

bought. The Marchesa party also obtained a sea-otter bow and arrow, a figure of the latter being given on p. 225.

On p. 229 Dr. Guillemard says as follows : "We could make out nothing about the nationality of the people of this village. We had been told that some Aleuts from the Bering group had settled in this neighborhood, but it seems that the Kurile islanders have also passed northward, and established themselves on the coast near Cape Lopatka. To us it appeared that they did not differ appreciably from the Kamchatdale type, but the opinion of a mere passer-by on these matters is usually valueless."

Notwithstanding the caution with which Dr. Guillemard has expressed himself, the impression which his account leaves is that the people he met were Kuriles and that the skin-canoe is a Kurile apparatus.

The fact is that these natives were Aleuts pure and simple, former inhabitants of the Aleutian Islands (not even by way of Bering Island, I believe). The history of their location near Cape Lopatka, in Kamchatka, and the consequent appearance of the baidarka, or skin-canoe, on that peninsula is as follows :

The Russian authorities, in order to prosecute the sea-otter hunt in the Kurile Islands at the time when these still belonged to the Russian crown, transferred a number of noted Aleutian sea-otter hunters, with their families, to the Kuriles. At the time of the cession of these islands to Japan it was stipulated that such of the inhabitants as preferred to return to their homes should be allowed to do so. The Aleutian Islands having in the meantime been ceded to the United States, and the Aleuts living in the Kuriles having declared their desire of remaining Russian subjects, they were transferred to Kamchatka at the expense of the Russian government and provisionally located a few miles from Petropaulovski, on

the road between this port and Aratcha. Here they lived for several years in extreme poverty and squalor, and, as there was no way of employing them, the government had to feed them to prevent them from starving to death. The ease with which they could obtain *rooka* at Petropaulovski tended to further degrade them and render their total extinction a question of time only, if allowed to continue living in that neighborhood. It having been decided by the authorities to change their habitation, the present site of their village near Cape Lopatka was selected, as it offered a fair prospect of making them self-supporting by hunting and fishing.

These were the natives which Dr. Guillemard and his party met, and thus it came to pass that skin canoes were in use in the Kuriles and in southern Kamchatka.

The illustration of the three-hole baidarka given by Dr. Guillemard on page 226, and the description of a sea-otter bow and arrow, the latter with figure, on page 225, serve as additional proof of the correctness of the above. They are in every detail identical with specimens in the National Museum from Alaska.

LEONHARD STEJNEGER.

U. S. NATIONAL MUSEUM.

THE HISTORY OF NAVIGATION IN SPAIN.

ALTHOUGH Navarrete's *Historia de la Nautica*, published at Madrid in 1846, is now almost half a century old, very little use has been made of it in recent biographies of Columbus. In order to thoroughly understand the greatness of the discovery made by the Genoese navigator, it is essential to be acquainted with the progress of naval science up to his time, and that is what is described in the Spanish scholar's book. He begins by giving a short sketch of seaman'ship among the Ancients. As a great deal has been done to elucidate the subject

in our time,* a brief summary of the chief results will be sufficient for our purpose.

The Ancients had no means to determine the latitude and still less the longitude at sea, so they navigated wholly by dead reckoning. The instruments at their command were the sounding lead, and at a later time the plane chart. The absence of an instrument to measure the speed of a vessel was not very material—a good estimate of the velocity can be easily obtained without it—but the want of an instrument like our compass, to guide the pilot when thick weather prevailed, was sadly felt. Consequently winter was not considered as a season proper for navigation, and even in summer they generally ranged the coast, seldom venturing into the open sea.

Nevertheless records have been left to us of voyages accomplished by the Ancients, whose daring and perseverance has hardly ever been surpassed. The Phœnicians circumnavigated Africa from east to west some six hundred years before the beginning of our era. The Carthaginian Hannon explored the western coast of Africa. Towards the north, Pytheas of Marseille went as far as Thule, say Shetland Islands. Towards the east the Greek mariner Alexander reached China, and the pilot Hippalos taught his countrymen how to avail themselves of the monsoon for a voyage to India.

The world fell now under the sway of the Romans, one of the most unscientific peoples that ever existed, who left us a sad record of how a nation could reach a high degree of material prosperity, be great in war and in internal administration and remain as unmindful of science as the savage of the Australian wilds. As a redeeming quality may be mentioned the frankness with which the Romans acknowledged the fact. Cicero

tells us, for instance, that the Greek geometry had been degraded by them to a simple mensuration. They never became skillful seamen, but land-lubbers as they were, they somehow managed to beat at sea fleets manned by expert sailors, and then very willingly acknowledged the superior seamanship of the adversary. The demand for exotic products, which was very great during the Roman Empire, stimulated to a certain degree navigation considered from a commercial standpoint.

In Spain—about which we are here particularly concerned—the interest in sea-matters, planted there by the Phœnician founders of Cádiz about 1160 B. C., was however kept up. Cartagena and Barcelona were important seaports even in that remote time.

And now a part of the world, including Spain, changed its master again. The followers of Mohammed conquered Egypt, Syria, northern Africa, Persia and the Iberian peninsula. It seemed at first that these rude warriors were going to trample all learning under their feet. But the change came very soon and the wild raiders became a cultured nation. Poetry had already the Bedawin; science was borrowed from more cultured people, the Greeks and the Indians. Not only did the Arabs master the Greek geometry and astronomy and the Indian arithmetic and algebra, but they enriched them with new discoveries. Still greater was their progress in physics and chemistry. It will be sufficient for our purpose to state that they improved the astronomical tables and the astrolabe and borrowed the compass from the Chinese. A certain Bailak from Kisgak tells us:*

“The mariners who navigate the Indian sea are said to use a little hollow iron fish

* See the recent works by Breusing (*Nautik der Alten*, Bremen 1886, translated into French by M. Vars, Paris 1887) and Torr (*Ancient Ships*, Cambridge, 1894).

* I borrow the information from Professor Wiedemann's pamphlet: *Ueber die Naturwissenschaften bei den Arabern*, Hamburg, 1890.

which they manage to arrange so that if you put it into a dish of water it floats and points with its head and tail toward the two directions north and south."

So the dead reckoning was put on a firmer basis and the determination of the latitude at sea became possible. It would be very interesting to find the first reference to the compass, known to the Arabs as far back as 854, in the European literature. Navarrete found the following passage in the Spanish Laws compiled in the middle of the thirteenth century:

"And just as the mariners guide themselves in a dark night by means of the needle which is a mediator between the star and the stone and shews them where they go, so," etc., etc.

A well-known passage in Dante (*Par.* XII., 29) proves that in his time the compass was a familiar object. While the sciences flourished among the Moslems they were sadly neglected in Christian Europe.

Towards the twelfth century, however, a better day dawns in Spain. We see the Kings of Castilla and Leon very solicitous to spread knowledge in their kingdoms. Alfonso VIII., of Castilla, establishes a seat of learning in Palencia. Alfonso IX., of Leon, founds the University of Salamanca, and finally Alfonso the Wise publishes his celebrated tables. In his time flourished the renowned Mallorcan Raimundo de Lulio, who among many other subjects devoted particular attention to seamanship. He gave a geometrical construction to find the ship's place if her preceding place, the course steered and the distance run are known, and improved the astrolabe. As helps to navigation used in his time he mentions the chart, compasses, the needle and the sea star. Soon afterwards the Italians and the Catalans improved the plane chart, Regiomontanus invented a metal astrolabe, and Prince Henrique appeared on the scene as a great promoter of maritime discovery.

I shall not stop to give here an account of the careers of the great discoverers of the time, Columbus, Vasco da Gama, Magalhães, but close my review by presenting a short sketch of the great activity in Spain in maritime affairs.

The Spanish Renaissance never found a worthy historian, so that I shall simply state that at the beginning of the sixteenth century we find the Spanish mathematicians Ciruelo and Siliceo teaching at the University of Paris, the philosopher Vives at Oxford, while Servet, Harvey's forerunner in the discovery of the circulation of the blood, was burned alive in 1553.

At the same time the Spanish government was very active in promoting seamanship. The office of pilot major and a chair of cosmography and navigation were created, and an official maker of nautical instruments was appointed. The pilots had to pass an examination before a tribunal consisting of the pilot major, the professor of navigation and the maker of instruments, assisted by at least six expert pilots. Inventions tending to facilitate navigation were rewarded.

Thus Diego Ribeiro was awarded in 1532 a pension of 60,000 maravedís* a year for his invention of metal pumps. Before granting this pension, his invention had been submitted to a severe test on an experiment vessel having a commission on board to judge of the advantage gained by using the new pump. A few years later, in 1545, Vicente Barrero, who was the first in Spain to make wooden pumps, obtained an exclusive privilege to construct them for ten years, his pumps having been found much cheaper than those of Ribeiro.

In 1519 Martin Fernandez Enciso published the first Spanish treatise on seamanship, talking as his guide not only the classical writers Ptolemy, Eratosthenes,

* A maravedí was worth about two-thirds of a cent in gold.

Pliny and Strabo, but also the experience which, as he says himself, is the mother of all things.

The next Spanish works on navigation to be mentioned are those of Fernandez* (1520), Faleiro (1535), Medina † (1545), and Cortés ‡ (1551), through the numerous translations of which the science of the Spanish pioneers spread all over the civilized world.

JOSEPH DE PEROTT.

CLARK UNIVERSITY.

CURRENT NOTES ON ANTHROPOLOGY (XI).

RACIAL AND ETHNIC TRAITS.

TIME was when Nott and Gliddon and their colleagues and disciples undertook to prove the fundamental diversity of the races of mankind, physically and mentally. The pendulum has now swung to the other extreme, and various leading ethnologists deny the existence of any such things as racial or ethnic traits, tendencies or capacities. For instance, Dr. Otto Stoll, in his thoughtful work, 'Suggestion and Hypnotismus' (cap. xx.), calls racial psychology a 'deceptive appearance' (Trugbild); Dr. S. R. Steinmetz, in the introduction to his 'Entwicklung der Strafe,' quotes with approval the opinions of those who say that the only psychical differences in races are those arising from their surroundings, etc.

If such expressions—not always clearly enunciated—mean merely that the traits of races and nations are the slow results of their *milieu*, and are as permanent as the physical results, color, hair, etc., they are truisms which nobody denies; but if, as is apparently the case, they intend to say that at present the Fuegian or the Bantu has the intellectual endowment of the European, and all that he requires to make use

of it to as good effect is to be given an equal chance, this is contradicted by uniform and repeated experience. The mental traits of races and peoples are as much their peculiar characteristics as are their bodily idiosyncrasies, and are just as impossible to change by any quick process. The theories of education and government which have been based on the opposite view have steadily failed. The changes in the mental are strictly correlated to those in the physical system. It is vain for ethnologists to seek to forget this elementary physiological fact.

THE PROGRESSIVE DEPOPULATION OF NORTHERN REGIONS.

THE last census of Russia showed that its northern province, Archangelsk, had lost over ten thousand of its already sparse population within a decade, not from any general or violent cause, but from the independent migration of families to more genial climes toward the south. Mr. H. C. Bryant and other Arctic travelers assure me that there is no doubt about the advancing extinction of the natives of the extreme north of America and Greenland. Dr. A. Jacoby, in the 'Archiv für Anthropologie' for November last, draws a painful picture of the degeneration and disappearance of the Samoyeds and other boreal tribes of Siberia. Nearly everywhere the arctic and sub-arctic zones have fewer inhabitants than a half century ago.

The general causes are obvious. One is the destruction of the native tribes by the introduction of new modes of life, new diseases, alcohol and idleness; another is the removal of all who can go, to climates of less severity. The arctic regions, like mountains, were not originally chosen by preference as homes, but were the refuges of conquered and dispersed bands. Now that the pressure is removed such inhospitable climes will certainly be occupied less and

* Translated into French.

† The French translation had five editions, the German six, the English one, the Italian two, and the Flemish one.

‡ Translated into English.