When this work was almost completed, the paper by Ollis and coworkers[7] appeared in which a new synthesis of thiophanic acid (I) was described. In their method, 5, 7-dichloro-1, 3-dihydroxy-6-methoxy-8-methylxanthone (IV) was chlorinated with sulphuryl chloride to thiophanic acid-6-methyl ether (VIII) which was demethylated with pyridine hydrochloride to thiophanic acid (I). However the present method is somewhat different from that followed by the British workers[7] and hence our results are reported in this communication.

The authors wish to thank the University Grants Commission for the award of a Junior Research Scholarship to one of them (N. T.).

Department of Natural Products Chemistry and Physical Chemistry,
Madurai University,
Madurai-2, *May* 4, 1972.

S. NEELAKANTAN.
N. THILLAICHIDAMBARAM.

1. Hesse, O., *J. pr. Chem.*, 1898, 58, 465.
2. Kennedy, G., Breen, J., Keane, J. and Nolan, T. J., *Sci. Proc. roy. Dublin Soc.*, 1937, 21, 557.
3. Huneck, S., *Tetrahedron Letters*, 1966, No. 30, 3547.
4. Jayalakshmi, V., Neelakantan, S. and Seshadri, T. R., *Curr. Sci.*, 1968, 37, 196.
5. Grover, P. K. and Shah, R. C., *J. sci. industr. Res. (India)*, 1956, 15 B, 629.
6. Santeesson, J., *Ark. Kemi*, 1969, 30, 449.
7. Arshad, M., Devlin, J. P. and Ollis, W. D., *J. Chem. Soc.*, C, 1971, p. 1324.

STUDY OF THE GARNETS FROM SAKARSANITES, SAKARSANAHALLI. KOLAR DISTRICT, MYSORE STATE

AN interesting series of metamorphic rocks consisting of secondary augite rocks, sillimanite-quartz schists, manganiferous limestones, garnetiferous pyroxene schists etc., occurring in the vicinity of Sakarsanahalli (Lat. 12° 50′ N; Long. 78° 15′ E), Kolar District, have attracted the attention of many geologists from Mysore. Jayaram (1922) gave the name Sakarsanite to these metamorphic rocks and compared them to gondites and kodurites and considered them to be metamorphosed sediments. Sampath Iyengar (1931) regarded the series as merely altered and metamorphosed hornblende schists—"the Tarurites". This view was supported by Ramachandra Rao and Sripada Rao (1934). Fermor (1938), however, could not agree with these views; he pointed out the similarity between the rocks of this region and the rocks of the Sausar series and considered that it is at least in part sedimentary. Rama Rao (1940) who could not find detailed evidences indicating their origin compared these rocks with other interesting metamorphic rocks like Bidalotite, Kodamite, Bandite occurring in the State of Mysore. He considered these rocks to represent the remnants of the intensely metamorphosed phases of original sediments.

With a view to re-examine the rocks of this region particularly from the point of view of mineralogy and petrology, the author undertook an investigation of the individual minerals reported to occur in these rocks. As a first step, the garnets occurring in these metamorphic rocks have been studied by chemical, optical and X-ray methods. The results of this investigation are reported here.

Garnets are common in the Sakarsanites, especially in the garnet-diopside rocks and banded Tarurites. The garnets vary widely in their size form big trapezohedral crystals sometimes measuring 5 cm across to tiny crystals that can hardly be recognised by naked eye. Whatever may be their size and association, they are deep brown in colour with trapezohedral outline. The fresh unaltered crystals are bright and transparent. Weathered ones show a pale brown to dark brown colour, almost becoming opaque. In thin sections they show the rounded outline characteristic of the trapezohedrons, isotropic and pink to yellowish brown in colour. Often the crystals show cracks, and inclusions of quartz. The grains of quartz were carefully separated from garnets by heavy liquids and hand-picked crop was used for chemical analysis, X-ray studies and the determination of specific gravity and refractive index. These data are given in Table I. The chemical, optical and X-ray characters of the garnet under study

TABLE I

Chemical composition, physical, optical and X-ray data for the garnet from Sakarsanahalli

Percentages by weight:			Molecules	
SiO_2	..	37·40	Spessartite	61·37
Al_2O_3	..	19·02	Almandite	3·33
Fe_2O_3	..	7·20	Pyrope	17·65
FeO	..	1·43	Andradite	17·65
CaO	..	5·60		
MgO	..	4·03		
MnO	..	24·79		
TiO_2	..	0·16		

Analyst: A. M. Pathan.
Specific gravity: 3·833
Refractive Index: 1·795
Unit cell dimension (a): 11·623 Å
Structural formula on the basis of 24 (O):
$Si_{6.763}$ (Mg F″ Ca Mn Na K)$_{6.52}$ (Al Fe‴ Ti)$_{5.06}$

shows that it is essentially a spessartite with subordinate amounts of pyrope and andradite. Spessartite, which is a less common species, is known to be associated frequently in manganese-rich assemblages, with rhodonite, pyroxmangite, tephroite, etc,

Associated with these garnets in Sakarsanite, there are the other silicate minerals which await a correct identification. Recent investigations in Pre-Cambrian Geology of Mysore State involving isotopic age determinations show that certain metamorphic rocks including the charnockites could represent the oldest rocks in the State if not the remnants of the primordial crust (Sadashiviah and Naganna, 1964). Accepting this view, the author is inclined to believe that this rich assemblage of manganese silicates could be the source of the syngenetic manganese oxide deposits associated with the Dharwar schist.

I am thankful to Dr. C. Naganna for suggesting the problem, and Sri S. Ramasesha for the X-ray diffraction pattern. The financial help of the Bangalore University to undertake the work is gratefully acknowledged.

Dept. of Geology, M. SURYANARAYANA SASTRY.
Central College,
Bangalore, *August* 7, 1972.

1. Fermor, L. L., *Mem. Geo. Survey of India*, 1938, 70, Part 2.
2. Jayaram, M. B., *Rec. Mysore Geol. Dept.*, 1922, 22, Part 2.
3. Rama Rao, B., "The Archean complex of Mysore," *Bull. Mysore Geol. Dept.*, No. 17, 1940.
4. Ramachandra Rao, M. B. and Sripada Rao, K., *Ibid.*, No. 14, 1934.
5. Sadashiviah, M. S. and Naganna, C., "Dating the Post-Dharwarian crystallines of Mysore State ; 'Symposium on 'Stratigraphy, Age and Correlation of the Archaean Provinces of India', ". *Geo. Soc: of India Proc.*, 1964.
6. Sampath Iyengar, P., *Rec. Mysore Geol. Dept.*, 1931, 30.

OBSERVATIONS ON THE NORMAL CELL COUNTS IN THE BLOOD OF THE INDIAN FALSE VAMPIRE *MEGADERMA LYRA LYRA*

THERE is no information so far concerning the blood and its formed elements in any Indian bat. Krutzsch and Wimsatt (1963) have reported the normal values of peripheral blood in the American vampire, *Desmodus rotundus murinus*. Their data however are based on a study of the adults only.

The present report embodies observations on the erythrocytes and the leucocytes in the blood of the Indian false vampire bat, *Megaderma lyra lyra*. This species breeds once a year conceiving in November and delivering the young in the following April. The blood of two females at full term pregnancy, two females which had just delivered, two just delivered young females, one just delivered young male and one adult male collected in the middle of April 1972 was analysed for the present study.

The blood was collected and drawn in the appropriate pipettes for the erythrocyte and leucocyte counts. For erythrocyte counts the blood was diluted 1 : 200 with Hayen's solution and counted in the Neubaur counting chamber. The leucocyte count was also made in the Neubaur counting chamber by diluting the blood with a 1% solution of glacial acetic acid in the proportion of 1 : 20. Thin smears of blood, stained with Leishman's stain, were examined for differential leucocyte count. The results calculated to the mean values for each group are given in Tables I and II.

TABLE I
Mean values for each group of specimens

	Erythrocytes/mm³ (million)	Leucocyte/mm³ (thousand)
Adult females ..	5–8	2–4
Adult males ..	6–8	2–4
Just delivered young	5–7	5–8

TABLE II
Differential leucocyte counts

a	Megaloblast	Neutrophil	Small lympho-cyte	Large lympho-cyte	Eosinophil	Myelocyte	Monocyte
Adult femaie ..		44·25	41·75	8·00	0·75	3·50	1·50
Adult male ..		40·00	44·00	10·00	3·00	2·00	1·00
Young female ..		26·33	54·33	11·33	1·00	2·33	3·00
Young male	20·00	20·00	29·00	13·00	0·00	15·00	3·00

Table I indicates that, regardless of sex, this species has an erythrocyte count, which varies approximately from 5 to 8 million/mm³. These figures are considerably lower than those in *Desmodus rotundus murinus* (8 to 12·4 million/mm³ (Krutzsch and Wimsatt, 1963).

The total leucocyte count revealed a striking difference between the adult and the young bats of this species. Whereas the adults have a very low count (2 to 4 thousand/mm³) comparable to the values given by Worth (1932), Grundboeck and Krazanowski (1957), Krutzsch and Hughes (1959) and Krutzsch and Wimsatt (1963) for other bats, the young ones show very high leucocyte count. Lymphocytosis appears to be of common occurrence in the newborn young of this bat as in the human case. Further, differential counts reveal that while the neutrophils predominate in the adults, the young show a high lymphocyte count. However, there does not appear to be much difference between the