The first assay was performed on the combined fluid from the tissue cultures of the three-month placenta and the hydatidiform mole. There were five tubes of placental tissue containing approximately twenty fragments each and four tubes of hydatidiform mole containing about ten fragments each. The total amount of fluid injected was 4 ml; 0.6 ml was injected twice daily for three days. The rats were opened and the ovaries examined on the fifth day. The test was strongly positive for prolan, each ovary having several blood points. One ovary was fixed and examined microscopically in each assay. As controls 4 ml of human cord serum and 8 ml of beef embryo extract were injected separately into two rats. These substances were the main constituents of the nutritive medium used in the cultivation of the tissue. Both gave negative assays.

The following week, using the same technique, fluid was removed from the tissue cultures of both the three-month placenta and the hydatidiform mole and tested separately for prolan. 1.75 ml of fluid from the placental cultures proved positive for prolan. The fluid from the mole gave a positive Friedman test. As a control 1.75 ml of fluid removed from roller tube cultures of normal human muscle fibroblasts which had been growing in continuous culture for 20 months was used. This gave a negative reaction.

The next series of assays, using 1.5 ml of supernatant fluid from the three-month placenta, 1.25 ml of fluid from mole and 1.75 ml from normal human muscle fibroblasts were all negative for prolan. The fluid from the mole, however, produced several large follicles in each ovary and a swelling of the uterus. Microscopic examination of the ovaries showed an increase in the size of the interstitial cells. This series of assays was performed irregularly, two of the injections being given only three hours apart instead of the desired eight hours and the rats used, although chronologically 21 days old, were noted to be smaller than usual.

The assays were repeated at a later date, using 4 ml of fluid from the mole cultures, 2 ml from the placental cultures and 3.5 ml of fresh unincubated culture fluid as a control. The culture techniques had been slightly changed before this fluid was removed, and the fragments were not very active. The hydatidiform mole fluid again proved positive for prolan. The placenta and the control gave negative prolan reactions.

1.5 ml of fluid from a culture of cells of the anterior pituitary gland of an eight-month human foetus was also assayed for prolan. The ovaries of the test rat showed no blood points grossly. Microscopically some increase in the size of the interstitial cells and an apparent increase in the amount of interstitial tissue was noted. Although this could not be interpreted as a positive assay for prolan it suggested some hormonal activity.

In summary: (1) evidence is presented which shows that the placental cells produce a substance similar to the prolan-like substance found in the urine of pregnant women. (2) Placental cells growing in tissue culture for a period of over two months retain the ability to produce the hormone *in vitro*. (3) The cells responsible for this hormonal activity are possibly the Langhans' cells. (4) A hydatidiform mole growing in tissue culture for one month also produced the hormone. (5) The supernatant fluid bathing cultures of anterior pituitary cells of a human foetus gave negative prolan assays, but the microscopic appearance of the ovaries in the test rat suggested some hormonal activity. (6) We desire to extend these observations to additional material, and inasmuch as mole and chorionepithelioma are of rare occurrence we would greatly appreciate the help of others in supplying us with fresh, sterile specimens of these tumors.

GEORGE O. GEY
G. EMORY SEEGAR
LOUIS M. HELLMAN
JOHNS HOPKINS HOSPITAL AND UNIVERSITY
AND
CARNEGIE EMBRYOLOGICAL LABORATORY

THE COLD WATER LAYER OF THE SCOTIAN SHELF

PROBABLY the most important feature of the waters of the continental shelf, to the south of Nova Scotia, is the cold water layer of a temperature less than 5.0° C.—as low or lower than 0.0° C. This layer is found in summer at depths between 17 and 66 fathoms offshore, and between 33 and 80 fathoms inshore.[1] Considering the salinity of the waters of such temperatures, on the Scotian shelf, they may be classified as "bank" or "slope" water.[2] There have been two opposing views as to the origin of this water, one of which favors "winter chilling in situ" while the other favors "water movements from the east." A cooperative effort between the Fisheries Research Board of Canada and the Woods Hole Oceanographic Institution, during the winter of 1936, furnished the first extensive body of data for the assessment of the relative importance of these two points of view.[3]

The temperature and salinity data from a February section, extending outwards from Halifax to beyond the edge of the continental shelf, furnish the T-S diagram of Fig. 1. The volume transports in the

[1] H. B. Hachey, *Trans. Amer. Fish.*, 66: 237–241, 1937.
[2] Paul Bjerkan, Can. Fish. Exped. 1914–15, Department Naval Service, Ottawa, 1919.
[3] The writer is indebted to Mr. C. O'D. Iselin, of the Woods Hole Oceanographic Institution, who agreed to the interchange of data.

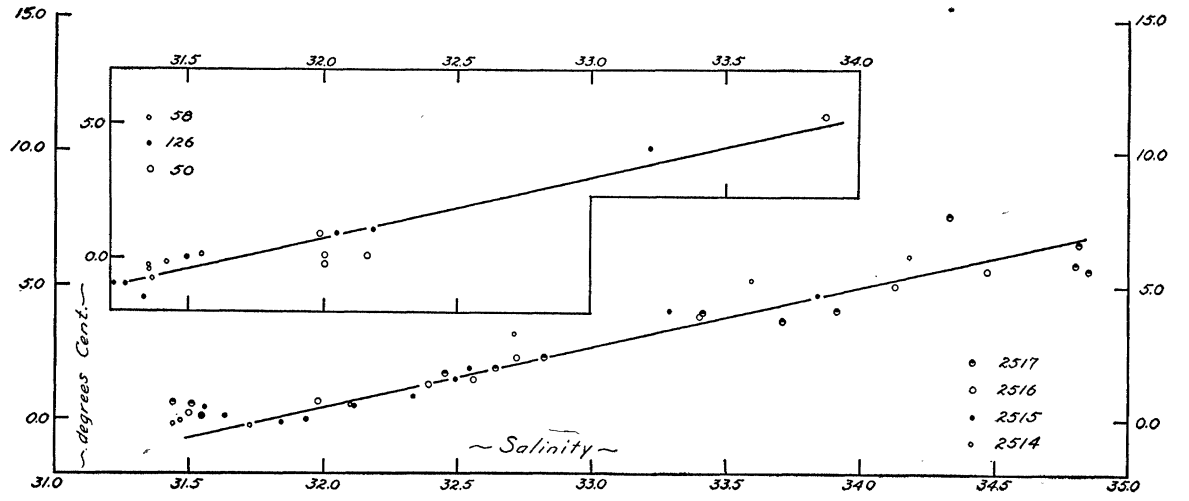

FIG. 1. T–S diagram of data from a section extending outwards from the coast in the vicinity of Halifax (station 58) to beyond the edge of the continental shelf (station 2,517).

upper seventy-five meters of water as calculated[4] are furnished in Table 1.

TABLE 1

VOLUME TRANSPORTS IN CU.M./SEC. IN THE UPPER SEVENTY-FIVE METERS BETWEEN PAIRS OF STATIONS, IN A SECTION EXTENDING FROM THE COAST (STATION 58) TO BEYOND THE EDGE OF THE CONTINENTAL SHELF (STATION 2517).

Stations	58–126	126–50	50–2514	2514–15	2515–16	2516–17
	S.W.	S.W.	N.E.	N.E.	N.E.	S.W.
Transport	103000	371000	25200	13200	53700	59000

Resultant between 58 and 2517 is S.W. 441000

On the basis of the straight line relationship suggested by the T–S diagram, it may be stated that the waters of the February section are the result of the mixture of two water masses "A" and "B," which may be described as follows:

A—water, of a salinity less than 32.50% and of a temperature less than 1.0° C., and

B = water, of a salinity greater than 35.00% and of a temperature greater than 7.0° C.

The calculated resultant volume transport indicates considerable resultant movement through the section to the southwest in the upper seventy-five meters—441,000 cu.m./sec. This transport is concerned with what we have termed the A-water. The volume transport, in the upper seventy-five meters, between stations 58 and 50 is 474,000 cu.m./sec. There is a preponderance of comparatively low temperature and low salinity water between these two stations. The supply of A-water to the area depends, therefore, upon this southwest transport. The transport between stations 126 and 50 represents velocities of as much as 7 or 8 nautical mi./day. Therefore, the supply of A-B water, if produced on the Scotian shelf, is dependent upon movement, and is comparatively independent of "winter chilling in situ." This A-B water possesses the temperature and salinity characteristics of what constitutes the "cold water layer" of the Scotian shelf. It can, therefore, be readily appreciated that the most important feature of the waters of the Scotian shelf—namely, the "cold water layer"—is dependent upon "water movements from the east." This thesis will be more fully developed in a publication to follow.

[4] A. E. Parr, *Bull. Bingham Ocean. Coll.*, 6: 3, 1–62, 1937.

H. B. HACHEY

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