

arduous task was undertaken by Professor J. R. Ainsworth Davis, of the University College of Wales. The first volume of the translation appeared in 1906; the second has just been published. The first volume differs from the original German, in that it contains the bibliography up to January 1, 1904. The second has been translated without substantial alterations, except that it is much more clearly printed, with fewer abbreviations. No attempt has been made to bring it up to date. The third volume, now in press, will finish the account of the European observations; and the fourth will be prepared next autumn or winter. The last part of Knuth's work, dealing with the "aussereuropäischen" observations, was naturally the most incomplete (pathetically so for many parts of the world!); and hence Professor Ainsworth Davis, in spite of the great increase of work involved, has arranged to incorporate all new information available up to the date of going to press. This will make the final volume almost a new book, and as such it will be invaluable to all students of flower pollination. American students should be careful to forward to Professor Davis any papers they may have written bearing upon the subject, and also any manuscript data they are able to furnish. Those who have the German edition will be able to note the omission of important data, and will have a chance this summer to make many observations which can be incorporated.¹

The second volume, the immediate subject of this notice, is of great value to American workers. In the first place, most of the European plants described are of American genera, and not a few of the species are circumpolar; in the second, there are many observations on purely American forms, made in European botanical gardens. So closely, indeed, are the European and American data related, that we can not help greatly regretting that they were not combined in a single series. The separation of the European and American sections will doubtless result in many workers procur-

¹ Professor Ainsworth Davis has just been appointed principal of the Royal Agricultural College, Cirencester, and should be addressed there after September 1.

ing only the one or the other, according to their place of residence. This will have the most unfortunate results; for example, American observers may work on particular genera, ignorant of the illuminating results obtained in Europe; or Europeans may take the records from botanical gardens as fairly representative for American genera, overlooking the very different data obtainable where these plants grow wild.

In the present state of the science, it is unavoidable that a work on flower pollination should contain a large amount of undigested information. The precise meaning of the long lists of visitors can not always be determined; and no doubt any author who should try to dispense with these lists, and state the results of research in general terms, would fall into many errors. There are, of course, many important and suggestive generalizations in the book; but every worker will be glad that he is supplied with the actual data at the back of these, data which he can compare minutely with those accumulated by himself.

In a work compiled from so many different sources there will necessarily be some errors. Thus the map on p. 49 does not do justice to the distribution of the humble-bees. *Bombus* extends quite to the north of Greenland (*cf.* Peary) and in Asia reaches the Philippines (*B. mearnsi* Ashmead), Sumatra (*B. senex* Snellen and *B. sumatrensis* Ckll.) and Java (*B. rufipes* Lep.).

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SPECIAL ARTICLES

REVISION OF "THE NEW YORK SERIES."

THE writer submits the following rearrangement of a part of Clarke and Schuchert's classification of the New York Paleozoic, including changes based chiefly upon the recent work of Hartnagel and others:

Hartnagel's redetermination of the Oneida conglomerate as the equivalent of the topmost or true Medina sandstone, and his separation from the latter of the great thickness of barren shales constituting his "lower Medina" with the suggestion of a disconformity at their top,

	Ulsterian.	Onondaga. Schoharie.
E o d e- vonic.	Oriskanian.	Esopus (Decewville). Glenerie Connelly (Port Jervis) } Oriskany. Port Ewen ("Kingston").
	Helderbergian.	Becraft. New Scotland. Kalkberg. Coeymans.
Neon- tatic.	Cayugan.	Manlius. Rondout. Cobleskill.
Meson- tatic.	Salinan.	Bertie. Rosendale. Camillus. Wilbur. Syracuse. Binnewater. Vernon. High Falls. Pittsford. Shawangunk.
Eontaric.	Niagaran.	Guelph (Shelby). Lockport. Rochester (inc. Irondequoit). Clinton { Williamson. { Wolcott (inc. Furnace- { Sodus. [ville] Medina (Oneida).
		Lewiston (Richmond). Lorraine (inc. Oswego). Utica.

opens a way of solution for the vexed Richmond question. These lower shales, for which he has suggested to the writer a revival of the early name LEWISTON SHALE, Hartnagel has again shown to be strictly continuous with the underlying Oswego sandstone, which in turn appears to constitute merely the closing episode of the Lorraine division. The Lewiston shales must therefore be referred to the Cincinnati (Eopaleozoic), and that they are the true time equivalent of the Richmond beds is indicated (1) by homotaxy, (2) by the finding of the Richmond species, *Rhynchotrema capax* and *Ambonychia radiata*, high up in their supposed Pennsylvania equivalent, the "red Medina" (Juniata), as ascribed to Stevenson in Dana's Manual; (3) by the immediate succession of the Clinton to the Richmond fauna in the continuous deposits of Anticosti and (4) by the survival into the Clinton of such Richmond forms as *Platystrophia lynx* and *Calymmene senaria*. There is thus no room for the interpolation of an "Oswegan" time-division and fauna (if such

existed). The Oswego and Lewiston beds as we know them are entirely barren, except for the two Richmond fossils mentioned, while the wholly minor congeries occupying the hundred feet of true Medina (Oneida) and consisting chiefly of *Lingula cuneata* and *Arthropycus alleghaniensis* contains other forms, such as *Bucania trilobata*, which link it closely with the Clinton fauna, into which it might be merged without violence. In any case the (restricted) Medina falls within the Niagaran, which thus becomes the Eontaric, with the Clinton facies for its initial fauna in America as in Europe.

It should be noted in passing that both Hartnagel and Sarle have shown the fauna of the so-called "upper Clinton" (Irondequoit) limestone to be very nearly that of the Rochester shale, to which it should, therefore, be transferred. A rather similar development of limestone at the base of the Rochester appears to exist in Ohio. The Furnaceville ore bed lies *in* and not *below* the Wolcott limestone.

Having replaced the Niagaran in the Eontaric (compare the old Dana classification—Niagara, Salina, Lower Helderberg), it seems natural to restore the triple time-division of the Ontaric by separating the Salina series from the higher limestones of the Cayugan, to which that name may accordingly be restricted as chiefly applicable. This step is made easy by Hartnagel's unraveling of the Cobleskill limestone and discrimination of the overlying (Rondout) from the underlying (Bertie-Rosendale) "waterlimes." We now have in the marine faunas of the Cobleskill, Rondout and Manlius limestones a very natural group characterized by certain well-marked shells and corals ranging through the three formations. Quite distinct from these is the mass of barachois deposits constituting the group which may be designated by the long-established term Salinan. Hartnagel's determination of the eastern New York expression of these beds on theoretic (stratigraphic) grounds has found a gratifying confirmation through the recent discovery of a Pittsford fauna in the Shawangunk con-

glomerate, so that we are able to parallel the eastern and western series with certainty.

The Mesontaric thus becomes a unit of remarkable symmetry. It may be likened to a parabola, which, springing from the marine fauna of the Guelph dolomite, ascends through one Eurypterid fauna (the Pittsford-Shawangunk) to a culmination centrally in the barren salt beds (Syracuse) and descends through a second Eurypterid fauna (the Bertie) to a return of marine conditions with *Halysites* and other Niagaran types in the Cobleskill dolomite, itself lithologically not unlike the Guelph.

Unpublished studies by the writer on the Port Ewen fauna have shown its many affinities with that of the overlying Oriskany limestones as known at Glenerie and Becraft's Mountain. Dr. Clarke has, therefore, recommended the transfer of these beds to the Oriskanian, in spite of the preponderance of Helderbergian elements. The oft-mooted pertinence of the Esopus to the Oriskanian also appears to be affirmatively settled, at least for its lower portion, by the writer's finding of Oriskany fossils (*Leptocælia flabellites*, *Chonostrophia*, etc.) forty feet above its base near Leeds, Greene Co. *Taonurus caudagalli* occurs in the Oriskany limestones at Glenerie.

In the Rondout region the last-mentioned beds, which may now be formally christened as the GLENERIE LIMESTONE, are underlaid by eighteen or twenty feet of pebble-beds, typically exposed on the hill above South Rondout (Connelly post-office) and in the creek bank opposite, for which the name CONNELLY CONGLOMERATE is proposed. Southwestward, as at Cottickill, this latter appears to give way to shaly limestones exactly resembling those of the underlying Port Ewen, but having a strongly Oriskany fauna, and it is suspected that these are the equivalent of Barrett's *Dalmanites dentatus* zone, herein designated provisionally by the name PORT JERVIS.

The new name KALKBERG LIMESTONE is proposed to cover certain layers heretofore included variously by writers with the beds above or below (New Scotland and Coeymans)

and carrying a mixed fauna, highly developed and excellently silicified on Catskill Creek. Here the beds show numerous thin parallel seams of black flint nodules; below these are fourteen feet of typical Coeymans, without flint, and above them are the typically shaly layers of the New Scotland. A similar association has been found at the Indian Ladder and elsewhere. The fauna is one of the most interesting and abundant in the region and combines *Sieberella galeata* with *Bilobites*, *Nucleospira*, *Delthyris*, *Dalmanella*, *Rhipidomella*, *Rhynchospira*, etc. The name Kalkberg (lime hill) is the local Dutch designation for the Helderbergian ridge, and is pronounced Collak-barrakh.

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OBSERVATIONS UPON A YELLOWS DISEASE OF THE FALL DANDELION

THE fall dandelion, *Leontodon autumnale* Linn., is becoming one of the worst of the introduced weeds of certain sections of Maine, in meadows, along roadsides and in lawns. This is particularly the case on the lawns of the University of Maine, where the bright yellow flowers are very conspicuous from August till late autumn, in spite of frequent mowing.

Here the plant is affected with a "yellows" disease which the writer has had opportunity to observe for the past two seasons. The diseased plants are very characteristic and conspicuous because the foliage becomes much lighter colored and yellowed and tends to grow upward into a rather compact mass, especially if not cut back by the lawn mower. The plant reacts to the stimulus of the disease by producing an abnormal number of leaves and flower heads, particularly the latter. As a rule the scapes are considerably shortened and the flowers abortive, but plants only slightly affected are occasionally observed to form seeds.

These weeds were very plentiful on the lawns in the fall of 1906 and from 30 per cent. to 50 per cent. of the plants were diseased.