successfully reared second litters, weaning 9 out of 11 young born alive on the 135th day of subsistence of these mothers on Diet A–2. Obviously the stock diet fed to these mice (Nos. 8 and 12) prior to the start of the feeding experiment in which Diet A–2 has been used, can not be regarded as playing a role in determining the success in reproduction and lactation of these mice with their second litters.

It is interesting to note, in reporting our success with the C_{57} mice, that there may be a strain difference in mice as regards reproduction and even continued maintenance of life on artificial diets, since attempts to duplicate our results using Diet A–2 and a different strain of mice have been unsuccessful to date.

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FERTILE TETRAPLOIDS OF SESAME, SESAMUM INDICUM LOEW, INDUCED BY COLCHICINE

Sesamum indicum Loew is a plant of the family Pedaliaceae which originated in tropical Asia and has been cultivated since ancient times for the high quality oil of its seeds. Although it has been used in all the tropical and subtropical countries for so many years, it is known only in its diploid form of 26 chromosomes.

In September, 1940, the axillary buds of some sesame plants were treated with 0.5 per cent. colchicine in lanolin and others with 0.4 per cent. colchicine emulsion.[1] With either of the two preparations severe burning and dying back of the leaves occurred, followed by the formation of callus-like tissues and new buds.

When new branches developed the four-celled mucilage-producing glands of the leaves were larger on some than on others. Leaves with larger glands had correspondingly larger but fewer stomata than those with smaller glands. Chromosome counts in the pollen mother cells of the branches with large glands revealed that a few of them had the tetraploid number, 52, while others had between 26 and 52. Some of the branches with 52 chromosomes were fertile. It is highly probable that if only a small number of plants had been treated with colchicine, no fertile branches would have been obtained.

Most of the normal branches were severed, but a few were left to furnish material for a direct comparison between fertile tetraploids and diploids on the same plant. The data in Tables 1 and 2 were obtained from 20 of these plants.

TABLE 1

Type of branch	Number of glands per cm² of leaf area	Size of glands	Total volume of glands per cm² of leaf area
	per cent.	per cent.	per cent.
Diploid ...	100	100	100
Tetraploid.	68	264	180

TABLE 2

Variety	Type of branch	Average number of seeds per pod	Average weight of 1,000 seeds	Average weight of seeds per pod	Comparative weight of seeds per pod
			grams	grams	per cent.
Jaffa	Diploid	91	3.41	0.310	100
	Tetraploid	90	5.04	0.454	146
Colombiano	Diploid	58	2.60	0.151	100
	Tetraploid	55	4.23	0.233	154
Criollo	Diploid	55	2.56	0.141	100
	Tetraploid	56	4.12	0.231	164
Selection 3	Diploid	53	2.58	0.137	100
	Tetraploid	52	4.19	0.218	159

The average increase in size of seeds obtained by doubling the chromosome number was 56 per cent. There was no reduction in the number of seeds per pod nor in the number of pods per branch.

By subsequent colchicine treatment, hybridization and selection, haploids, diploids, triploids, tetraploids, hexaploids and octoploids have been obtained. Field tests of the comparative seed yields, quantity of mucilage, and per cent. of oil of the various types have not yet been completed.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

A MODEL GEYSER

GEYSERS, which are special types of hot springs that gush or erupt into the atmosphere at various intervals, are one of the most intriguing of natural phenomena and have held the interest of geologists and laymen alike for many years. As a result of this interest, many theories and modifications have been presented to explain the cause and manner of the eruptions. In addition, there have been a number of experimental geysers constructed throughout the last 100 years,

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