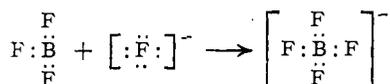


from the mother liquor before heating and the third for this same material after heating to remove ether.

*Anal.* Calcd. for  $C_{30}H_{21}BNa_2$ : Na, 10.50; B, 2.47. Found: Na, 10.59; B, 2.49. Calcd. for  $C_{34}H_{31}OBNa_2$ : Na, 8.98; B, 2.11. Found: Na, 8.92; B, 2.15. Calcd. for  $C_{30}H_{21}BNa_2$ : Na, 10.50; B, 2.47. Found: Na, 10.53; B, 2.40.

Compounds of boron showing a valence of more than three are of course known, such as  $KBF_4$ . In such cases an octet is completed by four covalent bonds thus



No compound has been reported, however, in which the boron completes its octet by taking two electrons from different atoms to give ionic linkages. Thus no compound is known of the formula  $Na_2BF_3$ . It now appears that in case the three fluorine atoms are replaced by three naphthyl groups, then the boron atom can complete its octet by taking two electrons from two sodium atoms. How these sodium atoms are held is a question to be decided by further experiment. This work is being continued.

DIVISION OF CHEMISTRY  
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HENRY E. BENT  
MAURICE DORFMAN

RECEIVED APRIL 23, 1932  
PUBLISHED MAY 7, 1932

### THE ACTIVATOR OF CATALASE<sup>1</sup>

*Sir:*

The activation of glandular proteinase (cathepsin) by glutathione<sup>2</sup> and other —SH compounds points to a connection between enzymic hydrolysis and the sulfur oxidation–reduction system of Hopkins. A connection of the sulfur system to enzymic oxidation is also indicated, however, by our findings that the catalase activity (of pig's or lamb's liver) is increased by S–S derivatives, namely, cystine, insulin and oxidized glutathione. In liver juice, which contains sulphydryl derivatives, the catalase may therefore be activated by all manner of oxidizing agents, such as iodine, ferric iron, oxygen and hydrogen peroxide, so that in the usual preparations of catalase the enzyme will be found completely active.

The natural activator which occurs in the liver press juice is not cystine, since in larger amounts this again inhibits the catalase action, but in view of the quantity of glutathione present in liver, it may be that the natural activator is, in part at least, composed of oxidized glutathione.

Since the presence of —SH derivatives accelerates proteolysis, and that of S–S derivatives, the decomposition of hydrogen peroxide, it would there-

<sup>1</sup> Food Research Division Contribution No. 145.

<sup>2</sup> *Naturwissenschaften*, **18**, 645 (1930).

fore seem that the state of the S-S - SH equilibrium determines whether the cell at the moment functions proteolytically or oxidatively.

BUREAU OF CHEMISTRY AND SOILS  
WASHINGTON, D. C.

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A. K. BALLS  
W. S. HALE

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## NEW BOOKS

**Matière et Atomes. (Matter and Atoms.)** By A. BERTHOUD, Professor of Physical Chemistry at the University of Neuchâtel. Second edition. G. Doin et Cie, 8 Place de l'Odéon, Paris, France, 1932. 324 pp. 28 figs. 11.5 × 18 cm. Price, 26 fr.

This is a revised and enlarged second edition of "New Conceptions of Matter and the Atom." The earlier book has been conscientiously revised and brought up to date. The present chapters include: Historical Introduction, Classical Theories of Light and of Electrons, Theory of Relativity and Mass, x-Rays and Atomic Numbers, Radioactivity and Isotopes, Rutherford Atom and Transmutation, Bohr Atom and Quantum Theory, Complex Atoms, x-Rays and Chemical Affinity, Wave Mechanics.

The style is clear and readable throughout and the selection of material judicious. The book is addressed to "a wide circle of cultivated readers," and the plan is to present selected facts, intelligently grouped, and then to state the conclusions drawn from them. The names of Prout and Proust are frequently confused.

NORRIS F. HALL

**Gmelin's Handbuch der anorganischen Chemie. (Gmelin's Handbook of Inorganic Chemistry.)** Edited by R. J. MEYER. Eighth edition. System-Number 7. Bromine. Issued by the Deutsche Chemische Gesellschaft. Verlag Chemie G. m. b. H., Corneliusstrasse 3, Berlin W 10, Germany, 1932. xxi + 342 pp. 17 × 25 cm. Price, to subscribers, M. 56; singly, M. 49.

This volume presents the chemistry of bromine itself and of its compounds with those elements of smaller System-Numbers (1-6): namely, chlorine, fluorine, nitrogen, oxygen, hydrogen and the inert gases. The relevant literature has been covered up to August 1, 1931.

The great extension of our knowledge of this element, since the previous edition, particularly as regards its physico-chemical properties and those of its compounds, is most impressive. Attention should also be called to the section on the history of our knowledge of this element and on its economics.

The present volume is a worthy addition to this invaluable encyclopedia of inorganic chemistry.

ARTHUR B. LAMB