is now widely used in this country and abroad as a highly convenient and accurate method. These authors eliminated bulk streaming of liquid through the sintered glass or other porous membrane by careful leveling of the membrane which separates the denser liquid above from the lighter liquid beneath. Several workers have obtained erratic results when using membranes that were too coarse.

We find that it is simplest to test all cells for streaming by using them once tilted at an angle such as 30°. If the pores are too coarse, the values for diffusion may be increased as much as four-fold as compared with either the same cell used horizontally or with a cell of fine pores. Such cells should be discarded because those with finer pores such as glass sintered membranes "G3" ($2\text{–}5 \times 10^4$ Å) are scarcely affected by tilting.

DEPARTMENT OF CHEMISTRY C. R. DAWSON
STANFORD UNIVERSITY, CALIF.

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THE RADIOACTIVITY OF LANTHANUM, NEODYMIUM AND SAMARIUM

Sir:

In view of the note in *Nature* [**130,** 846 (1932)] by Hevesy and Pahl regarding the radioactivity of samarium, we wish to report an independent investigation on this subject. In October of this year we discovered radioactivity in a sample of samarium and since that date we have examined samples of lanthanum and neodymium which are also radioactive.

The method employs the Geiger–Müller counter set-up as described by Libby [*Phys. Rev.*, **42,** 440 (1932)]. The salts investigated have been deposited as a thin film on the inside of a glass tube. This is placed around the counter which is in the form of a long wire enclosed in a metal screen cylinder. In a typical run 20 g. of potassium chloride deposited on the tube increased the zero count of 15 per minute to 160.

The activities of the samples of lanthanum and neodymium are not appreciably screened by 0.07 mm. of aluminum, whereas that of samarium is very largely, if not completely, screened, indicating that the activities of the former are mainly of the beta type and that of the latter alpha. We have used two different samples of neodymium, one sulfate and the other oxalate. Both show an activity which is approximately 2.5 times that of potassium per mole. The lanthanum activity per mole is about 8 times that of potassium and the samarium approximately 3 times. A careful examination of a very pure sample of gadolinium sulfate prepared by Professor B. S. Hopkins gave results which are negative to at least 2% per mole of the activity of potassium.

We believe that the radioactivity of these elements is due to the

presence of unstable isotopes, but have not completely eliminated the possibility of actinium as an impurity in the lanthanum and neodymium samples. This point is under investigation.

DEPARTMENT OF CHEMISTRY
UNIVERSITY OF CALIFORNIA
BERKELEY, CALIFORNIA
W. F. LIBBY
W. M. LATIMER

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NEW BOOKS

A History of Chemistry. By F. J. MOORE, Ph.D., Late Professor of Chemistry in the Massachusetts Institute of Technology. Second edition. Revision prepared by William T. Hall. McGraw-Hill Book Company, Inc., 370 Seventh Ave., New York, 1931. xxiii + 324 pp. Illustrated. 14.5 × 21 cm. Price, $3.00.

The revision of this serviceable book has not involved a departure from the general plan of the first edition. The essential change, apart from restatements necessitated by recent discoveries, is the inclusion of biographical sketches of two groups of chemists, *viz.*, (1) brilliant chemists who died during the last twelve years and (2) deceased American chemists who contributed material to the development of chemistry in this country. It is to be regretted that the bibliography at the end of the chapters has not been enlarged, particularly since so many admirable articles on the history of chemistry have appeared during the last ten years in the *Journal of Chemical Education*. The chapter devoted to chemistry in the United States would be more in harmony with the rest of the book, and certainly more useful to American students, if the growth was described as a connected narrative rather than in the form of disconnected biographies. However, the book as revised is an excellent example of books in its field and a faithful expression of the scholarship of the author, whose life as a scientist and as a teacher is briefly recounted in the introductory portion.

LYMAN C. NEWELL

Elementary Qualitative Analysis for College Students. By J. H. REEDY, Associate Professor of Chemistry in the University of Illinois. Second edition. The McGraw-Hill Book Co., Inc., 330 West 42d St., New York, 1932. x + 163 pp. 13 figs. 14 × 21 cm. Price, $1.50.

"The changes consist mainly in the inclusion of new procedures based upon reagents recently developed, and the extension of older methods to more difficult combinations.... Practically the whole book has been rewritten.... If the book has a distinctive feature, it is the emphasis placed upon interpretative work on the part of the student."

Preliminary experiments, notes, and exercises following each group will convince the student that the reagents and conditions as specified are well planned to separate the ions sharply and to detect them with certainty.

The theoretical treatment is clear and helpful. Greater stress might have been laid upon the fact that the whole of qualitative analysis can be formulated in terms of a very limited number of equilibria, and displacements of the same.

Here and there are statements which could be revised to advantage, and without appearance of pedantry. Thus ionic precipitates (p. 2) appear to be produced from