in the form of a cylinder, to iodine vapour in a closed jar for 2 to 3 minutes. The unsaturated acids appear as brown spots on a pale yellow background. (The unsaturated acids can also be located, along with the saturated acids, by immersing the chromatogram in 0·2% copper acetate solution, washing with water, drying, and dipping in 0·03% dithio-oxamide in 95% ethanol.)

The chromatogram of the unsaturated acids from the common oils and from sesame oil admixed with 5% mustard oil and castor oil, respectively, are illustrated in Fig. 1. The un-

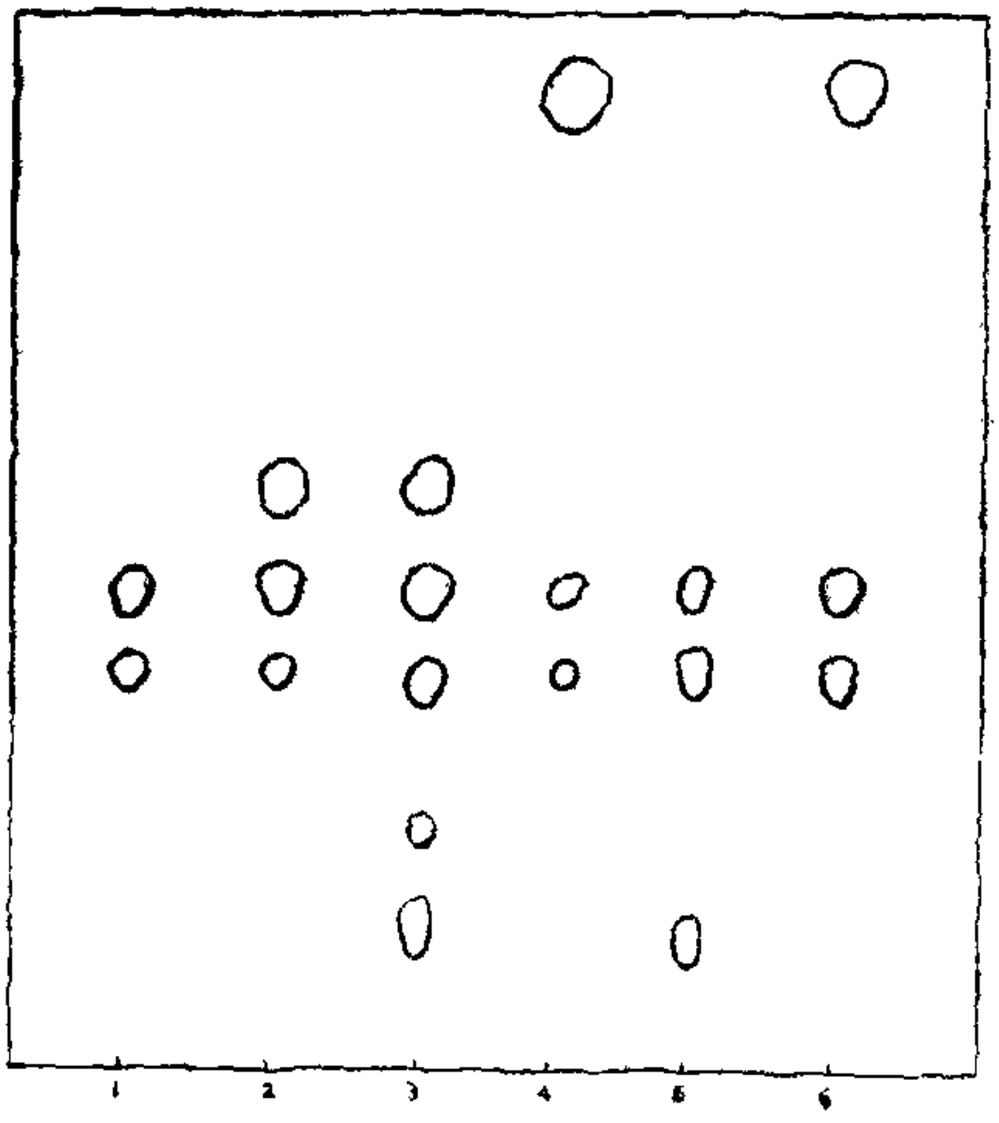

FIG. 1. Chromatograms of the unsaturated acids of common vegetable oils. (1) Sesame, groundnut, cottonseed, safflower, coconut and mahua oils. (2) Linseed oil. (3) Mustard oil. (4) Castor oil. (5) Mixture of Sesame and Mustard oils (95 : 5). (6) Mixture of Sesame and Castor oils (95 : 5).

saturated acids of sesame oil, groundnut oil, cottonseed oil, safflower oil, coconut oil and mahua oil separated into two zones with R_f values 0·38 and 0·46, the intensity of the zones varying with the oleic and linoleic acid content of the oils. Linseed oil gives rise to three spots with R_f values 0·38, 0·46 and 0·54. In the case of mustard oil five unsaturated acids are distinguishable, with R_f values 0·14, 0·23, 0·38, 0·46 and 0·54, the spot with R_f value 0·14, due to erucic acid, being very marked. Castor oil shows three spots, those with R_f values 0·38 and 0·46 being faint and that with R_f value 0·94, due to ricinoleic acid, being conspicuous.

The zone with R_f value 0·14 is characteristic of mustard oil. It is not given by any other oil, but is obtained when 5% of mustard oil is present in any other oil. Similarly the zone with R_f value 0·94 is peculiar to castor oil. It is absent in the case of the other oils, but is clearly distinguishable when 5% or even less of castor oil is present in any other oil.

The method offers a simple and reliable means of identifying mustard oil and castor oil when admixed with other vegetable oils.

We thank Sri. K. Narayanaswamy, Government Analyst, for permission to carry out this study.

Government Analyst's Laboratory, Madras, *November* 12, 1965.

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A NOTE ON THE RELATIONSHIP OF BUNDELKHAND GNEISS OF RAJASTHAN WITH THE SURROUNDING SEDIMENTS*

A. M. HERON considered the granite occurring in the area adjacent to the Berach river in the Bhilwara and Chittorgarh districts of Rajasthan as the basement over which the surrounding Aravalli rocks were deposited. Based on the physical and mineralogical resemblance, he correlated this granite with that of the Bundelkhand area in Uttar Pradesh and thus, referred to it as "Bundelkhand Gneiss" in his publications. B. C. Gupta, who mapped the eastern part of the area, where the granite is exposed, agreed with Heron. E. H. Pascoe referred to this granite as Berach Granite.

The granite is generally medium to coarse-grained, equigranular with pink feldpars (orthoclase and microcline), albite, perthite, opalescent quartz and a few grains of biotite or hornblende. Epidote, magnetite and apatite are the minor accessories. At the contact with the quartzites, at places, a larger proportion of irregular grains of quartz are seen in the granite. Near the contact with slates, the rock becomes greenish and is enriched in chlorite. Gneissic foliation is common towards west, where it is noticed to merge with the gneisses.

The exact contact of the granite with the quartzites is exposed at a few places and these have been interpreted as sedimentary by Heron. Closer examination reveals sinuous and irregular contacts, the orthoquartzites showing enrichment felspar at the contact with the granite thus becoming friable there. Near Putholi, north of Chittorgarh, the granite has eaten up a part of the quartzite and the contact is highly irregular. Thin strips of quartzite are also seen in the granite. Further west, a number of xenoliths of slates are noticed in the

granite. Just west of Bara Khera, the 1 m to 2 m thick vitreous quartzite band has tongues, veins and veinlets of granite clearly indicating the intrusive nature of the latter. The contact with the slates is generally covered but in the few exposures available, the shales and slates show puckering, hardening, silicification and felspathisation near the contact. Very good gradational contacts between granite and felspathised slates are seen in the bed of the Berach river north of Bilor, in the bed of the Banas north of Magrop and in the Bagan river where the Udaipur-Chittorgarh road crosses it. At the latter place, the granite is enriched in chlorite and calcite and much metasomatic replacement is indicated. Thin aplitic bands are also seen in the slates at the contact there.

On a regional scale the boundary of granite is very irregular and it comes into contact with the different members at different places. Tongue-like extensions of granite near Amli, Kalias, Bhawanipura and Det can be better explained if the granite is intrusive. Much recrystallisation of quartzites near Mataji-ka-Khera and occurrence of granite in the core of the structure there, also suggests the intrusive nature.

Absence of contact metamorphism has been quoted by Heron, as an evidence for considering the Bundelkhand gneiss as the basement. Similar is the case with the sediments around the post-Aravalli granite near Udaipur, which is undoubtedly intrusive. Probably, this is due to lack of volatiles as evidenced by dearth of pegmatites in the area. Silicification and felspathisation seen in the quartzite and shales at places around the Bundelkhand gneiss are definitely the effects of intrusion.

Thin pebble bands extending over short distances in the different orthoquartzites have been considered to indicate unconformity. About 1·5 km west of Barlias, there is a 2 m thick vitreous, buff quartzite which was considered by Gupta to be the basal conglomeratic bed of the Aravallis. The quartzite is generally free from felspar, and at only one place a 2 m long and 0·5 m deep channel, with small well-rounded pebbles, is seen. The quartzite is recrystallised and at the contact with the granite small felspathised patches are also seen. Similarly most of the conglomerates, referred to by Heron, are interbedded and a few are channel fillings. As already mentioned, the granite is in contact with the different quartzite and slates and it is rather difficult to interpret all of them as basal.

Heron himself emphasised the absence of any special marginal deposit characteristic of an erosional unconformity in this area. Further, he cites evidences of intrusive contacts but considers them to be due to close wedge-faulting or deposition of sediments on a highly irregular surface of the granite.

Recent mapping of the area has convinced the authors that the Bundelkhand Gneiss of Rajasthan is intrusive into the shales, slates and quartzites which are nothing but the westward extension of rocks referred to as Gwaliors by Heron. As evidenced by the equigranular texture, some shearing and development of foliation, the granite appears to be late to post-tectonic. North-east of this area, near Jahazpur, the Gwalior rocks have been metamorphosed and granitised yielding the Banded Gneissic Complex. Further west of the Gangrar-Hamirgarh quartzite ridge also, extensive granitisation is observed. It is therefore likely that the Bundelkhand Gneiss is an intrusive phase of the major granitic activity in the area. The relationship of the Bundelkhand Gneiss of Rajasthan with that of the granodiorites of U.P., which are also intrusive into the sediments there (A. G. Jhingran, 1958), cannot be established until absolute age determinations are made.

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Jaipur, *August* 24, 1965.

* Published by permission of the Director-General, Geological Survey of India.

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A NOTE ON SUCCINIC DEHYDROGENASE ACTIVITY OF TISSUES OF THE COMMON FRESHWATER MUSSEL, *LAMELLIDENS MARGINALIS*

THE respiratory enzymes of freshwater pelycypod, *Lamellidens marginalis* have not been studied so far.[1] While investigating the effects of temperature acclimation on the respiration and ciliary activity in this animal, it was felt that a study of a seemingly ubiquitous enzyme like succinic dehydrogenase would be of interest. The present note deals with the activity of this