages," Science Service's account of Dr. Dam's report to the British scientific journal, *Nature,* continued.

"Large doses of anti-scurvy vitamin C in the form of lemon juice and ascorbic acid did not have any effect on the disease, but a diet consisting entirely of cereals or seeds plus salt prevented the occurrence of the hemorrhages.

CAMERA OF THE SEAS—This odd-looking apparatus is an underwater camera which can travel to the bottom of the ocean and automatically take its own pictures with a minimum of disturbance to animal life. Turn to the front cover to see one of its pictures.

"The cause of the disease must therefore be a deficiency in an antihemorrhagic factor different from vitamin C and occurring in seeds and cereals," was Dr. Dam's conclusion.

When this vitamin was first used to treat human patients it had to be given in what many of them must have thought was food fit only for chicks, dried alfalfa or dried fish meal. Thanks to the work of Dr. Doisy and many other biochemists, patients today can be given the vitamin as a synthetic preparation in a pill or by hypodermic injection.

Less dramatic and far harder for the layman to understand is the fundamental research on nerves for which Dr. Joseph Erlanger, of Washington University School of Medicine, and Dr. Herbert S. Gasser, director of the Rockefeller Institute for Medical Research, share the 1944 Nobel Prize in medicine. Yet modern methods of learning about the electrical changes accompanying nerve activity, including the familiar brain waves which scientists believe will some day be developed to the point of telling what a person is thinking about whether he wants to tell them or not, were started by Dr. Erlanger and Dr. Gasser. The history of these developments is briefly traced by Dr. R. W. Gerard, of the University of Chicago, somewhat as follows:

One hundred years ago changes in potential in active nerves were discovered with the aid of the then newly developed galvanometers.

"Another half century saw the invention of the string galvanometer, by the physiologist, Einthoven, to permit the measurement of the rapid flicks made by responding tissues which opened the era of electrocardiography. In the early twenties, amplifier tubes were used with the string galvanometers and shortly after with the Braun tube by physiologists at Harvard and Washington Universities. The latter, especially Erlanger and Gasser, were thus able, for the first time, to disentangle the impulses in one nerve fiber from those in others and to show that several types of fibers existed with very different conduction rates."

As a result of this work we now know, says Prof. Edgar Douglas Adrian, of Cambridge University and himself a Nobelist in medicine, "that the sensory fibers can be ranged in decreasing order of size, velocity of conduction and excitability to electric stimuli and that pain reactions are mainly, if not entirely, due to the smaller fibers."