2. Kadiak Bear, *Ursus middendorffi* Merriam, of Kadiak and the Alaskan Peninsula.

3. Yakutat Bear *Ursus dalli* Merriam, from Yakutat Bay, Alaska.

4. Sitka Bear, *Ursus sitkensis* Merriam, from Sitka.

5. Grizzly Bear, *Ursus horribilis* Ord.

6. Alaska Grizzly, *Ursus horribilis alascensis* Merriam (nom. prob.).

7. Sonora Grizzly, *Ursus horribilis horrixus* Baird.

8. California Grizzly, *Ursus horribilis californicus* Merriam (nom. prob.).

9. Barren Ground Bear, *Ursus richardsoni* Reid.

10. Black Bear, *Ursus (Euarctos) americanus* Pallas.

11. Louisiana Bear, *Ursus (Euarctos) luteolus* Griffith.

12. Everglade Bear, *Ursus (Euarctos) floridanus* Merriam.

13. Glacier Bear *Ursus (Euarctos) emmonsi* Dall, St. Elias Alps, Alaska.

The paper is very fully illustrated, having seventeen cuts in the text and three plates, illustrating the dental and cranial characters of the forms recognized. Many of the figures of the skulls are reproductions from photographs.

<div align="right">J. A. A.</div>

Elementarcurs der Zootomie in fünfzehn Vorlesungen. Von DR. B. HATSCHEK und DR. C. J. CORI. Jena, Gustav Fischer. 1896.

This new zootomy of viii. and 104 octavo pages, 18 plates and 4 text figures comes to us as a surprise after waiting so long (and apparently in vain) for the Vierte Lieferung of Hatschek's Lehrbuch der Zoologie. It devotes four lectures to Salamandra maculosa, one to Rana temporaria, two to Anodonta mutabilis, two to Helix pomatia, two to Astacus fluviatilis, two to Periplaneta orientalis, one to Lumbricus terrestris, and one to Hirudo medicinalis. Apus cancriformis and Hydrophilus piceus each constitutes an 'Anhang' to the eleventh and thirteenth lecture respectively. Of the plates four are devoted to the Salamander, one to Rana, two to Anodonta, two to Helix, three to Astacus, one to Apus, three to Periplaneta and Hydrophilus, one to Lumbricus and one to Hirudo.

The general plan of the book is to indicate first in a table or two the systematic position of the animal to be studied; then, as an introduction, give a brief account of the organization and relationship of the group to which the animal belongs, and then give an account of the external and the internal anatomy of the animal, preceding the accounts of the several systems of organs with brief laboratory directions. Practically it is a meager laboratory guide distributed in a text-book that aims to give the beginner a general survey of the animal kingdom in as short a time as possible, and with material most easily obtained at Prague.

The fish is omitted because a profitable study would require too much time, and the Coelenterata, Echinodermata and Ascidians are merely alluded to in the lectures, because laboratory work on these groups is impracticable in ' eines ganz elementaren Kurses.' When we read the lectures, the technical notes and examine the figures we exclaim what is a ' ganz elementar Kursus ' at a university !

In the preface we are told this elementary course in zootomy is the outcome of a ten-years' experience at the University at Prague and that with respect to ' Form, Inhalt und Ausdehnung' it represents quite accurately the annual course of lectures and exercises given at the University. The object of the course, it is stated, is to acquaint the beginner with a mass of facts that in connection with the lectures upon theoretical zoology shall constitute a foundation for more advanced study.

All of this we are assured can be attained in fifteen two-hour periods ! This will no doubt be welcome news to the lovers of the ' 14 weeks ' courses which many of us mention with so much respect. Personally we have no time to waste upon such courses at our colleges or universities, and we even have our doubts as to their value in our high schools.

It is the unanimous verdict of careful observers that the American student in general is not a whit inferior to the German student, and yet these authors would have us believe their beginners in zoology study ' in fruchtbringender Weise ' the vascular and nervous systems of Salamandra maculosa—listening to the lecture, dissecting and making sketches and notes of

these systems—in two hours ! And this at the beginning of the course ! This same course also provides laboratory work on Apus and Hydrophilus in addition to that on two other Arthropods, but can not get time for any work on the fish or the Echinodermata or the Coelenterata. We can crowd ourselves enough to pass the Tunicata, but we can hardly comprehend how a man capable of beginning so promising a work as the 'Lehrbuch der Zoologie' can so lightly pass over these magnificent groups.

As to the figures we are bound to say that in point of distinctness most of them are inferior to those of well known standard works. The shading is often poorly done, though they are all neat and clean. Originality, however, is hardly enough to justify a new figure, particularly if it is to appear in a text-book for some good. Unless a figure is a decided improvement in some respect or other we prefer to have it remain the exclusive property of the author and his students. Some of the figures are of necessity so much like well known old ones that they have nothing to specially recommend them.

It is undoubtedly a mistake to introduce into an elementary course individual views of matters in dispute. The authors have not sinned grossly in this respect ; still the 'Cladus' and 'Anhang' ideas might have been kept out without impairing the value of the book. We even get the accounts of Apus and Hydrophilus as Anhänge.

The hope of the authors that their 'Büchlein' will prove useful to others may be realized to some extent in Germany ; but for the English teacher and student, excepting the descriptions and illustrations of animals not taken up so fully in other books, there is nothing in it to recommend it above any of the good books now available.   HENRY F. NACHTRIEB.

SCIENTIFIC JOURNALS.

THE PHYSICAL REVIEW, JULY–AUGUST.

On the Measurement of the Expansion of Metals by the Interferential Method: By E. W. MOR-LEY and WM. A. ROGERS. The first part of this article by Prof. Morley is devoted to a description of the method used, which consists essentially in measuring the change in length, during the heating or cooling of a test bar, by observing the displacement of interference bands. These bands result from the interference of beams of monochromatic light reflected from mirrors which are placed at the ends of the test bar and a constant temperature bar respectively. A later article will contain the results of an actual trial of the method. As in all cases where interference phenomena are used, the method demands great care in all details and is capable of extreme accuracy. Prof. Morley discusses the sources of error and the means of avoiding them at some length and in a very practical manner. A difficulty which one would not be apt to think of arose when the sodium flame was used as a source of light ; for the number of bands to be counted was so great (five or six thousand) that the slight difference in wave-length between the two sodium lines caused a great decrease in the visibility of the bands in certain regions. Thus when about 3,400 bands had been counted, the fringes were so obscure that the next hundred could hardly be observed at all.

The Viscosity of Polarized Dielectrics: By A. W. DUFF. Professor Duff finds that the viscosity of certain non-conducting liquids, such as glycerine and castor oil, is increased when the liquid is subjected to considerable electrostatic stress. The increase observed was small, being expressed in fractions of one per cent., but the fact of its existence seems to be definitely proved. The change was measured by observing the rate of descent of small spheres which were allowed to fall through the liquid between two oppositely charged plates. If, as seems probable, Prof. Duff's results are confirmed, we have here a new class of electrical phenomena, doubtless intimately connected with the electrostatic Kerr effect.

Note on the Theorem of Clausius: By EDGAR BUCKINGHAM. Prof. Buckingham's object is to give a demonstration of what we usually refer to as the 'Second Law of Thermodynamics,' for cases not considered in Clausius' original proof and usually treated very briefly by his followers. The cases considered are (1) systems whose state is defined by only one coordinate besides the