

## ABSTRACTS OF THE COMMUNICATIONS, PACIFIC COAST BRANCH

## Sixth meeting.

43 (975)

The intra-uterine growth of infants, estimated by the weights of pre- and post-maturely born infants. (Preliminary Communication.)

By T. BRAILSFORD ROBERTSON.

[From the Rudolph Spreckels Physiological Laboratory of the University of California.]

It has been shown by Read<sup>1</sup> that the intra-uterine growth of the guinea-pig consists of one whole growth-cycle and a portion of a second, birth occurring during the progress of the second growth-cycle. The point of junction of these cycles is a critical period in the growth of guinea-pigs. The junction of the two cycles, at a period when growth is relatively slow, is not infrequently faulty and premature delivery of dead young occurs at this period much more frequently than at any other.

I have sought to ascertain whether or not a similar critical period occurs in the intra-uterine growth of infants. Through the courtesy of the matron, Miss E. C. Sketheway and of Dr. H. Gilbert, I have had access to the extensive and admirably kept records of "The Queen's Home," a large maternity hospital in Adelaide, South Australia.

Reckoning the period of gestation from the date of onset of the last menstruation I find that there is no tendency whatever for premature deliveries, in pregnancies not accompanied by pathological conditions in the mother, to occur at any given period rather than at any other.

Plotting the frequencies of deliveries as ordinates and the corresponding periods of gestation as abscissae we obtain a normal unimodal frequency-curve, the mean period of gestation being  $282.5 \pm 0.55$  days for 247 male infants and  $284.5 \pm 0.57$  days for 264 females, whence it appears that females are born later than

<sup>1</sup> J. Marion Read, *Arch. f. Entwicklungsmech. der Organismen*, 35 (1912), p. 708.

males, the probability of the truth of this conclusion being 142:1.<sup>1</sup>

The weight of the infants at birth increases regularly with the length of the period of gestation. Plotting these weights as ordinates with the corresponding periods of gestation as abscissae the curve of growth thus obtained passes smoothly into the extra-uterine curve of growth for South Australian infants, without any indication of a slackening of growth such as occurs at or near the junction of two growth-cycles. The intra-uterine growth of infants, subsequent to implantation of the embryo, therefore appears to be part of a single growth-cycle which culminates towards the end of the first year of extra-uterine life. At or near this period a junction of growth-cycles (slackening of growth) occurs, and Macgregor<sup>2</sup> has shown that an unusual proportion of infants are of subnormal weight at this period and that these infants are selectively attacked by certain zymotic diseases. This period therefore corresponds with the critical period detected by Read in the intra-uterine growth of guinea-pigs. That it occurs during intra-uterine growth in guinea-pigs and during extra-uterine growth in human beings corresponds with the fact that guinea-pigs are born in a relatively more adult condition of development than man.

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**The post-natal loss of weight in infants and the compensatory overgrowth which succeeds it. (Preliminary Communication.)**

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*[From the Rudolph Spreckels Physiological Laboratory of the University of California.]*

As stated in the preceding communication, it is possible, by plotting the weights of infants born somewhat before the expiry of the mean term of gestation against the length of the period of gestation, to obtain a curve of intra-uterine growth which continues without any break or any period of loss of weight into the

<sup>1</sup> For the method of computing this probability cf. C. B. Davenport, "Statistical Methods," 2d ed., New York, 1904, p. 14.

<sup>2</sup> A. S. Macgregor "Physique of Glasgow Children," *Royal Philosophical Society of Glasgow Proceedings*, April 21, 1909.