treated on October 8 remained alive over winter.

3. Peach foliage protected from rain and dew, as in a greenhouse, sustains no externally visible injury from spraying with either Bordeaux mixture or copper hydroxide. Under normal orchard conditions the leaves sprayed with Bordeaux in a situation so as to be partially protected from falling rain or dew are the last to succumb to the injurious action of the copper.

4. The presence of deliquescent salts (as $Ca(NO_3)_2$ and $CaCl_2$) greatly accelerates the injurious action of copper hydrate on the foliage of the peach.

5. Peach seedlings growing in a saturated atmosphere are not injured by Bordeaux mixture and but slightly by pure copper hydrate.

6. Peach leaves growing in a saturated atmosphere possess a thinner and much more easily permeable cuticle than those growing in a dry or less moist atmosphere. Following is a summary of measurements of paraffine sections stained with chloroiodide of zinc:

Peach leaves.	Thickness of cuticle of upper surface.
Orchard Knoxville.....1.17	micromillimeters
Orchard California.....1.21	"
Seedling greenhouse.....0.86	"
Seedling in moist chamber.....0.60	"

7. The presence of a certain excess of lime accompanying the copper hydrate on peach foliage retards or possibly entirely prevents the injurious action of the latter. This holds true of lime applied either as the hydrate or at once as the carbonate. The sulphate of lime does not produce this effect.

The writer believes that the above results go far toward explaining the conflicting testimony of different investigators along this line in this country. So far as shown to date, no injury will result to peach foliage sprayed with ordinary Bordeaux mixture until a certain proportion of the lime carbonate is washed out by heavy dews or rain, when it at once begins to manifest itself. One would thus expect but little injury in an arid region like parts of California. On the other hand, an atmosphere containing abundant hygroscopic moisture, such as is to be found in Georgia and Florida, would supply conditions similar to those produced in the moist chamber as stated above, and thus atone to a certain extent for the washing out of calcium carbonate caused by precipitated water.

The practical application of this principle is readily suggested. It may be possible to follow up a spraying with Bordeaux mixture with one or more of milk of lime and thus prevent the injury which would otherwise occur. Experiments carried out here this season thus far show this method to be a success. Whether it will remain so to the end of the season is yet to be determined. There are, of course, other questions to be taken into consideration, such as the practical application of the method in the commercial orchard, the effect of the lime on the fungicidal action of the copper, etc.

It is hoped in the forthcoming publication above mentioned to describe in detail the experiments above outlined, in addition to a number of others finished and now nearing completion, looking toward the physiological explanation of the results obtained.

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CURRENT NOTES ON PHYSIOGRAPHY.

THE NORTHERN ADIRONDACKS.

A 'Preliminary Report on the Geology of Franklin County,' N.Y., by H. P. Cushing (18th Rep. State Geol., Albany, 1900, 73–128, 8 pl., colored outline map) describes the northern side of the Adirondack mountains and the drift-covered paleozoic plain at their base. The transition from one area to the other is rather abrupt, but the height of the mountains decreases with some regularity towards the plain, and branches of the plain enter valleys among the hills. An old baselevel is inferred from the systematic northward decrease of summit heights, although its horizon is admittedly not closely definable. The present valley system is explained as of later origin, the result of erosion following a slanting uplift. No dates are given in this connection, although it is said that 'the Adirondack region has been continuously above sea level since Lower Silurian times' (78), a statement that seems open to doubt. The step-like descent of the mountains toward Lake Champlain is explained 'by a

series of meridional faults with downthrow to the east,' and the depression occupied by the lake itself is said to be 'a fault valley.' It is not stated whether these faults, more or less worn, are yet so recent that they dominate the topography, or whether they are ancient faults produced while yet a heavy series of strata overlay the present surface, and only developed into existing topographic features by erosion long subsequent to faulting. Glacial erosion is regarded as having rounded off the northern slopes of many of the mountains, leaving the southern slopes of greater declivity; and a few cliff-walled cirques are ascribed to local glaciers. Lakes are very numerous and are as a rule referred to drift obstruction; 'there is yet no evidence that any of them occupy rock basins' (84). The rivers have all developed reaches ('still-waters' or 'levels') on drift, interrupted by rapids on ledges. The drift plain bordering the mountains is well occupied, while the mountains are largely a rugged wilderness.

SLATE MOUNTAINS OF THE MIDDLE RHINE.

THE report of an excursion conducted by Professors Rein and Philippson over the plateaus and valleys of the middle Rhine ('Wiss. Ausflug, Siebengebirges-Rhein-Eifel-Mosel,' 19–25 Sept., 1899; Verhandl. VII. Internat. Geogr. Kongresses, Berlin, 1900, 328–344) presents some interesting details concerning that attractive region, its physiographic features being described by Philippson. The lofty mountains of Carboniferous deformation were reduced, partly by subaerial denudation, partly by marine abrasion, to a low torso, afterwards broken into blocks which were irregularly elevated and depressed. The Rhine crossed the region along a depressed block, whose surface it modified, producing a broad trough, which now stands at altitudes of 300–350 m. The Mosel eroded a branch trough, whose altitude is now 350–400 m. Pauses in the uplift of the region to its existing position are indicated by terraces, of which the principal one, strewn with river waste, reaches heights of 200 m. It is in the floor of this terrace that the narrow gorges of the Rhine and Mosel are cut. Troughs, terraces and gorges are the work of Pliocene and later time. Frequent mention is made of the extended views over the plateau in which the troughs and the deeper valleys have been cut, of the volcanic cones and maare that ornament it, and of the ridges of resistant quartzite that rise over it. Yet it is concluded that the plateau is not a peneplain and that its history is still to be made out. Truly it is not a peneplain, everywhere almost completely worn down and still lying undisturbed close to sea-level; but the description given of it strongly suggests that it is a somewhat unevenly uplifted peneplain, bearing some linear residual mountains on its back, and more or less dissected by its revived streams. For example, "The High Eifel is a broad, flat-arched dome, which descends southward as a gently inclined plain towards the valley of the Mosel; beyond the Mosel, the same surface is continued in the Hunsrück as a nearly horizontal plain, rising wall-like in the high quartzite ridges of the Hochwald" (p. 332). To exclude a region thus described from the class of uplifted and dissected peneplains makes one wonder what conception the author attaches to this category of forms. The report forms a very serviceable guide for a physiographic excursion over this district. It is in many ways more satisfactory than the more elaborate essays by Follman on the Eifel and by F. Meyer on the Hunsrück (*Forsch. deut. Landes und Volkskunde*, VIII., 1894, 195–282; XI., 1899, 73–106), which unfortunately leave much to be desired in this respect.

PHYSIOGRAPHY OF ACADIA.

THE general progress of physiographic development that has been found applicable to the Appalachian belt within the United States by various observers is extended by Daly to the provinces of New Brunswick and Nova Scotia with the adjoining islands ('The Physiography of Acadia,' *Bull. Mus. Comp. Zool., Harvard Coll.*, XXXVIII., 1901, 73–104, 10 pl., map). The uplands of inner New Brunswick and the 'southern plateau' of Nova Scotia are regarded as areas of Cretaceous peneplanation, now uplifted and dissected; while central New Brunswick, together with certain areas now submerged in bays, represent lowlands etched out of weak rocks beneath the Cretaceous peneplain, and now partly drowned. The author

concludes that Acadian land forms may be described in terms of these two topographic facets, each a nearly perfect plain of denudation, interrupted by residual hills and incised valleys. Regarding the uplands of Nova Scotia, it is remarked that undue emphasis has been placed on the hills, "apparently with the mistaken notion that the true lover of nature cannot be especially interested in her land-forms when they are subdued. Yet the marvel of Nova Scotian scenery lies in its flatness." Although the region borders the sea, preference is expressed for a subaerial origin of the peneplains here described; marine erosion is given a relatively subordinate value in their preparation, however active it has become upon them since submergence has brought the sea in over the land.

PREGLACIAL DRAINAGE OF OHIO.

Several papers on 'The Preglacial Drainage of Ohio' by Tight, Bownocker, Todd and Fowke are published by the Ohio State Academy of Science (Special papers, No. 3, Dec., 1900, 75 pp., plates and maps). Tight describes some of the drainage changes along a part of southeastern Ohio, with special references to the preglacial and postglacial valleys that lie to the southwest of the trenched col by New Martinsville, from which the preglacial streams flowed opposite ways and through which the Ohio now connects basins that were formerly separate. A high-level and broad-floored ancient valley is traced through the hills southwest of Parkersburg; it is now trenched across by several deeper-cut valleys. The most novel point is presented by Fowke, regarding a former northward discharge through the Miami valley of the waters from several rivers (Licking, Kentucky, etc.) whose courses lie between ancient cols at Manchester and Madison, east and west of Cincinnati. The northward discharge is now blockaded by drift; the cols are cut across by the Ohio, and the gathered rivers are discharged westward. This involves an impounding of many north-flowing rivers by the ice sheet and the production of a temporary lake, compared to which the reputed lake caused by the supposed ice dam at Cincinnati would have been a comparatively small affair. Independent evidence of the existence of the lakes is not yet announced. Both Fowke and Todd suggest that some of the preglacial streams followed courses that were determined in paleozoic time, a suggestion that seems to give too little importance to the many possible changes of secondary and tertiary time.

The technical book-making of this publication is not altogether creditable to a State Academy. There is no table of contents, except an imperfect one on the paper cover, which disagrees with the title page and with the titles of some of the articles; the same page heading is continued throughout; some of the maps are unnumbered, and all of them are poorly lettered.

SCHLESWIG-HOLSTEIN.

An east-west section across the base of the Danish peninsula is described by R. Gredner ('Excursion nach Ost-Schleswig-Holstein und der Insel Sylt.,' Greifswald, 1900), from which it appears that the chief features of the district are systematically arranged with respect to the glacial moraine that forms its strongest relief. The eastern border shows the hills and hollows of the typical moraine, of rich soil and divided into well-cultivated fields by numerous hedges. The eastern shore line is irregular in consequence of a slight postglacial submergence; embayments known as Föhrde (etymologically related to fjords and firths) occur where interglacial valleys were deepened by scouring ice lobes; they lead navigable water in among the morainic hills, thus locating such towns as Flensburg and Kiel. Beyond the moraine comes a broad plain of washed sands and gravels, sloping gently to the west and traversed by shallow channels; it is covered with pine forests or heathery moors, and is infertile and thinly occupied compared with the moraine. As the plain slopes westward, its materials become finer and ground water stands nearer its surface; thus the moors become meadows, and at last dikes are needed along their borders to hold off high tides. The shallow edge of the sea is known as the Wattenmeer, where a great expanse of fine mud, traversed by winding channels, is laid bare at low tide. Fields are occasionally gained by diking in the shallowest

border of the tidal flats. The outlying islands, of which Sylt is here described, consist of remnants of Tertiary strata, overlaid by drift. Long wings of beach and dunes stretch north and south from the western front of the island, with slightly convex outline towards the North sea and in-bent hooks at their end. The wings are much longer than the front of the island from which they are spread.

W. M. DAVIS.

JESSE WILLIAM LAZEAR MEMORIAL.

ON the 25th of September, 1900, Jesse William Lazear, at that time Acting Assistant Surgeon in the United States Army and a member of the Government Commission for the investigation of yellow fever, lost his life from that disease at Quemados, Cuba.

Doctor Lazear was born in Baltimore County, Maryland, in 1866, and graduated from the academic department of the Johns Hopkins University in 1889. In 1892 he received the degree of M.D. from Columbia University. From 1892 to 1895 he spent his time in study and investigation in Europe and as an interne at the Johns Hopkins Hospital in Baltimore. During the following three years and a half, while a member of the staff of the Out-Patient Department of the Johns Hopkins Hospital, he did much valuable work as a teacher and investigator in the laboratory of clinical pathology. In February, 1900, induced by the opportunity for research concerning malarial and yellow fevers, Lazear became an acting assistant surgeon in the United States Army and was assigned special laboratory duties at Columbia Barracks, near Havana. Later, he was appointed member of a special government commission for the investigation of yellow fever. The brilliant discoveries of this commission concerning the ætiology and manner of infection of yellow fever have recently been referred to in public by a distinguished pathologist as the most important piece of work by American students since the discovery of anæsthesia. To these results Lazear, as a member of the commission, contributed largely. The final proof of their discovery that the disease is transferred by the bite of a certain mosquito could only be obtained by direct experiment upon a human being. To this experiment Lazear, with another of the committee, courageously and heroically subjected himself, and in the performance of this noble duty he lost his life.

The many friends and admirers of the talented and accomplished student, of the brave, true, self-sacrificing man, desire to establish a lasting memorial to him and to his work. To this end a meeting was held on the evening of Wednesday, May 22, which was presided over by Professor William Osler. At this meeting it was concluded that the nature of the memorial could better be decided upon when some idea could be obtained as to the amount of money available. It was, therefore, decided that a committee consisting of Dr. Stewart Paton and Dr. William S. Thayer be appointed to arrange for the distribution of a circular among the friends and admirers of Lazear, setting forth the object of the meeting. It is earnestly hoped that not only those who have known and admired Lazear and his work, but also others, who appreciate courage and manliness and self-sacrifice, may contribute to the fund for the Jesse William Lazear Memorial.

Subscriptions may be sent to Dr. Stewart Paton, treasurer, 213 West Monument Street, Baltimore, Md. It is to be hoped that the response to this circular may be made early, as it is hoped to be able to decide upon the nature of the memorial by the middle of June.

WILLIAM OSLER, *Chairman.*
STEWART PATON,
WILLIAM S. THAYER, } *Committee.*

THE AMERICAN LIBRARY ASSOCIATION.

AT the annual meeting of the American Library Association, held at Waukesha, Wis., the 3d to 10th of July, a Round Table meeting was devoted to professional instruction in bibliography. The chairman, Mr. A. G. S. Josephson, of Chicago, in his introductory remarks, pointed out the need of solid bibliographical scholarship as a prerequisite of the librarian and urged the establishment at some university of a post-graduate school of bibliography. Such a school should, in the opinion of the speaker, offer instruction in bibliography