

single species, *Neotoma mexicana* Baird, and the extraordinary opinion is expressed that *N. albigula* Hartley 'is not separable from *N. mexicana*.' Here, as in a previous paper, the author shows himself hopelessly at sea. *Neotoma albigula* and *N. mexicana* not only inhabit different life zones but belong to different groups or subdivisions of the genus!

The Arizona form of the Plains Prairie Dog is given as a distinct species, but anyone who will take the trouble to compare it with specimens from New Mexico and Texas will see that at most it is only a subspecies. On the other hand, the long-eared Arizona Jack Cottontail is given as a subspecies, though very distinct from any other known rabbit.

By curious lapse of memory the round-tailed spermophile (*Spermophilus tereticaudus*) is allowed to remain in the subgenus *Ictidomys*—a subgenus erected by Dr. Allen in 1877 for species with narrow elongate skulls. The species originally referred to it are *tereticaudus*, *tridecemlineatus* and *franklini*. *S. tereticaudus* has one of the shortest and broadest skulls known in the whole genus *Spermophilus*, but, probably by accidental transposition of skulls, it was described by Dr. Allen as long and slender. When his attention was called to the matter he very properly withdrew *tereticaudus* from the group and suggested that *13-lineatus* be taken as the type of *Ictidomys*, no type having been designated in the original description. But in the present paper the short skulled *tereticaudus* is again placed in *Ictidomys*!

Say's ground squirrel (*Spermophilus lateralis*) is persistently referred to the genus *Tamias*—a genus with which it has no affinity whatever and to which it bears only the most superficial resemblance.

With respect to the white-footed mice of the *Peromyscus sonoriensis* group, it is not likely that the last word has been said.

The generic name *Adelonycteris*, adopted from Harrison Allen for the large Brown Bat, has no claim for recognition, being antedated by at least two names of equal pertinency.

The specific name now in current use for the Mountain Sheep (*Ovis canadensis* Shaw) is replaced by *O. cervina* Desm. without apparent reason. Both names were published in 1804,

but there is no evidence that *cervina* antedates *canadensis*. In the absence of positive proof of priority such changes are most unfortunate and not likely to stand.

Passing from technical matters to the substance of the paper, one finds much of interest and numerous previously unpublished records. And it is gratifying to learn that elk still inhabit the White Mountains on the boundary between Arizona and New Mexico, where one was shot August 10, 1894. It is to be regretted that the specimen was not preserved.

C. H. M.

*La sensibilité de l'œil aux couleurs spectrales.* M. PARINAUD. *Revue Scientifique*, Sér. 4, T. 3, 709-714. June 8, 1895.

In a recent number of the *Revue Scientifique* Parinaud gives the results of certain interesting experiments upon the relative sensitiveness of the eye to spectral colors seen under different conditions of retinal adaptation. Two degrees of adaptation were used, one that of the eye in ordinary vision, the other that of the eye from which light has been completely excluded for 20-30 minutes. The following little table gives

| Condition of the Retina. | A | B               | C               | D              | E               | F               | G                | H               |
|--------------------------|---|-----------------|-----------------|----------------|-----------------|-----------------|------------------|-----------------|
| 20-30 min. darkness...   | ? | $\frac{1}{400}$ | $\frac{1}{100}$ | $\frac{1}{10}$ | 1               | 1               | $\frac{1}{100}$  | $2\frac{1}{10}$ |
| Ordinary conditions...   | ? | $\frac{1}{400}$ | $\frac{1}{100}$ | $\frac{1}{10}$ | $\frac{1}{100}$ | $\frac{1}{500}$ | $\frac{1}{1500}$ | ?               |

the general results of the experiments, the letters standing for the Fraunhofer lines. While the figures are not to be taken in any sense as absolute, there are several interesting relations that appear in them.

The red end of the spectrum, for example, appears wholly unaffected by adaptation, though the place of greatest brightness shifts decidedly toward the violet. It was observed further that, with the adapted eye and the low intensities of light used with it, colors from the yellow onward to the violet (*i. e.*, the colors which are influenced by adaptation) appeared colorless; in other words, adaptation of the eye decreases the saturation of the colors seen until they at last appear entirely white. The red end is seen as red if seen at all. A third observa-

tion was that no adaptation whatever exists in the *fovea* (retinal point of clearest vision). It is consequently blind to lights that are yet easily seen by adjacent regions, and all colors are seen by it as colors if seen at all. The relations of these observations to color theories the author has reserved for succeeding papers. It is to be regretted that M. Parinaud has not coördinated his work with that of von Bezold, Hillebrand, König, Christine Ladd Franklin and others, who have, one or another of them, made all or nearly all of these observations before.

E. C. SANFORD.

#### SCIENTIFIC JOURNALS.

THE PHYSICAL REVIEW, VOL. III., NO. 2, SEPTEMBER-OCTOBER.

*A Study of the Polarization of the Light Emitted by Incandescent Solid and Liquid Surfaces:* By R. A. MILLIKAN. In spite of its important bearing upon the whole theory of radiation, the subject of polarization by emission appears to have been heretofore almost wholly neglected. As is pointed out by Dr. Millikan in the brief historical introduction to his own observations, no quantitative study of this subject has yet been made; and even qualitative observations appear to be rare. Having a clear field, Dr. Millikan has therefore undertaken a thorough investigation of the phenomenon. Experiments were first made in order to make certain that the effect is not due to refraction through the heated air at the incandescent surface. For this purpose a piece of platinum foil was brought to incandescence *in vacuo*. The light emitted showed the same degree of polarization as was observed when air was present. It thus appears that the polarization occurs within the radiating body.

Qualitative observations were next made upon a great variety of substances, in order to determine to what extent the phenomenon depends upon the nature of the surface. In all cases it was found that the polarization was in a plane perpendicular to the plane of emergence. Most metals showed a strong polarization, especially at grazing emergence; and provided the surfaces were not altered by oxidation, the behavior of molten metals was similar to that of

solids. Non-metallic substances, such as glass and porcelain, showed the effect in less degree than did the metals. The transparency or non-transparency of the material appears to have little influence upon the amount of polarization observed. For quantitative observations the author used the polariscope of Cornu, an instrument quite simple in construction and yet capable of considerable accuracy. The present paper contains a discussion of the sensitiveness of the instrument, together with a few observations made with it; but the discussion of most of the quantitative work is postponed until the second half of the paper, which will appear in the November number.

*Alternating Currents when the Electromotive Force is of a Zigzag Wave Type.* By E. C. RIMINGTON. Of course no dynamo will give an E. M. F. curve of the zigzag form. Nevertheless when certain harmonics are present in unusual prominence this shape of curve is sometimes approached. Mr. Rimington has investigated the relation between current and electromotive force in an inductive circuit for the ideal case, in order to be able to predict roughly what will occur in practice. The mathematical methods used are novel, and results are obtained in such form as to be readily available for calculation. Perhaps what will most strongly appeal to the reader are the diagrams giving the curves of electromotive force current for certain assumed values of the resistance and inductance. Diagrams are also given for the case of an E. M. F. curve of the rectangular type.

*On Ternary Mixtures.* By W. D. BANCROFT. This is a continuation of an article begun in the July number, which has already been noticed in SCIENCE. Further abstract will be postponed until the article is completed.

*On a Simple Method of Photographically Registering the Infra-Red Energy Spectrum:* By KNUT ÅNGSTRÖM. In this paper are described two forms of apparatus for obtaining autographic bolometer records, the results achieved being similar to those obtained by Langley in his recent work on the infra-red solar spectrum. Dr. Ångström makes no attempt to improve upon the elaborate apparatus of Langley, the wonderful results of which he does not hope to equal. But, as he very truly remarks, "such