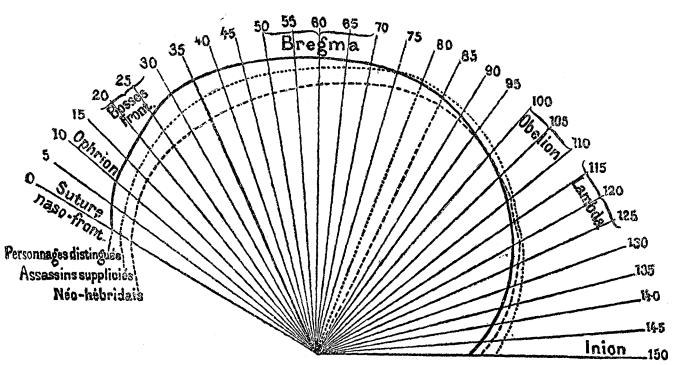
which is the only instrument that permits the drawing of a curve from a series of heads by taking for each ray the mean in the series. The mean curve for each series shows that all the frontal rays of distinguished men are much greater than in the assassin, and that in a savage race, the Neo-hebrides, taken for comparison from four heads, the frontal development is even less than among assassins.

These last two curves cross the first in the parietal part, in the neighborhood of the bregma; and the posterior development of assassin and savages is greater in all points than that of distinguished men. In all the distinguished men the occipital rays were less developed than in the other series, though this difference is less marked. The maximum rays, represented in the diagram by dotted lines, are in distinguished



AVERAGE MEASUREMENTS OF THREE CLASSES OF HEADS.

men at the 35° line, while in the other two classes it is found at the back of the head, between the 80° and 85° ray. This rule is not so infallible that we can pick out men, and say this is a distinguished man, this an ordinary man, and this a criminal, simply by the shape of the head; but it can be said that seventy-five in a hundred learned men have the superior character, while at least ninety-five in a hundred assassins have the inferior character. A third part of Dr. Bajenoff's work deals with the cranial projection (total, posterior, anterior, and facial) and the facial angle. These confirm his first experiments. Among distinguished persons the anterior cranial portions are the best developed, while among savages and assassins the facial and posterior projections exceed the others.

ORIGIN OF THE CEREALS.[1]

RECENT numbers of *Naturen* contain interesting papers, by Professor Schübeler, on the original habitat of some of the cereals, and the subsequent cultivation in the Scandinavian lands and Iceland of barley and rye more especially. It would appear that barley was cultivated before other cereals in Scandinavia; and that the generic term 'corn' was applied among Northmen to this grain only from the oldest times; and that in the Norwegian laws of the seventeenth and eighteenth centuries, wherever reference was made to the '*Kornskat*' (or standard by which land in the northern lands was, and still is, rated in accordance with the corn it is capable of yielding), the term was understood to apply to barley. Proof of the high latitude to which the cultivation was carried in early ages is afforded by the Egil's Saga, where mention is made of a barn in Helgeland (65° north latitude) used for the storing of corn, and which was so large that tables could be spread within it for the entertainment of eight hundred guests. In Iceland barley was cultivated from the time of its colonization, in 870, till the middle of the fourteenth century, or, according to Jón Storrason, as lately as 1400. From that period down to our own times, barley has not been grown in Iceland with any systematic attention, the islanders being dependent on the home country for their supplies of corn. In the last century, however, various attempts were made, both by the Danish government and private individuals, to obtain home-grown corn in Iceland; and the success with which these endeavors were attended gives additional importance to the systematic undertaking which has been set on foot by Dr. Schübeler and others, within the last three years, for the introduction into the island of the hardier cereals, vegetables, and fruits. As many as three hundred and eighty-two samples of seeds of ornamental and useful plants, most of which were collected from the neighborhood of Christiania, are now being cultivated at Reykjavik under the special direction of the local government doctor, Herr Schierbeck, who succeeded in 1883 in cutting barley ninety-eight days after the sowing of the seed, which had come from Alten (70° north latitude). And here it may be observed that this seems the polar limit in Norway for any thing like good barley-crops. The seed is generally sown at the end of May, and in favorable seasons it may be cut at the end of August, the growth of the stalk being often two inches and a half in twenty-four hours. North of 60° or 61°, barley cannot be successfully grown in Norway at more than from eighteen hundred to two thousand feet above the sea-level. In Sweden the polar limit is about 68° or 66°; but even there, as in Finland, night frosts prove very destructive to the young barley. In some of the fjeld valleys of Norway, on the other hand, barley may, in favorable seasons, be cut eight or nine weeks after its sowing; and thus two crops may be reaped in one summer. According, even, to a tradition current in Thelemarken, a farm there owes its name, *Triset*, to the *three* crops reaped in the land in one year. Rye early came into use as a bread-stuff in Scandinavia, and in 1490 the Norwegian council of state issued an ordinance making it obligatory on every peasant to lay down a

[1] From *Nature* of June 4.

certain proportion of his land in rye. In Norway the polar limit of summer rye is about 69°, and that of winter rye about 61°; but in Sweden it has been carried along the coast as far north as 65°. The summer rye-crops are generally sown and fit for cutting about the same time as barley, although occasionally in southern Norway less than ninety days are required for their full maturity.

CASSINO'S STANDARD NATURAL HISTORY.

The editors of the 'Standard natural history' have undertaken a most difficult and praiseworthy work. The aim set in the prospectus is to give "a popular account of the whole animal kingdom by the best American authorities," and American forms are to be made especially prominent. Mr. J. S. Kingsley is editor-in-chief, and each type or class is described by some naturalist who has made special investigations in that group. The work is to be completed in six imperial octavo volumes. Of these, two treat of invertebrates, three of vertebrates except man, and the sixth of the human races. Three of them have already been completed.

It is a labor requiring no small study and diligence to collate the immense mass of terribly scattered notes and articles on American zoölogy. But the great danger is, of course, that the work will be too abstruse for popular use, or too popular for scientific accuracy and value. Both these extremes have been uniformly avoided by the different writers with a skill hardly to be expected, and worthy of all praise. There is, too, no such lack of unity or uniformity as one would expect from so large a corps of editors. The figures are remarkably clear and fine. Indeed, the first question that occurs to us is whether some of the luxury in heavy paper, wide margins, and striking full-page cuts, might not well have been dispensed with in order to lower the price of the work, and give it the circulation which it deserves: for to many young students, and teachers in our schools and academies, this work would be the very best help; and yet to them especially the price, six dollars a volume, will be an insuperable obstacle.

The introduction, which occupies seventy pages of the first volume, opens with an account of protoplasm and the cell. In the whole introduction only five pages are devoted to embryonic development. This subject is treated under each group in the systematic portion of the work only in a general and very meagre outline. This is perhaps wise in a popular work, but for that very reason it should have been described in the introduction as fully as is consistent with a purely general outline. Twenty pages are devoted to the nervous system and animal psychology, forming a brief but admirable epitome of what is known of this as yet almost unexplored field. The single page devoted to alternation of generations and parthenogenesis is the least satisfactory in the introduction: the statement is meagre, the line of argument any thing but clear. Evolution is discussed in twelve pages, six of which are devoted to a history of the theory and *résumé* of the contributions of American students. It is certainly one of the most marked defects of the work, that this subject of universal and intense interest should not have been fully presented; all the more, because the age, investigations, and views of the writer fitted him to give us a fair and impartial discussion of the subject.

Of the systematic portion of the first volume, one can but notice the generally high character of the work. It does great credit to its editors. Especial notice should perhaps be given to the interesting discussion of the origin and formation of coral islands. The editor of the chapter on Vermes, the most difficult and least familiar branch, has given too little of the anatomy, and has hardly attempted to show the resemblance and affinities between the different classes. It is certainly a pity that the Brachiopoda, which have so many points of interest, should be dismissed with only three pages. Their enormous abundance in early geologic ages, together with the long battle so hotly waged over their affinities and systematic position, should gain for them more attention, and the more so that this conflict originated through the writings of an American naturalist. Even some of their most important anatomical characteristics are not stated; and of their great geological importance as the predecessors of Mollusca, we have scarcely a hint. But, if the introduction and the description of all the invertebrates except Arthropoda must find place in one volume, we ought, perhaps, to be thankful that some groups are not crowded out altogether. The Tunicata are not described in this volume, and hence will probably appear either before or among the lower invertebrates, — after all, their only proper position at the present stage of investigation. The volume closes with a full and very readable description of Mollusca.

The standard natural history. Edited by J. S. Kingsley. Vol. i. Lower invertebrates; vol. ii. Crustacea and insects; vol. v. Mammals. Boston, *Cassino*, 1884–85. 8°.