nars be held, starting with the topic of "Group structure and interactions of primates."

Discussions at the meeting showed that primatologists from both countries have similar points of view. The scientists who participated in the meeting unanimously expressed the hope that primate biology would be made a part of the U.S.–Japan Cooperative Science Program.

Leonard Carmichael was American chairman of the meeting, and A. J. Riopelle was secretary. The other U.S. members were C. R. Carpenter (Pennsylvania State University), W. H. Eyestone (National Institutes of Health), and T. C. Ruch (University of Washington).

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Fetal Homeostasis

Homeostatic mechanisms operative in the earliest periods of gestation were the main topic of discussion at the first of a projected series of conferences on fetal homeostasis held in Princeton, New Jersey, 28 June–1 July 1964, under the sponsorship of the Interdisciplinary Communications Program of the New York Academy of Sciences. Participants in this conference were drawn from the fields of biochemistry, physiology, genetics, and morphology, and from the related clinical areas of obstetrics, pediatrics, and veterinary medicine, each of which is concerned with problems of mammalian reproduction.

Robert Noyes (Vanderbilt University) led the first discussion, which dealt with ovulation, tubal transport of ova, and the transport of spermatozoa. A synthesis of biochemical and morphological data regarding follicular maturation and atresia, the sialoproteins of the zona pellucida, neogenesis of ova, and capacitation of spermatozoa was presented. Despite the contributions of several morphologists and endocrinologists in the group, the reason for the inhibition of simultaneous ovulation of all ova during the first cycle remained a mystery. Similarly, controversial data on the problems involved in follicular rupture were presented, but no final solution was agreed upon. Sydney Asdell (Cornell University) provided comparative data regarding the tubal transport of ova in farm animals, and Sheldon Segal (Population Council) presented preliminary evidence that MRL-41 may antagonize the effect of estrogen on tubal spasticity. Luigi Mastroianni (University of California, Los Angeles) indicated that suction of ova into the human fallopian tube under physiologic conditions had not been demonstrated; he likened oviductal activity to that of a carpet sweeper rather than that of a vacuum cleaner. Both laboratory and clinical observations suggested that in humans both the cervix and the uterotubal junction act as barriers to the ingress of sperm.

The second session, under the leadership of Samuel Solomon (McGill University), was devoted to the control of ovulation, fertilization, and maintenance of early pregnancy by endocrine glands. In presenting the results of his experiments with perfusion of progesterone in intact and adrenalectomized fetuses, performed jointly with Egon Diczfalusy (Stockholm), Solomon differentiated secretory from metabolic clearance rates, which he defined as the ratio of production rate to concentration in the blood. His measurements of progesterone concentration in the male varied surprisingly from 0.037 to 0.07 μg per 100 ml. In studying the metabolism of ovarian and adrenal steroids by the fetus and placenta, MacDonald (Southwestern Medical School, Texas) showed that in anencephalic infants the estradiol produced from dehydroepiandrosterone sulfate is necessarily of ovarian rather than adrenal origin.

The discussions of the second morning centered about mechanisms of implantation. Bent Böving (Carnegie Institution of Washington) provided cinematographic support for his theory of the spacing of blastocysts as a function of the location of endometrial capillaries. Louis Fridhandler (U.C.L.A.) questioned the crucial role of carbonic anhydrase in implantation, indicating that free carbonate ion could not exist at the physiologic *p*H concerned. E. C. Amoroso (Royal Veterinary College, London) described unusual patterns of blastocystic spacing in the antelope *Kobus* and suggested experiments to test Böving's hypothesis by mechanically displacing the early blastocysts and noting their sites of reimplantation. Geoffrey Sharman (Canberra, Australia) contributed the results of his own studies of the early stages of implantation and blastocyst formation in the marsupials *Macropus canguru* and *Megaleia rufa*. Carl G. Hartman added pertinent comments based on his embryologic studies of the opossum and other animals during the last half century. New techniques for obtaining and analyzing the physical properties and chemical constituents of the blastocystic fluid of the cow were offered by Louis Holm (University of California, Davis).

In concluding the discussion of implantation, Ralph Wynn (State University of New York, Downstate Medical Center) attacked the concept that envisions the trophoblast as fundamentally malignant during implantation. He quoted the work of Kirby, who showed the invading trophoblast of the mouse to be cellular rather than syncytial, and demonstrated ultrastructural homeostatic adaptations in his own electron micrographs of trophoblast from a variety of hemochorial placentas. He showed that in the rabbit and some rodents the "syncytium" actually comprises clumps or sheets of overlapping cytotrophoblast. Many theories, but few conclusions, regarding the fundamental nature and biologic significance of the placental syncytium and giant cells were offered by the group.

The fourth session, on early placental development, was introduced by Kurt Benirschke (Dartmouth University), who provided theoretical and anatomic support for his concept of anomalies of placental development as related to aberrant insertion of the umbilical cord. He showed that single umbilical arteries were more common in cords with velamentous insertion. A discussion of the relationships of the membranes in twins led to an argument regarding the origin of the human amnion, which was resolved, with some reservation, in favor of the trophoblast. Benirschke provided several examples of non-sterile natural hybrids and explained the usual infertility of the hybrid in terms of chromosomal discrepancies between the parents. Henry Thiede (Rochester, N.Y.) demonstrated chromosomal anomalies, particularly polyploidy, in abortuses, opening another area for the study of human reproductive wastage. O. J. Miller (Columbia University) contributed autoradiograms illustrating normally late replication of one of the X chromosomes. He showed, furthermore, that in tetraploidy involving the X chromosomes, three of the four chromosomes underwent late replication.

On the third day Jonathan Lanman (State University of New York, Downstate Medical Center) traced the ontogeny and phylogeny of immunologic responsiveness. The results of his grafting experiments in pregnant animals were discussed in terms of prevalent theories to explain the lack of rejection of the physiologic placental "homograft." The work of Kalmutz on production of antibody by the embryonic opossum was described by Sharman. Suggestions for newer immunologic approaches to the prevention of erythroblastosis were made, based on the differential permeability of the placenta to various γ-globulins. Most of the data indicated that a physical break in the placental "barrier" was required to initiate the events culminating in clinical erythroblastosis. On the final afternoon, Jack Pritchard (Southwestern Medical School) outlined the major topics covered during the preceding three days.

The conference was supported by a grant from the National Institute of Child Health and Human Development. A complete transcript of the proceedings is scheduled for publication prior to next year's meeting. The goals of this series of conferences over the next four years include discussion of the placental phase of intrauterine development, the birth process, and environmental and social factors concerned with fetal homeostasis.

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Forthcoming Events

November

30–2. New Horizons in **Solid State Electronics**, seminar, Rochester, N.Y. (A. DeWinter, Rochester Inst. of Technology, Extended Services Division, Rochester 8)

30–2. **Pacific Air Force Medical** conf., Fuchu Air Station, Tokyo, Japan. (Lt. Col. R. J. Carter, USAF Hospital Tachikawa, APO 323, San Francisco, Calif.)

30–2. **Thalamic Regulation of Sensorimotor Activities**, symp., New York, N.Y. (M. D. Yahr, New York Neurological Inst., 710 W. 168 St., New York 10032)

30–3. **Atomic Industrial Forum**, annual, San Francisco, Calif. (Atomic Industrial Forum, 850 Third Ave., New York, N.Y.)

30–3. **Entomological** Soc. of America, annual, Philadelphia, Pa. (ES, 4603 Calvert Rd., College Park, Md.)

30–3. American **Nuclear** Soc., winter meeting, San Francisco, Calif. (W. H. Nutting, Pacific Gas and Electric Co., 245 Market St., San Francisco)