The skull consists of the frontal bone, the whole left parietal, a fragment of the right as well as a part of the left temporal bone, with the petrosa. The occipital bone, the face, and the base of the skull, are lacking; but freshly broken surfaces indicate that the skull was complete, and that the missing fragments are lost. On this account, measurements according to the accepted rules could not be given.

I therefore sought for lines which would permit a comparative measurement with a modern skull. I joined the point of the upper edge of the orbit with that in which the parietal bones are connected at the end of their median suture, and from it drew a line perpendicular to the lower end of the mastoid process of the petrosa (see fig. 1). I did the same, also, to a normal skull, and ascertained by this means the great difference in the shape of the forehead, and the lowness of the skull arch. A measurement made in the same way, of the slope of the forehead in a normal brachycephalic Bohemian, amounts to seventy-two degrees, while the skull from Podbaba measures fifty-six degrees. In a normal skull, the height of the crown above this horizontal line is 7.2 centimetres; in the skull from Podbaba, 5.6 centimetres. The position of the outer opening of the ear may be reconstructed with some exactness by means of the channel running diagonally across the temporal bone. A further remarkable characteristic of the skull is the very strongly developed eyebrows, which, in their

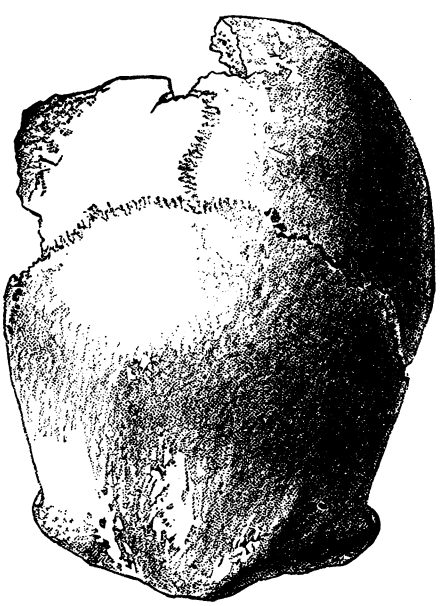

FIG. 2. — THE SAME, TOP VIEW.

inner half, are little inferior to the Neanderthal skull. A cross-section of the stoutest portion of the parietal bone shows that only the middle third is porous. The bone has nearly the same appearance as those of the diluvial mammals found in the same clay, commonly considered fossil. A few small fragments of the bones of the extremities were obtained with the skull, but their inter-relation would be difficult to prove.

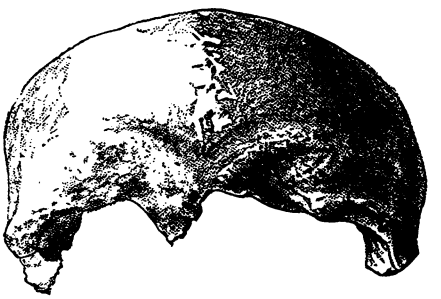

FIG. 3. — THE SAME, FRONT VIEW.

From the same clay a skeleton of a girl of the bronze age was recently brought to me, one hand still holding a bracelet, which had turned the distal end of the arm green. A few days later I obtained two nearly perfect skeletons of full-grown men from a neighboring lime-kiln. All these skeletons came from graves situated in the top layer of the loess and in the loam. All are typical dolichocephali, with beautifully arched foreheads. The bones are soft and fragile, and are at once distinguishable, on a glance, from the skull with low forehead found deep in the loess.

After repeated visits to the locality, I succeeded in determining that it was in precisely this layer, two metres below the loam, that all the mammal remains obtained at this place had been found; viz., a tusk of a mammoth seventy-five centimetres long, two skulls of Rhinoceros tychorhinus, reindeer, and horse. Since this is the same level from which the human skull came, it may be considered as established beyond doubt, that the mammoth, the rhinoceros, and man lived in Bohemia at the same period.

As I am no craniologist by profession, and am especially occupied with other paleontological material, I think I act agreeably to all anthropologists in sending the skull for further examination to Professor Schaafhausen. This high authority, to whom I have already sent a plaster cast, declares it very interesting, and will be prepared shortly to report on it.

PRIMITIVE COMMUNITIES.

DURING the year 1883 three books were published which were of so great importance in the early history of institutions, that it seems worth while to examine them with some care in their relation to one another, in order to determine the precise extent and value of their contribution to this study. These books are, Sir Henry Maine's 'Early law and custom,' Mr. Frederic Seebohm's 'English village community,' and Mr. D. W. Ross's 'Early history of land-holding among the Germans.' Sir Henry Maine's book, being a collection of essays of a considerable range of discussion, will be touched upon only incidentally: the other two, those of Mr. Ross and Mr. Seebohm,

being in the same general line of investigation, and arriving at essentially the same results, deserve careful study by themselves.

The principal object of these two books, so far as they are controversial in character, is to disprove the accepted theory of village communities. The existence of village communities as a feature of serfdom, they readily accept; and Mr. Ross even recognizes certain *quasi* communities of freemen, of a comparatively late date, and of subordinate importance: but the agricultural community of free peasants, purely democratic in its structure, as a regular and necessary phase in the history of Germanic society, they either deny altogether, or accept as a merely transient and unimportant phenomenon.

It may be noted here, that neither of these treatises aims to cover the entire ground of the inquiry. Mr. Seebohm's investigations are, for the most part, confined to the English people, — an intruding people, settled by conquest upon a soil to which they were foreign. Here he appears to have completely established his thesis by a series of inductions of remarkable fulness and cogency, and to have shown that the evidence before us does not warrant us in going back of the *servile* community which we know to have existed in the middle ages. But when he passes from England to the original home of the English, he contents himself with the discussion of two or three points, of considerable interest and importance, it is true, but which do not go to the bottom of the matter. Mr. Ross pursues his inquiries by a precisely opposite method. Instead of working back inductively from the present to the past, he begins with the first settlement of the Germans in their permanent homes, and traces their landed institutions step by step down to fully historical times. Like all deductive processes, his reasoning depends for its force upon our acceptance of the proposition with which he starts.

This proposition is (p. 1), that "the freemen settled neither in villages nor in towns, but apart from one another, in isolated farmsteads." Of the evidence for this proposition, derived from chap. xvi. of the Germania of Tacitus, I spoke some months ago (see *Science*, No. 45), in a review of Mr. Ross's book. My object now is not to repeat what I said then, or to examine the proposition itself, but to bring it into relation with other connected branches of inquiry. Mr. Ross has given us an invaluable treatise upon early German land-holding; but landed institutions are only one of a group of institutions, and, however fundamental their importance, they cannot be fully understood, except in connection with the social organization and the political institutions of the people in question. Moreover, however fundamental the landed institutions are at the stage of civilization in which the Germans were at the time of the migrations, in the earlier stages of society they are of only secondary importance, and, indeed, only come into existence at a relatively late epoch in the life of any community.

Primitive communities stand in no relation to the land except that of occupation. Land is to them a free gift of nature, just like air; and individual ownership, or even permanent individual occupation, is inconceivable to them. For primitive communities, the most fundamental consideration is that of the social organization, — the structure of society: the relation to the land does not come into consideration until the people has passed through savage life and the lower stages of barbarism, and has settled down to permanent occupation and systematic agriculture. Then, upon the passage from the personal to the territorial basis of organization, the land becomes the subject of the first consequence. It is readily seen, therefore, that Mr. Ross, starting with individual property in land, leaves out of sight — as he has a right to do — all the earlier phases of landed relations, as well as the entire question of social structure. We cannot, however, fully understand the landed institutions themselves, or fully appreciate the bearing of Mr. Ross's researches, without bringing them into relation with these cognate branches of inquiry.

It will be well to diverge here for a moment to Sir Henry Maine's book, which raises a question similar to that under consideration. In chap. vii., 'Theories of primitive society,' he pronounces in favor of the 'patriarchal theory of society,' — that is, "the theory of its origin in separate families, held together by the authority and protection of the eldest valid male ascendant," — against the view presented by Morgan and McLennan, of its origin in the horde. That this was the history of society as we are in condition to trace it, especially in the Indo-European family of nations, there is no doubt; but the patriarchal family, like individual ownership of land, requires something back of it to account for its origin. It is not primitive, but must itself be the outcome of ages of gradual advancement.

The theory of the patriarchal family, as defined by Sir Henry Maine, lends itself readily to Mr. Ross's theory of landed relations. The German warrior, upon the settlement of his tribe in a new region, may be supposed to have taken a tract of land, and settled upon it with his sons and daughters, his slaves and serfs. From this beginning, the sketch of landed relations presented by Mr. Ross possesses unity and consistency. To accept it in full, however, as an exhaustive theory of the subject, we must not only agree to the interpretation of Tacitus, by which he establishes his premise, but must also bring his theory into harmony with what we know of the primitive social organization of the Germans.

It is generally agreed that the Germans, in the time of Caesar, — and these remarks apply also, in the main, to the time of Tacitus, a hundred and fifty years later, — were in what is sometimes called the semi-nomadic stage, but what we may, perhaps, better describe as the end of a series of migrations. There is good evidence that the intruding Germans had displaced Celts in some parts of Germany at a relatively recent date; and the great invasion of the Teutones and Cimbri at just the time of Caesar's birth, was, no doubt, a part of this general migration. This erratic movement of the Cimbri and Teutones was checked by the Romans with considerable difficulty; but an effective barrier was placed against the slow west-

ward advance of the Germans by Caesar's defeat of Ariovistus, the later campaigns of Drusus and Tiberius, and finally by the *limes*, or line of fortified posts constructed from the Rhine across to the Danube in the second century.[1] The Germans, at the time of Caesar, cultivated the ground to a certain extent, — a form of industry not inconsistent with the slow migration, occupying perhaps several centuries, by which they passed from their original home to central Europe. Once this migratory movement stopped, no longer finding scope for expansion, the Germans appear to have settled quietly within their now established boundaries, and to have passed with great rapidity into a settled condition of society, with permanent occupation of land, and a regular system of cultivating it.

At this point there is an absolute blank in our knowledge for a period of nearly three hundred years, after which time, in the weakness and disruption of the Roman empire, the Germans burst over the barriers which had held them stationary, and began a new series of migrations, of a very different type. These years, as I have said, are a complete blank, except so far as we are enabled to infer what happened during the interval, from what appears at its close. In the time of Caesar, and probably in that of Tacitus, when the *limes* was in process of construction, the Germans appear to have been still in the stage of temporary occupation of land by groups of kinsmen. What was the nature and organization of these family groups it is impossible to tell; only we have every reason to conclude that they were of far less importance in their system than in that of either Greeks, Romans, Slavs, or Celts. Like the Romans, the Germans advanced to the territorial or political stage at a relatively very early period; but while the Romans continued, even under their highly developed political system, to retain their gentile organization unimpaired, — although only as a branch of private law, — the corresponding institutions among the Germans were rapidly outgrown, and have left very slight traces in their later institutions. The larger subdivisions, which may very likely have been *gentes* in their origin, appear, in the time of Caesar and Tacitus, to have become purely territorial districts, in which, so far as our information extends, there is absolutely no feature of the family principle. They are administered, not by an hereditary or quasi-hereditary chief representing the original patriarch, as among the Slavs and Celts, but by elected magistrates (*principes*), in which no trace of the patriarchal origin is discernible; and so strongly developed are the political habits of the people, that these magistrates are elected by the entire nation in their public assembly, and assigned to the several districts.[2] Within these districts the family groups still continue, and receive annual assignments of land at the discretion of the magistrates. This is in the time of Caesar. In the time of Tacitus, even these lesser family groups appear to have lost much of their original character; for he does not mention it as a feature of their constitution. When we reach the settlement of the Angles and Saxons in England, we find that the *maegth*, or legal kin, was not a precisely defined group, like the Roman *agnatio*, but was irregular and fluctuating in the highest degree.[1] The same fact, the inferior importance of the kin as compared with all the other European branches of the Aryan race, is shown distinctly in the popular literature. In the story of Burnt Njal, for example, the patriarch lives surrounded by his sons and daughters; but so far is he from possessing the Roman *patria potestas*, that he has no power even to withhold his sons from the perpetration of a gross crime.

When the Germans come under our observation again, at the time of the migrations in the fourth and fifth centuries, we find, in place of the system of shifting occupation of land, a fully developed system of individual ownership. This Mr. Ross appears to have completely proved. That the ownership was not yet complete, for the purposes of alienation and devise, does not affect the main question. It was precisely so among the ancient Romans, who possessed the most vigorous and logical conception of individual property (*dominium*) in land which any people has ever had; nevertheless, the *paterfamilias* held this property in trust, as it were, for his heirs, without power either of alienation or devise. Here comes in the importance of the distinction made by Mr. Ross between *common* and *undivided* property. The land belonged to the freeman and his heirs, not to the community, and, when divided, was divided *per stirpes:* it was therefore not common, but undivided.

The question now arises, What connection was there between the system of shifting occupation described by Caesar and Tacitus, and that of individual ownership which existed at the time of the migrations? To answer this question, we have absolutely no positive data, but may arrive at certain inferences by following deductively the tendencies at work in the earlier period, or by detecting in the later period survivals of perished institutions.

It may be said that the natural course of events would be something like this. The family group, which in the time of Caesar received an assignment of land for a year at a time, appears in the time of Tacitus to have held it for a series of years; its family character being, perhaps, at the same time modified. This is what we should naturally expect, and it is the most probable explanation of the much-disputed passage in the twenty-sixth chapter of the Germania. This shifting occupation, the natural accompaniment of semi-nomadic or migratory life, would cease by the force of circumstances when this form of life came to an end. The German nations being confined within definite territories, divided into permanent districts, the lesser groups would likewise become fixed. The habits of settled agriculture, the attachment to lands and residences once occupied, would very soon transform the shifting occupation

[1] For the historical importance of this *limes*, see Arnold, Deutsche urzeit, book i. chap. iii.

[2] This subject I have discussed more fully in a paper in vol. vi. of the Transactions of the Wisconsin academy of sciences, arts, and letters, now in press.

[1] See Professor Young's essay upon Anglo-Saxon family law.

into a permanent occupation; and with permanent occupation comes in at once the idea of ownership. Ownership of land is the outcome of a settlement in permanent homes, and the adoption of a regular system of agriculture. This ownership would be of the group, the *universi* of Tacitus, and must be *common* ownership in the strictest sense of the word: for the shifting occupation of individuals or households (*quos mox inter se secundum dignationem partiuntur*) would continue for a while after that of the larger groups (*agri ab universis in vices occupantur*) had ceased; and in this interval there would be real ownership, because permanency of occupation, on the part of these larger groups (*universi*), originally themselves family groups in nature, and probably still so in their prevailing character. At last the same causes which had called into existence the common ownership of the larger group would create, in turn, the individual ownership of the household. This would probably be a very rapid process. Such as it is here described, as a probable result of known causes, it is precisely what Mr. Seebohm appears to have in mind (p. 367) when he says, "It is certainly possible that during a short period . . . tribal households may have expanded into free village communities." If it took place at all, it must have been in this period of blank between the construction of the *limes* and the migrations of the fifth century.

The free village community is therefore a natural and probable connecting link between what we know to have existed in the first century, and what we know to have existed in the fifth century. That it actually existed among the Germans during this epoch, we have no direct and positive evidence; but there are numerous features of the later system, in the community of cultivation, the rights of pre-emption, and the traces of occasional re-distribution, which are easiest explained as survivals of the village community. For a description of these, I need only refer to Sir Henry Maine's 'Village communities,' and similar works.

Of actual cases of village communities, indeed, in any country, it is surprising how few we have knowledge of, considering the large part they have played, of late years, in treatises upon early institutions. The villages of India are composed of independent families, joint or individual. Those of the South Slavonians are groups of house communities; the Celts never appear to have had any institution of this nature; the Greeks and Romans afford no traces of them; the German villages, as Mr. Ross has proved, were communities of independent proprietors, although bound together by ties, which seem to indicate a previous condition of collective ownership; Russia alone affords unquestionable examples of the village community of the theory. What is common to all of these, and may be fairly pronounced a universal institution of the Indo-European race, if not of the human race, in its early stages, is the family group with collective occupation of land. The nature and organization of the group, and the later history of its relation to the land, are questions into which we have not space to enter.

The obscurity and vagueness in the prevailing ideas upon the subject result from not attending to the fundamental character of the transition, in early society, from the personal structure of society (based upon the family relation) to the political organization (based upon territory). In the earlier stage we have family groups occupying a definite territory: in the later stage we may have a definite territory — the *mark* or village circumscription — occupied and owned in common by a group of proprietors. These proprietors may be the family group of the earlier stage, or they may have taken in members of different origin: in any case, the point of view has shifted, and is now territorial instead of personal. This condition of things, if it ever existed, is the free village community. W. F. ALLEN.

TECHNICAL EDUCATION IN EUROPE.

A SECOND and important instalment of the Royal commission, appointed in England in 1881 to inquire into the subject of technical education, was published on May 16. The preliminary report presented during the session of 1882 dealt exclusively with the condition of things in France, where educational development has been most remarkable. The percentage of illiterate conscripts in 1833 was forty-seven and eight-tenths: in 1867 it had fallen to twenty-three, and in 1880 to fifteen, per cent. The law of the 16th of June, 1881, which came into operation on the 1st of January following, decreed gratuitous instruction available for the working-classes throughout an extended series of schools, commencing with the Salles d'asile, which are being converted into kindergarten schools, and graded upwards to the 'superior elementary schools,' in which technical instruction is given, and trades taught. The commissioners appear to have been favorably impressed with what they saw of the handicraft teaching of the Christian brethren in France, Belgium, and Ireland. The combination of manual with ordinary literary instruction imparted to very young children appears to have been first tried in 1873, at the communal school in the Rue Tournefort, with such satisfactory results that schools of the same type are being rapidly and extensively established. "Drawing, modelling, and carving are taught as part of the curriculum; and lathes, forges, and joiners' benches are as much matters of course as desks and blackboards. In the Boulevard de la Villette is the apprenticeship school, established some twelve years ago by the city of Paris, for boys who have completed the ordinary primary-school course, and to whom is given what professes to be a very thorough training in the theory and practice of numerous handicrafts; the pupils especially distinguishing themselves as pattern-makers and engine-fitters. Nearly fifty thousand pounds is said to have been expended on the establishment of this institution, and nearly three thousand pounds is required for its annual maintenance." The abolishing of the old system of apprenticeship is the main object of this institution. The most striking examples of primary schools are to be found