the collision, the distance the electron :raverse when its velocity becomes zero, creases under the retarding field. The e in this distance means an increase number of times when the velocity of ctron tends to become zero. Since the .lity of ionisation by a light quantum aximum when its energy just exceeds ising potential so that the kinetic energy photoelectrons is small, it follows from nciple of microscopic reversibility[4] that bability of combination is greatest when electron collides with an ion. Under circumstances, the probability of re-ation is increased due to the excess of ctrons approaching a velocity equal to nd hence there might be a diminution discharge current in an alternating field adiation.

tever might be the true mechanism of crease in current on irradiation, it may phasised that this light-effect has got technical promises and applications in ture.

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vier's College,
., B. K. SAHAY.
25, 1945.

shi and Narasimhan, *Curr. Sci.*, 1940, **9**, 536; Deshmukh, *Nature*, 1941, **147**, 806; —, *Proc. Sci. Cong.*, Presidential Address, Chem. Sec., 2. — and Deo, *Nature*, 1944, **153**, 434. 3. *Phys. Rev.*, 1924, **23**, 664; —, *Ibid.*, 1925, **25**, —, *Proc. Roy. Soc.*, 1925, **109**, 397. 4. Klein and and, *Z. Physik.*, 1921, **4**, 46.

N AN OCCURRENCE OF MICA-ERIDOTITE FROM MIRZAPUR ISTRICT, UNITED PROVINCES

note describes the occurrence of a very and narrow dyke of Mica-peridotite of Chhipia village which has not been usly recorded. It is probably the west-st occurrence of mica-peridotites, the n occurrences being more to the east in Giridih, Jharia and Raniganj coalfields.

: rock is medium-grained, and black in with glistening flakes of deep brown e. Greenish black grains of olivine d to serpentine can also be seen. It esces with warm concentrated hydro-c acid indicating the presence of dolo- The specific gravity of the rock is 2·97. der the microscope, the grains of olivine omewhat rounded, crystal boundaries be-bserved only in a few cases. The length e crystals varies between 1·61 mm. and mm., the average being ·99 mm. Almost he sections show serpentinisation, with ation of magnetite sometimes along the s. In some cases, the serpentine is fur-altered to a mineral resembling talc. nately, however, it is seen to be replaced fine-grained mosaic of dolomite.

Biotite is remarkably fresh and is strongly pleochroic from light yellowish brown to dark brown. Its flakes enclose grains of olivine giving an ophitic aspect. The flakes vary in

Photomicrograph of Mica-peridotite
Ordinary light × 31·25

length from ·26 mm. to 1·54 mm. In some instances bleaching of the interior is marked.

Augite which is subordinate in amount, is pale-green in colour and has an elongated form. A few small stout prismatic sections of common hornblende are observed. It also occurs in small greenish patches derived by the alteration of augite.

Magnetite occurs associated with serpentine, as inclusions in biotite, and in the form of dendritic skeletal crystals. But the inclusions of this mineral in biotite have well-developed outline. Ilmenite is much less common and is seen altered to leucoxene. Hæmatite and limonite occur as small specks.

The study of the rock has been made under the guidance of Dr. H. L. Chhibber, Department of Geology, University of Lucknow. To him the writer is highly indebted.

Department of Geology,
Lucknow University, R. C. MISRA.
February 15, 1945.

NEGATIVELY CHARGED FERRIC VANADATE SOL

WHEREAS the positively charged sols of ferric arsenate, phosphate, molybdate, tungstate and borate have been prepared and studied by Grimaux,[1] Holmes,[2] Dhar,[3] Prakash,[4] and Ghosh,[5] no attempt has been made to prepare and investigate their negatively charged sols. In a paper Prakash and Mushran[6] investigated the detailed conditions under which these negatively charged sols can be obtained in this note the results with negatively charged ferric vanadate sol have been recorded.

When ammonium vanadate is added to ferric chloride solution, yellowish white precipitate of ferric vanadate is obtained. It is observed that the precipitated ferric vanadate can be dispersed by caustic soda in presence of glucose or glycerine to yield a clear deep red sol. If the sol is dialysed until all electrolytes are removed it can be shown to possess a negative charge. By taking the sol in a U-tube with platinum electrodes, and passing a current, it is seen that the sol is coagulated at the anode. The coagulum after being collected and washed is found to contain ferric vanadate. The idea of peptisation can be had from the following figures:—

1·0 to 2·5 c.c. of a ferric chloride solution (corresponding to 30·36 gms. or Fe_2O_3 per litre) when mixed with 1·0 to 3·0 c.c. of ammonium vanadate solution (corresponding to 6·5485 gms. of V_2O_5 per litre) in presence of 0·9 to 3·0 c.c. of 20 per cent. glucose solution requires 1·3 to 4·0 c.c. of N-NaOH (total volume 10 c.c.) to bring about the complete peptisation in half an hour.

1·0 to 2·5 c.c. of a ferric chloride solution (of the same strength) when mixed with 1 to 3 c.c. of ammonium vanadate (of the same strength) in presence of 0·4 to 2·5 c.c. of glycerine requires 1·4 to 3·4 c.c. of N-NaOH (total volume 10 c.c.) to bring about the complete peptisation in half an hour.

Detailed procedure of the study of this sol will be duly communicated.

The auhor is greatly indebted to Dr. Satya Prakash for suggesting the problem and for guidance during the course of this work.

Chemical Research Lab.,
Allahabad University, S. P. Mushran.
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1. Grimaux, *Comptes Rend.*, 1884, **98**, 1540. 2. Holmes *J. Amer. Chem. Soc.* **1918**, **40**, 1014. 3. Dhar and Prakash, *J. Indian Chem. Soc.*, 1930, **7**, **367**. 4. Prakash and Verma, *Z. Anorg. Chem.*, 1932, **205**, **241**. 5. Ghosh and Chakravarti, *Proc. Nat. Acad. Sci.*, 1939, **9**, 201. 6. Prakash and Mushran, *Allahabad Univ. Studies*, **1943**. **19**, **1**.

VERNALISATION RESPONSE OF INDIAN WHEATS

The six different strains of foreign wheats so far tried by us in Almora since 1938—Holdfast, Little Joss, Yeoman, Juliana and Yorkwin—have all given significant vernalisation response, *i.e.*, earlier emergence of inflorescence in plants from pre-chilled seeds. In both Holdfast and Yeoman[1] a maximum earliness of nearly one month has been observed in normal seasonal sowings of October. A few strains of Indian wheat which have hitherto been tried for vernalisation experiments in different places in India are: Bansi 103, in Poona,[2] I.P. 4, I.P. 114 and C. 13, in Almora,[3] I.P. 114 and I.P. 165, in New Delhi,[4] and I.P. 4, I.P. 52 and I.P. 165 in Calcutta.[5] The observed earliness in ear emergence of plants from vernalised seeds in all these wheats, if any, was very slight and statistically insignificant. These observations led to the general acceptance that the cultlivated strains of Indian wheat would not respond to vernalisation on account of their shorter life-cycles.

The results (unpublished) of our vernalisation experiments with crosses between I.P. 4 (Indian wheat) and Yeoman (Cambridge winter wheat), begun in 1939 and still in progress, proved that F_1, F_2 crosses and F_3 selections, all with a much shorter life-cycle than their Yeoman parent, gave very good vernalisation response. This encouraged the hope that there might be some cultivated Indian wheats, after all, which would respond to vernalisation. In 1942, first preliminary experiments were undertaken with 18 pure strains of cultivated Indian wheats—P.8-A, P.9-D, P.499, P.C. 518, P.C. 591, C.Ph. 47, A.T. 38, H.S.W. 3, I.P. 12, I.P. 52, I.P. 80-5, I.P. 101, I.P. 111, I.P. 114, I.P. 120, I.P. 125, I.P. 165 and C. 13—seeds of which were obtained through the courtesy of Dr. B. P. Pal, Imperial Economic Botanist, from his collection at New Delhi. As a result of the encouraging results observed in 1942-43, we (*i*) repeated the experiments with these eighteen strains in 1943-44, and (*ii*) arranged a systematic study, in co-operation with Dr. B. P. Pal, of the vernalisation response of all the available strains of Indian wheats in his collection.

In 1943-44, two sowings were made of vernalised seeds of the eighteen strains listed—one in October 1943, and the other in February 1944. For both these sowings the seeds were chilled for 67 days and were sown with their corresponding controls in similar stages of germination in randomised blocks with four replications. The data of the vernalisation response of the strains of the cultivated Indian wheat in which a significant earliness of over one week was observed in normal seasonal sowings of October, together with their responses in February sowings, for comparison, are given in Table I.

From the above table it will be seen that (*a*) there are strains of cultivated Indian wheat which respond to vernalisation, (*b*) response of different ~~strains~~ varies and (*c*) an earliness in ear emergence up to 27·5 days can be obtained in plants from vernalised seeds of P. 9-D, in normal seasonal sowing in this region. The comparison of the earliness observed in October and February sowings clearly indicates that favourable after-sowing environmental factors—temperature and daily light period—modify, and in some cases, even completely mask, the advantages of pre-chilling of seeds. For instance, (*i*) the earliness observed in P. 9-D and A.T. 38 in October sowing was 27·5 and 20·5 days respectively, while the corresponding earliness in February sowing was 2·68 and 2·50 days, and (*ii*) in February sowing of the other seven strains, no significant earliness could be observed, even in P. 8-A, which in October sowing showed a significant earliness of 19·75 days. Therefore, to explore the practical possibilities of vernalisation for Indian agriculture it would be necessary to observe the vernalisation response of different strains of crops when grown in different climatic regions of India.

Though an earliness of agricultural significance in ear emergence of certain cultivated Indian wheats can be obtained by the use of vernalised seeds, it will be seen from Table II that the number of tillers, the factor positively correlated with yield, observed in both sowings in plants from vernalised seeds, was smaller.