illustrates fairly well the wide range of cultivation possible in this favored climate.

Botany Bay of the early navigators lies within easy excursion distance of the city of Sydney. There and in the contiguous peninsulas, one can see growing wild the native plants which gave the place its appropriate name.

In point of fact, the garden at Sydney was visited considerably later by me than those at Adelaide and Melbourne, a journey through Tasmania and New Zealand intervening. But it has seemed best to bring the three larger gardens together in a single sketch, reserving the visit to the economic museum in Sydney for a third communication.

Before leaving the subject of these three gardens, it may not be out of place to call attention again to the deep interest and local pride felt by the people of the respective cities in these establishments. Every intelligent person with whom I conversed upon the subject appreciated the importance of such institutions in a country with undeveloped resources. It was also felt that, since these gardens, and the smaller ones, for that matter, keep in touch with Kew, the botanical interests of the colonies, particularly in their economic aspects, were receiving due attention.

The Botanic gardens of the south do not appear to sustain any close connection with the Universities. They are, of course, available for purposes of investigation, but they are governmental and not academic institutions.

It is frequently said that in the southern hemisphere everything is reversed from what is found in the northern. This is certainly not true of the budgets for botanical gardens. These institutions are everywhere very popular, but I did not find in any case that too much money was provided for the running expenses. In fact, I observed no instance where a somewhat larger income would not have improved the condition of affairs. But the directors and superintendents of the larger gardens, and the curators of the smaller ones made the best use of the rather scanty funds placed at their disposal.

The position of government botanist (in Victoria), filled by the distinguished von Mueller, seems at first anomalous. But when it appears that, as matter of fact, this position has left its incumbent far more free to elucidate botanical questions affecting all the colonies, than if he were burdened with administrative duties connected with the botanical garden in one colony, the establishing of the office has had happy results. It may not be out of place to say that on every hand in the colonies Baron von Mueller's preëminence receives hearty recognition, even in quarters where the relations might naturally have been somewhat strained. The willingness with which the government botanist comes to the assistance of young botanists and amateur collectors in the colonies may have had much to do with the general interest in botanical matters exhibited in the three most populous colonies. G. L. G.

APPENDIX.

ART. XXVI.—*Notice of New Vertebrate Fossils;* by O. C. MARSH.

RECENT researches on a number of extinct animals have made it evident that several of them are new to science, and that others possess some characters of interest which have not hitherto been observed. In the present paper, some of the results of this investigation are placed on record, and others will be given in a later communication.

CERATOPSIDÆ.

Triceratops elatus, sp. nov.

One of the largest members of the *Ceratopsidæ*, representing a distinct species, is at present known from the skull only, which was secured during the past year. Although this skull is about six feet and a half in length, it belonged to an animal scarcely adult, as indicated by some of the cranial sutures. The rostral bone is not coössified with the premaxillaries as in old animals, and the superior branch of the former bone has its extremity free. The nasal horn-core, however, is firmly coössified with the nasals. It is of moderate size, with an obtuse summit directed upwards. The main horn-cores were quite long, with their extremities pointed and directed well forward. These horn-cores are compressed transversely, the section being oval in outline.

One of the most striking features of the skull is the parietal crest, which was quite elongate, and much elevated, more so than in any of the species hitherto discovered, and this has suggested the specific name.

The length of this skull from the front of the rostral bone to the back of the parietal crest was about seventy-eight inches, and the greatest transverse expanse of the posterior crest was about forty inches. The summit of one of the frontal horn-cores was about twenty-eight inches above the orbit, and fifty-three inches from the base of the quadrate.

This interesting specimen was found in the Ceratops beds of the Laramie, in Wyoming, by Mr. J. B. Hatcher of the U. S. Geological Survey, whose previous discoveries are well-known.

Torosaurus latus, gen. et sp. nov.

Another well-marked species of this group, which may be referred to a new genus, is represented by one skull, and parts of the skeleton, from nearly the same horizon as the specimen above described. One of the most striking features of the present species is seen in the posterior crest, which, instead of being complete as in the skulls hitherto found, is perforated by a pair of large openings. These are in the parietals, but they have the inner margin of each squamosal for their outer border. They are well behind the supra-temporal fossæ, but doubtless were originally connected with them. They may be called the supra-temporal fontanelles. The squamosal bones, moreover, are very long and slender, and distally only show near the ends sutures for union with the parietals. Another distinctive character is seen in the main horn-cores, which are placed well back of the orbit. The nasal horn-core is short, with the apex compressed, and directed forward.

This genus is of much interest, as it represents an earlier and less specialized form than either *Ceratops* or *Triceratops*, both of which have the posterior crest complete. The existing Chameleons show the other extreme, where the outline only of the parietal crest has been attained.

Some of the principal dimensions of this skull are as follows:

Length from apex of nasal horn-core to extremity of squamosal	80	inches.
Distance from same apex to front of orbit	21	"
Distance from same to front of parietal opening	54	"
Width between posterior extremities of squamosals	56	"

This important specimen was discovered by Mr. J. B. Hatcher, in the Laramie of Wyoming.

Torosaurus gladius, sp. nov.

A second species of apparently the same genus is represented by various portions of a skull in good preservation. In this specimen, the nasal horn-core is short and obtuse, and nearly upright. The main horn-cores are elongate, oval in outline, and in position resemble those of the skull above described. The most remarkable features in the present specimen are the squamosal bones, which are greatly elongated, and so attenuated as to have the general shape of the blade of a sword, thus suggesting the specific name. These bones, moreover, show but slight evidence at their distal extremity of union with the parietals, as the inner margin is rounded for nearly half the length. This feature will distinguish the present species from all others hitherto described.

The following are some dimensions of portions of this specimen:

Length of horn-core from top of orbit to summit	27	inches.
Antero-posterior diameter of same horn-core at base	8	"
Transverse diameter of same	5	"
Length of squamosal behind exoccipital groove	55	"
Greatest width	15	"
Width at middle	9	"

These interesting specimens were also found in the Laramie of Wyoming by Mr. J. B. Hatcher.

ANCHISAURIDÆ.

Ammosaurus, gen. nov.

The Yale Museum has recently secured two interesting specimens of Dinosaurs from the Triassic sandstone of the Connecticut valley. In comparing these with the known species of *Anchisaurus* from this formation, the fact became evident that among them are two well-marked genera. One of the specimens, which is described below, cannot now be distinguished generically from the type of *Anchisaurus*, while the one described by the writer as *Anchisaurus major* is quite distinct, and hence a new genus is here established for its reception. The distinctive characters are well marked in the pelvic arch.

There are three vertebræ in the sacrum, but they are not coössified with each other, being free, as in the *Crocodilia*. The ilium is comparatively small, and has a slender pre-acetabular process. The pubes are broad, elongate plates, perforate above, and not coössified with each other. In form, they resemble the corresponding bones in *Zanclodon*, where, however, the two are coössified, and imperforate. The ischia meet the pubes by an extensive union. Their distal ends are slender, directed backward, and closely adapted to each other. This species may now be known as *Ammosaurus major*.

Anchisaurus colurus, sp. nov.

The new species is represented by perhaps the most perfect Triassic Dinosaur yet discovered, as the skull and greater portion of the skeleton were found in place, and in fine preservation. It is smaller than the specimen above described, but similar in its general proportions, yet the two may be readily distinguished by the pelvic arch and posterior limbs. The pubes are distinct from each other, imperforate above, and the distal portions are only moderately expanded. The process that projects backward to meet the ischium is slender, and the face for union with that bone is quite small. The sacrum and ischia resemble those of *Ammosaurus* above described.

The skull is of moderate size, and of delicate structure. In its general shape, it somewhat resembles the skull of *Hatteria*. The supra-temporal fossæ are very large, and the orbits especially so. The quadrate is inclined forward, and the upper and lower temporal arches are slender. Compressed, cutting teeth are present both in the premaxillary and maxillary bones. The lower jaws have similar teeth, and the rami are not united to each other at the symphysis in front.

The vertebræ and limb bones are hollow, and the whole skeleton is lightly built. The neck is long, and the tail of moderate length. The scapula is elongate, and the coracoid very small and imperforate. The humerus has a strong radial crest, and the radius and ulna are nearly equal in size. There were five digits in the manus, the first, second, and third being armed with strong claws.

The femur is longer than the tibia, and has a flattened head, somewhat like that of a crocodile. The tibia is short and stout, and the fibula well developed. The astragalus is not coössified with the tibia, and the calcaneum is distinct. There were five digits in the pes, but only four functional, the fifth being represented by the metatarsal alone.

The skull of this reptile is about five and one-half inches long, and the lower jaw four and one-half inches. The scapula and humerus are of equal length, each about six inches long. The femur is about eight inches in length, and the tibia about six. The animal when alive was about five and one-half feet long. The present remains were found near Manchester, Conn.

A more complete description of this interesting reptile, with illustrations, will soon be published.

BRONTOTHERIDÆ.

Allops crassicornis, sp. nov.

The present species is represented by the nearly perfect skull of an adult, but not old animal. The skull is of medium size, with the zygomatic arches moderately expanded. The nasal bones do not project beyond the premaxillaries. The horn-cores are very short and massive, with rounded summits, and thus form one of the striking features of the skull. The dentition is complete, and in fine preservation. The single incisor is quite small, and situated close to the canine. The latter is of moderate size, and projects but little above the rest of the dental series. There is no diastema between the canine and the first premolar, which is small, and has its inner face on a line between the canine and the second premolar. The second, third, and fourth premolars are large, and have a strong inner basal ridge. The last molar has its anterior margin somewhat in advance of the front border of the posterior nares.

The length of this skull on the median line is about thirty inches, and the width across the zygomatic arches twenty-three inches. The width across the horn-cores is fourteen inches. The extent of the superior dental series is sixteen inches.

The type of this species was found in the Brontotherium beds of South Dakota, by Mr. J. B. Hatcher.

Brontops validus, sp. nov.

This well-marked species is based upon a skull in fine preservation, which agrees in its main characters with the other species of this genus, but is particularly short and robust. The zygomatic arches are widely expanded, almost as much as in any skull of this group. The nasal bones have only a moderate extension in front, and do not reach the end of the premaxillaries. The free portion is broad and massive. The horn-cores are of moderate size, nearly round in section, and have their obtuse summits directed somewhat backward. The occipital crest slopes forward, and is expanded transversely. The length of this skull on the median line is about twenty-six inches. The greatest transverse diameter across the zygomatic arches is twenty-two inches, and across the summits of the horn-cores, fourteen inches.

The type specimen of the present species is from the Brontotherium beds of South Dakota, where it was secured by Mr. J. B. Hatcher.

Titanops medius, sp. nov.

The present species is from nearly the same horizon as the type of the genus, but is of smaller size. It is represented by one skull in fair preservation, with the horn-cores and dentition complete. The free portion of the nasals is very small, and projects but slightly beyond the anterior line of the horn-cores. The latter are compressed antero-posteriorly, and project laterally nearly at right angles to the median line of the skull. The two incisors on each side are quite small, and separated from each other and from the canine. There is a slight diastema behind the canine. The first premolar is small, and triangular in outline. The second premolar is of moderate size, and the third and fourth premolars have only an incomplete inner basal ridge.

The width of this skull across the horn-cores is twenty-three inches, and the distance from the end of the nasals to the front of the posterior nares is sixteen inches. The extent of the upper dental series is seventeen inches. This specimen is from near the top of the Brontotherium beds of South Dakota, where it was discovered by Mr. J. B. Hatcher.

New Haven, Conn., August 10th, 1891.