

because it seemed to offer the possibility of preparing the free isopropyl group. Paneth and his co-workers [*Ber.*, **62**, 1335 (1929); **64**, 2702, 2708 (1931)] had already prepared free methyl and ethyl but had failed to obtain the *n*-propyl or the isobutyl radicals from the corresponding lead compounds; they concluded that a large proportion of the *n*-propyl and isobutyl radicals must have decomposed into methyl groups since zinc dimethyl was identified among the products. It occurred to us, however, that the isopropyl and tertiary butyl radicals should have about the same stability as the ethyl radical, since in all three cases a C-H bond must break in order for the radical to decompose with production of an olefin hydrocarbon, whereas all other paraffin radicals can undergo this decomposition by rupture of a C-C bond. This may be easily seen from the examples given in a previous paper [Rice, *THIS JOURNAL*, **55**, 3036 (1933)].

We first made some measurements of the rate of disappearance of the active fragments according to the method described by Rice, Johnston and Evering [*THIS JOURNAL*, **54**, 3529 (1932)]. The following table gives the results obtained with a 1% solution of azoisopropane in acetone, using a quartz tube 0.4 cm. in diameter and an acetone pressure at the standard mirror of 0.22 mm. of mercury; the fall in pressure down the tube was 0.007 mm. per cu.

<i>d</i> , cm.	15	22	11	30	25	18	13	28	20	30	24
<i>t_m</i> , sec.	51	118	33	225	275	71	42	275	83	305	270

d is the distance from the furnace to the standard mirror and *t_m* is the time of removal of the standard mirror. These results were plotted and compared with the curve obtained for lead tetramethyl under identical conditions. The first parts of the two curves coincide exactly, but at distances greater than 20 cm. from the furnace the concentration of active fragments does not fall off as rapidly in the case of azoisopropane as in the experiments with lead tetramethyl. This behavior would seem to indicate the formation of a fragment of comparatively long life during the decomposition of azoisopropane. However, at that time we had not yet developed any convenient method of identification and therefore could not determine conclusively whether the isopropyl group was formed, perhaps undergoing partial decomposition into propylene and atomic hydrogen.

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INDIUM AND SCANDIUM IN PEGMATITE

Sir:

Indium and scandium have been found in a pegmatite dyke in Western Utah. Analyses of samples taken at random along the dyke indicate 1.0-2.8% indium and 0.5-1.2% scandium.

It is interesting to note that these metals do not occur in connection with zinc. The chief minerals of the deposits are cordierite, actinolite, antigorite, calcite and molybdenite. Apparently the indium occurs as a partial replacement of aluminum in cordierite. The mode of occurrence of the scandium has not yet been determined.

We have succeeded in developing a method for extracting the scandium. This method will be described shortly in detail (as a contribution from the Chemical Laboratory of the University of Utah).

SALT LAKE CITY, UTAH

HENDRIK ROMEYN, JR.

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NEW BOOKS

Annual Survey of American Chemistry. Volume VII, 1932. Edited by Clarence J. West, Director, Research Information Service, National Research Council. Published for National Research Council by the Chemical Catalog Company, Inc., 330 West 42d Street, New York, 1933. 346 pp. 13.5 × 21.5 cm. Price, \$4.00.

In this volume of the Annual Survey a new policy in regard to the selection of subjects to be considered has been put into effect. The plan followed involves the reduction in the number of fields covered in any year and the treatment of the less important topics once in two or three years. This change was made necessary as the result of the growing size of the volumes from 257 pages in the first year to 543 pages in the sixth year. The number of chapters has been reduced from 37 to 27, which cover 346 pages. Although several topics have been eliminated, the work covered is so extensive that on the average eight references are considered per page, with the result that the discussions are exceedingly brief and limited often to not more than a statement of the titles. Notwithstanding this fact the authors, in general, have produced readable articles which give a clear impression of the recent developments in the subjects treated. The volume is an example of the art of condensation in scientific writing, which is becoming more and more necessary as time goes on and production increases. Since the number of chapters has been reduced it appears to be desirable to list the subjects treated in this volume. They are as follows: theories of solution, kinetics of homogeneous gas reactions, subatomic phenomena, thermodynamics and thermochemistry, colloids, contact catalysis, aliphatic compounds, carbocyclic compounds, heterocyclic compounds, biochemistry, photochemistry, x-ray examination of materials, electrochemical practice, inorganic chemistry 1929-1932, non-ferrous metals, foods, fermentation, water, sewage and trade wastes, soils and fertilizers, coal, petroleum chemistry and technology, textile fibers, dyes and dyeing, rubber, synthetic plastics, chemical engineering. It should be noted that chemical engineering appears for the first time in the Annual Survey. The inclusion of this topic will add to the value of the book.

The Survey has proved of particular value to those who cannot find time to read extensively. It makes it possible for a chemist to learn with little effort something of the developments outside of his own field.

JAMES F. NORRIS