raphy; Dr. John P. Nafe, professor of experimental psychology. Oscar W. Richards has been appointed assistant professor of biology.

AT Rutgers University, Dr. Albert O. Hayes has been appointed full professor of geology and head of that department. He has served during the past two years as visiting professor of geology.

DR. CARL STEVENSON, of the University of Chicago, has been appointed acting professor of medical history at Cornell University, Ithaca, for the second term of the coming year, during the absence on leave of Professor Preserved Smith.

THE following promotions have been made in the department of chemistry at Princeton University: Assistant Professor Gregg Dougherty, to the rank of associate professor; instructors William T. Richards, Francis B. Stewart and Thomas J. Webb, to the rank of assistant professor.

DR. A. E. CAMERON, professor of zoology and entomology in the University of Saskatchewan, has been appointed lecturer in medical entomology in the department of zoology of the University of Edinburgh.

DR. JOHANNES WEIGELT, professor of geology in the University of Halle, has been appointed to the chair of geology in the University of Greifswald.

DR. HERMANN STEUDEL, of the department of physiology in the University of Berlin, has been made a full professor.

DISCUSSION AND CORRESPONDENCE

A NOTE ON THE FLUORESCENCE OF TEETH IN ULTRA-VIOLET RAYS

THAT teeth fluoresce under the excitation of ultra-violet rays has been known for some time. Hans Stubel[1] states that rabbit teeth fluoresce with a somewhat bluish intense white light. In human beings he finds the lens of the eye to be the strongest fluorescing organ, although the teeth are almost equally brilliant.

The following observations were made with a cored carbon arc and a Kromayer lamp, using as filters: (1) Corning purple-violet Ultra, (2) Corex G 986A, (3) Uviol cell with paranitrosodimethylaniline and a quartz cell of copper sulphate.

(1) The dentine fluoresces much more brilliantly than the enamel and seemingly with a bluer light.

(2) The white spot indicative of beginning dental caries does not fluroesce even though unpigmented. A similar effect is obtained by scratching through a paraffin coated tooth and placing in dilute acetic acid over night.

[1] *Arch. Ges. Physiol.*, 142, 1–14, 1911.

(3) Ashed enamel does not fluoresce, nor does dentine which has been boiled in 50 per cent. sodium hydroxide. On decalcifying dentine in dilute nitric acid the organic matrix retains its fluorescent power to an appreciable extent.

(4) Whereas serumal calculus fluoresces little if at all, salivary calculus fluoresces quite markedly with a reddish orange color (some old museum specimens emitted a white light).

These observations are significant in an investigation of the teeth as they may give a clue to the steps in the decalcification of enamel. From No. 3 the conclusion might be drawn that it was the organic matter which fluoresces. We have a means of determining on macroscopic pieces that we have enamel free from dentine. Further work is in progress.

H. C. BENEDICT

CHEMISTRY DEPARTMENT,
NORTHWESTERN UNIVERSITY DENTAL SCHOOL,
CHICAGO, ILL.

ON THE ANTIQUITY OF RELICS OF MAN AT FREDERICK, OKLAHOMA

IN the issue of SCIENCE for February 10, on pages 161 and 162, is an interesting contribution from Dr. Leslie Spier, of the University of Oklahoma, on the artifacts found recently at Frederick, Oklahoma. The present writer wishes to make some comments on this paper.

The most important statement made by Dr. Spier is that, according to the representations of Mr. Holloman, the owner of the pit, he picked up one arrow head from loose materials at the bottom of the front of the pit as it was being torn down by workmen. On the other hand, Mr. Holloman repeatedly told Director Figgins that he took it out of the hard conglomerate on the floor of the pit. Also the writer has Mr. Holloman's statement to the same effect in two or three letters. In one of these he informs me that he could not free the arrow-head himself, but had to call a workman to bring a tool. A pack knife was brought and with this the utensil was secured. Mr. Holloman further says that Dr. Spier misquotes him in saying that he picked the object from the loose materials. The writer can not for a moment doubt the veracity of either of these gentlemen. There must have been a misunderstanding of some remark made by Mr. Holloman.

In regard to the other flint object, probably a drill, Dr. Spier says that Mr. Holloman scratched it out of the face of the pit with his fingers. Now, if that object had fallen from the surface it would probably have become involved in the red clay which forms the uppermost stratum. In case it had fallen into the sand, this must have been sand which had been