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.

ROBERT M. YERKES

YALE UNIVERSITY

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

clusions drawn from the data must be made with caution. Ten of the seventeen plants had interstitial chiasmata, and the remaining seven were terminal. The plants have been arranged in the order of their fertility; and coincidence will probably not explain why the most fertile all had localized chiasmata. The third column depicts the situation as to chromosome pairing at IM. The cells examined in each plant exceed fifty. The two most fertile plants were devoid of irregularities, but so was one of the most sterile. Another interesting matter is the complete lack of correlation between per cent. of good pollen and fertility. The most fertile plant has 67 per cent. good pollen, and the next to the most sterile had 99.3 per cent. There are fertile plants with a high per cent. of good pollen, and others with a low per cent. This is equally true of the more sterile plants.

The temptation is strong to state that type of chiasmata in each species is gene controlled. If this is true, the ten plants showing interstitial chiasmata should all be homozygous recessives, and all their progeny should have bivalents with interstitial chiasmata. The seven plants with terminal chiasmata should all be heterozygous, and their progeny should segregate for terminal and interstitial. Populations from each of the seventeen plants are now in the seedling stage, and next spring a large number of each will be examined.

S. L. EMSWELLER
H. A. JONES
UNIVERSITY OF CALIFORNIA

HOW LONG DO ROOTS OF GRASSES LIVE?

ROOTS have been investigated much less than the above-ground parts of the plant because their study necessitates much more difficult technique due to their inaccessibility. As a result the length of life of both seminal and nodal roots remains a disputed question. Many earlier botanists suggested that the seminal root served to supply the plant only for a few weeks prior to the growth of nodal roots. Later workers showed that the seminal root served throughout life in annual grain plants. No work is known to the writer which concerns the length of life for either type of root in perennial grasses.

In 1932 Dr. J. E. Weaver, of the University of Nebraska, suggested to the writer the possibility of placing permanent marked bands on roots as a means of identification for determining life span. This was tried on a group of typical prairie grasses grown from both seed and rhizomes.

Containers one foot in diameter and three feet in depth were fitted with a removable metal collar extending about 4 inches above the top. The soil, therefore, extended well above the top of the container and, by removing the collar, the upper part of the roots could easily be exposed by gently washing or picking the loose sandy soil away. A small aluminum band about one fourth inch wide was stamped with a number and bent around each individual root about two inches below the soil surface. The plants were examined every six months for two years. They were subjected to all degrees of soil moisture from below the wilting coefficient to saturation, and to temperatures of 0° F. to 112° F. The results are shown in Table I.

TABLE I

Species	No. banded	Number of banded roots living			
		6 mo.	12 mo.	18 mo.	24 mo.
Sporobolus heterolepis	5	5	5	4	2
Panicum virgatum	3	3	3	3	3
Bouteloua curtipendula	8	8	8	8	2
Andropogon furcatus	10	10	10	10	6
Stipa spartea	5	5	5	3	0

These results show that in all plants studied a root lives for at least a year and many in excess of two years. Some new roots are produced each season.

Tests made on the seminal roots of *Andropogon furcatus* revealed that all lived to an age of 18 months and some were still functioning at the end of two years. Thus the life span of the seminal root appears to approach, at least, that of the nodal root.

From these preliminary tests it is concluded that the method outlined is very satisfactory for measuring the life span of roots. These tests indicate that both seminal and nodal roots of prairie grasses, even under adverse conditions, may live in excess of two years.

LAURENCE A. STODDART
UNIVERSITY OF NEBRASKA

BOOKS RECEIVED

BOND, PERRY A. *The Fundamentals of General Chemistry.* Pp. x + 411. 68 figures. Farrar and Rinehart. $3.00.

COMMITTEE ON METHODS OF ANALYSIS, C. E. MANGELS, Chairman. *Cereal Laboratory Methods.* Third edition, revised. Pp. viii + 205. 9 figures. American Association of Cereal Chemists, Omaha.

GRUENBERG, BENJAMIN C. *Science and the Public Mind.* Pp. xiii + 196. McGraw-Hill. $2.00.

STEPHENSON, T. A. *The British Sea Anemones.* Vol. II. Pp. 426 + 16. 33 plates. 10 figures. Ray Society, British Museum, London. 37/6.

WETTSTEIN, OTTO. *Verhandlungen der Zoologisch-Botanischen Gesellschaft in Wien.* LXXXIV. Band. Heft. 1–4. Pp. 86 + 48. 5 figures. Zoologisch-Botanischen Gesellschaft, Wien.