Peruvian skulls recently received by the museum, and the ancient crania collected in Arizona last summer, there are frequent individual variations in thickness, but no tendency to unusual thickness. The conclusion from these facts is, that exposure to the sun probably does not cause thickness of the human skull.

In connection with this subject, it is interesting to note, that, among the Australians the *sinus frontalis* is generally found to be solid in the males, instead of being hollow as in the skulls of other races. This bone in the male Australians generally extends straight across the head, the lower side overhanging the eyes so that they seem to look out from under it, while in the North American Indians a modification of shape deprives them of that heavy look about the forehead. The heavy *sinus frontalis* of the Australians, of course, increases the weight of the skull.

Diseases of Menagerie Animals.

At the meeting of the Biological Society, Mr. F. A. Lucas read a paper on "The Diseases of Menagerie Animals." He showed that menagerie animals are extremely liable to disease; and this is almost as true of those born in captivity as of those which are captured when full grown.

Young animals suffer greatly from caries, owing to lack of proper diet, and their bones are very generally soft, swollen, and misshapen. The maxillaries are especially liable to be attacked during the period of teething, and the facial region is in consequence very much distorted.

Diseases of the lungs are very prevalent among menagerie animals, tuberculosis being exceedingly common among monkeys, and found among other animals less frequently. Pneumonia is a frequent cause of death, and birds as well as mammals are liable to be attacked by this disease.

The following is a list of animals examined, where the cause of death was fairly established: —

Macaque (*Macacus cynomulgus*). — Tuberculosis.

Gray fox (*Urocym virginianus*). — Pneumonia. This specimen also exhibited a very bad case of intestinal catarrh and inflammation of the bladder.

Badger (*Taxidea americana*). — Pneumonia.

Elephant (*Elephas africanus*). — Pneumonia.

Lynx (*Lynx rufus*). — Uræmic poisoning (in two cases).

Black bear (*Ursus americanus*). — Killed. Had been sick for some time with catarrh of stomach and intestine.

Mino bird (*Eulabes affinis*). — Congestion of lungs.

Parrot (*Amazona ochroptera*). — Congestion of brain (?) This bird died suddenly, and all organs were healthy. The blood-vessels of the brain were much congested.

Parrot (*Amazona Levaillantii*). — Tuberculosis.

Tooth-billed pigeon (*Didunculus etrigorostris*). — Disease of liver, that organ being converted into a hard, waxy mass adherent to sternum.

Pigeon (*Columba livia domestica*). — Disease of liver, same as above.

Eagle (*Haliœëtus leucocephalus*). — Fatty degeneration of liver.

Night heron (*Nyctherodius violacens*). — Congestion of lungs.

The Geological Survey.

Appropriate committees of the Senate and House are considering, with very favorable tendencies, the bill appropriating $600,000 for the erection of a building for the Geological Survey, on the public reservation near the Smithsonian, where grounds have been allotted to it. The plan submitted by Major Powell contemplates a solid and compact rectangular structure, covering 100 by 300 feet, five stories high, with hipped roof. It will be of Seneca sandstone (like the Smithsonian), or of selected red brick with sandstone buttresses, trimmings, and belt courses, and overground basement of same. The general arrangement will consist of a series of large, well-lighted rooms, averaging 16 by 24 feet, disposed about a spacious central court lighted from the top, and with tessellated floor. In this court the working collections of the survey will be open to inspection. The preliminary ground plans and elevations have been prepared by Messrs. Victor Mindeleff and Delancey W. Gill of the Geological Survey.

THE TASK OF STATE WEATHER SERVICES.

PROFESSOR FRANCIS E. NIPHER, in an interesting pamphlet on the rainfall of Missouri, takes occasion to urge the establishment of State weather services. "The State weather service," he says, "bears the same relation to the national service that the State Government bears to the National Government.

"There are many large storms, of great severity, which damage shipping and endanger life. The Signal Service has done a great work in giving warning of these storms. Shippers and dealers in provisions and fruits find the cold-wave warnings of the greatest value. In all large cities the approach of a 'warm spell' is known through the Signal Service predictions, and thousands of tons of meats are hurried to cold storage warehouses, and the opportunity to ship other provisions which must be kept from freezing is anticipated and made available. It is not saying too much to say that it would be impossible to carry on the shipping business of the country as it is now carried on, without the aid of the national weather service.

"But each State has its own peculiar industries, advantages, and interests. It should provide for a thorough study of its own climate, and should distribute published reports for the benefit of those who may desire such knowledge.

"There is another field which peculiarly belongs to the State weather service. The weather which is of greatest importance to the farmer is the weather of harvest. During that time storms are usually very local. They may cover a few counties only, and inflict immense damage. People living in the city can learn from the Signal Service that there will be 'local rains in Missouri,' but nobody knows where in Missouri they are going to locate; and even this information reaches the farmer only after the rain is over, if at all.

"The local peculiarities of these storms require study in each State. Very much has been done in this direction in Iowa and by the New England Meteorological Society. Such work should be at once begun in our State. In three or four years we should be familiar with the behavior of these storms, and this knowledge could be given to all.

"In 1893 the telephone will become public property, and it will then be possible for county telephone services to be established, putting each farm in communication with a county seat. Telephone service can be rendered for a sum which will be utterly insignificant when compared with the advantages which it will bring. Farmers can then keep informed of the markets, can sell their produce before leaving their homes, and will be able to save much time which they now waste during the busy season of harvest. This is all so apparent that it is needless to discuss it further. In addition, there will grow up a system of harvest storm warnings. It will be very easy for any county telephone system to give its subscribers a general warning of an approaching thunder-storm, and to transmit that information to such other counties as may be in danger. The exact details of this scheme may be left to the director of a State weather service to work out. It seems certain that this can and will be done, and there is no reason that this should be done by the national weather service."

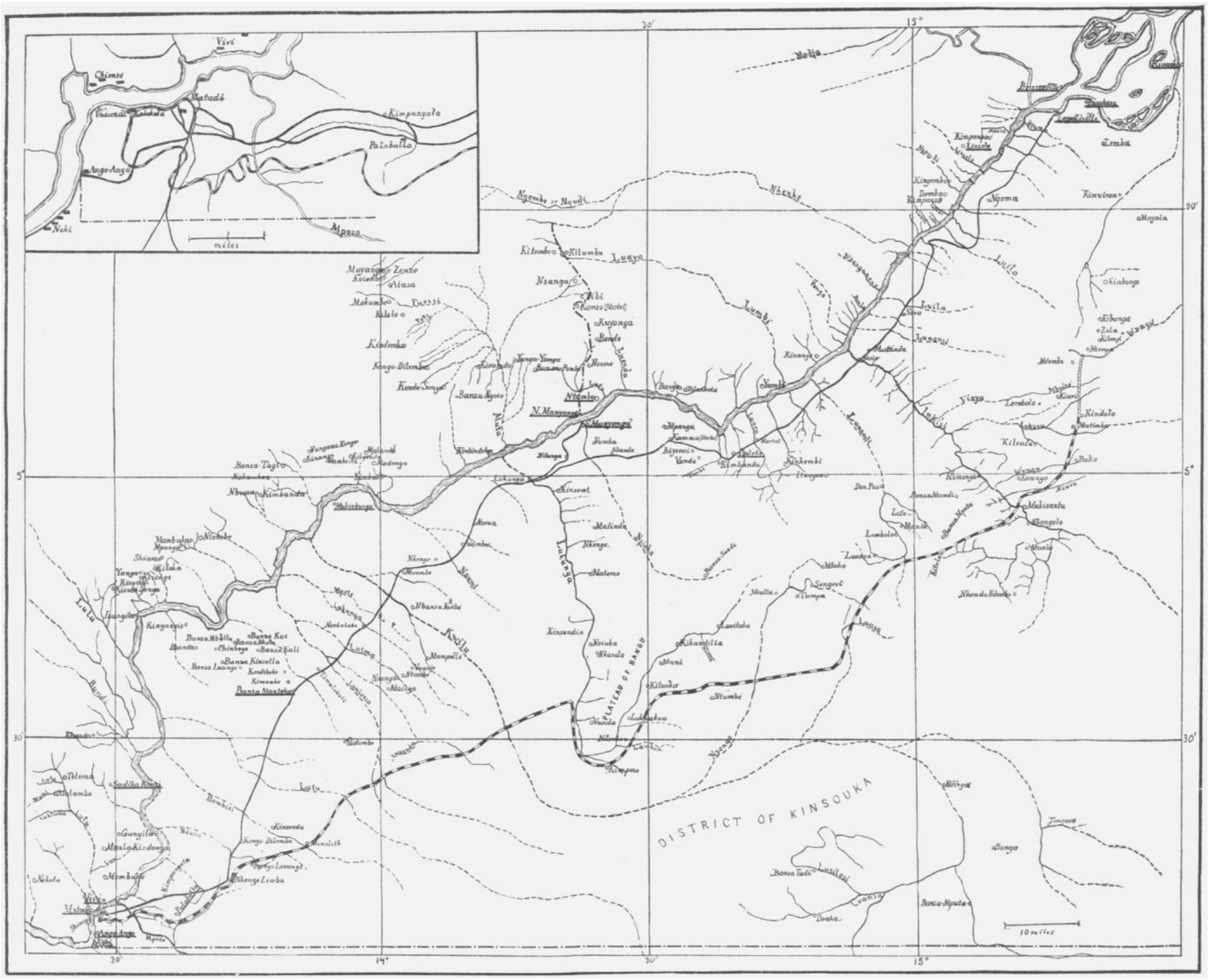
COMMERCIAL GEOGRAPHY.

The Development of Commerce on the Kongo.

THE Belgian Compagnie du Congo pour le Commerce et l'Industrie is pushing on its enterprises vigorously. The most important among these for the development of the resources of Central Africa is the railroad from Matadi to Stanley Pool, connecting the navigable upper Kongo with the highest point that can be reached by steamers. In the past year a corps of engineers was engaged in surveying this line, which offers peculiar difficulties on account of the deep gullies cutting the line to be followed by the road at right angles. At a recent meeting oft he shareholders of the company, M. Cambier, chief engineer of the expedition, gave a report of his proceedings, which has been published in a recent number of the *Mouvement Géographique* from which we take the following statements and the accompanying map.

It will be noticed, that while the old caravan route runs approxi-

mately parallel to the Kongo, and crosses its affluents near their mouths, the railroad either crosses these rivers near their sources or keeps on the divides between these river systems. Thus the deep gullies and valleys are avoided, gentle slopes prevailing on the plateau. Considerable difficulty was encountered in climbing this highland which falls abruptly to the river. It was found impossible to ascend it by one of the tributaries of the Kongo coming from the south, as they run in inaccessible gorges. But fortunately a depression was found a short distance below Matadi, from which point the projected road ascends the highland. The road will cross the tributary Mpozo on a bridge, and, after having avoided the plateau of Palababa by a *détour* to the south, it takes an east-



PROJECTED RAILROAD FROM MATADI TO STANLEY POOL, KONGO FREE STATE.

north-easterly direction, until the river Lukunga is met. It seemed at first that some difficulties would be encountered here; but the reconnaissances of the engineers showed that the valley of the river takes a north-easterly turn, and thus they were enabled to follow its left bank without crossing it. No serious obstacles are encountered between the bend of the Lukunga and the Inkissi, the country consisting of hills intersected by small ravines. Between the line and the Kongo rises the plateau of Ngombi to an altitude of 1,600 feet. This part of the country is intersected by deep valleys. The Inkissi, at the point where the railroad is proposed to cross it, is about 350 feet in width. A number of rocks are found in its bed, which will facilitate the construction of a bridge.

East of the Inkissi the population becomes less numerous, and the country is more elevated and sandy. The heights of the hills are clad in forests, and deep ravines intersect the slopes of the plateaus. Approaching Stanley Pool, the line has to pass over hills about 300 feet above the Kongo, which are traversed through narrow and tortuous valleys. Later surveys show that a better line may be found farther to the west. Although it will be some time before work on this line is taken up, the results of these surveys show that it may be constructed without incurring extraordinary expense. Preliminarily the establishment of a regular connection with the upper Kongo by means of oxen is contemplated.

The commercial reconnaissance of the upper Kongo region, and the tentative establishment of stations by the Belgian Company as well as by the Sandford Exploring Expedition, have encouraged the promoters of these enterprises to take more energetic action. The two companies have recently joined, and formed the Compagnie Belge du Commerce au Congo, with a capital of 1,200,000 francs, which has for its purpose the establishment of regular commerce with the Kongo basin.

HEALTH MATTERS.

The Schoolroom as a Factor in Disease.

A VERY valuable paper on "The Schoolroom as a Factor in the Production of Disease" was read by Dr. J. A. Larrabee of Louisville, Ky., at the last meeting of the American Medical Association, and is reported in full in the *Journal*. Estimating that one-third the lifetime of every educated person is passed in the schoolroom, it follows that the location, construction, and surroundings of the same are matters of importance. While there has been great advance in these respects, much still remains to be done. In Switzerland the summits of small hills are selected as school-sites.