

ministration series showed only about one-sixteenth the normal increase in size for this period, and, showed only a few well formed follicles and an increase of the intensity of the hydropic state of the germinal epithelium. The recovery series shows a growth rate of comparably normal rate although absolute size remains 10 days retarded. The histological picture is normal.

During the fifth and sixth weeks of the experiment when the animals were 8 and 9 weeks old, the normals showed only a very slight increase in size due to the fact that the ovary has about completed its growth. The continuous administration series showed even less increase in size. The recovery series which had previously recovered from the histological effects of a single massive dose of theelin and has since showed only 10 days' retardation in growth, ovulated 10 days late and appears identical in size and appearance with a normal of the same age.

The effect of the continuous administration of 3 rat units of theelin for a period of 5 weeks was to retard growth almost completely after the first week of the experiment, to decrease the number of developing follicles, to increase the amount of atretic degeneration of follicles and to produce a most remarkable hydropic metamorphosis of the germinal epithelium. A few follicles will reach maturity, rupture, and become luteinized apparently, since 2 small corpora were seen in one and one in another of the 2 animals carried longest.

## 5585

### Immunity Studies Among Central and Polar Eskimos.\*

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(Introduced by J. Bronfenbrenner.)

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This report is based upon material and data collected within the Arctic Circle by one of us (P. H.) during the summer of 1930 for the purpose of checking the work which led Heinbecker and Irvine-

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Jones<sup>1</sup> to state "That the immunity shown does not depend on infection by the diphtheria bacillus," and that "it emphasizes the probability that the antitoxic mechanism is not as specific as is ordinarily supposed."

Cultures and direct smears from throats of 115 different individuals, 19 specimens of sera, and the results of 60 Schick tests comprise the basis of this report, representing 7 isolated groups of Central and Polar Eskimos of all age-groups and involving practically the entire population of the 7 localities visited. In these cultures and smears, organisms morphologically resembling *Corynebacterium diphtheriae* were recovered from 48 of the 115 individuals examined.

On the basis of fermentation reactions, the strains here reported represented a number of different groups, corresponding rather closely to those given by Andrewes<sup>2</sup> and his coworkers. Judging by results of these tests, which were made about 3 months after the beginning of the study, no true *Corynebacterium diphtheriae* were found. However one strain (Bache 4) resembled true diphtheria bacilli in that it fermented dextrose and dextrin but not sucrose and mannitol at the time it was isolated. This resemblance was further evidenced by the fact that 1 cc. of a 48-hour broth culture killed a normal guinea pig weighing 205 gm. within 10 days, whereas the same quantity of the culture did not affect a normal guinea pig of 185 gm. weight which had been given 350 units of diphtheria antitoxin 2 hours previously. These results were again obtained with the same broth culture 3 months later.

Schick tests were made on 2 groups of Eskimos, using material secured from the United States Public Health Service. Results are given in Table I.

TABLE I.

Group	No. tested	Children and young adults			Adults		
		No.	%+	%—	No.	%+	%—
Pond Inlet	39	14	64	36	25	52	48
Pangnurtung	21	6	33	67	15	27	73

Fifty-five per cent of the group of young individuals and 44% of adults gave positive Schick reactions, a total of 47% of all the persons examined, as compared to 25% of 49 such tests reported in 1928.<sup>1</sup>

<sup>1</sup> Heinbecker and Irvine-Jones, *J. Immun.*, 1928, **15**, 395.

<sup>2</sup> Andrewes, *et al.*, *Med. Res. Council*, London, 1923, 44.

Nineteen specimens of serum, representing 4 groups of Eskimos, were titrated for diphtheria antitoxin content, using the method of Flood.<sup>3</sup> The results, in units per cubic centimeter, are shown in Table II.

TABLE II.

Group	No. tested	No. showing antitoxin			
		None	1/45	1/22	>1/22
Pond Inlet	8	5		1	2
Dundas Harbor	2			1	1
Robertson Bay	6	3	1	1	1
Bache	3	2	1		
Total	19	10	2	3	4

More than half of the sera examined possessed no diphtheria antitoxin.

Because of these data and the fact that the respiratory flora in general was found<sup>4</sup> to be very similar to that of groups living elsewhere, we are inclined to believe that the mechanism of the production of immunity to diphtheria among Central and Polar Eskimos is much the same as it is among persons living in other latitudes.

Such a conclusion is strengthened by Bay-Smith's report<sup>5</sup> of outbreaks of clinical diphtheria among Greenland Eskimos, as well as the results of his 684 Schick tests showing 59% positive reactions. This investigator, although admitting that clinical diphtheria has been known to exist at least in certain groups of Eskimos, believes in a "spontaneous" origin of diphtheria antitoxin in the Schick negatives of the 684 Kap-Farvel and Julianehaab Eskimos. An outbreak described as clinical diphtheria in Central Eskimos has also been reported by Boas.<sup>6</sup>

## 5586

## The Blood Sugar of Normal Fasting Persons.

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It has long been known that blood contains non-sugar substances that, in alkaline solution, reduce copper and other metals used in

<sup>3</sup> Flood, *Am. J. Dis. Child.*, 1930, **30**, 107.

<sup>4</sup> Being reported elsewhere.

<sup>5</sup> Bay-Smith, *Klin. Woch.*, 1929, **8**, 974.

<sup>6</sup> Boas, *The Central Eskimo, Sixth Annual Rep. Bur. of Ethnology*, 1884-1885.