

# Pioneer Physiologist Commemorated

Physiology

The fame of one American physiologist will be celebrated above all others as the members of the Thirteenth International Physiological Congress come together in Boston at the Harvard Medical School. The work of Dr. William Beaumont, U. S. Army surgeon, who was born in 1785 and died in 1853, was chosen for republication in a book to be presented to every member of the Congress.

It is the custom at each Congress to commemorate the work of one of the earliest physiologists of that country in which the Congress is meeting. And Dr. Beaumont is recognized as "the pioneer physiologist of the United States", remarkable for the scientific research which he carried on side by side with the arduous duties of a U. S. Army surgeon on the frontier.

The speech in which Sir William Osler set forth Beaumont's claims to this rank has been reprinted and bound together with a facsimile edition of Beaumont's great work on *The Physiology of Digestion*. It is this volume which is given to the incoming members.

The Congress which is meeting from August 18 to 23, at the Harvard Medical School in Boston, will hear hundreds of papers read on scores of physiological subjects, but none more remarkable for subject matter.

On the morning of June 6, 1822, at Fort Mackinac, Michigan, a young French-Canadian, Alexis St. Martin, was wounded by a shotgun accidentally discharged into his abdomen. Doctor Beaumont, the surgeon of the fort, was sent for and extracted part of the shot together with pieces of clothing. After the operation he left, thinking that the patient could not possibly live.

He visited the patient again in two or three hours, and found him doing better than was to be expected. From that time forward the man progressed, but his progress was slow, and his recovery due almost entirely to the care and interest of Doctor Beaumont, not for a day or a week, but for years. Until 1825 the man was of little use

to himself or to anyone else and the doctor supported him and his family and nursed him back to health.

The case began to develop aspects important for research when, in 1825, Dr. Beaumont realized that the man's side would not completely close. It was possible to enable the patient to lead a normal life, but there was no time when the doctor did not have an opportunity for immediate examination of the patient's digestive tract. This man, who proved to be a walking laboratory for the study of the physiology of digestion, was under observation by Dr. Beaumont for a number of years.

The experiments went on uninterruptedly from 1825 to 1831. Then St. Martin found it necessary to return to lower Canada, which he did by open canoe, "via the Mississippi, passing by St. Louis, ascended the Ohio river, then crossed the state of Ohio to the lakes, and descended the Erie and Ontario and the river St. Lawrence to Montreal." He took his family with him, including the two children born after the accident.

In November, 1832, he again engaged himself to submit to another series of experiments in Plattsburg and Washington. The last recorded experiment is in November, 1833.

This case is celebrated among physiologists all over the world. It is only recently, that is during the present

century, that the work of Ivan Pavlov has verified and advanced many of the findings of Dr. Beaumont which had stood supreme until that time.

The work of Dr. Beaumont was notable for many reasons. It was one of the first observations of its kind, and enabled many theories to be confirmed, and many others which had been postulated without success to first-hand data to be exploded. It was notable for the accuracy and completeness of the description of gastric juice itself. It confirmed the observation that the important acid as gastric juice was muriatic or hydrochloric.

It established by direct observation the profound influence of mental disturbances on the secretion of the gastric juice and on digestion. And it was the first comprehensive and thorough study of the motions of the stomach, observations on which are based the most of our present knowledge. Dr. Beaumont included in his study the very important work of determining the digestibility of different articles of diet in the stomach, one of the most important contributions ever made to practical dietetics.

One of his observations, constantly referred to, is little heeded after the passage of all these years. He said: "The system requires much less than is generally supplied to it. If more be taken than the actual wants of the economy require, . . . the residue becomes a source of irritation and produced a consequent aberration of function. . . . Dyspepsia is oftener the effect of over-eating and over-drinking than of any other cause."

Beaumont served as an assistant surgeon during the War of 1812, and although he withdrew after the war he returned to service later, and was enabled to secure his greatest patient through his post at Fort Mackinac, located where the waters of Lake Michigan and Lake Huron unite.

His patient, Alexis St. Martin, lived to a good old age, dying in 1880, at the age of 76 at St. Thomas, near Montreal.

*Science News-Letter, August 17, 1929*

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SCIENCE NEWS-LETTER, The Weekly Summary of Current Science. Published by Science Service, Inc., the Institution for the Popularization of Science organized under the auspices of the National Academy of Sciences, the National Research Council and the American Association for the Advancement of Science.

Edited by Watson Davis.

Publication Office, 1918 Harford Ave., Baltimore, Md. Editorial and Executive Office, 21st

and B Sts., N. W., Washington, D. C. Address all communications to Washington, D. C. Cable address: Scienservice, Washington.

Entered as second class matter October 1, 1926, at the postoffice at Baltimore, Md., under the act of March 3, 1879. Established in mimeographed form March 13, 1922. Title registered as trade-mark, U. S. Patent Office.

Subscription rate—\$5.00 a year postpaid. 15 cents a copy. Ten or more copies to same address, 5 cents a copy. Special reduced subscrip-

tion rates are available to members of the American Association for the Advancement of Science. Advertising rates furnished on application.

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