

Dr. Richard P. Hall, Ph.D., University of California, and for the past three years at Rice Institute, Houston, Texas, to be assistant professor of micro-biology; Dr. F. L. Campbell, Harvard University, to be assistant professor of general physiology, and Mr. H. A. Charipper and Mr. F. J. Novotny to be graduate assistants in biology.

DR. RICHARD DOUGLAS PASSEY, lecturer in pathology in the Welsh National School of Medicine, Cardiff, has been elected to the new chair of experimental pathology in the University of Leeds and will also be director of cancer research. Dr. Bryan A. McSwiney, who was assistant professor of physiology at Trinity College, Dublin, and subsequently lecturer in experimental physiology at the University of Manchester, has been appointed to the chair of physiology, in succession to the late Professor W. F. Shanks.

DISCUSSION

GEOLOGIC AGE CALCULATIONS

IN view of the recent publication of two articles under the auspices of the Committee on the Extension of Geological Age by Atomic Disintegration in which the age of the Black Hills pitchblende is in one case referred to as fifteen hundred million years and in the other as sixteen hundred and sixty-seven hundred million years, it may be well to remark that the work of Davis¹ of course precedes that of Richards and Hall² and his estimate is the closer calculation, while the figure in the article by Richards and Hall is simply a round number to show the importance which this particular sample and the age determination thereof seem to have.

It may be well to say that even though no great exactitude can yet be claimed for the numerical figures for age, the relative ages are of great geological value and significance. In this case, for instance, a much greater age is indicated for the Precambrian age of the Black Hills than was previously supposed on what were realized to be very insufficient grounds.

The physicists are hardly yet agreed on the second figure of the numerical constants necessary to compute time from the lead: uranium ratio, and moreover it is by no means universally accepted that the rate of decay of radioactive atoms is uniform in time. Of the eight or more conceivable factors that might affect it, not all have been eliminated as unimportant within the ranges of conditions that occur in the outer rind of the earth.

It does not seem likely that any of them will affect the relative ages. If so it may probably be found out

by comparing ages thus obtained with ages derived in other ways.

This has recently been done by A. Holmes.³ In time we may hope to correlate the periodic and progressive, the hourglass and pendulum methods of estimating time.

In this work C. W. Davis has added important facts, for his paper includes not only an analysis of the Black Hills pitchblende, but that from Katanga, and of a mineral from Utah which may be a recent representative of the Swedish Kolm and the pre-Cambrian anthraxolites.

ALFRED C. LANE

AERIAL MUSIC IN YELLOWSTONE PARK

THE very interesting article in your issue of June 11 on a mysterious sound heard in Yellowstone Park brings to mind the fact that I heard sounds like that described many times in July, 1890, when, in the company of Professor Edwin Linton, then of Washington and Jefferson College, Pennsylvania, I was making a biological study of the waters of the park under the auspices of the U. S. Fish Commission. Linton and I heard these sounds with wonder and delight in different places and under different conditions—once I remember when we were riding on horseback through the woods, but never when they could be explained as due to anything in our immediate neighborhood.

I was so interested in this perplexing phenomenon that I made the following footnote reference to it in my report of our operations, made to the commissioner, Colonel Marshall McDonald, and published in the Bulletin of the U. S. Fish Commission for 1891. Referring to Shoshone Lake, I wrote:

Here we first heard, while out on the lake in the bright still morning, the mysterious aerial sound for which this region is noted. It put me in mind of the vibrating clang of a harp lightly and rapidly touched high up above the tree tops, or the sound of many telegraph wires swinging regularly and rapidly in the wind, or, more rarely, of faintly-heard voices answering each other overhead. It begins softly in the remote distance, draws rapidly near with louder and louder throbs of sound, and dies away in the opposite distance; or it may seem to wander irregularly about, the whole passage lasting from a few seconds to half a minute or more. We heard it repeatedly and very distinctly here and at Yellowstone Lake, most frequently at the latter place. It is usually noticed on still, bright mornings not long after sunrise, and it is always louder at this time of day; but I heard it clearly, though faintly, once at noon when a stiff breeze was blowing. No scientific explanation of this really bewitching

¹ *Am. J. Science*, 1926, xi: 201.

² *Journal Am. Chem. Soc.*, 1926, xlviii: 704.

³ *Geological Magazine*, Nov.-Dec., 1925, xii: 505-515, 529-544.