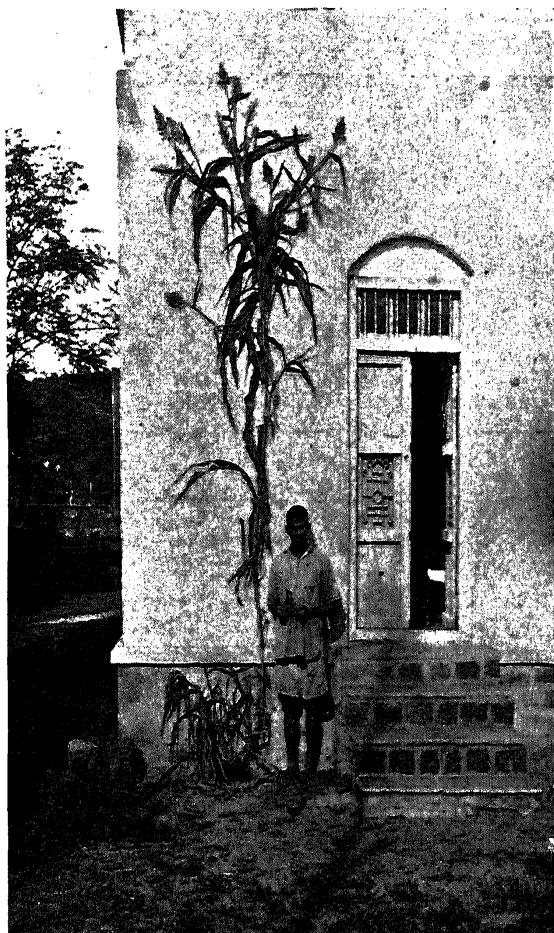


a height of 14.5 ft., with a large number of ear-heads. The plant bore in all seventeen heads from the seven upper nodes (12th to 18th). The main stem terminated in a large head. The emergence of the heads was from the apex towards the base. Secondary branches were also formed in the upper nodes. Adventitious roots were noted in 12th, 13th and 14th nodes. The plant was further interesting in that it produced ten tillers including



the one described above. This kind of growth is very rare in this species of *Holcus*.

Poona,

January 9, 1943.

G. B. PATWARDHAN.

*Ed. Note:* It is since reported very regretfully that the seeds of the plant were destroyed partly by birds and partly by rats in store.

### ON THE VARIATION IN THE RATE OF ELONGATION OF THE COLEOPTILE OF ZEA MAYS

C. V. KRISHNA IYENGAR<sup>1</sup> has recently reported that the rate of elongation of maize coleoptile shows a fluctuating course when measurements are carried out at ten-second intervals with a magnification of 3,000. He is inclined to believe that the autonomous activity of the growing organs showing a pulsating nature (Bose, 1927) and the rhythmic change of potential in the plant body at short intervals as explained by Bose (1923) might indicate

the occurrence of variation in the turgidity of the plant body even at short intervals; and this variation in the turgidity might account for the fluctuations in the rate of elongation of the coleoptile.

While this explanation may be correct the writer is puzzled by the following few questions and hopes that the author will throw light on the same.

How rigorous was the control of external conditions in this experiment? The author states that "the temperature was uniformly about 74° F.". No mention, however, is made of the relative humidity of the air and the constancy of illumination. A brief indication of these would have carried conviction. It is needless to point out that a very rigorous control of external conditions is absolutely essential in a delicate work of this type. Is it possible that the accuracy of measurements of such minute growth-rates can be vitiated by the nutations of the coleoptile? This difficulty is met with particularly when measurements are made with an auxanometer or a kathetometer and is emphasised, for instance, by Du Buy<sup>2</sup> in his work on the growth of the coleoptile of *Avena sativa*.

Pusa,

February 1, 1943.

R. D. ASANA.

1. *Curr. Sci.*, 1942, 11, 443-444. 2. *Rev. Trav. bot. merl.*, 1933, 30, 858.

### ASSAY OF INDIAN ERGOT

WITH the exception of ergot found on certain species of grasses near the Simla Hills,<sup>1</sup> medicinal ergot growing on rye has not been reported from India. Recently, Mr. K. M. Thomas of the Mycology Department, Agricultural Research Institute, Coimbatore, South India,<sup>2</sup> has successfully grown ergot on rye plots in the Nilgiri hills following the method originally advocated by Hynes,<sup>3</sup> and referred to in detail by Mukerji and Bose.<sup>4</sup> Through the courtesy of Dr. J. N. Ray, Director of Production (Drugs and Dressings), Office of the Director-General, Indian Medical Service, the Biochemical Standardisation Laboratory was afforded the opportunity of examining this specimen of ergot artificially grown for the first time in India. The medicinal importance of Ergot and shortage of the drug during war-time in India justify the publication of the analytical figures obtained.

#### 1. Botanical Examination:

Length of sclerotia = 2 to 3 cm. Smallest size = 1 cm. Some sclerotia are cylindrical with a thick base and nearly pointed tip, others are markedly curved. Appearance—dark coloured hard structures, 4 to 5 mm. thick with a yellowish core.

The length of sclerotia imported from Europe varies from 1 to 3 cm. These are nearly cylindrical, slightly curved with longitudinal furrows and externally dark brown with a pinkish core.

Transverse section: The outer portion consists of small dark-coloured cells, the colour of which is changed to brownish red on the

addition of  $H_2SO_4$ . The rest of the sclerotium consists of nearly colourless, closely compacted, very small oval or rounded cells.

Imported sclerotia of ergot also shows more or less similar appearance.

Odour and taste, characteristic.

### 2. Chemical Examination:

(a) Assayed according to the method outlined in B.P. 1932 and Addendum 1936 to B.P. 1932,<sup>7</sup> the colour developed with a solution of dimethylamino-benzaldehyde being compared with the help of a Zeiss Pulfrich Photometer for accuracy of colour matching.

Found: Total Alkaloids of Ergot, 0.13014 per cent. (i.e., 130.14 mg. per 100 gm.) [B.P. specification, 0.05 per cent. (i.e., 50 mgm. per 100 gm.).]

(b) In view of the importance of the new water-soluble alkaloid of Ergot (Ergometrine, Moir<sup>6</sup>), the water-insoluble (Ergotoxine—Ergotamine group) and water-soluble (Ergometrine) alkaloids present in Indian ergot were separately estimated by the method of Hampshire and Page.<sup>7</sup>

Found: Total alkaloids (calculated as Ergotoxine) = 0.1213 per cent. (121.32 mg. per 100 gm.) Water insoluble alkaloids (calculated as Ergotoxine) = 0.1169 per cent. (116.9 mg. per 100 gm.). Water soluble alkaloids (calculated as Ergometrine) = 0.0237 per cent. (2.37 mg. per 100 gm.).

### 3. Pharmacological Examination:

Broom and Clark method<sup>8</sup> of assay, with rabbit uterus (parous rabbit uterus dissected into strips of approximately equal length and thickness) and with ergotoxine ethane-sulphonate (1 in 30,000) as standard, was used. The observations suggest that the content of ergotoxine in the liquid extract prepared from Indian ergot according to B.P. process would lie between 0.085 and 0.145 per cent., and that the mean of 0.115 per cent. would not probably be far from the true value of ergotoxine content in the liquid extract.

There is no suitable biological method for estimating the ergometrine content of ergot specimens. The method of Brown and Dale<sup>9</sup> could not be employed. The content of ergometrine could not, therefore, be biologically confirmed.

The analytical data clearly show that Nilgiri ergot satisfies all requirements laid down in the B.P. This conclusion is strengthened by several analyses of ergot sclerotia carried out previously in the B. S. Laboratory and elsewhere.<sup>10</sup> The total alkaloidal content of imported ergot was found in six assays to vary between 0.010 to 0.110 per cent. Swiss workers reported a much wider variation (in thirty assays) of total alkaloidal content of European ergot (fresh) between 0.000 to 0.200 per cent.

The opinion may, therefore, be expressed that ergot artificially produced in India on rye is of good quality with adequate total alkaloidal content and has developed both the water-insoluble (Ergotoxine group) and water-soluble (Ergometrine) alkaloids in suitable proportions for therapeutic utilisation. It is in certain

respects better than many batches of imported ergot with comparatively poor alkaloidal contents.

Botanical study was conducted by Mr. A. B. Bose and part of the pharmacological study by Dr. N. K. Dutt and Dr. B. Chowdhury. Dr. I. B. Bose carried out the assays on imported ergot sclerotia when he was stationed at Calcutta.

Dr. Venkatchalam and Mr. Ratnagiriswaran<sup>11</sup> of the Research Unit, Medical College, Madras, carried out independently a chemical and biological assay of this ergot directly sent to them by Mr. Thomas. The results obtained by these workers, though slightly on the higher side, corroborate our finding in that the Nilgiri ergot is at least of the B.P. quality, if not better.

Biochemical Standardisation

Laboratory,  
Government of India,  
Kasauli and Calcutta,  
January 28, 1943.

B. MUKERJI.  
N. K. DEY.

1. Pushkar Nath and Padwick, *Curr. Sci.*, 1941, 10, 488.
2. Thomas, *Science and Culture*, 1942-43, 8 (in press); *Mad. Agri. J.*, 1942, 30, 411.
3. Hynes, *Pharm. Jour.*, 1941, 147, 172.
4. Mukerji and Bose, *Science and Culture*, 1942, 8, 267.
5. General Medical Council, London, *British Pharmacopoeia First Addendum*, 1932-1936, 151.
6. Moir, *Brit. Med. Jour.*, 1932, 1, 1119.
7. Hampshire and Page, *Quart. J. Pharm. and Pharmacol.*, 1936, 9, 60.
8. Broom and Clark, *J. Pharm. Exp. Therap.*, 1923, 22, 59.
9. Brown and Dale, *Proc. Roy. Soc., Ser. B.*, 1935, 118, 446.
10. Sandoz Laboratory, *Modern Therap.*, No. 7, p. 8.
11. Venkatchalam and Ratnagiriswaran, Personal communication to B. M.

### ON THE PRE-SOWING TREATMENT AND PHASIC DEVELOPMENT

RECENTLY an interesting article on pre-sowing treatment and phasic development was published by Dr. Chinoy<sup>1</sup> which I have read with interest. In this connection I wish to place on record the results of pre-sowing treatment of the rice plants carried out in the Botanical Laboratory, Ravenshaw College, Cuttack, for the last four years, the preliminary report of the results and seed treatment having already been detailed in the Progress Reports of Orissa Rice Research Scheme, 1937-38<sup>2</sup> and 1940-41.<sup>3</sup> It was therein reported that the treated plants flowered 8 to 10 days earlier than the controls.

The seed treatment adopted by Dr. Chinoy is on the same line as detailed by the author for the rice plants, and is as follows:—Seeds are soaked in water for 24 hours, when the basal portion of the lemma at the midrib becomes opaque, indicating the swelling of the embryo. The seeds are then taken out, air-dried for 6-8 hours, placed in an electric oven at 40°C. to 42°C. for 24 hours, after which they are taken out and sowed along with the controls. Even at the seedling stage the treated and the untreated seedlings manifested differences in drought resistance. An observation recorded on 17-11-42 is as follows:—By 10-30 a.m. large number of plants had wilted