correlated characters though even here there are limits to such combination. The use of the 'discriminant function', by which the component factor which shows the least variation due to environment is determined and utilised, is referred to in the case of the components of the yield character in rice and cotton. Dealing with the subject of wide crosses, the advantage in respect of hardiness and resistance to diseases secured by crossing with wild types is pointed out, which has also been availed of an Indian work. Some outstanding work on wide crosses are already to India's credit, and the bamboo sugarcane cross and the sorghum sugarcane cross of Venkataraman, and crosses effected between Asiatic and American cottons are all referred to. It is, however, pointed out that there is a limit to the amount of combination of characters expected in wide crosses owing to the tendencies of certain parental species characters to stay together, these being borne but by the failure of certain rice crosses in Madras and the U.P. to come up to expectations.

The address next deals with the need for maintaining strains pure and combating the tendency to deteriorate, keeping up a nucleus in the breeding stations and again for the carrying out of basic research in genetics. Though a certain amount of such research has been in progress at various centres in India it is claimed that with greater co-ordination more valuable results can be expected, as has been achieved in the study of the chromosomes of maize in America. A plea is also put in for the formation of a Bureau of Plant Introduction for India on the American model and for the introduction of genetics as a subject of study in the Veterinary Colleges of India. The address concludes by emphasising the desirability of a change of outlook in the botanical teaching of our Universities, firstly by the introduction of genetical studies of agricultural crops in the syllabus and secondly by establishing greater contact between the Universities and the agricultural departments, such contact having already proved fruitful, as exemplified in the case of the work on the rusts of wheat and that on statistical methods applied to agriculture.

A. K. Y.

THE MAGNETIC ACTIVITY OF THE YEARS 1939 AND 1940

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THE magnetic activity for the years 1939 and 1940 was larger than that for the year 1938, as seen from the magnetograms of the Alibag Magnetic Observatory. The method adopted by the Bombay Observatory for determining the magnetic characters of individual days is that recommended by the International Commission of Terr. Mag. and Atm. Elec.[1] The mode of classification of days into *quiet* and *disturbed* days has been described in an earlier note.[2]

During the year 1939 there were 95 quiet days, 229 days of slight disturbance, 32 of moderate disturbance and 9 of great disturbance. In 1940, there were 101 quiet days, 222 days of slight disturbance, 36 of moderate disturbance, 5 of great disturbance and 2 of very great disturbance. During 1939, according to both Bombay and International classifications, April was the most disturbed month and November the least disturbed one. For 1940 International Character figures are not available but according to Bombay classification only, April was the quietest month. March can be considered to be the most disturbed month although the monthly mean character for March was slightly lower than that for January. The mean monthly characters for the year 1939 according to Bombay and International[3] classifications based on data from 62 observatories are given in Table I.

TABLE I
(*Magnetic Characters*, 1939)

Month	Classifications	
	Bombay	International
January	0·71	0·51
February	0·89	0·86
March	0·97	0·96
April	1·03	1·01
May	0·94	0·93
June	0·83	0·78
July	0·97	0·83
August	0·77	0·66
September	0·70	0·66
October	0·97	0·87
November	0·70	0·47
December	0·77	0·63
Year	0·864	0·763

[1] *Vide* their Circular letter of March 1924.

[2] *Current Science*, 1940, **9**, 90.

[3] Van Dijk, G., *Terr. Mag.*, 1940, **45**, 351.

The monthly mean characters for 1940 according to Bombay classifications only have been given in Table II.

TABLE II

(*Magnetic Characters*, 1940)

Month	Bombay Classification
January ..	1·06
February ..	0·72
March ..	1·03
April ..	0·70
May ..	0·77
June ..	0·77
July ..	0·71
August ..	0·87
September ..	0·77
October ..	0·74
November ..	1·03
December ..	0·90
Year ..	0·839

The Bombay Characters for the years 1939 and 1940 are nearly equal being 0·854 and 0·839 respectively. The number of days of different Characters in individual months during the years 1939 and 1940 have been given in Table III.

During the year 1939, there were 17 magnetic storms of moderate intensity and 7 of Great intensity. In 1940 there were in all 18 storms of which 14 were of moderate intensity and 3 of great intensity and 1 of very great intensity. The storm of very great intensity began at 13*h*. 50*m*. G.M.T. on Easter Sunday, March 24, 1940, and ended at about 18·5 hours the next day. This, the most violent storm recorded by the Bombay Observatory during the last 70 years, caused considerable havoc to telegraph, radio, telephonic and telephotographic communications. Besides, it caused disturbances to electric power systems. Similar disturbance had never been observed in the case of any severe magnetic storm in the past. During the intensest period of this storm the traces at some of the magnetic observatories of the world went off the photographic chart; this has resulted in a large number of these observatories equipping themselves with wide-range magnetographs. According to McNish, this storm probably stands pre-eminent in the annals of terrestrial magnetism.[4] For a detailed description of this storm as recorded by the instruments at the Alibag

[4] McNish, *Terr. Mag.*, 1940, **45**, 360.

TABLE III

Year	Month	Bombay Classification 0	1	2
1939	January .	9	22	..
	February .	8	16	4
	March .	4	24	3
	April .	4	21	5
	May .	5	23	3
	June .	6	23	1
	July .	9	14	8
	August .	11	16	4
	September .	11	17	2
	October ..	8	16	7
	November .	10	19	1
	December .	10	18	3
	Total ..	95	229	41
1940	January ..	4	21	6
	February .	9	19	1
	March .	9	12	10
	April ..	13	13	4
	May ..	9	20	2
	June ..	9	19	2
	July ..	10	20	1
	August .	6	23	2
	September ..	9	19	2
	October .	10	19	2
	November .	7	15	8
	December ..	6	22	3
	Total .	101	222	43

Magnetic Observatory, reference is invited to an earlier note[5] in this Journal.

Among the storms of Great intensity, the one of February 24, 1939 was associated with the display of Aurora Borealis in Great Britain. The times of commencement and cessation of the storms of Great and Very Great intensity together with the ranges of different elements during the storms are given in Table IV.

[5] *Current Science*, 1940, **9**, 167.

TABLE IV

Date	G. M. T. of Beginning	G. M. T. of End	Ranges D	Ranges H	Ranges Z	Intensity G=Great V. G.=Very Great
	H. M.	D. H.	/	r	r	
1939, Feb. 24	02 42	25 22	8·5	>335	37	G.
Apr. 17	01 57	18 00	8·2	345	83	G.
„ 24	17 37	25 23·5	8·0	370	43	G.
June 13	16 47	14 18·5	7·3	217	71	G.
Aug. 12	01 42	14 15	9·0	261	73	G.
„ 22	00 42	23 19·5	10·2	315	58	G.
Oct. 13	02 03	14 00	10·0	294	62	G.
1940, Mar. 24	13 50	25 18·5	17·1	>785	>100	V.G.
„ 29	16 02	31 02·5	7·9	266	74	G.
Mar. 31	09 42	Apr. 02 22·5	5·9	242	41	G.
June 25	02 54	26 07	13·9	340	96	G.

IDENTIFICATION OF COMMERCIAL TIMBERS

THERE are now more than 500 Indian timbers that are known to commerce. Of these only a few can be recognised by their look. Carpenters, timber contractors and others who handle timbers are often quite good at recognising them by their superficial colour and grain, but experience has shown that colour is a variable factor and that superficial grain depends considerably on the method of conversion. The most accurate way of identifying a timber is by its anatomical structure that can be seen in the cross-section. The colour of teak timber may vary, depending on the locality in which the tree grows and its superficial grain may be different in differently converted timbers, but its anatomical structure in the cross-section will seldom vary. This fact is well utilized by the Wood Anatomists or Wood Technologists, who make a thorough study of various timbers and collect data on their anatomy. Their method of study is often slow and laborious and the data collected by them may have to pass the critical eyes of the statistician and yet some practical results are achieved. Samples of timber are daily received by the Wood Technology Department of the Forest Research Institute from people who want to know whether they have obtained the correct timbers for certain specific uses. It is becoming more and more evident that a great number of people now realise that the use of a wrong timber often results in considerable financial loss. Help of this kind is being continuously given by the Wood Technology Section of the Forest Research Institute to the various Provincial Governments, the Railways, the Defence Department, the Supply Department, the Royal Air Force, the Civil Aviation, the Public Works and Industries Departments, and to Corporations, business concerns and private individuals. Every year some 400 to 2,000 samples of wood are received for examination and report.

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