lections were made by the Leon Mandel Galapagos Expedition. Scientific personnel included Dr. Wilfred H. Osgood, curator of zoology emeritus; Rudyerd Boulton, curator of birds; Loren P. Woods, assistant curator of fishes; Staff Taxidermist Leon L. Walters, and Melvin Traylor, associate in ornithology. Colin C. Sanborn, curator of mammals, sailed to undertake collecting and studies of Peruvian animals.

An expedition which has as one of its objects the determination of the date at which the Isthmus of Panama emerged from the sea was dispatched to Central America in November and will continue its work in 1942. Paul O. McGrew, assistant curator of paleontology, is in charge.

Dr. Sharat K. Roy, curator of geology, collected invertebrate fossils in New York State. Llewelyn Williams, curator of economic botany, sailed in October for a botanical expedition in Venezuela, and will continue collecting and researches for about a year. Donald Collier, assistant curator of ethnology, left in September for five months of archeological research in Ecuador. Dr. Francis Drouet, curator of cryptogamic botany, made an extensive collection of the cryptogamic plants of California. Dr. Fritz Haas, curator of lower invertebrates, collected thousands of representative Pacific shore animals in southern California. A botanical expedition to Guatemala, which began work in 1940, was concluded by Paul C. Standley, curator of the herbarium, and followed by a new expedition to the same country conducted by Dr. Julian A. Steyermark, assistant curator. Emmet R. Blake, assistant curator of birds, and Melvin A. Traylor, Jr., associate in ornithology, carried out a successful ornithological expedition in the southwest. Several specimens of one of the earliest large mammals to walk the earth, the rare *Coryphodon,* and many other fossil animals were collected by a paleontological expedition to the West under Bryan Patterson, assistant curator of paleontology. Mr. Patterson was assisted by James H. Quinn, and others. An important mineral collection was assembled by Bryant Mather, assistant curator of mineralogy, in various eastern states; mammals of the Mount Tancitaro area were collected by Frank C. Wonder on an expedition to Mexico; Mexican insects were obtained by Henry Dybas on a field trip to the Cordoba and Vera Cruz regions; and fossil remains of a ground sloth of the genus *Megalonyx* were collected near London Mills, Illinois, by Assistant Curator Patterson.

Besides the approximately 1,350,000 persons who visited the museum, many additional hundreds of thousands benefited from activities conducted outside of the institution's own building, such as the illustrated lectures and other programs presented by the James Nelson and Anna Louise Raymond Foundation, and the traveling exhibits circulated in the schools by the N. W. Harris Extension.

On May 2, 1941, Field Museum celebrated the twentieth anniversary of its occupation of the present building in Grant Park. Since 1921, more than 25,000,000 persons have entered this structure. More than 5,800,000 others visited the museum during some twenty-five years in its old location in Jackson Park.

For the first time in the history of such institutions as museums in this country, a federal tax on admission charges became effective on October 1. This tax, amounting to three cents each on paid admissions, is now charged to adults, but in the case of children, students, teachers and others to whom the museum is of direct educational importance, the museum itself is paying the cost in order that full benefits to children and to the schools may not be curtailed.

The library of the museum continued to add to its extensive collections of scientific books, which now number approximately 124,000 volumes. A new modernized reading room was prepared for the service of the public.

Boardman Conover and Howard W. Fenton were elected to fill vacancies on the board of trustees. Trustee Albert W. Harris resigned for personal reasons. Two trustees, Brigadier-General Theodore Roosevelt and Ensign Joseph Nash Field, were called to active service in the U. S. armed services. A number of other members of the museum personnel were likewise called into various branches of military service and the museum will hold their positions open for them when they return. Among new appointments to the museum staff were Orr Goodson, assistant to the director; Donald Collier, assistant curator of ethnology; Melvin A. Traylor, Jr., associate in ornithology; Elizabeth Best, guide-lecturer in the Raymond Foundation; and John Janecek, illustrator.

CLIFFORD C. GREGG

SPECIAL ARTICLES

"PEPSITENSIN"—A HYPERTENSINLIKE SUBSTANCE PRODUCED BY PEPTIC DIGESTION OF PROTEINS

CERTAIN findings suggest that the vasoconstrictor and hypertensive substance which originates under the influence of renin is a polypeptid.[1] We were able

[1] J. M. Muñoz, E. Braun-Menendez, J. C. Fasciolo and L. F. Leloir, *Am. Jour. Med. Sci.,* 200: 608, 1940.

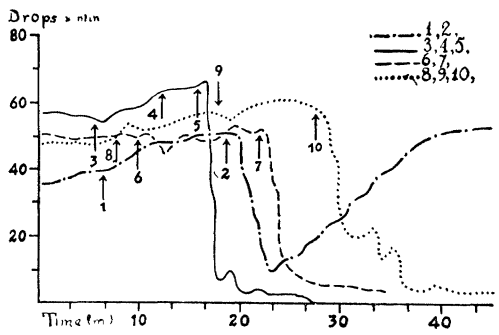
to show that a vasoconstrictor and hypertensive substance can be produced not only by incubation with renin but also by peptic digestion of hypertensinogen.

0.5 cc of a standard preparation of hypertensinogen[2] or renin activator[3] in hydrochloric acid (pH = 2 to 6) were incubated at 38° for 15 min. with 1 to 2 mgr of commercial or purified pepsin (Merck) in 0.1 cc of dest. water. A buffer solution of m/5 phosphate of pH = 7.2 was added. A vasoconstrictor effect of great intensity was observed in the Laewen-Trendelenburg preparation of the giant Chilean frog Calyptocephalus Gayi. We obtained also in cats a very remarkable rise of arterial pressure with hypertensinogen incubated with pepsin and conveniently concentrated and purified.[4]

Subsequently we were successful in obtaining a vasoconstrictor substance from different proteins (casein, fibrin, serumalbumin and ovalbumin) incubated with pepsin under conditions identical with those described above for hypertensinogen. The vasoconstrictor effect was always noticeable, though less than with pepsin-incubated hypertensinogen or with hypertensinogen incubated with renin (Fig. 1).

The physiological and chemical properties of the vasoconstrictor substance produced by incubation of proteins with pepsin also resemble those of hypertensin as described by Houssay: the substance is thermostable, soluble in water and strong alcoholic solutions, insoluble in ether, it dialyzes easily through the Cellophane membrane, it is precipitated by phosphotungstic but not by trichloroacetic acid. Trypsin destroys the vasoconstrictor substance produced by pepsin in a similar way as hypertensin is destroyed. Our substance behaved towards hypertensinase[1] also in a way similar to hypertensin: the substance was, like hypertensin, inactivated when mixed with renal extracts (from pig, human, rat) at a neutral pH.

It has been shown by Schroeder[5] with angiotonin (Page) and by our former work[6] with hypertensin that these substances are inactivated by tyrosinase of mushrooms. Likewise we found recently that the vasoconstrictor substance as derived from proteins is destroyed by tyrosinase. This is in favor of the assumption that hypertensin has a phenolic function. Other new findings of ours also are in full agreement with this assumption. Whereas so many proteins when incubated with pepsin generated the vasoconstrictor substance the latter failed to appear when *gelatin* was subjected to incubation with pepsin.



EXPLANATION OF FIGURE

Perfusion of Laewen-Trendelenburg preparation of the giant Chilean frog with Ringer. Ordinates—number of drops per minute. Abscissa—time in minutes. Arrow indicates addition of different solutions. 1. Solution of casein (Hammersten, 3%) for 30 min. in HCl (pH = 5.5); no vasoconstrictor action. 2. Same but incubated with pepsin (Merck-Payr); vasoconstrictor action. 3. Hypertensinogen in HCl; no action. 4. Solution of pepsin (Merck-Payr); no action. 5. Hypertensinogen incubated with pepsin (pH = 4.5); vasoconstrictor action highly pronounced and more stable than in 2 (pepsin-casein). 6. Pepsin in HCl; no action. 7. Hypertensinogen incubated with pepsin (pH = 6); highly pronounced vasoconstriction. 8. Purified gelatin (5%) incubated with pepsin; no action. 9. Same but double quantity added; no action. 10. Hypertensinogen incubated with renin; pronounced vasoconstrictor action.

Conclusions: A substance similar to hypertensin as to physiological, physical and chemical properties can be derived from hypertensinogen by incubation with pepsin. This substance is probably a polypeptid with a phenolic function and it is very likely that this applies also to hypertensin. The term "pepsitensin" seems appropriate for the new substance.

H. CROXATTO
R. CROXATTO

LABORATORY OF PHYSIOLOGY,
CATHOLIC UNIVERSITY OF CHILE,
SANTIAGO, CHILE

[2] E. Braun-Menendez, J. C. Fasciolo, L. F. Leloir and J. M. Muñoz, *Soc. Argent. Biol.*, 15: 420, 1939.

[3] K. G. Kohlstaedt, I. H. Page and O. M. Helmer, *Am. Heart Jour.*, 18: 618, 1939.

[4] The method of purification was used as described by Braun-Menendez for hypertensinogen incubated with renin. E. Braun-Menendez, J. C. Fasciolo, L. F. Leloir and J. M. Muñoz, *Jour. of Physiol.*, 98: 283, 1940.

[5] H. Schroeder and N. Adams, *Jour. of Exp. Med.*, 73: 531, 1941.

[6] H. Croxatto and R. Croxatto, *Proc. Soc. Exp. Biol. and Med.*, 48: 392, 1941.

IN VITRO CULTIVATION OF THE STREET VIRUS OF RABIES

SUCCESSFUL *in vitro* cultivation of the virus of rabies has been reported by Kanazawa (1936 and 1937)[1,2] employing a medium consisting of rabbit embryo brain tissue suspended in Tyrode solution,

[1] Kanazawa, *Jap. Jour. Exp. Med.*, 14: 519, 1936.

[2] Kanazawa, *Jap. Jour. Exp. Med.*, 15: 17, 1937.