

$\beta$ -alanine, arginine, hydroxyproline and tyrosine are detected.

The algæ studied here are comparatively poorer in the proteins and free amino-acids than those reported earlier.<sup>2,3</sup> This might have been due to the variations in the habitat of the specimens studied. However, the record of some additional ones made here, is most likely due to the improved methods of analysis employed in the present investigation. Since the identical species, viz., *P. tetrastromatica* investigated earlier<sup>2,3</sup> as well as in this investigation, differed in amount of proteins and free amino-acids, it seems a study of these variations in the different species of the same genus, as well as under varied ecological conditions, is necessary in order to evaluate the importance of the data

in the taxonomical and nutritional studies of any algal specimen.

The author wishes to acknowledge his indebtedness to Prof. (Mrs.) Ella A. Gonzalves, Institute of Science, for the encouragement given during the course of this investigation, and to Dr. (Mrs.) Francesca Thivy, Algologist at the Central Salt Research Institute, Bhavnagar, for confirming the identification of the algal specimens.

1. Dokhan, R., *Compt. Rend. Soc. Biol.*, 1953, **147**, 1556.
2. Lewis, E. J. and Gonzalves, E. A., *J. Univ. Bombay*, 1959, **28** (3), 1.
3. — and —, *New Phytol.*, 1960, **59**, 109.
4. — and —, *Ann. Bot.* (in press).
5. Pillai, V. K., *Proc. Indian Acad. Sci.*, 1957, **45 B**, 43.

## SYMPOSIUM ON FERRO-ALLOY INDUSTRY

**M**ETALLURGICAL partnership of special and alloy steels with the ferro-alloys started more than a century ago when Robert Mushet happened to add manganese to the then newly invented Bessemer-Kelly process of pneumatic steel-making, providing thereby the solution to a major cri-de-cœur in the metallurgy of steel. Since the turn of the last century considerable developments have taken place in the research and production technology of ferro-alloys which have led to the phenomenal growth of ferro-alloy industry in different parts of the world. These developments in ferro-alloy's production technology have, however, been exceedingly slow in their impact in India.

In order to focus attention on the latest technological trends and research developments in the production of ferro-alloys, a symposium on 'Ferro-Alloy Industry in India' was organised by the National Metallurgical Laboratory from February 12 to 15, 1962, to exchange technical know-how with the leading scientists, and metallurgists from different parts of the world in the context of the interrelated problems facing the industry and its growth along scientific and economic lines. The Symposium drew a large gathering of top-ranking scientists and technologists from all over the world besides a large number of distinguished delegates from India.

The Symposium was inaugurated by Prof. M. S. Thacker, Director-General, Scientific

and Industrial Research; Sir Jehangir Ghandy, Chairman of the Executive Council, National Metallurgical Laboratory, presided, and Dr. B. R. Nijhawan, Director, National Metallurgical Laboratory, welcomed the distinguished delegates.

Twenty-nine technical papers covering the various aspects of research and development work on ferro-alloys and their production and properties were presented and discussed in six technical sessions. The subjects covered relate to (i) survey of raw materials, sampling methods and role of research; (ii) extraction and production technology; (iii) scope for development of ferro-alloy industry, utilisation of by-products and methods of standardisation; (iv) physico-chemical principles involved in the ferro-alloy production; and (v) general aspects of ferro-alloy technology.

The National Metallurgical Laboratory Technical Journal for February 1962 (Vol. IV, No. 1) is a Symposium Number and contains besides the abstracts of all the papers presented at the Symposium, the following technical papers in greater detail: "Some Aspects of the Sampling and Analysis of Ferro-Alloys" by G. M. Holmes; "The Extraction of Vanadium from Titanium Iron Ores" by A. G. Robiette; "Some Applications of Rapid Metallurgy to the Manufacture of Ferro-Alloys" by R. Perrin and A. Greffe; "Electrolytic Manganese in a Non-Diaphragm Cell" by G. Bjorling and N. G. Elfstrom.