The President, WILLIAM AYSHFORD SANFORD, Esq., then read the following

Inaugural Address.

I MUST thank you for the high position in which the Council of this Society, confirmed by your vote of to-day, has placed me. It is a position to which I feel that I have no claim. The very slight amount of work which I have done in connection with this Society, and which has been so long interrupted by causes to which I need not further allude, can surely have given me no claim on your consideration; but still the manner in which the offer was made me by the Council was of such a nature that I could hardly with courtesy have refused it. I do not wish to waste the very short time which is at our disposal by any long address on my part. So many gentlemen have prepared papers on subjects of the greatest interest that every minute must be of importance. I will therefore confine my remarks to subjects which they are not likely to touch on, and to that to which I have particularly given my attention, and on which I would wish to say a few words of comment rather than of original matter. In the first place I would remark that three great works of repair of our ancient monuments are approaching completion. First, the west front of our Cathedral is sufficiently advanced to enable us to judge somewhat of the effect. I must confess that in some respects this is at present disappointing. Whether it be that the beautiful warm grey tint of the old work, harmonising with the dark shafting, produced an effect of dignity and grandeur which is to a great extent lost by the new pale blue shafts, and the mealy appearance caused by the repair of the freestone work, I know not; but certainly the effect of the upper part of the front is not satisfactory. The pale blue shafts mix with the colour of the sky, and produce positive gaps to the eye, where they should present

support, and a shadowy unsubstantial look is given which, I fear, will prevent those of this generation at least, who, from this time see the Cathedral for the first time from realising the noble grandeur which distinguished this fine, though it be but scenic and unstructural, effort of mediæval art. In the next place, the fair form of the spire of St. Mary Redcliff points heavenward over the bustle and commercial activity of the great city of which its parish forms a virtual portion. It is a noble finish to a noble work of repair honestly and patiently carried on through many years. The stone ceiling of the nave of the great church of St. Peter, at Bath, is worthy of the golden age of English vaulting. As soon as the repair of the choir is complete, and the communication between it and the nave is opened, this church, late though it be in date and style, will present one of the most complete and uniform interiors in England, worthy in some respects, to be compared with that masterpiece, King's College Chapel, at Cambridge, though, of course, of less span and general grandeur of effect. When so much is good it is hard, perhaps, to find fault. But I think the most uncritical eye will not be otherwise than thoroughly displeased by the large and, I fear I must say, ugly gasalier, as I think it is called, that disfigures this noble church. It it so large, so ungainly, and so entirely an encumbrance, that I can hardly use words strong enough to condemn it, as every one will in the exact proportion that he admires the remainder of the work. With regard to our own tower of St. James', it will cease to be a reproach to this town. Taunton has within the memory of those now living repaired or executed more monuments of historical interest than any town I know of its size. A comparatively small work like this must not be suffered to languish. St. James' tower will rise again in simple and graceful emulation with that of St. Mary's. We must show to future generations what our ancestors have done, and how we appreciate their work. While on the subject of architecture I would say a

word on the preservation of the exquisite bits of village architecture which still linger in the nooks and corners of the county. Some of these are of very ancient date, and they nearly all so admirably harmonise with the scenery in which they occur that one would have supposed that this would have sufficed to rescue them from destruction at the hands of educated restorers. But so vitiated is the taste of most of the town architects, that the first thing one of them does, when called on to give plans for the repair of a village church, is to recommend to the unsophisticated and astonished country parson to destroy those loved and simple beauties, and replace them with polished shafting and elaborate mouldings; and when he in his humility remonstrates, he is told that it is necessary to leave the mark of the age on the restoration. A 12th century chancel, with its beautiful recessed windows, its massive oak beams and thick walls, has entirely disappeared within the last few years, within a few miles of this, to make way for about as ugly and unsubstantial a structure as I ever set eyes on, and this by the advice of a celebrated architect; and the same thing goes on all over the country. But I was delighted the other day in North Devon, with a dear old vicar of Wakefield, who showed me with pride a perfectly proportioned, though simple, lancet triplet, which he had rescued from the hands of a fashionable London architect, whom to get aid from societies he was obliged to employ, and who was at the time building for a neighbouring clergyman of a fashionable watering-place a church in the most approved style of polish, elaborate moulding, un-English square abaci, and fantastic arrangement of details, with blue and scarlet external roof, and this he called a true eclectic example of the pointed style. New work, if you like it, in the richest and most beautiful forms that you can afford; but respect with the love you bear to an aged and loving parent, the simple work of our earnest and loving ancestors.

From archæology the passage is easy to that period which

may be considered to belong either to that science or to its kindred sister—geology.

You are aware that the period when man made his first appearance in these latitudes, at least as far as at present ascertained, is at the present moment the object of most earnest study among men of the highest intellect and powers of research. The period must have been of enormous length, compared with that to which in our earlier years we have been accustomed to confine the existence of the human race. With regard to this difference of opinion, I would make a remark I do not remember to have seen elsewhere. A very slight acquaintance with the early books of eastern nations, and the modes of thought and of expression to be found in them, will enable us to see that when a race, whether Aryan or Semitic, had raised itself above the surrounding tribes, and had moved from the region in which it had risen from the savage state into other lands, they hardly ever considered the inhabitants of those lands as men; they called them yackos, devils, sorcerers, trolds, fauns, anything but man, and they attributed to them frequently supernatural powers; they forbade marriage with them, and, in fact, treated them as beings of a different species. Now, this fact may explain to some, whose early education may have made timid on this point, a difficulty which will naturally arise to their minds, and perhaps clear the way to a more free investigation than they would otherwise undertake.

Now with regard to this period, an investigation has been for some years in progress which offers the first approximation to a chronology of geology, which has yet been shown to rest on a really scientific basis. Many of you are probably aware that Mr. Croll some years since had worked out the probable effects on the variations of climate which would result from the varying eccentricity of the earth's orbit, combined with those which would result from the precession of the equinoxes. The result was, perhaps, startling, for he

found that it was probable that in connection with the precession of the equinoxes a great year of about 20,000 years existed in which there was a great winter and a great summer of 10,000 years each in length in each hemisphere, and that at the present moment we were about 300 or 400 years past the midsummer of the northern hemisphere. But when he came to combine the effects of this great year with that of a still longer one, which depended on the varying eccentricity of the earth's orbit, he found that at certain periods of variable length great winters of intense cold would probably result, which might extend through periods of great length; while at others even more temperate conditions than those which we at the present period experience might be expected. He showed that in accordance with these principles the great year in which we at present live was one in which no very great extremes of climate were likely to occur, the eccentricity of the earth's orbit being small compared with other past periods.

When these views first attracted the attention of scientific men, cold water was, to a certain extent, thrown upon them by Sir Charles Lyell and others, who considered that the varying positions of land and water, as produced by local elevation and subsidence, would sufficiently account for the variations of climate the strata gave us evidence of, without calling astronomy to their assistance. But astronomy must have existed at least as long as geonomy, one sister could not live without the other. So Mr. Croll went on calculating, and I think he is now bringing over some geologists, and to a great extent Sir Charles Lyell himself, to be geonomers. Mr. Geikie, in a recent series of papers on the glacial and post-glacial periods, has shown that it is highly probable that the strata of this long period exhibit the very conditions demanded by the hypothesis of Mr. Croll, that is, that the so-called glacial period was not one of a gradual increase of cold from that of the pliocene to a period of maximum intensity, and

then a gradual warming up again to the present day, but that it was a period in which there were several alternations of temperature of very considerable magnitude, in some of which Northern Britain was covered with ice of perhaps 2,000 or even 3,000 feet in thickness; while at others this country must have enjoyed a nearly Mediterranean climate, free from ice and frost. The same thing has been shown in other parts of the world; but as far as I am aware Mr. Geikie is the first who has correlated the evidence on the subject from different countries. Mr. Croll also showed that one of the effects of his great summers and winters would be that the accumulation of ice on either pole, combined with its disappearance at the other, would, by the attraction of an enormous heap of ice at the one pole and its absence from the other, cause a great ice-tide, so to say, alternately in either hemisphere, which would necessarily cause a submergence or emergence of the land to great depths and elevations above the sea, according as it was high or low water at the given pole. The evidence from the strata on this point is complicated by the proofs we have of the apparent local risings and fallings of the land, which have certainly taken place to a considerable extent. But the following considerations have occurred to me, which have certainly cleared the ground from this difficulty to a much greater extent than I should have *a priori* expected.

If we imagine a condition of things which a low water of this great ice-tide would produce, and that the sea should, by the diminution of the mass of ice at the Northern, and a piling up of a still larger mass at the Southern Pole, be so reduced in extent here that the sea bottom should be laid bare to the depth of 100 fathoms, the following would be the state of the area connected with Great Britain:—St. George's Channel, the English Channel, and the German Ocean would all be dry land; the water-shed of the German Ocean would be to the north of Scarborough; all the rivers to the south of that town would be tributaries of the Rhine, which would

flow through the Straits of Dover, and have its mouth about half way between Cape Clear and Santander, opening on a coast where deep water would at once be reached—in fact, a bold coast in the form of a great bight. The Severn would, if not a tributary to this mighty stream, have its mouth close to it.

Now the drainage basin of this supposed great river would contain all the localities where the fossil hippopotamus has been found.

The Baltic and all the rivers of Great Britain to the north of Scarborough would in the same case drain into a great ravine, which would run along the coast of Norway. In this area I am not aware that the hippopotamus has been found. Now this looks as if the existing formation of the drainage systems of these countries is in the main identical with that existing at the continental period when this amphibious animal was an inhabitant of this country. For one can hardly conceive that the hippopotamus could have been the inhabitant of a river which discharged its waters into the Arctic sea, which the Kirkdale and Thames animals must have done had the Straits of Dover not been open to the passage of at least fresh water. Further consideration also shows that denudation would in this case mainly affect only the higher levels, as the lower levels would be mainly beneath the sea during the more severer conditions of the climate, and would therefore be more affected by deposition than by denudation. If, therefore, we find, as we do by examination of the soundings, that the courses of existing rivers are continued beneath the sea by channels of sensible depth at the bottom of submarine valleys, allowing for local or temporary accumulations, we may fairly assume that it is highly probable that these channels are the continuations of courses of these rivers, and that the valleys are valleys of erosion continuous with those of the subaerial valleys which open into them, and, though now submarine, that they were when eroded subaerial, and had rivers flowing at the bottom of them.

Now all this favours the idea that this great ice-tide, which Mr. Croll demonstrates to have been a highly probable consequence of his astronomical conditions, has here a geological correlation, and that the low water of this tide was contemporaneous with, at least, a warm climate capable of maintaining the hippopotamus throughout the year, as well as its more active companions, the southern elephant, rhinoceros, panther, and one or two other animals; not to speak of the *Corbicula fluminalis*, a southern fresh-water shell, which occurs during the same period in the old area of the Thames in incredible numbers.

The great autumn of such a great year as I speak of would have brought the northern mammalia here. The increasing frosts would have forced them from the north long before the cold could have produced an ice-cap sufficient to have submerged by its attraction this country to any extent, so as to insulate it, particularly if we look to the reduction of level by denudation which must have occurred since that time.

That more than one set of these phenomena have been repeated since the period I speak of, to a greater or less extent, has been clearly shown by Mr. Geikie in the papers I refer to, how often it, perhaps, is the business of future geologists to show. Mr. Geikie has certainly made out a tolerable sequence, and has shown the nature of the evidence, and how it is to be used.

With regard to the chronological part of this question, Mr. Croll has shown that though there were several alternations of temperature, arising from astronomical causes, there were probably two periods in which maxima of great intensity of cold occurred—one about 800,000 years ago, and another about 200,000, and that since this 200,000-year period there has been, though probably more or less interrupted, a gradual amelioration of condition to this present day. It is in the period between the 800,000 years and the 200,000 that we might from astronomical causes have expected conditions

more favourable than those which now exist. Which of the two great maxima of cold were the more intense there may be some doubt about. The main point on which I think both astronomers and geologists are agreed is, that the period which immediately preceded the present, or the quaternary, is such as I have described. And there is a probability that the 800,000-year period marks the close of the pliocene, while the 200,000-year period marks the commencement of the squeezing out of the mammoth and his companions between the severe cold advancing from the north and neolithic man from the south. This process must have been a long one; and in Siberia the mammoth, and in America the mastodon, may have struggled on to a very late date. I think it more than probable that what I have said refers to countries in which we live.

However, as I said before, the evidence we have is very partial and fragmentary. It is for future geologists to fix these numerical laws, which are at present being tentatively treated. If 200,000 years appears too long for the period of the post-glacial period, then we have for the present no geologic trace of Mr. Croll's 800,000-year period; but the evidence of this may yet appear, and then we should have to re-cast our views. It must be remembered that according to this view the 200,000-year period does not represent the advent of neolithic men in these latitudes; but the gap which is on all sides recognised as being great between the disappearance here of palæolithic, and the advent of neolithic men.

In working out problems of this kind it must be remembered that those who are working them are seeking for truth alone. They are not seeking to overturn any given theory, much less are they seeking to extinguish that on which all our dearest hopes rest. If some of our discoveries appear to be incompatible with a cosmogony which is more or less mixed up with an early education in religious matters, let us rather imagine that we may have been mistaken in our so mixing up matters

which have really little or no connexion together, excepting in a very broad and necessary sense. Every truth must be compatible with all other truth. If what we have hitherto regarded as truth prove to be speculation resting upon imperfect interpretation, and to be incompatible with that which we can observe and know, let us endeavour to find out where our mistake is, and not rashly assume that the discoverer is a wilful assailant of that which we have hitherto regarded as holy, often simply because it has been incomprehensible to us; and least of all let us not despise those who advance opinions which, because they are not comprehended by us, we imagine are beyond the range of human intellect.

The President concluded by calling upon

Mr. G. T. Clark who read a paper on "Taunton Castle," which is given in Part II., page 60.

The President moved a vote of thanks to Mr. Clark for his valuable dissertation, which, he said, showed the importance of obtaining the assistance of gentlemen who had given such subjects their attention, with very much skill, and brought to bear their experience derived in other parts of the country. He was not the only one in the room who had learned a great deal from the paper.

The vote of thanks thus called for having been passed with unanimity,

Mr. W. A. Jones, referring to Mr. Clark's expression of regret that water had disappeared from the Castle moat, said he had discovered an entry in the records of the Manor as far back as the time of James I. that William Hill rented the free fishing from the water-gate as far as the entrance, with all the trees and other profit, leaving to the Lord of the Manor the right of free entry.

Mr. J. H. Parker, C.B., having been invited to speak upon the topic, said that his friend Mr. Clark was so much better acquainted with the subject that he had nothing he

wished to add. Mr. Clark had given the most excellent account they could have, and a better summary he had never heard. He asked whether the mounds which Mr. Clark only slightly mentioned as being of the Roman period might not, as a general rule, be put down to the 8th or the beginning of the 9th century.

Mr. CLARK: Yes; but I took it from the 8th to the 10th century.