themselves, however, the dominating faunal features of the intermediate Jacksonian ought to have carried conviction, or nearly that, to the mind of any unprejudiced paleontologist. The Zeuglodontidae, represented (as generally considered) by the two genera Zeuglodon and Squalodon, are thus far positively known (in their earliest forms) only from late eocene or miocene (and oligocene?) deposits; and the only species of the former other than the American forms, and those obtained by Schweinfurth from Birket-el-Keroun (and recently referred by Dames to the eocene or oligocene horizon), is a member of the same group of deposits (the Bartonian) which in England correspond in position with the Jackson beds; i.e., overlie the Parisian (equal Claibornian). In that which relates to the oligocene (Orbitoide, Nummulite) rock of the peninsula of Florida, whose existence appears to give Dr. Meyer a considerable amount of anxiety, and which would better suit the requirements of the new theory were it cretaceous, our author need entertain no doubts: the rock is there, and has recently been found in several other localities which were not known at the time the mapping for my book was executed. No amount of chastising of Orbitoides will efface the testimony which it has unguardedly left behind.

I fully agree with Professor Hilgard as to the value of tracing derivative relationships between the species of the different formations, — a field of inquiry which I entered some years ago, but from which I have thus far drawn but barren fruit. In such inquiry it is necessary, however, to know the relative positions of the different deposits with which one is dealing, and not to proceed, as Dr. Meyer has done, from top to bottom, believing that top was bottom, and bottom top. Some curious evolutionary results might arise from this novel method of procedure.

For the rest, I need only reiterate my warning to geologists and paleontologists against the acceptance of the vagaries which are set forth in the two articles before us. Having given attentive study to the fossils from the region in question for a period extending over six years, and with the types of by far the greater number of species that have ever been described from the formation under my eyes and under my charge, I can say that those portions of Dr. Meyer's papers which relates to systematic paleontology are of about equal value with the geological, and clearly show that the author has not yet even found time to identify the numerous species which he is discussing. Pseudo-science of the kind to which we are here treated should be exposed. Angelo Heilprin.

Academy of natural sciences, Philadelphia, July 20.

The etymology of 'ginkgo.'

Mr. Lester F. Ward, in a note to his paper on the ginkgo-tree (*Science*, v. 495, June 19, 1885), says, "The orthography of this word ['ginkgo'] is not settled. Linné wrote 'ginkgo,' as did also, apparently, Kaempfer before him ('Amoenitat. exotic.,' 1712), and as all botanists since have done, and do still; but nearly all lexicographers reverse the consonants, and write 'gingko.' . . . In the supplement to Webster's dictionary the word is said to signify 'silver fruit;' and it would seem that the etymology ought to determine the orthography."

The first use of the word *ginkgo* occurs in Kaempfer's 'Amoenitates exoticae,' p. 811, where he says, "杏銀 *Ginkgo*, vel *gín an*, vulgo *itsjò*. Arbor nucifera folio adiantino." And then he adds a page of detailed description, and a page of figures of the leaves and fruit. He gives the two Chinese characters that are still used for the fruit in Japan: they are pronounced by two different methods, according to two provincial pronunciations brought to Japan long ago, and corrupted there, — either *ginkíyoo* (not the common English *oo*, but each *o* long, or as in 'oolite;' and the *g* as in 'give,' of course), or, much more commonly, *ginnan;* and they mean 'silver apricot,' or 'silver almond.'

It is plain that Kaempfer's *ginkgo* was a misprint for *ginkjoo;* since the second character (杏) is also given by him on p. 798 for the apricot, and transliterated *kjoo*, — a very reasonable way to write it, with the German sound of *j*, and the long *o* doubled, as actually pronounced. Undoubtedly, the last syllable of the word was written in the same way at p. 811; but, in printing, it became *kgo*, and the error has been sacredly perpetuated until the present time.

The word *ginnan* (the first *n* is doubled in pronunciation) is likewise misprinted, on p. 812, 'ginnaù.'

Instead of *ginkiyoo*, or *ginnan*, the name of the fruit, the tree is called in Japan *ichoo* (two long *o*'s, as before, not the English *oo*, but the *ch* as in English), and that is what Kaempfer writes *itsjò*.

Thunberg ('Flora japonica,' 1784, p. 358), probably guided by his own ear, in amendment of Kaempfer, writes the name *ginko*, which represents a third less common Japanese pronunciation of the second syllable, *koo*, with two long *o*'s; and he speaks of the great size of the tree, comparing the thickness of the trunk to oaks. Possibly the evident errors of the Linnean name in spelling, pronunciation, and meaning (signifying the fruit rather than the tree, though Dr. Williams's dictionary says the same name is in China given also to the tree; and it is in Japan, too, sometimes given to the fruit-bearing sex of it), may be considered strong arguments in favor of the name 'Salisburia;' or, perhaps better, in favor of Thunberg's reform of the orthography — if that be not treading on altogether too holy ground.

Kaempfer pointed out the resemblance of the leaf to Adiantum, not only on p. 811, but again in the detailed description on the next page.

My copy of Kaempfer has an old manuscript note, as follows, — "1753. See this plant in Mr. James Gordon's garden at Mile End, London," — showing that the tree was very early introduced in Europe.

The tree sometimes grows to a very large size, and there was one about five feet in diameter in my garden at Yedo, on high ground; but damp soil is said to be its preference. The juice of the thick pulp outside the nut is very astringent, and is used in making a somewhat waterproof, tough paper, and a preservative black wash for fences and buildings. The meat of the nut is cooked and eaten.

Benj. Smith Lyman.

Northampton, Mass.

THE RECENT LAND-SLIDE IN THE WHITE MOUNTAINS.

Between Jefferson and the well-known Fabyan House, in the White Mountains of New Hampshire, is an oblong elevation of thirty-six hundred feet above the sea, known as Cherry Mountain. It is about seven miles in length

and three miles in width, the longer axis being north and south, and it rises from a nearly level area elevated fourteen hundred feet above the sea. On the east side, there is a close connection with Mount Deception, a spur from the principal White-Mountain range; and the Cherry-Mountain road, passing over the lowest point, reaches the altitude of twenty-two hundred feet. At the very north end of Cherry Mountain is an elevation known as 'Owl's Head,' about seventeen hundred and fifty feet above the plain. Down the steep side of this part of the mountain, at six A.M. of Friday, July 10, there rushed an immense mass of earth, rocks, and trees, producing a land-slide destined to be as memorable in the annals of White-Mountain history as the famous Willey slide of 1826. In less than five minutes this mass of earth slid down an inclined plane one and a half miles in length, a vertical descent of seventeen hundred feet, completely demolishing a partially built house, a large barn, injuring fatally one man, killing several cattle and smaller domestic animals, both those confined within enclosures and those feeding in the open field.

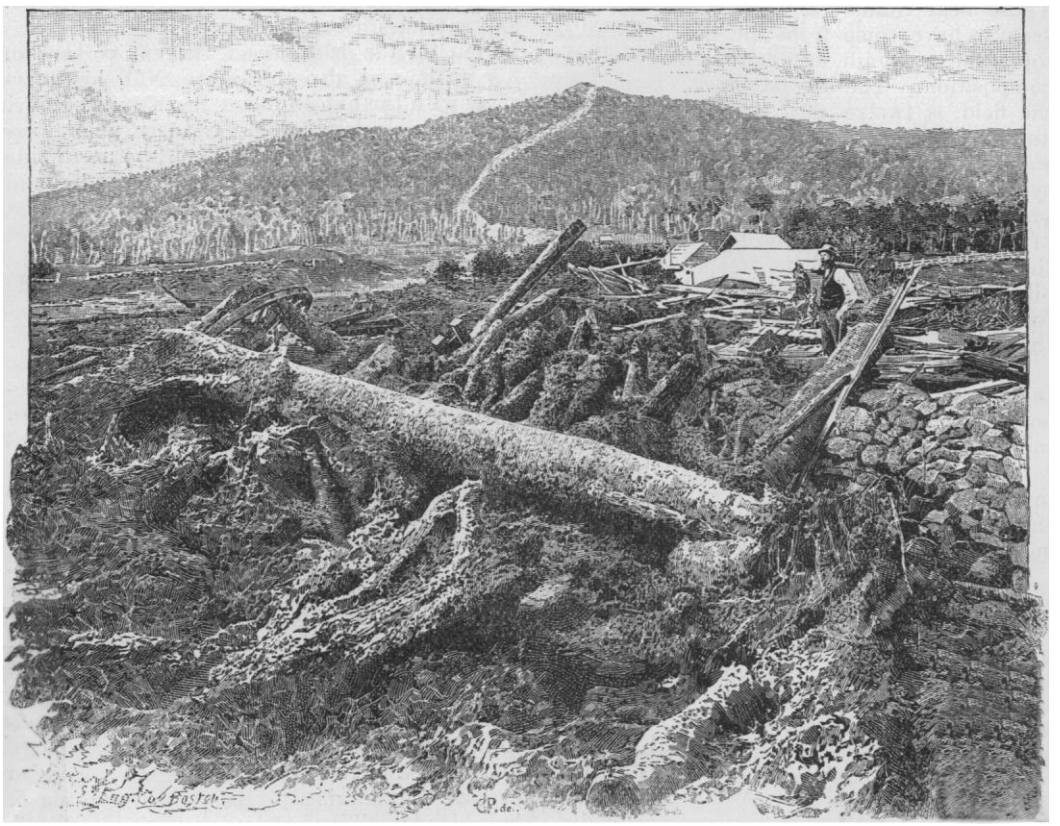
At the very base of the mountain is a carriage-road running east and west. Upon the south side, upon a slight eminence, stood Mr. Oscar Stanley's house, with a small orchard partly behind, and partly to the west. The stream which descended the valley of the slide flowed very near this house, ordinarily discharging as much water as would pass through a hoop of twelve inches diameter. A quarter of a mile nearer the mountain stands a small house occupied by John Boudreau. The *débris* nearly touched Boudreau's doorsteps, but had not force enough to remove Stanley's orchard. It spread over seventy-five feet width of grass-land, while the principal portion passed on against the house. The greater elevation of the orchard seems to have insured its preservation.

Mr. Stanley, with two joiners, were at work in the house at the time of the slide. For half an hour previous there had been a heavy thunder-shower, but it was only raining gently when there came a noise sounding something like thunder. Stanley spoke to his companions, who suggested the noise came from a train on the railway. He ran to the door, saw the slide coming, and cried out, "I am going to get out of this: the mountain is coming down!" They all jumped for their lives, and barely escaped. The hired man, Walker, who was milking in the barn, was less fortunate. He heard the noise, ran from the barn, but was caught by the flying timbers and badly bruised, so that he died a few days later. He was buried on the 16th, upon the anniversary of his birth, and also the day set for his marriage with the oldest daughter of Mrs. Stanley.

The arable land of Mr. Stanley, amounting to about twenty acres, lay upon the north side of the road, and it is entirely covered by mud and stones. Grass, oats, wheat, potatoes, and the garden were all buried under several feet thickness of 'calamity,' as he described it. Several observers from a distance heard the noise, and saw the mass slide down the mountain. It would seem that rain had fallen copiously during the whole of the night previous, completely saturating the natural earth or decomposed granite gravel of the mountain-side. Just before six A.M., another thunder-cloud moved against that which had been discharging during the night, so that the slide seems to have been nearly synchronous with the collision of the clouds. This shock would naturally produce what is commonly called a 'cloud-burst,' when an extraordinary amount of water falls. This, meeting *débris* already saturated, produced the conditions favorable for the descent of the mass, especially should any accidental cause furnish a starting-point. Such a cause existed in this case, which will be mentioned presently.

The rock at the summit is peculiar, being a syenite characterized by very small crystals of hornblende. Two hundred feet down, this is replaced by a greenish porphyry, verging into a granite called the 'Albany granite' in the 'New-Hampshire geological report.' This porphyry is not very thick. Below it is found the rock making up the principal bulk of Cherry Mountain, a species of protogene or chloritic granite. All these rocks are traversed by jointed planes, dividing the granites into parallel plates two, four, or more inches thick, and all dipping northerly, or down the steep slope at an angle of about 20°.

This slide started less than forty feet below the summit of Owl's Head, from a precipice of perhaps ten feet altitude. The site is further designated by a vacant place in the precipice, from which large blocks were detached, presumably the beginning of the catastrophe. For a hundred and eighty feet vertical descent, the slope may be 20°, and the direction of the movement N. 60° E. for about half a mile. Then follows a sort of shelf, or step, where the inclination suddenly increases, becoming perhaps 30° to 35° for a short half-mile in distance, and a fall of six hundred and fifty feet.



THE RECENT LAND-SLIDE ON OWL'S HEAD.[1]

The path of the slide, commencing at a single point, gradually increases in width till the maximum of a hundred and seventy-five feet is reached in a vertical descent of three hundred feet. Essentially this width is maintained for a vertical descent of six hundred and fifty feet, when there is a change in the direction on its reaching the bed of the stream, and the width is narrowed as much as thirty or forty feet. Very many smooth ledges were uncovered in the first five hundred (vertical) feet from the starting-point, and the angle of the slope has lessened to about 20° at three hundred feet from the top to the bend six hundred and fifty feet below the starting-point. This part of the slide may be seen to excellent advantage from the village of Jefferson Hill, and other elevated points in the neighborhood. The lower part of the slide is obscured from most points by the adjacent forest.

[1] The illustration of the slide is from a photograph by D. W. Butterfield, photographer of the Boston and Lowell railroad.

Coincident with the change in the direction from N. 60° E. to nearly north is a diminution in the slope and a deepening of the excavation. At first not more than a foot or yard in depth seems to have been removed. At the bend the depth of the middle portion of the excavation is as much as forty feet. The distance from the bend to the extreme end of the slide is about one mile. The slope falls from 20° to about three hundred feet to the mile below Stanley's house. The width of this lower section is usually about a hundred and fifty feet, being ninety-five feet at the narrowest place below Boudreau's house, and a hundred and seventy-five feet just above Stanley's. So rapid was the descent, that every change in the direction, caused by bendings of the cañon, carried the *débris* much higher upon the bank in front. There is a marked absence of large blocks of stone above Boudreau's. Near his house a rather large bowlder was stranded. Others appear just

above Stanley's and in the field below. Those near Stanley's, perhaps six feet long, seem to have come from the precipice at the top of the mountain, as identified by the mineral composition. The largest block examined in the field is twelve feet long, six feet wide, and five feet high, and is of porphyry. Others were not examined, but these suggest that the syenite fragments started from the summit precipice. These struck the projecting ledges of porphyry three hundred feet lower down at the commencement of the steeper slope, when all of them combined furnished the accidental force which urged the moistened *débris* down the mountain-side with such fearful velocity.

The *débris* is thoroughly mixed with vegetable loam, and the black soil of the forest; so that, though covered by a yard thickness of mud, the field may again become productive to tillage. This mud disported itself very much like lava flowing down inclined slopes, the terminations being escalloped, and the surface waved by small ridges like ropy lava.

Briefly, then, the conditions giving rise to this slide upon Cherry Mountain seem to have been the presence of gravelly granitic *débris* upon smooth ledges having a jointed structure pointing downwards. This *débris*, thoroughly saturated by water, became plastic and moved downwards just as soon as the blocks of syenite and porphyry started on their course, breaking off trees, and thus increasing the moving mass every rod of the way, till the lessened slope caused the viscous flood to stop. Such has been the history, probably, of all the more notable slides in the White Mountains.

The locality may be reached most conveniently by way of the Whitefield and Jefferson railroad. All trains will stop at the 'slide station' if desired. This is a point only seventy-five rods distant from the base of the slide.

C. H. HITCHCOCK.

AN AMERICAN SILURIAN SCORPION.

ON Nov. 12, 1884, the announcement that a fossil scorpion had been found in Silurian rocks in Sweden was made to the Swedish academy of sciences, and the printed notice of it published in the *Comptes rendus* of the French academy, Dec. 1. On Dec. 18, Dr. Hunter of Scotland, in making the announcement of the Swedish discovery to the Edinburgh geological society, stated that he also had found a Silurian scorpion during the summer of 1883 in Scotland; and I can now add the statement that a fossil scorpion has been found in the Silurian rocks of America, and at an earlier period than either the Swedish or Scottish specimen, as it was obtained by the discoverer on Nov. 10, 1882.

On June 8 of this year, Mr. A. O. Osborne of Waterville, Oneida county, N.Y., wrote me that he had that day sent me a small box of fossils which he wished me to name for him, mentioning a few of them as of "special interest, as they are the first of the kind that I have found." On opening the box, some two weeks after it arrived, I found among those of 'special interest' a nearly entire scorpion which measures a little more than one and a half inches in length, but wanting a part of the fifth, and all of the sixth, segment of the tail. The specimen is preserved on the surface of hard hydraulic limestone, and presents the dorsal side to view. It is extremely thin and compressed, and, as a part of the substance is removed along the right-hand side of the abdomen and over the entire portion of the tail shown, these parts expose the inside of the ventral surface. The specimen shows the Cephalothorax and the left mandible (1) in place; the left palpus entire, with its chelate process (2); the first walking limb on the left side (3), with an apparently *bifid* extremity; and parts of each of the other three limbs on the same side. On the right side the palpus is folded on itself, and is imperfect. On the Cephalothorax the eye-tubercle is distinctly visible, and the points indicating the ocelli are readily distinguished; the ridges marking the position of the lateral eyes are visible, but the ocelli cannot be distinguished. As the inside of the abdominal plates is seen for about one-third of their width along the right side of the specimen, the spiracles ought to be shown, if they ever existed. Points which may have been spiracles are faintly visible; but the actual openings must have been very obscure, if present at all. The crust of the specimen is smooth, and destitute of the elaborately granulose ornamentation which characterizes the Swedish specimen: consequently the obscurer features would be more easily detected. But the specimen being so extremely flattened and small, renders other features more difficult of recognition. There is one feature shown in which this species differs very materially from living forms of the group. The limbs are crowded forward. The coxa and second joint (trochanter) of the posterior limb appear from beneath the edge of the first dorsal segment, on the left side; the end of the second ventral segment (*b*) is equal in extent to the end of the second dorsal segment, and of the same length antero-posteriorly. In the