forms of at least medium size are common. The Caney shale of the Arbuckle Mountains of Oklahoma, for instance, is often very fossiliferous, and in places carries a fauna made up predominately of straight cephalopods. It is evident that orthoceracones of large size and in large numbers did live on into the Carboniferous in a few favored localities.

The Fayetteville cephalopods are remarkable in the second place because of their unique morphology and because they are well enough preserved to throw definite light on their unusual structure. Polished sections show that the animal did not completely abandon its posterior chambers when the body moved forward to occupy a new "living chamber." Furthermore, it is evident that the camerae were not air containers, but the loci of deposition of regular organic deposits, secreted by rayonnettes, or double membranes, which extended from the siphuncular wall to the shell of the animal at about the middle of each camera. Complete evidence for this statement is presented elsewhere,[4] but partial proof for the contention may be found in the fact that the holotype of the genus *Rayonnoceras* is a conch which was broken in two and recemented during the life of the individual. If the cephalopod did not maintain organic connection with its camerae, this remarkable circumstance is very hard to explain.

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A PARASITE OF THE GOLD-FISH

A SHORT time ago Mr. Guy Mason, of Boulder, Colorado, sent me a parasitic crustacean which he had found on the gills of one of his gold-fish (*Carassius auratus*). It is broad oval, about 4.5 mm. long, with a pair of round adhesive discs on the under side. The tail is deeply notched, and is marked with a pair of black dots. The gold-fish was bought in Denver. The species proves to be *Argulus trilineatus* C. B. Wilson, well described and figured in Proc. U. S. Nat. Museum, XXVII (1904) p. 651. Wilson had a single female, found on a gold-fish at Macon, Georgia. My specimen is also a female. The name *A. trilineatus* is perhaps not quite appropriate, as my specimen shows the same pigment spots, but more numerous than in Wilson's figure and distributed along each side of a clear line. On each side of the line there is a certain tendency for the spots to be in two rows, and Wilson's figure apparently shows that his animal also had four rows of spots. The species presumably came from Europe, and it is in fact very similar to the European *Argulus coregoni* Thorell. Those who have gold-fish should be on the lookout for this curious crustacean which may prove to be commoner than the scanty records indicate.

Wilson writes *A. trilineata,* but the name *Argulus* is of masculine gender and is elsewhere so treated by Wilson himself.

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UNIVERSITY OF COLORADO,
BOULDER, Nov. 18, 1926

[4] *Loc. cit.*, 345.

A CONTEMPORARY OF CHARLES DARWIN

A LETTER has recently been received from an English lady, Mrs. Arabella B. Fisher, who as Miss Arabella B. Buckley, at the age of twenty-three, served as secretary to Sir Charles Lyell. At that time Miss Buckley undoubtedly wrote many of the letters which passed between Lyell and Darwin.

The writer recently received a special request from Mrs. Fisher for a reprint of his address at Oxford entitled "The Problem of the Origin of Species as it appeared to Darwin in 1859 and as it appears to us to-day," as recently printed in SCIENCE. Mrs. Fisher's letter of acknowledgment shows that the Oxford address was successful in expressing almost complete dissent from Darwin's original statement without offending the old friends and supporters of the great naturalist:

> Thank you most heartily for sending me your article on "The Problem of the Origin of Species" at the request of Miss Allen.
>
> I am now an old woman 86 years of age, but I was a young girl of 23 when, as secretary to Sir Chas. Lyell, I first met Mr. Darwin and was encouraged by him to write on animal life for children. I had the privilege of visiting him and Mrs. Darwin at Down until his death in 1882.
>
> I revered him not only for his work but for his noble character, and was somewhat pained by the reaction against natural selection in the struggle for existence exhibited by some English and American zoologists after his death. As I married and lived in the depth of the country not long afterwards I only got second hand information as to recent advances in knowledge on these points.
>
> Therefore when I saw the short account in the *Times* of your address at the British Association this year I welcomed even such scanty information as it contained, and longed for the article itself.
>
> I give you these personal details as it will show you how I value your impartial account of recent investigation, and your appreciation of how the foundations of the theory itself were "really and truly laid" so far as the knowledge of that time permitted.
>
> Thanking you again most sincerely.
>
> Yours truly,
>
> (Signed) ARABELLA B. FISHER
> (née Buckley)

This letter will be added to the growing collection of Darwiniana in the American Museum of Natural History.

HENRY FAIRFIELD OSBORN
AMERICAN MUSEUM OF NATURAL HISTORY

SCIENTIFIC BOOKS

Our Mobile Earth. By REGINALD A. DALY. New York, Charles Scribner's Sons, 1926.

THIS book, "boldly planned on an endlessly difficult theme," is primarily intended for the general reader; even so, working geologists and especially teachers of the earth sciences will find "Our Mobile Earth" not only replete with facts but also interesting, and inspirational to deep thinking. The earlier chapters abound in short sentences, and in questions that are answered directly with examples and striking illustrations; toward the end, however, as the subject-matter becomes more difficult, the book becomes somewhat heavy reading. It goes easily from the known to the unknown, and finally becomes highly speculative, and why not, since "science progresses through systematic guessing in the good sense of the word"? Daly has made clear in this book many of the profound problems now so actively discussed by geologists and geophysicists everywhere, as to why the earth has high standing continents, vast oceanic basins, mountain chains, volcanoes and earthquakes.

Daly's theme, as his title shows, is the mobility of the earth's surface. This mobility is expressed in earthquakes, volcanic action, broad warpings of the crust, rising of mountains and subsiding of oceanic basins. The opening chapter is on "Great Earthquakes of History." The crust is under strain and at intervals it snaps and moves a little—"each snapping means an earthquake." Between 1885 and 1903, the seismographs of Japan recorded four earthquakes per day, while for the whole earth there is nearly one for each hour. Fortunately, however, most of them are on the oceanic bottoms. The following chapter on the "Nature of Earthquakes" makes it plain that our city fathers should above all study seismology and human psychology, for this knowledge is "to the millions of the future more precious than rubies."

These two stirring chapters lead naturally to a study of "The Earth's Interior," and thence into another striking chapter on volcanic action. The rigid crust, composed of crystallized granite and basalt, is, we learn, "about forty miles thick," and it rests upon a hot, easily yielding and uncrystallized substratum of basalt. This substratum is "potentially mobile" and in consequence gives rise to "the possibility of volcanic action, and of mountain chains." The granitic continents, of lighter materials, actually float on the heavier basalt of the substratum, just as an iceberg does in sea water. From the substratum rise, through great cracks in the crust, the materials extruded by the volcanoes. Furthermore, as the earth is a shrinking mass, due to loss of heat, to loss of material to the exterior (gases and rocks), and to compression, naturally the cold and rigid crust must also shrink, and it does so through folding, crumpling and overriding of masses. It is due to these internal changes that the face of our earth is mobile and has taken on, through the further action of erosion, the expression we see all about us.

Mainly through earthquake shocks and the resulting tremors or waves that travel rapidly around and through the earth, geologists have learned that the material of the earth is in layers or shells: at the center is the core of iron, making one sixth of the earth's mass; this is overlain by the transition shell, eight hundred miles thick, in which rock materials are introduced; and then follows the silicate shell, one thousand miles thick, in which the amount of iron becomes less and less, and which is in turn enclosed by the crust of the earth, about forty miles thick.

We are now prepared to understand the "Distortion of the Earth" and why there are mountain ranges, and then we are instructed as to the origin of these mountain ranges. In the last-mentioned chapter the climax of the book is attained, but to round out the subject another chapter is added on the "Evolution of the Face of the Earth."

It has long been known that Daly sees much of value in the Taylor-Wegener hypothesis of continental drift, which is now being widely discussed. This hypothesis, he holds, "must be seriously entertained as the true basis for a sound theory of mountain building. . . . Taylor and Wegener believe that the mountain chains of the globe were formed by the horizontal crushing of geosynclinal prisms which lay in front of *slowly moving, migrating continents.*" Parts of the continents are bowed or raised up and accordingly gravitate downhill, as it were, over the potentially mobile substratum, and so by their sliding force crumple together the weaker places in the crust. As he says, "The continents appear to have slid downhill, to have been pulled down, over the earth's body, by mere gravity; mountain structures appear to be the product of enormous, slow *landslides.*"

"Our solid earth, apparently so stable, inert and finished, is changing, mobile and still evolving. . . . And the secret of it all—the secret of the earthquake, the secret of the 'temple of fire,' the secret of the ocean basin, the secret of the highland—is in the heart of the earth, forever invisible to human eyes."

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