

Bombay Presidency where these are found naturally, but not Kolhapur. Roxburgh<sup>1</sup> refers to them as natives of Coromandel, Ceylon, etc. Their occurrence, therefore, in Kolhapur is interesting from point of view of their distribution.

*Drosera Burmanni* Vahl. was collected at Radhanagari hills (a place of heavy rainfall) while *Drosera indica* Linn. was found at Katyayani hills (with much less rainfall), in marshy places.

A third variety of *Drosera*, also collected in a marsh near Gokulshirgaon—very near to the city, differs from *Drosera indica* Linn. in possessing red flowers instead of the usual white ones, while it agrees in other characters very closely. It also flowers in September.

This third type appears, therefore, to be a distinct variety of *Drosera indica* Linn., not recorded by Cook.<sup>1</sup> This may not be the same as that referred by I. Pfeleiderer<sup>3</sup> and V. Mayuranathan<sup>2</sup> as having "pinkish" flowers.

The following new nomenclature is, therefore, proposed:—

Flowers white . . . . . *Drosera indica* Linn.  
var. *alba*.  
Flowers red . . . . . *Drosera indica* Linn.  
var. *rubra* Parandekar et Diwan.

Biology Department,  
Rajaram College,  
Kolhapur,  
September 16, 1943.

S. A. PARANDEKAR.  
M. G. DIWAN.

1. Cook, T., *Flora of the Bombay Presidency*, 1901.  
2. Mayuranathan, V., *Bulletin of the Madras Govt. Museum*. 3. Pfeleiderer, I., *Glimpses into the Life of Indian Plants*. 4. Roxburgh, W., *Flora indica*, 1874.

### PRODUCTION OF ELEMENTARY SULPHUR BY REDUCTION OF SULPHATE THROUGH BACTERIAL AGENCY

IN the course of investigations on microbiology of some anaerobic bacteria at the Imperial Agricultural Research Institute, New Delhi, an organism, which reduces sulphate to elementary sulphur, has been isolated both from soil collected from the bottom of an irrigation channel and materials from the anaerobic fuel gas plant set up at the chemical laboratory. Although the reduction of sulphates to sulphides in the presence of organic matters has been known for a long time, no mention has been made in literature of any organism producing elementary sulphur by reduction of sulphate. The organism appears to be a new one of the kind as is evident from the morphological characteristics and biochemical tests. The organism is a gram negative, non-spore forming short rod. It grows in Dunham's solution in the presence of sucrose, lactose, maltose, raffinose, levulose, mannite, salicine, and glycerine with no gas and acid. The organism ferments glucose with production of gas and acid and reduces nitrate to nitrite and ammonia. It neither curdles nor peptonises milk. It does not reduce litmus milk. The organism grows well in Van Delden's lactate asparagine liquid medium of the following composition:—  
K<sub>2</sub>HPO<sub>4</sub> 0.5 gm., Sodium lactate 5.0 gm., As-

paragine 1.0 gm., MgSO<sub>4</sub> or CaSO<sub>4</sub> 1.0 gm., FeSO<sub>4</sub> Traces, and Tap water 1,000 c.c. In this medium about 30-35 per cent. of sulphur present in calcium sulphate is reduced to crude elementary sulphur in about a week's time. For the estimation of crude elementary sulphur 50 c.c. of the inoculated culture medium were evaporated to dryness on water-bath. The dried mass was treated with carbon disulphide and then filtered on a tared porcelain dish. The carbon disulphide was then evaporated to dryness. The substance extracted by carbon disulphide was then weighed as crude elementary sulphur. Further test for sulphur was made by oxidising it with nitric acid and precipitating the sulphate with barium chloride.

The production of hydrogen sulphide could not be detected at any stage as no blackening of lead acetate paper occurred during the course of reduction.

The possibility of this organism producing sulphur from sulphate by composting with organic matter is being studied. A paper on the subject will be published later.

Imperial Agricultural  
Research Institute,  
New Delhi,  
September 15, 1943.

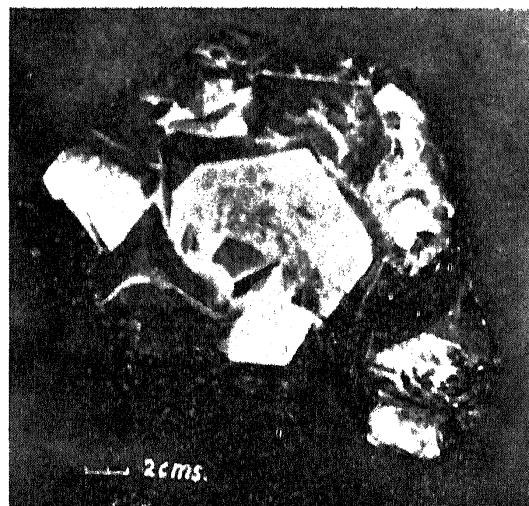
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### PYRITE CRYSTALS FROM THE ALMORA DISTRICT, UNITED PROVINCES

PYRITE is a widely distributed mineral and occurs in formations of various ages, and its crystals are quite common. However, on account of the large size of the crystals the above occurrence is worthy of record.

The crystals occur in greenish schistose phyllites at two localities, Chowkoree (29° 50.5'; 80° 2') and near the bank of Sarju river E.N.E. of Khani (29° 47.70' 47.5').

From the former locality the crystals are cubes, which are somewhat distorted and show



a pseudo-tetragonal symmetry. The edges of the largest crystal measure 19 mm. One of the crystals showing the pseudo-tetragonal symmetry can be seen towards the right in the photograph.

From the latter locality, in addition to the cubic crystals, pyritohedrons are also common. The largest crystal in the collection (see photograph) has octahedral faces on it. The longer edge of the largest pyritohedral face measures 31 mm. and the edge of the octahedral face measures 6 mm. The crystals are grown one into another giving an aspect of inter-penetration twinning. The intergrowth of crystals seen in the photograph weighs 1,005 gm. A chemical analysis of the crystals gave:— Sulphur 53.46 per cent., Iron 45.36 per cent.

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University of Lucknow,  
September 29, 1943.

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### INFLUENCE OF POTENTIAL AND NATURE OF RADIATION ON THE NEW LIGHT-EFFECT IN CHLORINE UNDER ELECTRICAL DISCHARGE

EARLIER results<sup>1,2,3</sup> on the production of a new light-effect, viz.,  $\Delta i$  the diminution on irradiation of  $i$  the discharge current, were observed under conditions selected chiefly to reveal the main phenomenon, within the range and sensitivity of the then available indicator. This precluded a wide-range investigation of the nature of  $\Delta i$  changes, when all except one of the determining factors were unaltered. Thus, e.g., whilst  $\Delta i$ , the light-effect, was quite marked over a wide range of  $V$  the applied potential using a violet light-filter, it was just detectible with red, employing any of the familiar, intense light sources and maximum  $V$ . This limitation was absent using the Cambridge A.C. microammeter, which has both improved and simplified appreciably the whole technique of the study of this new phenomenon.

Fig. 1 records results for  $\Delta i$  observed with the above instrument as  $V$  was varied over an

The light source was a 200 watt bulb run at 180 volts. In agreement with earlier results<sup>2b</sup> for  $\Delta i$  due to a fixed  $V$ , it is seen that the light-effect with the violet filter (curve 2) is substantially similar to that for unfiltered white light (curve 1), and that comparatively,  $\Delta i$  due to red is markedly low. The use of a pile of two violet filters (curve 3) as against one (curve 2) illustrates the effect of a reduction of intensity in diminishing  $\Delta i$ .

In relative units, the total incident energy corresponding to the white, violet, violet (double filtered) and red was 34.1, 16.5, 8.7 and 22.2 respectively. These results suggest that frequency is more important than the intensity in the production of this phenomenon.<sup>2,3</sup> That violet is more absorbed than red by chlorine is an additional factor.<sup>2b,3</sup> It may also be mentioned that within the limitations of the means at our disposal this light-effect was found to be negligibly small in the infra-red.<sup>3</sup> It is interesting that the general influence of an increase of  $V$  in increasing the light-effect in chlorine is but small and is comparatively sensible under the white or the violet light, when  $\Delta i$  is large.

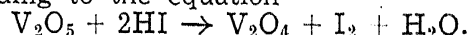
Benares Hindu University,  
September 2, 1943.

S. S. JOSHI.  
P. G. DEO.

1. *Curr. Sci.*, 1940, **9**, 536. 2. (a) *Nature*, 1941, **147**, 806; (b) 1943, **151**, 561. 3. *Proc. Ind. Sci. Cong.*, Pres. Address to Chem. Sec. (1943), pp. 70-75.

### THE INDUCED OXIDATION OF HYDRIODIC ACID WITH VANADATE AS INDUCTOR

THE reaction between vanadate and hydriodic acid has been studied by numerous workers but the course of the reaction is not yet definitely established. Perkins<sup>1</sup> and Gooch and Curtis<sup>2</sup> among others found that the amount of iodine liberated was in excess of that corresponding to the equation



We have conducted experiments to determine the total amount of iodine liberated in the presence of air under varying concentrations of vanadate and hydrogen ion. It was found by us that when the hydrogen-ion concentration was kept constant the discrepancy between the experimental and theoretical amounts (according to the above equation) of iodine increased with the decrease in the concentration of vanadate; when the vanadate concentration was kept constant the discrepancy increased with decreasing concentration of the hydrogen ion.

Ramsay<sup>3</sup> stated that the theoretical amount of iodine corresponding to reduction of pentavalent vanadium to the tetravalent stage is indeed obtained when the reaction is allowed to take place in an atmosphere of carbon dioxide excluding the presence of air. Experiments conducted by us in an atmosphere of carbon dioxide and in vacuum under widely varying concentrations of vanadate and hydrogen ion showed that the amount of iodine liberated in the absence of oxygen corresponds quantitatively to reduction to the tetravalent

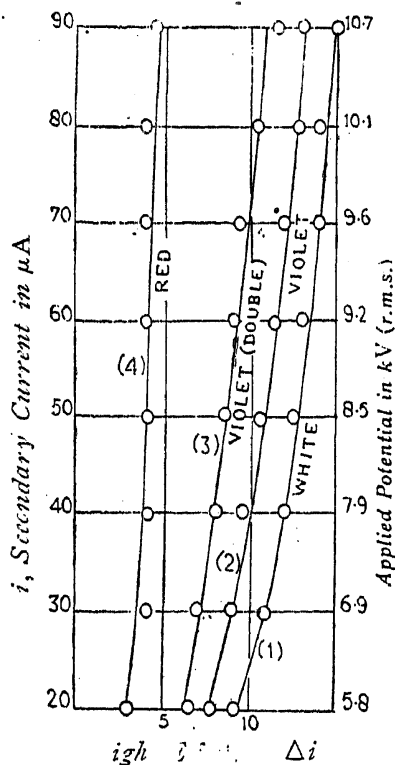


FIG. 1

appreciable range; the corresponding values of the secondary current are also indicated.