

It will be seen that the agreement between these two methods is very close. The chemical method permits of a direct determination of the amounts of strophanthin.

ASSAY OF STROPHANTHUS PREPARATIONS.

Spec. No.	Kind of Preparation.	Chemical Assay.	Biological.	
			Assay.	No. of Det.
		mg. = c.u. ¹	mg. = c.u.	
7	Strophanthus, amorphous, Merck ..	0.135	0.116	2
34	Tincture strophanthus.	7.8	7.6	2
42	" "	8.7	8.7	3
44	" "	1.95	1.78	5
45	" " , hispidus seeds	1.87	2.04	3
46	" " , kombe seeds.	3.06	2.85	4
47	Infusion strophanthus hispidus . . .	1.26	1.24	3
48	" " kombe.	2.88	3.08	3
47	" " hispidus . . .	1.75	1.51	3
47	" " one month old	1.19	1.40	3

¹ c.u. = cat unit of Hatcher and Brody.

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Regeneration in *Spathidium spathula* and *Blepharisma undulans*.

By E. LUCILE MOORE (by invitation).

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In a study of regeneration of form and function at various phases in the life history of the infusorians *Spathidium spathula* and *Blepharisma undulans*, it has been determined that the power of restoring lost parts and of continuing normal existence is in all cases dependent upon the same factor, the nuclear content of the fragment. Individuals of known pedigree were cut transversely, and the behavior of the fragments observed until regeneration and division or regeneration and death had occurred. During the vegetative state, regenerative power is highly developed in both ciliates, but because of the more distributed condition of the nucleus in *Spathidium* than in *Blepharisma* relatively smaller fragments from either extremity of the former are capable of com-

plete regeneration. All fragments which continue to divide contain both macro- and micronuclear material. It has been impossible to produce an amiconucleate race by artificial means.¹

In *Spathidium*, where the two nuclear elements extend throughout the cell both during and after fission, there is no difference in the regenerative power at any period of asexual life. In *Blepharisma*, however, where large amacronucleate fragments may be obtained during the process of division, it has been found that temporary restoration of external organelles is possible in the absence of nuclear material, if the formation of a new peristome has already been started. Dedifferentiation immediately follows and death occurs in a few days. The presence of micronuclei in such fragments, moreover, is not sufficient for continued existence.

During conjugation, complete regeneration in *Spathidium* is less frequent than during asexual life. Portions containing the synkaryon regenerate and divide; other pieces remain unchanged or undergo only temporary restoration of form. Fragments obtained from starved *Spathidia* prior to encystment either fail to regenerate, or regain normal form and subsequently encyst.

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The almond as a source of the A vitamin.

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Investigations by Cajori have shown that the almond furnishes proteins adequate for growth, reproduction, and the suckling of young, and the B vitamin in liberal amounts.² Coward and Drummond have reported an experiment on three rats, of fourteen days' duration, in which one gram per day of almond was added to a basal ration devoid of the A vitamin, which indicates that this amount of nut does not furnish a sufficient supply of A vitamin for growth of albino rats,³ but so limited an experi-

¹ Woodruff and Spencer, *Journ. Exper. Zool.*, 1922, Vol. 35.

² Cajori, *Jour. Biol. Chem.*, 1920, xliii, 583-606.

³ Coward and Drummond, *Biochemical Journal*, 1920, xiv, 665.