In Table I, each figure represents the average of more than twenty-five determinations; in Table II a half dozen or more.

TABLE II

Analysis of Plant Extract. Results Expressed in Mgs. of Copper Corresponding to Invert Sugar in Aliquots

Plant	Hydrochloric acid	Citric acid	Invertase
Grape:			
Stems B	4.58	3.21	0.79
Stems C	3.39	2.01	2.66
Leaves 1	6.34	5.68	5.22
Coleus:			
Yellow	2.16	4.96	0.24
Mixed[6]	.99	2.04	−2.31

Summarizing these results the following facts seem evident. First, hydrochloric acid used with solutions containing glucosides (grape stems) gives too high results, and with those containing little and only a trace of sucrose low results. Second, invertase results are variable and the conditions for accurate use are not yet sufficiently defined to give consistent results. Third, citric acid is easy to use, consistent in results, apparently does not hydrolyze the glucosides and does not seem to destroy any of the invert sugar.

On the basis of these results it seems well worth while to thoroughly investigate the use of citric acid as an inverting agent for use with plant solutions, and it is hoped at a future date to investigate its action much more completely, especially on phloridzin and maltose.

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THE MUTANT PARAMECIUM AURELIA

IN February, 1924, the writer isolated from a laboratory stock culture of *Paramecium aurelia* a number of invaginated forms. Progeny of these forms were bred in pedigree isolation culture and a race of mutant paramecia was established. The distinguishing character of this mutant is an apical notch and an aboral longitudinal groove which extends almost to the posterior end of the animal. It has been found that the notch, which is sufficiently well marked as to be clearly discernible with the 16 mm objective of the compound microscope, varies slightly but is inherited equally by both daughter cells at fission.[1] As this mutant form has been bred continuously in isolation pedigree cultures from February, 1924, to the present time, May 30, 1928,[2,3] and has retained the "notched" character both in the original parent series and in ex-conjugant series derived from the parent series, the writer wishes to record the appearance of the animals at the time of discontinuance of the pedigree isolation cultures.

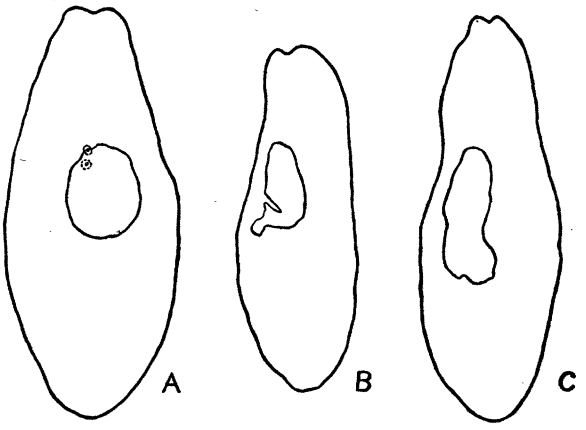

FIG. 1. Outline drawings of fixed specimens of mutant paramecia showing notched condition. X - - - . A. From Series A (original series) in 840th generation. B. From exconjugant series in 750th generation. C. From exconjugant series in 754th generation.

It is to be remarked that in all respects, except for the notch and the groove, this species shows the characters of *Paramecium aurelia* and it is not proposed to designate it other than a mutant of *Paramecium aurelia*. The micronuclei are two in number and of the characteristic "aurelia" type, as in Fig. 1, A. The three individuals shown in outline drawing (Fig. 1) made with a camera lucida from fixed and stained specimens are from the two pedigreed series of this race of paramecium. Comparison of the notched condition figured here of individuals in the 750th and 840th generations with the similar condition shown by the microphotographs in a previous report,[1] at which time the animals were in the 60th and the 300th generations, will make clear that the notched condition has been retained during the entire course of the pedigree culture. This precise inheritance of a new morphological character is, it is believed, unique in the annals of the protozoa.

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[6] Many samples have only a trace or no sucrose.

[1] Dawson, J. A., 1926, "A Mutation in *Paramecium aurelia*," *Jour. Exp. Zool.*, 44, 133.

[2] Richards, Oscar W., and Dawson, J. A., 1927, "The Analysis of the Division Rates of Ciliates," *Jour. Gen. Physiol.*, 10, 853.

[3] Dawson, J. A., 1928, "A Comparison of the Life-'cycles' of Certain Ciliates," *Jour. Exp. Zoöl.*, 51, 199.