the higher falling on the new moon day and the smaller on the full moon day. This clearly indicated that the position of the moon would also influence

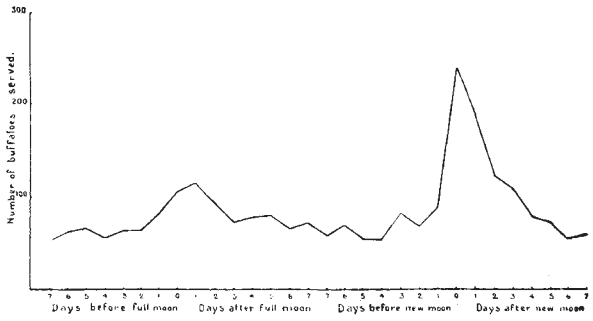


FIG. 1.

the onset of œstrum in buffaloes, if the buffalo cows brought to service could be taken as random samples of the buffalo population of the tract. When these data were retabulated according to the calendar months, a seasonal variation was also apparent.

| | No. of Animals served. | Length of Nights on 1st of each Month. |
|---|---|---|
| January . . . | 287 | 12 hr. 58 min. |
| February . . . | 250 | 12 27 |
| March . . . | 248 | 12 13 |
| April . . . | 204 | 11 54 |
| May . . . | 218 | 11 36 |
| June . . . | 167 | 11 24 |
| July . . . | 169 | 11 21 |
| August . . . | 156 | 11 31 |
| September . . | 132 | 11 46 |
| October . . . | 155 | 12 5 |
| November . . | 199 | 12 23 |
| December . . | 272 | 12 36 |
| Total . . | 2457 | |

It would appear from the above grouping that there exists an association between the length of nights and the number of œstrous animals. But when these figures were compared with the agricultural seasons of the year, it was found that the variations were more closely related to the availability of fresh grass than to the length of nights. O. RAMANATHAN.

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Coimbatore, May 19.

[1] NATURE, 129, 344, March 5, 1932.

## Further Purification of Gonadotropic Hormones (ρ-Factors)

DURING the past six months a further advance has been made in the purification of the gonadotropic hormones (ρ-factors, prolans) based on methods previously described, in particular the observation [1] that certain coloured hormone solutions can be selectively filtered in such a way that the filtrate is strongly coloured, although possessing extremely low gonadotropic activity compared with that of the original solution. The filters most useful for this purpose were the 'ultrafein', 'mittel', and 'fein' filters supplied by the Membranfilter Gesellschaft of Göttingen; the first allows rather more rapid filtration, but is somewhat more porous to the active ρ-factors.

A solution of 2 gm. of ρ-factors (20,000 units per gm.) in 100 c.c. of distilled water is adjusted to about *p*H 7·2 and concentrated to about 10 c.c. by filtration. The residue is washed on the filters with successive portions of distilled water, and finally washed carefully off the filter and centrifuged to remove a small amount of insoluble matter. The solution (20 c.c.) is then treated with 100 c.c. of absolute alcohol plus 100 c.c. of ether. The flocculent precipitate is removed by centrifugation, washed with alcohol and ether, and dried. The yield is usually about 0·15-0·2 gm., and the activity is increased to 200,000 units per gm., provided that the washing on the filter has been sufficient. The process described takes about 8 hours up to the alcohol-ether precipitation, using two filters of 5 cm. effective diameter, but is a very trustworthy one for the preparation of small quantities of a highly active salt-free product.

In the absence of inorganic salts (as in this preparation) the ρ-factors cannot be precipitated from aqueous solution by alcohol alone, and further addition of ether is necessary.

This highly active product contains no sulphur, phosphorus, or halogen, and has a nitrogen content of about 8·4 per cent (9·1 per cent on an ash-free basis). Further, it does not give the ninhydrin reaction for α-amino acids until hydrolysed by dilute mineral acids, although it is inactivated by heating in neutral solution at 100° for half an hour. From these facts it would appear that the active principles are nitrogen-containing compounds, probably polypeptide in character, as has been previously postulated, [1, 2] although, in view of their thermolabile nature, one may be dealing with a case of adsorption.

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[1] Marshall, *Quar. J. Exp. Physiol.*, **21**, 315; 1932.
[2] Wiesner and Marshall, *ibid.*, **21**, 147; 1931.

## Eradication of Slugs and Snails

IN the note on the "Eradication of Slugs and Snails" in NATURE of July 16, p. 90, reference is made to many of the accepted methods of dealing with these pests. The trouble with barriers of repellent material is that spreading plants such as violas, certain asters, carnations, etc., are difficult to surround without injurious contact to the foliage, and the slugs live amongst the roots. They appear, moreover, to prefer the flowers and foliage of these plants to the baits variously used, and extensive trials this spring with orange skins, bran, and bran mixed with Paris green were entirely ineffective. Examination after dark showed that each viola plant or carnation had as many as forty or fifty small white slugs feeding on it. As hand-picking was out of the question, a small pot containing a very strong solution of salt and permanganate of potash was carried, and each slug was touched with a knitting needle dipped in this solution. Half an hour spent each evening of one week has almost removed the trouble. I am not sure whether a solution of permanganate of potash without salt would be equally effective, and less harmful to the foliage if it touched it, but a single crystal of this salt will quickly kill a large snail. It is, however, not difficult to avoid damage to the foliage. For small upstanding plants, such as zinnia and dahlia seedlings, a collar of sheet zinc about one inch high is an absolute deterrent, and does not require renewal.

A. H. HALL.

Woodlands,
South Farnborough, Hants,
July 19.