ing, through which the plunger may be raised or lowered to increase or decrease orifice resistance. At the lower end of the outer orifice tube (*d*) is a short bit of rubber tubing, into which the plunger tip fits when completely depressed, to close the orifice. The lower end of the plunger tube need not be sealed, but a suitable glass rod serves as well as a tube.

Liquid dripping from the orifice is caught in the funnel (*x*) and conducted to the culture jar through tube *y*. The opening around tube *d* in the funnel mouth should be closed, as with a cotton plug, to retard evaporation and exclude dust. The jar (of the "Mason" pattern) has a shop-drilled lateral perforation (25 mm in diameter) that bears a 2-hole rubber stopper and two tubes (*y, z*). The inner end of the supply tube (*y*) is bent downward, extending nearly to the bottom of the jar, while the overflow tube (*z*) is correspondingly bent upward, so as to terminate at the level where the free liquid surface in the jar is to be maintained. To the outer end of *z* is attached a rubber tube leading to a waste receptacle. The rate of withdrawal of liquid from the reservoir may be roughly estimated by observing the rate of bubble formation at the inner end of tube *a*, and the rate of discharge at the orifice may be ascertained by observing either the drip into the funnel or the rate of waste discharge.

This sort of annular orifice, whose details may be altered in many ways, may be used in connection with any form of reservoir that maintains a constant hydrostatic-pressure at the orifice entrance, as with the reservoir of Shive and Stahl or with that of Johnston, for example. Several orifices, with resistances that are either alike or different, may operate from the same reservoir.

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SPECIAL ARTICLES

A SECOND-GENERATION CAPTIVE-BORN CHIMPANZEE[1]

CHIMPANZEES of definitely known ancestry, birth-date and life-history, with the exception of fourteen in the breeding colony of the Yale Anthropoid Experiment Station in Florida, are rare indeed, and of second-generation births in captivity the first is now to be reported.

On April 11, 1935, a full-term, healthy male infant was born at the station to a primiparous female, whose distinction it is to be the first chimpanzee of known birth-date and history to mature sexually and to reproduce under scientific observation. The maternal grandparents as well as the parents of this second-generation infant are living and belong to the station colony. The new arrival has been named Peter; his number in the laboratory records is 41.

So far as known, the ancestral history of Peter reads as follows. His maternal grandfather Jim and his grandmother Mona, whose hypothetical birth-dates are 1900 and 1913, respectively, were known to the writer for many years as members of the Abreu primate collection in Havana. His father Bokar, whose hypothetical birth-date is 1925, was brought to the station from French Guinea in 1930 by Dr. Henry W. Nissen of the staff. His mother Cuba, daughter of Jim and Mona, was born in Havana on March 24, 1926. Jim, Mona and Cuba, among other chimpanzees, were presented to the Yale Anthropoid Experiment Station by Pierre Abreu in May, 1931.[2]

Of the four known and living ancestors of Peter, Cuba alone is of dated birth and reliably recorded developmental history. She first exhibited characteristic genital swelling in April, 1933. Menstrual bleeding occurred first on July 10, 1933, when she was seven years, four months, old. She was caged with a mature male from May, 1933, and she became pregnant August 9 (± 5 days), 1934, at the age of eight years, five months.

These observations are unique in that, for the first time in the history of biology, they establish the age of a chimpanzee at sexual maturation and first impregnation.

Cuba's gestation continued for 245 ± 5 days. It was uneventful. Parturition was normal and easy, although accompanied by an exceptionally great loss of blood. Delivery must have occurred about 3 P. M., on April 11, 1935. It was not observed. According to Mr. M. I. Tomilin, Cuba showed no signs of discomfort or of the near approach of parturition at 2:10 P. M. At 3:20 P. M. the outcries of an infant in a cage adjoining Cuba's attracted Mr. Tomilin's attention, and the newborn infant Peter was discovered. His mother was then eating the afterbirth. This was completed, and she later drank much of the fluid, mostly blood, on the floor of the cage.

Mother and infant were observed continuously from 3:20 to 4:10 P. M., and both verbal and pictorial records were made of their behavior. As primiparous

1 The following have contributed to the life-history records upon which this report is based: Mrs. Rosalia Abreu, Messrs. Pierre Abreu, O. L. Tinklepaugh, K. W. Spence, J. H. Elder and M. I. Tomilin.

2 As Jim, then considered an old male, was not needed at the station as a breeder, he was presented to the Philadelphia Zoological Garden for use until death as an exhibition specimen.

mother Cuba exhibited behavioral inadequacies. Although from the first she carried Peter about with her, holding him awkwardly, usually grasped in one hand, she did not, according to species practice, place him upon her abdomen or breast and permit him to cling to her. Instead she treated him much as she might any strange object which interested, puzzled and annoyed her. Toward the end of the period of observation she forcibly broke his hold upon her whenever he succeeded in grasping her hair or skin with hand or foot. Often in so doing she was rough and impatient and vocalized complainingly.

Peter was left with his mother for about eighteen hours (overnight) under intermittent observation. As Cuba did not accept him, to be nursed and generally cared for, it was necessary to take him from her, in order that he might not become the victim of her inexperience, curiosity, neglect or abuse.

A few days prior to parturition Cuba had been observed by the writer to strip colostrum from her right nipple and to eat it. No evidences of lactation were observed following parturition. The mother was not markedly disturbed when separated from her infant by the closing of a slide door between cage and living-room. Although fatigued by parturitional effort and weak from loss of blood, she speedily recovered and in a few days appeared entirely normal. When taken from his mother eighteen hours after birth Peter weighed 1.61 kg. Presumably his birth-weight must have been close to 4 lbs. (1.81 kg.). He was perfectly formed, strong, healthy, fed readily from a bottle and throve from the first on a mixture of irradiated evaporated milk, corn syrup, lemon juice and water.

This is the prolegomenon to a story, which it will require decades to complete, whose plot features the breeding and other shaping of chimpanzee to specification and its standardization for use as material of biological research. Instead of keeping the animal as it comes from the wild, we purpose to fashion it to maximal usefulness as experimental object. To this end, modification in accordance with specification-formula and relative standardization are deemed essential. For each of the forty chimpanzees which to-day constitute the distinctive resource of this establishment for biological inquiry, an inclusive life-history record is continuously kept. Within a few years there will not—or at least need not—be an individual in the colony whose ancestry, birth-date, developmental and experimental history are not matters of reliable record and of steadily increasing value. These are among the objectives which we present as excuse for this announcement to the scientific world of the birth of a second-generation captive-born chimpanzee.

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A GENE FOR CONTROL OF INTERSTITIAL LOCALIZATION OF CHIASMATA IN ALLIUM FISTULOSUM L.

CYTOLOGICAL investigations in Allium were begun at Davis, California, in 1931. A fact worthy of a preliminary report is the evidence that the interstitial localization of chiasmata at IM in *A. fistulosum* is probably controlled by a recessive gene. In the corresponding stage of meiosis in *A. cepa* the chiasmata are all terminal. This results in configurations of two types—rings and rods. The ratio between the two types varies from cell to cell, instances of all rings or rods occurring with all possible grades between. Very probably, rods simply represent the earlier separation of two ends.

A hybrid between *A. cepa* and *A. fistulosum* was secured in 1931. It was exceedingly regular in meiosis, and a study of late IM showed the bivalents to be practically identical with those in the same stage in *A. cepa*. The configurations appear slightly different from those of *A. cepa,* but these deviations probably result from inversions and other changes in gene arrangement in the chromosomes of the two species. In no instances were any bivalents found in which the chiasmata were localized at the constriction region.

As a part of our general investigation of this hybrid, backcrosses were made in 1933 to both *cepa* and *fistulosum*. Those backcrosses to *fistulosum* bloomed this year, whereas those backcrossed to *cepa* behaved as biennials and will not bloom until next year. Table 1 summarizes some of our studies. As there were only seventeen plants in the population, any con-

TABLE 1

BEHAVIOR OF PLANTS IN BACKCROSS POPULATION

Plant No.	Type of chiasmata	Per cent. of meiotic abnormalities	Per cent. of good pollen	Number of seeds per umbel
2–8	Interstitial	0.00	67.0	292.00
2–3	"	0.00	96.9	231.25
1–1	"	5.50	97.9	205.50
2–4	"	0.00	75.9	122.00
2–7	"	3.55	95.2	114.23
1–2	"	3.19	97.3	88.70
2–5	"	1.88	97.0	66.66
2–2	"	1.69	56.0	51.44
1–6	"	3.77	47.2	22.14
2–9	"	0.00	98.7	13.00
2–1	Terminal	21.10	76.6	8.20
2–10	"	18.51	93.2	5.85
1–4	"	35.48	92.8	5.76
2–6	"	1.81	91.3	5.61
1–7	"	0.00	95.6	1.20
1–5	"	8.16	99.3	0.17
1–3	"	31.57	75.9	0.06