

tions. The number of doctorates conferred in the natural and exact sciences during the past nine years is as follows: Johns Hopkins, 147; Chicago, 145; Columbia, 137; Harvard, 129; Yale, 120; Cornell, 94; Pennsylvania, 85; Clark, 75. There is then a drop to universities that have conferred fewer than 25 degrees in the sciences during this period. Relatively more work is done in the sciences in some institutions than in others. Thus the percentage of degrees in the sciences in these universities is as follows: Clark, 95; Cornell, 58; Johns Hopkins, 54; Columbia, 49; Chicago, 48; Pennsylvania, 43; Harvard, 42, and Yale, 41.

Table V. shows the institutional origin of men who have pursued different sciences. The Johns Hopkins University has excelled relatively in chemistry, physics, zoology and physiology; Harvard in zoology and botany; Columbia in zoology, botany and mathematics; Cornell in physics and botany; Clark in psychology, and Michigan in botany and pathology. Of the foreign universities, Berlin has excelled in physics, Leipzig in psychology and Göttingen in chemistry and mathematics.

The table also shows that men are more likely to pursue graduate studies and to take the doctor's degree in some sciences than in others. Of the fifty psychologists, 35 have received the doctor's degree from the institutions given in the table, and of the 150 zoologists 90 have received it, whereas only two of the 25 anatomists and only five of the 60 pathologists have received a non-technical higher degree from these universities. While important improvements in the practise of surgery and medicine have been made in this country, it must be admitted that we are not doing our share for the advancement of pathology, anatomy and physiology.

It would be desirable to compare the scientific men and the scientific work of the United States with those of other nations, and I hope to collect data on this subject. It is my impression from such information as is on hand that we produce from one seventh to one tenth of the world's scientific research, but that we have not produced one tenth of its recent great discoveries or of its contemporary great

men. With our vast population and unlimited resources, it would be shameful and intolerable to let the future be no better than the present. It is obvious that we should collect without delay the information that would tell us where we stand among the nations.

It is not altogether without interest to find that it is possible to reduce to order facts which might be supposed to be outside the range of the natural and exact sciences. The present articles are, however, only a beginning of a study of scientific men as a group and of the conditions on which scientific performance depends. We have in a large measure explored the material world and subdued it to our uses; it is now our business to secure an equal increase in our knowledge of human nature and to apply it for our welfare. If he is a benefactor to mankind who makes two blades of grass grow where one grew before, his services would be immeasurably greater who could enable two men of science to flourish where there had been but one.

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BRACHIOPOD NOMENCLATURE.

THE following is an epitome of the results of some recent investigations; a fuller account of them has been handed to the editor of the *Annals and Magazine of Natural History* (England).

The genera *Epithyris*, *Hypothyris* and *Cleiothyris* can not be used, as they are now, on King's authority: they must stand or fall by what Phillips did. From what Phillips says of the first two (Pal. Foss. Devon., etc., 1841, pp. 54, 55) the types are as follows:

Genus *Epithyris*, Phillips.

Type *Terebratula maxillata*, Sowerby.

This will be the generic name for the *Terebratula maxillata* group of the Jurassic.

Genus *Hypothyris*, Phillips.

Type *Terebratula concinna*, Sowerby.

This would be the name for a series of Jurassic Rhynchonellæ, but it is preoccupied, and so must drop altogether. However, the terms epithyrid and hypothyrid will be found extremely useful to describe the beak-characters which Phillips noted.

Genus *Cleiothyris*, Phillips.

Type *Terebratula concentrica*, von Buch.

The type here is not so certain; but this seems to be the solution of Phillips's rather ambiguous phrases. At any rate *Cleiothyris* can not be used as King intended.

The genus *Seminula* has hitherto been incorrectly used, with *Spirifer ambiguus* as type, on a doubtful identification of Davidson's—that *T. pentaëdra*, the true genotype, was a synonym of *S. ambiguus*. But *T. pentaëdra* is hypothyrid, that is, it has a rhynchonelliform beak; while *S. ambiguus* is epithyrid, that is, it has a terebratuliform beak. *T. pentaëdra* is what would at present be called a *Camarophoria*. *S. ambiguus* happens to have been taken as type of a genus *Composita* in 1845, but it has always been overlooked. Therefore—

Genus *Seminula*, McCoy.

Type *Terebratula pentaëdra*, Phillips.

Non *Seminula*, auct.

The genus is not of the family Athyridæ, but is a pentamerid, allied to the later named *Camarophoria*, which may, perhaps, be retained for the transverse multiplycate forms, *Seminula* designating the globose pauciplcate species.

Genus *Composita*, Brown.

Type *Spirifer ambiguus*, Sowerby.

Syn. *Seminula*, auct. non McCoy.

Ref. T. Brown, 'Illustr. Fossil Conch. G. Britain and Ireland,' p. 131, 1845. This work of Brown's has been altogether neglected, and his names overlooked; but he was quite definite about his type. His work appeared in parts from 1837 to 1849; and the date of p. 131 is 1845. (*Vide*, Sherborn, Proc. Malacol. Soc., VI., 358, 1905.) All the athyrids hitherto assigned to *Seminula* will have to bear the name *Composita*.

Genus *Leptodus*, Kayser.

Syn. *Lyttonia*, Waagen.

Leptodus is generally given as a synonym of *Lyttonia*; but Waagen was not justified in suppressing Kayser's name merely because he placed it among fishes.

Genus *Cyclothyrus*, McCoy.

Type, the species figured by McCoy, 'Carb.

Foss.,' p. 150, fig. 29 = *Terebratula latissima*, Sowerby.

Davidson made this suggestion, and it appears correct. Therefore, the bulk of the Mesozoic Rhynchonellæ—all those that are multiplycate and hypothyrid—should go under this genus rather than under *Rhynchonella*, which should be applied only to the species congruous with the *R. loxia* series of pauciplcate hypothyrids.

New names are required for *Hypothyris*, auct. non Phillips and *Cleiothyris*, auct. non Phillips. The following were suggested: *Hypothyridina*, vice *Hypothyris*, and *Cleiothyridina*, vice *Cleiothyris*.

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CURRENT NOTES ON METEOROLOGY.

THE CYCLONIC THEORY.

To the interesting discussion concerning temperatures in cyclones and anticyclones, H. H. Clayton contributes an article in the *Beiträge zur Physik der freien Atmosphäre*, Vol. II., No. 2, on 'A Discussion of the Observations obtained by the Blue Hill Observatory with Ballons-sondes at St. Louis.' As the readers of these notes are aware, this discussion has been going on for some time, and has been participated in chiefly by Hann, Clayton and Bigelow. To go into the details as each article appeared has always seemed to the compiler of these notes too technical a matter for the columns of a general scientific journal like SCIENCE, and to do so would have occupied a good deal more space than could be devoted to meteorology in this publication. We are glad to note the emphasis which Mr. Clayton lays upon the points upon which general agreement has been reached, for further discussion will be more helpful and more to the point if the matters which have found general acceptance are clearly established. To quote: "The results of all the investigators agree in showing that the highest temperatures at all heights within an area of low pressure are in advance of the barometric minimum and the lowest in the rear; while in the area of high pressure the lowest temperature is in advance of the barometric maximum and the highest