is a vexed question. Professor Spalding reported work done in his laboratory from which it would appear that not only one side of the root is concerned in producing the bending, but both sides. As a result of numerous experiments it is concluded that the effect of the stimulus is not altogether, as has been supposed, on cell-membranes, nor upon the activity of protoplasm in manufacturing osmotic material, but is manifested in a molecular change in the protoplasm by which it becomes more permeable to water. The tense membranes consequently contract, shortening the side that thus becomes concave. It is claimed that, at the same time, the effect of the stimulus is to increase the length of cells on the side becoming convex. An important difference between this theory and its predecessors is that this proposes to utilize the tensions usually existing in straight roots to account for the curving.

The action of a cellulose dissolving enzyme extracted from cotyledons of seedlings of *Lupinus albus* was described by Professor Newcombe.

Professor True's paper on the toxic action of phenols on plants aroused considerable commendation and discussion. It has been known quite generally that plants are very sensitive toward certain substances, so sensitive that they may be used as tests for certain compounds diluted far beyond the capacity for identification by the usual chemical means. A study of the toxic action of the group of substances known as phenols has shown that living organisms respond in a definite manner to substances having a definite constitution, the reaction of the protoplasm being thus far governed by chemical laws. Electrolytic dissociation of the molecules into ions plays a subordinate rôle in the physiological action of these compounds, the undissociated molecules, therefore, determining to a large degree the physiological properties of the substances. Certain radicles seem to have specific properties when introduced into the molecule, modifying the toxic value of the same.

Dr. Hart sought to prove that the acridity of the juice of *Arum* is not due, as claimed, to the mechanical action of the raphides. He exhibited preparations of the extracted juice which had been filtered and still preserved its acridity. He described also a series of experiments upon himself, detailing the physiological effects of the administration of the juice.

Dr. Anderson described a self-registering torsion balance—an improvement over the one previously described by him. This instrument will record the increase or decrease in weight of any object that can be placed upon the balance, changes of .5 gm. being sufficient to make a record.

In joint session of Sections F and G, Professor Osborn and Professor Poulton presented a theory harmonizing to some extent Darwinism and Lamarckism, which is published in the present number (page 583) of SCIENCE.

FREDERICK C. NEWCOMBE,
Secretary Section G.

ANTHROPOLOGY AT THE TORONTO MEETING OF THE BRITISH ASSOCIATION.

SECTION H was perhaps the best attended of all sections of the Association, the large West Hall of the University of Toronto, where the sessions were held, being filled on several occasions, while on Wednesday, August 25th, when the joint discussion with Section C (Geology) took place, standing room was at a premium. The chairmanship of Sir William Turner, the celebrated anatomist, who presided with grace, dignity and a broad-minded discrimination that won the admiration of all who were privileged to present papers or to take part in the various discussions which arose, was a

delightful feature of the meeting, while the frequent attendance of Sir John Evans constantly reminded those present that the science of anthropology was well honored in the illustrious President of the Association. American anthropologists were well represented at the meeting and on the program as well—Miss Alice Fletcher, Professor F. W. Putnam, Dr. W J McGee, Professor E. S. Morse, F. H. Cushing, Dr. A. F. Chamberlain, Stansbury Hagar, Professor L. Witmer, etc., represented the United States, and David Boyle, A. F. Hunter, Rev. John Maclean, Geo. Iles, Dr. G. M. Dawson, etc., Canada. Among the distinguished British members present or contributing to the program were: E. W. Brabrook (President of the Anthropological Institute); Professor A. Macalister, of Cambridge; Dr. R. Munro, the investigator of British lake-dwellings; E. S. Hartland, the folk-lorist; Professor A. C. Haddon, who has written of 'Evolution in Art;' Dr. H. O. Forbes, traveler and anthropologist; F. T. Elworthy, who has written of the 'Evil Eye;' Sir Geo. S. Robertson, 'the hero of Chitral;' F. C. Selous, the South African traveler. Altogether some fifty reports, papers, etc., were laid before the Section and two extended discussions on 'American-Asiatic Contact' and 'The First Traces of Man in America' took place. Of the papers read, eight were by Canadians, eleven by British members, eleven by members from the United States.

The officers of the Section were as follows, due recognition being given to American anthropologists, both in Canada and the United States:

SECTION H.—ANTHROPOLOGY.

President: Professor Sir W. W. Turner, M. D., LL.D., F.R.S.

Vice-Presidents: E. W. Brabrook, C.B., Pres. Anthr. Inst.; Professor A. Macalister, M.D., F.R.S.; Dr. W J McGee; R. Munro, M.D., F.R.S.E.; Professor F. W. Putnam, D.Sc.

Secretaries: A. F. Chamberlain, Ph.D.; H. O. Forbes, LL.D.; Professor A. C. Haddon, D.Sc.; J. L. Myres, M.A., F.S.A. (*Recorder*).

Committee: F. H. Cushing; David Boyle; Dr. G. M. Dawson, C.M.G.; F. T. Elworthy; A. F. Hunter; Professor E. S. Morse; E. Sidney Hartland, F.S.A.; Professor Lightner Witmer, Ph.D.

Owing to the conservative regulations of the Association, Miss Alice Fletcher, being a woman, could not receive the official honor unanimously voted her by the Section Committee, who, however, by assigning her the first place on the program, paid a graceful compliment to her scientific attainments, which, together with the chairman's well-worded encomium at the conclusion of her address, was a tribute which an antiquated idea of scientific *personnel* utterly failed to minimize.

In detail the program was carried out as follows:

THURSDAY, AUGUST 18.

1. *The Scalp-Lock, A Study of Omaha Ritual.* Miss Alice C. Fletcher.
2. *The Import of the Totem Among the Omahas.* Miss Alice C. Fletcher.

In these two papers were contained remarkably clear presentations of the problems of what might, perhaps, be called 'the higher life' of the Omaha Indians, the general ideas and ideals which underlie the hair-cutting ceremonial and the institution of the totems being carefully explained and accidental or incidental phenoma rated at their true value. That the acquisition of the totem represented the outburst of individuality and personality on the part of the young Indian was ably shown, and the relations of personal, gentile and tribal totems elucidated.

The discussion following the paper was

shared in by Sir Wm. Turner, Dr. McGee, Mr. E. S. Hartland, F. C. Selous, all with warm appreciation of the ability of the author in her treatment of a very difficult subject. Dr. McGee emphasized the artificiality of certain social phenomena of primitive peoples. Mr. Hartland pointed out the great value of the proper interpretation of the ideas and institutions of the lower races.

3. *Squaktktquacht, or the Benign-Faced, the Oannes of the Ntlakapamuq, of British Columbia.* B. HILL-TOUT.

This was a detailed version of the 'younger brother' tale of the Ntlakapamuq, a Salish tribe of southern British Columbia. The 'Benign-faced' is culture-hero, animal-transformer, fish-befriended, wizard-destroyer, etc.

4. *The Blackfoot Legend of Scarface.* R. N. WILSON.

5. *Blackfoot Sun Offerings.* R. N. WILSON.

The first of these interesting papers told the adventures of 'Scarface,' a young Indian, whose personal disfigurement caused the maiden of his heart to refuse her hand in marriage until the scar on his face should be removed. After much wandering 'Scarface' accomplished this by the help of the sun (whose lodge he visited), the moon and the morning-star. Returning to earth, he received, in due time, his beloved, and instituted the system of offerings to the sun, of which a detailed account was given in the second paper.

6. *Star-Lore of the Micmacs of Nova Scotia.* STANSBURY HAGAR.

In this essay valuable details were given of the stellar Eden of the Micmacs, their lore of the Pleiades, moon and sun, the heaven-birds, etc.

7. *The Lake Village of Glastonbury and its Place Among the Lake Dwellings of Europe* (lantern illustrations). DR. R. MUNRO.

In this well-illustrated lecture the importance and the great extent of lacustrine remains in Europe were clearly demonstrated and the need for further explorations emphasized.

8. *Report on the Silchester Excavations.*

A brief account (a full report of the antiquities on exhibition at Burlington House is given in 'Archæologia,' Vol. LV., pp. 409–430) of the investigations carried on since 1896 on the site of the Roman city at Silchester.

9. *Some Old-World Harvest Customs* (lantern illustrations). F. T. ELWORTHY.

Illustrative account of the development and variations of the 'Kern-maiden,' and associated apparatus.

10. *Report on the North Dravidian and Kolarian Races of Central India.*

'No further progress' was reported in the transcribing and translating of Mr. Raynbird's extensive collections on the linguistic and anthropological characteristics of these peoples.

FRIDAY, AUGUST 20.

11. *Some Distinctive Characters of Human Structure* (lantern illustrations). The President's address, Sir W. W. TURNER.

The essence of this most admirable and eloquent address, to which a crowded hall listened with rapt attention, is contained in the following extract:

"We know that an animal is guided by its instincts, through which it provides for its individual wants, and fulfills its place in nature. In man, on the other hand, the instinctive acts are under the influence of the reason and intelligence, and it is possible that the association centers, with the intermediate association fibers which connect them with the sensory and motor centers, may be the mechanism through which man is enabled to control his animal instincts, so far as they are dependent on motion and sensation.

"The higher we ascend in the scale of humanity the more perfect does this control become, and the more do the instincts, emotions, passions and appetites become subordinated to the self-conscious principle which regulates our judgments and beliefs. It will, therefore, now be a matter for scientific inquiry to determine, as far as the anatomical condition will permit, the proportion which the association centers bear to the other centers, both in mammals and in man, the period of development of the association fibers, in comparison with that of the motor and sensory fibers in different animals, and, if possible, to obtain a comparison in these respects between the brains of savages and those of men of a high order of intelligence.

"The capability of erecting the trunk, the power of extending and fixing the knee joints when standing, the stability of the foot, the range and variety of movement of the joints of the upper limb, the balancing of the head on the summit of the spine, the mass and weight of the brain and the perfection of its internal mechanism, are distinctively human characters. They are the factors concerned in adapting the body of man, under the guidance of reason, intelligence, the sense of responsibility and power of self-control, for the discharge of varied and important duties in relation to himself, his Maker, his fellows, the animal world and the earth on which he lives."

The address was illustrated with numerous lantern-slides which served to render perfectly intelligible some of the more intricate anatomical points involved in the comparative study of the anthropoids, the human young and the various races of men.

12. *A Demonstration of the Utility of the Spinal Curves in Man.* Professor Anderson Stuart.

By means of a most ingenious machine, in which were a straight brass rod and a curved one, made so as to be subject to concussion, Professor Anderson Stuart showed what would have been the result had the human spine been perfectly straight. The skull would have been broken.

13. *The Causes of Brachycephaly.* Professor A. Macalister.

14. *Notes on the Brains of Some Australian Natives.* Professor A. Macalister.

After noting the great prevalence (seemingly irrespective of race) of brachycephaly among infants, Professor Macalister emphasized the importance of brain-growth as a determining factor in head form; the increased bulk of the frontal lobes, which grow most rapidly and largest in the higher races, causes brachycephaly. Photographs of Australian brains were exhibited and explained to illustrate the points of difference between savage and civilized man.

15. *On Some Uses of Trepanning in Early American Skulls.* Dr. W J McGee.

By means of an exhibit of pre-Incan Peruvian skulls, Dr. McGee discussed and explained the nature, process and probable uses of trepanning, the implements employed and the probable causes of the incisions. About 50% seemed cases of survival, but he did not care to credit the old Peruvians with very great surgical knowledge. Trepanning began in the taking of trophies; the head dwindled to a piece cut out of the skull, and passing through vicarious and sortilegic stages reached a stage of more or less blundering surgery.

In the discussion which followed the reading of the paper, Sir W. W. Turner seemed inclined to rank higher the surgical skill of the ancient Peruvians, and Professor Macalister stated that out of 87 Peruvian skulls he had examined two were trepanned, approximately the same number (2%) as Dr. McGee had found.

16. *Mental and Physical Deviations from the Normal Among Children in the Public Ele-*

mentary and Other Schools. Report (by DR. FRANCIS WARNER, Secretary of the Committee).

This fifth annual report of the committee 'gives an account of 1,120 children who appear to require special care and training, as being sub-normal in their mental or physical status.' The report is accompanied by many detailed tables. It is the intention of the committee to act in future with the recently formed 'Childhood Society,' of which the Earl of Egerton and Tatton is President and Sir Douglas Galton, Chairman.

17. *Report on Anthropometric Measurements in Schools.*

The work done by the committee during the past year has 'consisted solely in the distribution to applicants of the rules for measurement drawn up by the committee, and in advising those responsible for physical measurements in schools as to points respecting which they had written for advice.'

18. *The Growth of Toronto School Children.* DR. FRANZ BOAS.

This paper summarized the results of the extensive measurements of Toronto school children made in 1892, under the superintendence of Dr. A. F. Chamberlain. The chief points brought out were: American (Oakland, California) children are slightly taller than Canadian (Toronto); first-born children are somewhat taller than later-born children; families in Toronto are larger than those in Oakland; the families of Canadian descent are smaller than those in which the grandparents are of English birth.

In the discussion on this paper Professor Brabrook and Dr. A. F. Chamberlain took part, both emphasizing the importance of social atmosphere and environment in connection with physical well-being.

19. *An Experimental Analysis of Certain Correlations of Mental and Physical Reactions.* PROFESSOR LIGHTNER WITMER.

Professor Witmer, illustrating his remarks by numerous charts, discussed the differences in muscle tone, the rôle of the mental factor in physical processes, the sexual and racial differences in quickness of movement, etc.

In the discussion following the paper Professor A. C. Haddon, Dr. A. F. Chamberlain, Mr. David Boyle, all expressed their desire for a uniform system of mental and physical measurements, to be used in both the Old World and the New.

20. *Anthropological Work in the New York Pathological Institute.* DR. HRDLICKA.

In this paper Dr. Hrdlicka sketched the history, the prospects and the desirabilities of the anthropological department recently established in the New York Pathological Institute, as well as the system of investigation employed.

21. *The Physical Characteristics of European Colonists born in New Zealand.* DR. H. O. FORBES.

22. *A Case of Trepanning in New Mexico.* CARL LUMHOLTZ and DR. HRDLICKA. Read by title.

MONDAY, AUGUST 23.

23. *Report of the Committee on the Northwestern Tribes of Canada.* DR. FRANZ BOAS.

This was a summary of the work done under the auspices of the committee during the past twelve years in investigating the physical characters, languages and industrial and social conditions of the northwestern tribes of the Dominion of Canada.

In the discussion Professor Brabrook, Dr. A. F. Chamberlain, Professor E. C. Haddon and Rev. John Maclean took part, the evil of governmental interference with native tribes being pointed out.

24. *The Seri Indians of the Gulf of California.* DR. W J MCGEE.

A most interesting account was given of the Seri Indians, perhaps the most primitive of all American aborigines—autocthones, if there be any such in the New World; their arts and institutions, their fine physique, skill in hunting, their stone art, shell mounds, etc., were noted and described.

25. *Notes Historical and Philological on the Indians of British Columbia.* C. Hill-Tout. Read by title.

26. *The Kootenays of British Columbia and their Salishan Neighbors.* Dr. A. F. Chamberlain.

27. *Kootenay Indian Drawings.* Dr. A. F. Chamberlain.

In the first paper the author discussed the relation of the Kootenays—whose language forms a distinct stock—to their Salishan neighbors on the west, the Shushwap. The Kootenay speech contains a few Salishan words; the animal tales of both peoples have many resemblances; the manufacturing arts are alike sometimes in detail. But the most remarkable contact-phenomena is the possession by both these peoples of the peculiar double (downwards) pointed canue, of what Professor Mason calls the Amoor type.

The second paper was devoted to the explanation of some 300 drawings—natural objects, men, animals, instruments, etc.—made by the Kootenay Indians, and the consideration of their resemblances to, and their differences from, the drawings of children. The keen observation gift of the Indian, the greater truth to nature, the longer time taken to draw them, all evidence the differences between these primitive art products and the cruder, ruder efforts of children.

In the discussion Sir William Turner and Professor Haddon called attention to the importance of such collections of primitive art, as also did Dr. Munro, who pointed out the necessity of such data for comparison with the art of early man in Europe.

28. *A Rock Inscription on Great Central Lake, Vancouver Island.* J. W. MacKay.

Brief description, accompanied by photograph, of symbolic rock-carving of a tree.

29. *Blackfoot Womanhood.* Rev. J. Maclean.

A detailed account of woman's life, arts, influence, etc., among the Blackfoot Indians of Canada. The Indian legends as to the creation of woman—she was made first—her sociological status, the influence of mythology and religion, the division of labor, marriage-customs, result of contact with civilized races, were touched upon. Some traces of 'woman's language' were found. The merry laughter of the women is noticeable.

30. *On the Hut-Burial of the American Aborigines.* E. Sidney Hartland.

An extended ethnographic account of burial within the hut as practiced by the American Indians. According to Mr. Hartland, 'Its origin must be sought for in the savage idea of kinship, and in the desire to retain within the kin the deceased, with all his powers and virtues.'

31. *Report on the Ethnological Survey of Canada.*

The first report of the committee appointed at the Liverpool meeting, 1896, suggesting subjects and lines of investigation of native and intrusive races of the Dominion.

32. *Origin of the French Canadians.* B. Sulte.

A brief account of the chief groups of early French settlers in Canada and their places of origin. Mr. Sulte notes a 'remarkable uniformity of language among the French Canadians'—a point regarding which there is still some dispute.

33. *Report on the Ethnographic Survey of the United Kingdom.*

The chief portion of the report was an extended folk-lore collection by the late Dr. Gregor.

In connection with the report Professor Macalister gave an interesting résumé of anthropometric data procured by him and Professor Haddon from the scientists on the Parisian, who kindly submitted to these measurements.

34. *The Evolution of the Cart and Irish Car* (lantern illustrations). PROFESSOR A. C. HADDON.

By means of excellent slides the author showed the various stages in the development of the body and the wheels of the cart and the Irish car, and demonstrated how its retention was a matter of adaptation to the soil rather than of extreme conservatism. In the discussion which followed, many members took part and the wide prevalence of solid wooden wheels and other primitive cart elements was made evident.

TUESDAY, AUGUST 24.

35. *The Jesup Expedition to the North Pacific Coast.* PROFESSOR F. W. PUTMAN.

The first part of the morning session had been set apart for the discussion of 'Evidences of American-Asiatic Contact' and the subject was introduced by Professor Putnam, who, after giving an account of the origin of the Jesup expedition now exploring the North Pacific Coast, under the auspices of the American Museum of Natural History, New York, gave at some length his reasons for believing in the contact under discussion. Professor Putnam refused to believe that the aborigines of America belonged to one and the same race, and was inclined to mark off the culture races of Mexico, Central and South America and the Mound Builders from the North American Indians. The Eskimo of East Greenland were perhaps métis with early paleolithic man; the Caribs suggested an Africo-Mediterranean origin. The art of Central America, too, was suggestive of Mongolian contact.

The discussion on the paper was begun by Professor E. S. Morse, who at some length discussed the evidence so far brought forward of culture influencing contact between the peoples of America and those of Asia, concluding that the very ancient civilization of China and the adjacent countries had never penetrated to the New World. From a comparative study of the two world-civilizations such contact appeared not to be proved. Mr. F. H. Cushing, from his investigations of the arts, games, etc., of the Zuñis was led to the same conclusion, that the American peoples unaffected by cultural influences from Asia had been working out their own destiny. Dr. A. F. Chamberlain expressed his belief in the unity of the American race and the absence of any clear proof of cultural contact.

36. *Why Progress is in Leaps.* GEO. ILES.

Taking the mastery of electricity and the invention of photography and all the improvements and useful discoveries which have followed in their train, Mr. Iles indicated the rôle these factors play in the increased acceleration of human progress, making a day with us more than a thousand years with our ancestors. Such things are multipliers of, not additions to, human genius.

37. *Note on the Transmission of Acquired Characters* (lantern illustrations). PROFESSOR J. C. EWART.

An account of the foal of an Arab mare, supposed to be infected by the zebra sire of her first foal.

38. *The Kafirs of Kafiristan* (lantern illustrations). SIR GEORGE ROBERTSON.

An interesting account of a people whose Greek physiognomy has been noted by more than one observer. Their bridge-building, wall-decorations, tombs, the sphere of woman, etc., were discussed.

39. *The Mangyans and Tagbanuas of the Philippine Islands* (lantern illustrations). Professor Dean C. Worcester.

Professor Worcester described, with considerable detail, two very primitive tribes of the Philippines, the Mangyans, of Mindoro, and the Tagbanuas, of Palawan. Their physical characteristics, manners and customs, arts, etc., were treated of. Very interesting was the author's account of the childish temperament of the Mangyans and their actions when a mirror was given them; likewise their inability to recognize representations of themselves in a picture. The lowland people were less physically well developed than the mountaineers, and the result of contact with the Spaniards was bad for both. They have no belief in a future state. Concerning the Tagbanuas, the following points are noteworthy: Child-marriage, the precocity of children, belief in a subterranean heaven, love of music, use of a syllabic alphabet.

40. *Report on the Necessity of the Immediate Investigation of Anthropology of Oceanic Islands.*

Professor Haddon, in presenting the report, emphasized the necessity for investigation of rapidly disappearing flora and fauna and tribes of men who will soon be gone forever. This is much more important than the study of other phenomena whose number is practically unlimited, whose existence is practically perpetual. Every year is a year lost.

WEDNESDAY, AUGUST 25.

41. *The Trenton Gravels.* Professor F. W. Putnam.

42. *Human Relics in the Drift of Ohio.* Professor E. W. Claypole.

The first hours of the session were devoted to a joint discussion with Section C (Geology) on 'The First Traces of Man in the New World,' introduced by the two papers just mentioned.

Professor Putnam gave a résumé of the investigations in the Trenton Gravels and of the evidence which led him to believe in the existence of paleolithic man in northeastern America, laying great stress on the existence of argillite implements in the gravel.

Professor E. W. Claypole described the finding of a grooved stone axe in stiff clay near the bottom of a well during the digging of it. The find came from the great glacial plains of northern Ohio. The evidence, however, is not entirely convincing, as all who shared in the discussion took occasion to observe.

The discussion was begun by Sir John Evans, who declared that the Trenton implements were of a decidedly neolithic form, and declined to believe in the existence of paleolithic implements in America comparable to those of the river-drift of England and France. He rather favored a vast extension of its neolithic period in America.

Dr. J. W. Spencer gave his geological opinion as to the age of the Trenton gravels anywhere from 5,000 to 50,000 years.

David Boyle stated that there was no evidence as to the existence of man in Canada during or immediately after the glacial period.

Professor E. S. Morse was rather more favorable than the others to Professor Putnam's contention. Dr. W J McGee, while admitting the presumption that man was very ancient in America, advised conservatism in the matter of early man, and suggested that the argillite objects found in the Trenton talus may be quite modern, the product of the present Indian stock. Neither here nor in Ohio is the evidence convincing. A great mass of evidence to which constant and repeated appeal can be made by anyone at any time is the great necessity here.

43. *Exhibition of Lance-headed Implements of Glass from Northwest Australia.* Sir W. W. TURNER.

44. *The Genesis of Implement-Making.* F. CUSHING.

Starting with the arboreal, artless precurser of man in southeastern tropical Asia, Mr. Cushing traced his development and extension after the acquisition of a larger brain, of the power to use the hand, of speech, etc., emphasizing the rôle of the psychic factor—the rule of the ideal instead of the physical, and the influence of seashore residence on primitive man. The passage from teeth and nails to shells and the passage of man through the pre-lithic and proto-lithic periods was indicated with numerous illustrative experiments and references to the investigations of the shell-heaps of Florida and Maine. It was a great triumph for man when he ceased to be a mere user of tools and came to make tools with tools.

45. *Adze-Making in the Andaman Islands* (lantern illustrations). PROFESSOR A. C. HADDON.

Professor A. C. Haddon exhibited a series of slides from photographs taken by Mr. Portman, showing the natives of the Andaman Islands in the various stages of manufacturing their adzes. It was a model series of anthropological photographs.

In the number and nature of the papers read, the discussions which followed them and the interchange, after the sessions were over, of thought and suggestions, the session was one of the most successful in the history of the Association.

The grants for anthropological research made by the General Association were as follows, the committees marked * having been reappointed:

* Tylor, Professor E. B.—Northwestern Tribes of Canada	£ 75 0 s.
* Munro, Dr. R.—Lake Village at Glastonbury	37 10
* Brabrook, Mr. E. W.—Ethnographical Survey (and unexpended balance in hand)	25 0
* Evans. Mr. A. J.—Silchester Excavation	7 10
* Dawson, Dr. G. M.—Ethnological Survey of Canada	75 0
Turner, Sir W.—Anthropology and Natural History of Torres Strait	125 0

A. F. CHAMBERLAIN.

---

*ORGANIC SELECTION.**

THIS discussion was held before a joint afternoon session of the Zoological and Botanical Sections. At the close of Professor Poulton's paper he was obliged to withdraw. The question of the inheritance of acquired characters was taken up by Professor Theodore Gill, and a few remarks were made by Professor C. E. Bessey and others upon the botanical side.

Professor Osborn introduced the subject by a brief history of the progress of thought in recent years, dwelling especially upon the fact that ten years ago all the leading Darwinians had strenuously adhered to the original view of Darwin, that 'fortuitous variation' plays the most important part in the origin of new types, and that there was little evidence for 'determinate variation.' He continued as follows: The evidence for definite or determinate variation has always been my chief difficulty with the natural selection theory, and my chief reason for giving a measure of support to the Lamarckian theory. This evidence has steadily accumulated in botanical and zoological as well as paleontological researches, until it has come to a degree of demonstration where it must be reckoned with.

Quite in another field, that of experimental embryology and zoology, the facts of adaptation to new and untoward circumstances of environment have begun to

* A discussion introduced by Professor Henry F. Osborn and Professor Edward B. Poulton at the Detroit meeting of the American Association, Wednesday, August 11th.