

results obtained so far, as shown in the following tabular statement, it is evident that the proportion of the FeO oxidised to Fe₂O₃ in amphiboles is decidedly and considerably higher than in the pyroxenes of similar composition.

In the table above, in all the samples, only the FeO and MgO values are given, as these are the important constituents besides SiO₂. But sample No. 8 contains also 12.76 per cent. CaO and 10.15 per cent. Al₂O₃, and No. 10, 15.07 per cent. Fe₂O₃ and 6.90 per cent. Na₂O.

The degree of this oxidation may be modified to some extent by the other oxides present in the mineral like MgO, CaO, etc. The presence of a high proportion of MgO lowers the degree of oxidation as may be seen by comparing the analytical results of amphiboles, Nos. 1, 3, 7 and 9; and of pyroxenes, Nos. 2, 4, 5, 6 and 11. In pyroxene No. 4, where the proportion of MgO to FeO is high, the oxidation is very little. But, in amphiboles, Nos. 8 and 10, though the proportion of MgO to FeO is high, yet the degree of oxidation is large. This may be due to the influence of considerable amounts of Al₂O₃ and CaO present in No. 8, and of Na₂O and Fe₂O₃ present in No. 10. The fusions, in all cases, were carried out at about the same temperature, for the same period of time and using powders of about the same fineness.

The relative difference between the amphiboles and pyroxenes in the degree of oxidation of their FeO seems to be dependent upon their crystal structure. Further investigations are in progress and the results will be published in detail elsewhere.

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THE IODINE CONTENT OF THE THYROID GLANDS OF SOUTH INDIAN ANIMALS

DURING the course of our investigations (1941-1942) on the preparation of thyroid extracts, under the auspices of the Board of Scientific and Industrial Research, the remarkable observation was made that the desiccated thyroid prepared from the local animals was much higher in iodine content than the continental specimens. These observations, which were published as a brief note in the *Review of the Technical Work of the Board of Scientific and Industrial Research*,¹ have now been independently confirmed by Dr. Mukerji,² of the Biochemical Standardisation Laboratory, who has found that the thyroxine iodine contents of desiccated samples prepared in India are, as a rule, higher than those of foreign specimens.

The values that we obtained for the Total and Thyroxine Iodine contents of desiccated thyroids of cattle, sheep and pig, analysed by standard methods,³ are given in the following table (No. I), the experiments being carried out with South Indian animals exclusively:—

TABLE I
Chemical Assay of Desiccated Thyroid
(Per cent. by weight of desiccated gland)

	Total Iodine	Thyroxine Iodine
Beef thyroid .	0.91	0.35
Sheep thyroid ..	0.66	0.26
Pig thyroid ..	0.84	0.39

The average weights of the thyroid as well as of other glands like adrenal and pituitary of Indian animals are definitely smaller than those of the corresponding glands of European and American animals. In the case of the thyroid glands, however, the total iodine content is considerably higher, amounting to as much as 0.91 per cent. for beef glands. Kendall, who first isolated thyroxine in a pure and crystalline condition, worked with desiccated hog glands, the total iodine content of which was as low as 0.21-0.34 per cent.⁴ and Harington made use of desiccated thyroid having an iodine content of 0.5 per cent.⁵ for his classical researches on the isolation and study of the chemistry of thyroxine. It is also a well-known fact that several specimens of American thyroid are so low in iodine, that they cannot conform to the B.P. standard, which insists on having a thyroxine iodine content of 0.1 per cent.

It is generally agreed that the amount of iodine in the thyroid gland is dependent on the iodine content of the diet. The high iodine content of the thyroids of the South Indian animals must, therefore, be attributed to the high level of iodine in drinking water and in the vegetable kingdom here. It is also in conformity with the striking fact that endemic goitrous regions are practically unknown in South India.

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September 1, 1943.

1. *Curr. Sci.*, 1942, **11**, 171. 2. Mukerji, *Curr. Sci.*, 1943, **12**, 256. 3. *British Pharmacopoeia*, 1932 and *Addendum*, 1936. 4. Kendall, *Thyroxine*, 1929. 5. Harington, *The Thyroid Gland*, 1933.

CHEMICAL INVESTIGATION OF SEED OIL OF MORINGA CONCANENSIS

Moringa concanensis (Gujarati: "Kadavo Sargavo") is a medium type of tree glabrous except the young parts and the inflorescence and grows almost everywhere in Gujarat. The tree bears fruits in the form of capsules which are straight, acutely constricted between the seeds on an average 1 to 1½ ft. long. Each capsule contains several seeds. These seeds are white or pale yellow.¹ These seeds on

extraction with ether give on an average 38 per cent. of yellowish coloured oil. The oil, besides its use in medicine, can very well be used to lubricate delicate machinery. On finding that these types of trees are abundant on this side and the oil available would also be abundant, and in view of the above uses, it was thought advisable to carry out the chemical investigation of the same oil.

The oil has a faint pleasant odour and shows the following characteristics:—

- Refractive index at 40° C. = 1.4624.
- Acid value (in terms of oleic acid) = 2.61.
- Saponification value = 189.3.
- Icdine value (Wij's method) = 79.25.
- R.M. value = 0.57.
- P. value = 0.26.
- Acetyl value = 23.1.
- Unsaponifiable matter = 1.095.

The examination of the component fatty acids of the oil is in progress.

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September 4, 1943.

1. *The Flora of the Presidency of Bombay*, 1, Part 2, 283; and *Watt's Dictionary Econ. Prod.*, 5, 275.

VARIATION IN THE MEASURABLE CHARACTERS OF COTTON FIBRES: A NOTE ON THE VARIATION BETWEEN FIRST AND SECOND FLUSH OF BOLLS

In the Coimbatore tract the normal pickings of cotton end by April. If, however, showers of rain fall in time a second flush of flowers is produced which gives a supplementary picking somewhere in June. It was thought interesting to compare the fibre properties of the pickings made from the two flushes. Seven strains of *G. hirsutum* which were grown at the Cotton Breeding Station, Coimbatore, were utilised for this enquiry. It should be mentioned that in the normal pickings, the quantity of good *kapas* was a large percentage of the total. In the summer picking, however, it formed about a fifth or a fourth of the whole. For the study of the properties only the good *kapas* from the bulk was utilised. The results obtained are given in Table I.

TABLE I
Results (Mean of 7 Values)

Property	Normal	Summer	Difference Normal-Summer
Seed weight (mgm.)	107.4	99.3	+ 8.1
Lint weight (mgm.)	63.1	45.1	+18.0
Ginning percentage	37.0	31.2	+ 5.8
Mean length (inch)	0.924	0.844	+ 0.080
Fibre weight per cm. (10 ⁶ gm.)	1.483	1.323	+ 0.160
Standard fibre weight (10 ⁻⁶ gm.)	1.753	1.570	+ 0.183
No. of fibres per seed (1000's)	18.39	16.40	+ 1.99
Mature fibres %	56.29	57.43	- 1.14
Immature fibres %	16.00	17.59	- 1.59

It will be seen that the seed weight is higher for the normal picking by 8.1 mgm. on the average which is highly significant. The lint weight and ginning percentage are similarly higher by 18.0 mgm. and 5.8 per cent. respectively. The mean fibre length and the number of fibres per seed are significantly higher for the normal picking by 0.080" and 1,990 respectively. The fibre weight per cm. as well as the standard fibre weight are similarly higher by 0.160 and 0.183 units respectively. The difference in the maturity, however, is not significant.

It will be seen that on the whole the summer picking exhibits considerable deterioration, excepting in fineness and maturity, as compared with the normal picking. This result, it will be recalled, is for the good *kapas* only which forms about a fourth or fifth of the whole picking. Even this good portion shows such a deterioration; the quality of the whole picking should be considerably worse indeed.

The cause for the deterioration noted above appears to be, besides the later age of the plant, the severe attack of insect pests. The reduction in the number of fibres per seed and the standard fibre weight appears to be due probably to the higher temperature under which the fibres are produced, as is shown in another place.*

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September 1, 1943.

* Iyengar, R. L. N., *I.C.C.C.*, Second Conference, Report, 1941, 145-46.

A CASE OF CHLOROPHYLL DEFICIENCY IN SAFFLOWER (*CARTHAMUS TINCTORIUS* L.)

In the year 1938-39, in the progeny of a plant of I.P. 7 Safflower, 19 plants, out of a total of 98, were observed in which, although the cotyledonary leaves were normal green, the true leaves were chlorophyll-deficient. The chlorophyll deficiency increased gradually from the first true leaf up to the third or fourth leaf. Thereafter the next few leaves were practically white and very much reduced in size. At this stage these plants died.

The ratio of normal green to chlorophyll-deficient plants, as could be seen from the frequencies (79:19), was 3:1, suggesting that the parent-plant was heterozygous for the gene pair governing chlorophyll deficiency; this heterozygous condition may have resulted from the mutation of one of the dominant alleles of the pair responsible for the normal green condition, to the recessive state.

In order to test the validity of this assumption, the seeds of six normal green plants, picked at random, were harvested and sown separately in the following year (1939-40). Of the six progenies five segregated in a 3 normal green:1 chlorophyll-deficient plants and one bred true to the normal green condition. Theoretically, four progenies should have segregated and two bred true to green on the basis that the chlorophyll-deficient condition is a simple recessive to the green. The