

showed the presence of a single component and confirmed the homogeneity of this material.

Neomycin A hydrochloride shows a positive ninhydrin test for amino groups, a negative Elson-Morgan glucosamine test, a negative maltol test, and a negative Sakaguchi test for guanido groups.

CONTRIBUTION FROM
RESEARCH LABORATORIES
MERCK AND CO., INC.
RAHWAY, NEW JERSEY

ROBERT L. PECK
CHARLES E. HOFFHINE, JR.
PAUL GALE
KARL FOLKERS

RECEIVED MAY 27, 1949

A NEW METHOD OF SYNTHESIS OF HYDROGEN CYANIDE BY THE REACTION BETWEEN COAL AND AMMONIUM ALUM

Sir:

We would like to describe herewith a method of synthesis of hydrocyanic acid which, under a cursory search of literature, seems not to have been reported before.

A mixture consisting of 10 g. each of the powder of black coal (product of Manji Coal Mine, Hokkaido, Japan) and ammonium alum $\text{NH}_4\text{Al}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$ is heated in a porcelain tube at $400\text{--}500^\circ$ by means of an electric furnace. Air is passed through the tube at a rate of 100 cc. per minute by means of a water jet pump. When the reaction is over, white ashes remain in the porcelain tube. By this procedure 90–92% of the nitrogen of alum is converted into hydrogen cyanide. The hydrogen cyanide produced is caught by a 10% sodium hydroxide solution. The presence of CN^- in the sodium hydroxide solution is detected by the formation of prussian blue. The quantity of CN^- is determined by

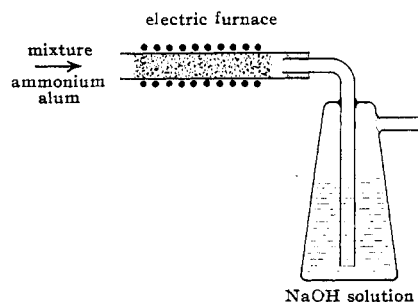


Fig. 1.—Electric furnace apparatus.

titration with a standard silver nitrate solution in the presence of Cl^- .

When coal alone is subjected to the above treatment, a small quantity of hydrogen cyanide is formed. Thus it is understood that a small fraction of the 90–92% yield is derived from the nitrogen of coal. When a mixture of coal and ammonium sulfate is subjected to similar treatment, 20–30% of the nitrogen in the ammonium sulfate is converted into hydrogen cyanide. The low yield is due to the noticeable sublimation of ammonium sulfate which takes place above 400° . A mixture of coke (or active charcoal) and alum gives only 2–3% yield. Coal containing iron gives rise to a poor yield. This might be due to the fact that the iron in coal decomposes hydrogen cyanide catalytically.

We find it highly interesting that the use of coal gives rise to a high yield of hydrogen cyanide out of ammonium alum.

SCIENTIFIC RESEARCH INSTITUTE LTD.
KOMAGOME, BUNKYO-KU, TOKYO, JAPAN

SHIGETO YAMAGUCHI
TOMINOSUKE KATSURAI

NEW BOOKS

The Chemistry of Penicillin. Report on a Collaborative Investigation by the American and British Chemists under the joint sponsorship of the Office of Scientific Research and Development, Washington, D. C., and The Medical Research Council, London, compiled under the auspices of the National Academy of Sciences, Washington, D. C., pursuant to a contract with the Office of Scientific Research and Development. Editorial Board: HANS T. CLARKE, JOHN R. JOHNSON and SIR ROBERT ROBINSON. Princeton University Press, Princeton, New Jersey, February 14, 1949. x + 1094 pp. Illustrated. 20.5×28 cm. Price \$36.00.

This volume is unique in the scientific chemical literature since it is a compilation of the results of unpublished co-operative investigations bearing on the chemistry of penicillin, performed in various laboratories in two different countries. The researches were withheld from publication during the war owing to the importance of penicillin as a military weapon. Declassification of the reports has per-

mitted an assembling of the details of the work in a logical and easily accessible form.

The material is presented in thirty chapters, the first a brief history of the chemical study of penicillin, and the last an appendix containing information as to the origin, date of issue, date of receipt of the individual progress reports and the location and names of the investigators. Each of the other twenty-eight chapters contains a table of contents and consists of a succession of well arranged papers covering either the consolidated results in a particular area from several laboratories or researches accomplished in one laboratory, in a form more or less similar to that found in scientific journals. Chapter topics are distributed according to organic chemical classification and physico-chemical techniques. It must be remembered that when the confidential reports were written it was never intended that they should be made available in their original form to a wider circle of readers. They were essentially interim reports, jottings from laboratory notebooks,