somes characteristic of the species, (*b*) the proportion of mixed dams of each possible pure chromosome-number used in each generation, (*c*) the relative fecundity of dams of different pure chromosome-number, and (*d*) the number of generations through which the system is carried.

3. By the pure-sire method, without selection in the F_5 generation in a twelve-chromosome (haploid) species (including man), the probability that a given offspring carries absolutely no mongrel blood, i. e., mongrel-descended chromosomes is 1 : 0.205.

4. For mass improvement without selection the pure-sire method in a twelve-chromosome (haploid) species, ceases to be practically effective after the F_5 generation.

75 (1450)

The transformation of the plant ovule into an ovary.

By J. ARTHUR HARRIS.

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In plants there is a rather wide capacity for the development of organs of various kinds from primordia normally destined to produce quite different structures. For example, leaves may replace petals, stamens or carpels; petals may occur in the place of stamens or carpels. The transformation of stamens into carpels is a well-known phenomenon.

Furthermore, the continued development of a growing point the activity of which is usually terminated by the formation of some highly specialized organ, such as the flower or fruit, is quite familiar to those concerned with problems of variation.

Among these morphological abnormalities the continued meristematic activity of the axis which is normally terminated by the formation of the ovary is of very rare occurrence. It is, however, regularly found, although in a small and variable percentage of the cases, in one of the passion flowers, *Passiflora gracilis*. Here prolification of the fruit consists in the formation of series of carpels, which may or may not be ovuliferous, within the

normal fruit. The mass of accessory carpels thus formed may be so large as to rupture the fruit wall.

While the occurrence of prolification may be regarded as a heritable characteristic in *P. gracilis* the abnormality is of relatively rare occurrence. Physico-chemical factors must, therefore, determine the occurrence of prolification in certain fruits and its absence from others.[1]

If the formation of the basal prolification be due to the presence of special formative substances, one might occasionally expect to find the formation of carpellary tissue from other primordia. The only primordia normally developed subsequent to the carpels themselves are the ovules, which are borne on the carpellary margins.

To test this point, and to secure materials for other investigations, a series of dissections was begun in 1908. Those which were made from 1908 to 1915 are summarized in the accompanying table.

The results show that in the series of 568,098 dissections which have been made of fruits grown under a rather wide variety of conditions, basal prolification occurred 18,921 times, or in 3.330 per cent. of the fruits. Placental prolification occurred only 224 times or in .039 per cent. of the cases. Basal and placental prolification occurred in 18 of the 568,098 fruits.

While the occurrence of basal prolification presents a number of interesting morphological problems it does not seem to have the physiological significance of placental prolification. In the first case we have merely the continuation of activity of an axis which normally ceases with the laying down of the whorl of carpels forming the normal fruit. In the second case we have an entire transformation of a primordium. The primordium which should develop into an ovule forms instead a carpel, *i. e.*, one of the units of which the normal ovary is built up.

I am inclined to consider that this result is due to the local influence of special formative materials.

[1] A prolonged effort to demonstrate the nature of these factors has been inconclusive. Subsequent studies have not substantiated in all cases the position taken by Gortner and Harris (*Bull. Torr. Bot. Club*, 1913, XL., 27). Studies on the osmotic concentration and the electrical conductivity of the fluids of the proliferous mass and of the wall have been given by Harris, Gortner and Lawrence, *Biochem. Bull.*, 1915, iv., 52.

Experiment.	Without Prolification.	Basal Prolification.	Placental Prolification.	Basal and Placental Prolification.	Total Placental Prolification.	Total Fruits.	Percentage Placental Prolification.
1908	20,104	446	..	..	..	20,550	...
1909	116,821	4,622	30	..	30	121,473	.024
1911	30,105	873	9	..	9	30,987	.029
1912	10,487	441	1	..	1	10,929	.009
1913	123,216	4,458	17	3	20	127,694	.015
1914	180,516	7,143	144	6	150	187,809	.079
1915	67,686	938	23	9	32	68,656	.046
Total..	548,935	18,921	224	18	242	568,098	.042

76 (1451)

The antipyretic action of dextrose.

By HENRY G. BARBOUR.

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Dextrose (30 gms. in 250 c.c. water) given per os with acetyl salicylic acid (1 gm.) in a case of chronic tuberculosis was followed within 2½ hours by a fall in rectal temperature from 38.03° C. to 36.02° C. In numerous observations upon this and other "labile" individuals under like conditions acetyl salicylic acid (1 gm. with 250 c.c.) never has produced a fall of temperature exceeding 1.1° C. in the same length of time.

TABLE.

DEXTROSE GIVEN BY MOUTH. HUMAN SUBJECTS.

Subject.	Date.	Dextrose, Gms.	H_2O, c.c.	A—S. A., Gms.	Rect. Temp. (° C.).		
					When Given.	2½ Hrs. Later.	Diff.
J. D. tbc.....	4/22	30	250	1	38.0	36.0	−2.0
	5/10	50	250	0	37.3	36.5	−0.8
	5/14	75	250	0	37.7	36.8	−0.9
J. T. ac. art. rheum.....	5/19	75	250	0	38.0	37.6	−0.4
M. M. D. normal.	5/12	50	250	1	37.0	36.6	−0.4
	5/15	100	250	0	37.1	37.1	0

[1] The expenses of this research are being defrayed from the Francis E. Loomis Research Fund of the Yale Medical School.