

The Evolution of Man

No. III. of This Series— By PROF. WILLIAM BOLSCHE

I MENTIONED, a while ago, that we have remains of skeletons of men who lived in the ice age, the age of mammoths. But these men of the ice age, who are still relatively close to us when compared to the more distant primitive periods, are not so very much behind in their civilization when compared to certain savage peoples of today. Even in our day, there are certain tribes, for instance in South America, who are not familiar with metals, who fashion all their own tools and weapons out of stone, horn, or wood, and who therefore are actually living in the "Stone Age" similar to those primitive mammoth hunters. Nevertheless, if one of us had met one of these primitive ice age men, we should have been somewhat startled by the features of that man. For his face, his size and his limbs would have appeared to us perceptibly different from ours, even from those of the savages of the present day. True, no one would have doubted that this was still a "man," but something strange, something divergent, would certainly have startled us in this type of the "Ice-age man." We may still reconstruct this man tolerably well from the remains of his skeleton.

It was in 1856 that such genuine human bones, with strangely divergent characteristics, were discovered for the first time and scientifically analyzed. It was in the so-called Neander Valley near Dusseldorf, (Rhineland.) Some working men were clearing out an old cave. They found an old and partly decayed skeleton. A physician, Dr. Fuhlrott, happened along and saved as many of these bones as he could obtain. In this way they reached a museum, and they are now on exhibition in the Provincial Museum of Bonn. The student is especially surprised by the construction of the skull of this man, which is very flat in the part directly above the brain, and has thick and unsightly bumps right over the cavities of the eyes. Even the lowest Australian has no such bumps on his forehead today.

For a long time the genuineness of this discovery was doubted, and no correct conclusions could be formed because the experts could not agree on the period to which this Neander Valley skull should be assigned. Some even doubted whether this man was really very old and whether he could have been a contemporary of the mammoth. Rudolph Virchow then took part in the discussion and claimed that whatever might have been the antiquity of these bones, and granting that they might be genuine bones of a contemporary of the mammoth, they certainly did not belong to a normal man, but rather to one who was diseased. The divergence from the present human type was attributed to the effects of disease. It was supposed that this Neander Valley man suffered from softening of the bones when a baby, from gout when an old man, and that at sometime in his life his skull had been crushed by a blow and healed imperfectly. And in this way the bumps over the eyes and other strange characteristics were supposed to have been produced. But this very daring assumption, looked far-fetched when examined in detail, was refuted when Professor Fraipont, in 1887, discovered two human skeletons in another cave near Namur, (Belgium) the so-called cave of Spy. These skeletons had skulls with the same strange bumps on them. One could not easily assume that all these individuals had endured the same improbable sufferings. Some time after that, a whole mass of remains of such bones, belonging to not less than ten individuals of different ages, were found near Krapina in Austria. They evidently represented the remains of a prehistoric cannibal feast, and the poor victim who had been roasted on that occasion had all of them the same structure of

skull as that of the Neander Valley man. And, finally Schwabe and Klaatsch have demonstrated scientifically that the Neander Valley bones were not at all diseased.

It is quite certain, then, that a type of man with such skulls has once existed and the discoveries at Spy and Krapina have shown at the same time to what period the man belonged. They were found together with the bones of the mammoth and cave bear of exactly the same age. They were therefore of the same age. They were therefore remains of the "Ice-age" men, and these ice-age men still showed this strange divergence from the present living type of "man."

Now, let us imagine that these variations continued far into the more primitive period. The traces of civilization, as we have seen, finally disappear altogether. Man, himself, if present in those very primitive periods, would not have been advanced far enough to fashion the crudest weapons out of flint stone. And we may logically draw conclusions from this lack of ability as to his physical constitution. The man of the Ice-age was able to fashion weapons from flint stones, and yet he was far behind us in the structure of his skull. How far behind, then, in the structure of his skull, would be a man without knowledge of flint stone tools?

The line of research here absolutely dissolves into nothing. Man diverges more and more from the present type of human beings. He finally varies to an extent which makes him absolutely indistinguishable and hides "Man" in beings which are not at all like him.

We must recall to mind the millions of years of the primitive world, the infinite succession of time, and think on and on along this line of natural development, just as we would in the case of a star which, once started on a definite course from a certain point, continues to move and move incessantly in a certain fixed direction.

But now that we have gone so far, we feel a pardonable curiosity and a certain daring. Would it not be possible for our penetration, once we have conceived of these possibilities, to forge ahead still farther into the mystery of things, get at the facts of all these "possibilities, to forge ask what disguise man might have adopted? What may be those strange primitive beings, the fossil remains of which we might perhaps find and in which he may be most likely hidden?

We have at least a starting point. We perceive, so to say, the mathematical point where the course begins to deviate, that is to say, we may start from these grotesque skulls of the ice-age with their crude bumps above the eyes. May we not speculate a little further as to the next physical transformation, and so forth?

It is precisely at this point that we meet with something which has the great advantage of not being merely a logical assumption, but rather a tangible scientific fact.

The beautiful island of Java in the tropics has long been known on account of its violent volcanic eruptions. As late as the Tertiary period, there was an eruption of a certain volcano which buried an entire section of land with loose masses of ashes in the same way in which Mt. Vesuvius buried the city of Pompei in historical times. On this occasion a multitude of living beings were buried. Their bones remained in that volcanic mass and were later on carried to a certain place by waters washing their way through this mass. The name of this place today is Trinil, and the old mass of volcanic ashes is now a part of the bed of the Bengawan River. In 1894, a Dutch physician, Eugen Dubois, made excavations in the banks of this river, and incidentally he discovered masses of old bones, mostly the bones of large

mammals of the Tertiary period, such as elephants and hippopotami which do not live in Java in our day. But among these bones Dubois found also a thigh bone and skull cap and a pair of molar teeth of a peculiar creature which had evidently lived in those primitive days with those animals at the time when the eruption of that volcano occurred.

This creature must have had a strange likeness to human beings. It had almost the height of a man. Its upper thigh bone indicates that it had the habit of walking upright. Indeed, it was so manlike that a number of authorities in anatomy, for instance, Rudolph Virchow, declared without hesitation that it was a genuine human bone. But matters were different with the skull. Flat, without a forehead, and with the bumps above his eyes, this skull seemed in its fundamental plan to be an extreme exaggeration of the Neander Valley skull. But this exaggeration went so far that the human likeness receded against a new likeness. This Trinil skull resembled strikingly—a monkey skull. And it was even possible to name the definite species of monkey which it resembled most nearly, a monkey living to this day in Southern Asia, the so-called gibbon. The gibbon is the nearest relative of the ourang-outang, the gorilla and the chimpanzee. The present living species are all of them much smaller than this strange creature of Trinil was. But that old skull was, in many respects, so like that of the gibbon that quite a number of grave experts declared that it belonged to an extinct species of gibbon which had the size of a man.

Still, a few others did not agree with this idea. The cavity of the skull, so far as it was preserved, was filled with gypsum in order to find out how much space it contained for a brain. The figure ascertained by this means was approximately half-way between a gorilla and the lowest Australian aborigine. That is to say, its brain capacity exceeded by far that of a gibbon without however coming anywhere near that of present-day man or even the ice-age man. What sort of a creature could this be? The scientists disagreed. "A very gibbon-like man," said some of them. "A very man-like gibbon," said the others. The discoverer Dubois took a middle course; he baptized this creature with the double name of pithecanthropus, monkey-man.

This disagreement of the scientists is very instructive in our research. We learn, as an actual fact, that in the Tertiary period there still existed on this globe certain creatures which stood about half-way between a man and a gibbon. Their skull exaggerated those characteristics, by which the ice-age man was distinguished from present-day man, to such an extent that this creature approached a new station which we have long known by the name of monkeys. In this way we are given a definite goal indicating the first disguise in which we may look for man further back and discover him, so to say, by evidences which reveal his presence beyond that limit where he began to deviate entirely from the present type of man.

Is it perhaps possible that at a certain historical stage, man simply merges in the monkey? Here another very old and venerable line of reasoning, long used even in the most exact research of nature, comes to our aid.

(To Be Continued)

[The next installment begins with an account of the great work of the scientist, Linnaeus, in classifying plant and animal life, and the value of these classifications for the method of comparative anatomy in throwing light on the steps of the evolution of man from lower animal forms.]

IRISH JURIES WILL NOT CONVICT

(From Vancouver "Province")

LONDON, Dec. 3.—Unlooked for delay has occurred in connection with the financial provisions of the new Home Rule Bill, and the measure is not now expected to come before Parliament this month. Before Christmas, however, the government will announce the main details of the bill, and at the opening of next session Home Rule will be treated as the most urgent matter in the government pro-

gramme.

Meanwhile the appalling crime wave in Ireland is engaging the government's close attention, and special radical arrangements are being made to deal with criminals, who at present escape punishment, through the impossibility of empanelling a jury that will record a conviction even when the clearest evidence of guilt is produced. To meet this difficulty persons charged with crimes having a political origin, will be tried by a commission of judges instead of by jury.

BRITAIN AND U. S. COMPETE TO RUSH GOODS TO GERMANY

WASHINGTON, Dec. 3.—Since the signing of the armistice, the United States and Great Britain have resumed trading with Germany, as shown in reports made public by the department of commerce.

Exports from the United States to Germany for the first ten months of the year totalled \$52,420,095, and imports from Germany, \$4,914,787.

Great Britain, from the signing of the armistice to October 1, exported

to Germany goods valued at more than \$80,000,000, and received imports from Germany valued at \$1,085,000.

Of the total American exports to Germany, \$20,663,521 were exported in October. Officials of the department of commerce stated that although Great Britain apparently has started off with a rush, the United States was overhauling her rapidly.

Propaganda meeting, Sunday, 8 p.m. Empress Theatre, Gore and Hastings street.