Correspondence.

A Name for the Aborigines.

To the Editor of the SCIENTIFIC AMERICAN:

Only recently I saw an article from your magazine on the subject of a suitable scientific name for the aboriginal tribe of America, considered as a whole. It seems to me that the proposed term *Amerind*, formed from the leading syllables of "American Indians," now erroneously used, has the same objectionable feature that the latter expression has. Would it not also "perpetuate an error"?

I venture to suggest that the word Westmen could be applied to all the races inhabiting the Western Continent before the advent of Europeans. The adjectival form would be Westmenic or Westmenian.

MARY ISABEL SMITHSON.

East Orange, N. J.

The Biltmore Forest.

BY GEORGE E. WALSH.

Private forests in the United States are not all conducted on the wasteful plan of converting the available commercial timber into money without consideration of the future supply. Some of the earliest attempts to conserve forest interests were made by private owners, who realized that successful timber culture should be placed in the same class with corn or wheat growing.

In recent years owners of large private forest lands have been the most progressive in adopting systems of forest culture which would increase the value of the woods. Dr. W. Seward Webb owns a forest tract in the Adirondacks where extensive forestry culture is carried on successfully. As the greatest danger in the Adirondacks comes from fires, the owner of this tract has established a system of fire protection, the most complete in the country. The tract is divided up into four sections, and an experienced woodsman watches over each section. The houses of the forest rangers are all connected by telephone with the superintendent's, and should a fire break out in one place they are all summoned to extinguish it. The latest fire-extinguishing apparatus is used by the rangers. On a tract of this size the damage by forest fires would be sufficient in the course of ten years to pay for the cost of the rangers.

A great number of other private forests are scattered throughout the country, including those owned by Mr. William C. Whitney, the Havermeyer estate, the Girard estate near Pottsville, Penn., that of Mr. H. C. Russell at East Greenwich, R. I., and of Mr. G. W. Vanderbilt at Biltmore, N. C. This last estate is of special interest to forest students and lovers because of the remarkable success obtained. The work was first organized at Biltmore in 1891 by Gifford Pinchot, now the forester of the Department of Agriculture, on about 4,000 acres of land. Additional tracts have since been added to the estate, until the whole extent of forest land brought under systematic treatment consists of over 100,000 acres. Dr. C. A. Schenck took up the work when Mr. Pinchot accepted the position as forester for the Department of Agriculture, and under his careful culture the forest has demonstrated many practical lessons to lumbermen and private owners of forests.

The forests of the Biltmore estate comprise to-day about 110,000 acres, 10,000 of which are located close to Asheville, with Mr. Vanderbilt's mansion in the midst. This home tract, as it is called, is made accessible by macadamized roads and dirt drives so that every acre of land can be worked by the foresters. According to Dr. Schenck's figures the $20,000 expended in building the roads through the woods have practically increased the value of the stumpage standing on the land by $40,000, owing to the accessibility of the trees for commercial purposes. Trees have no value so long as they stand out of the lumberman's reach, and forestry as a business enterprise must first bring them within the reach of a market. The annual output of this home tract of 10,000 acres is about 3,000 cords of wood, which finds a ready market at Asheville.

The large tract of 100,000 acres consists largely of virgin forest, and it has heretofore been entirely inaccessible for the lack of roads; the country, moreover, is so rough that railroad building is impossible. The tract lies in parts of four counties, bordering the head-waters of the French Broad River. In this immense forest the yellow poplar, or liriodendron tree, reaches an unusual size, and there are besides white oak, chestnut, hemlock, cherry, and other native forest trees. The work of building dirt roads, 16 feet wide, is now under way through this mountain tract to make the stumpage more accessible, the roads following as near as possible the main water courses. Several sawmills are located in the forest, cutting away the mature timber; after its removal, the young growth of yellow poplar, oak and chestnut springs up rapidly. This young growth is husbanded carefully and protected from fires—the greatest danger to forest culture in the South—at an expense of a few hundred dollars a year. Dr. Schenck estimates that for every mature tree removed the foresters give rise and life to about a thousand young seedlings.

Pisgah Forest is one of the roughest and wildest parts of the large mountain tract, and the task set in making the trees of commercial value is not merely that of the lumberman. It is an engineering problem as well, and requires large resources and much study to make it at all profitable. In the rich bottomlands made accessible by roads, the land will be cleared for farms, and it is the purpose of the owners to bring settlers there, who will furnish help as loggers and teamsters in the proper season and raise farm and food products for self support. Both agriculture and commercial forestry will thus be carried on at the same time. On the wind-swept mountain tops, where the tree growth of red oak and chestnut is stunted, there is found splendid pasture for cattle and sheep. These tracts have already been fenced in and considerable numbers of sheep and cattle are grazing there. The number of both is restricted, however, so as to prevent any permanent damage to the productiveness of the soil pastured. The idea of the forest management is to make every square foot of land pay permanently, and to bring up the investments in stumpage, roads, farms, buildings, and pasture fences to a figure which will prove remunerative.

There are many old abandoned farm tracts on the estate which have been planted with white pine. There have been planted already a great number of acres, and the work proceeds at the rate of 50 acres per year. About 4,000 white pines are planted to the acre at an expense of $12. These plantations will not be cut for fifty or sixty years. In 1960, Dr. Schenck says, this plantation should yield about 20,000 feet board measure of lumber, worth about $100, and yielding 3½ per cent interest on the capital invested. This is a long time to wait for returns on an investment, and it is this which deters the average farmer from taking up practical forestry as a living. Nevertheless, on a large estate where capital is plentiful, the returns are sure, the investment is gilt-edged.

Combined with the management of the forests of the Biltmore estate there is now a local forest school. This is not intended to be a college of forestry. It is rather a gathering of young men interested in forestry, and anxious to make forestry their life's profession. In the course of a few years the students get acquainted with the theoretical and practical side of forestry work. Every second year Dr. Schenck takes the students abroad to show them forestry methods as practised in European countries.

The Biltmore forests, and the management thereof, have been of special interest to the Forestry Bureau of the Department of Agriculture, both because of the excellent example set by the Biltmore estate for other owners of private woods, and because of the personal associations existing between the workmen in the two different fields. As the forester of the Department of Agriculture, Mr. Pinchot originally started the work on the Biltmore estate, and he has always felt a personal pride and interest in the growth of the enterprise under his successor, Dr. Schenck. Incidentally it may be said that many of the workmen and student assistants in the Forestry Bureau are sent down to the Biltmore estate at different times to make practical sudies of forestry as exemplified there. The Forestry Bureau is making plans to co-operate more and more with owners of private forests, both for the instruction of their student assistants and for the better preservation of the woodlands. The bureau is preparing working plans now for about 1,250,000 acres of forest lands owned by the different states, a good deal of which is in New York; and in addition to this there are applications for similar working plans for some 2,500,000 acres belonging to private owners. The Forest Bureau is thus rapidly expanding in its work, and the demand created for foresters who understand their work well enough to manage private forests exceeds the supply.

The torpedo destroyer "Viper" of the English navy, which ran on the rocks off the coast of Alderney, in the English Channel, in a fog during the recent English naval maneuvers, owing to its being abandoned, has been blown up by the Admiralty. Guncotton was utilized for this purpose, and the work was carried out thoroughly at high tide. The object of this course was to prevent the foreign fishermen who frequent this part of the Channel from obtaining any information regarding the secret mechanism of the destroyer. The court martial upon the officer who was in charge of the "Viper" at the time of the catastrophe has been held at Portsmouth. He attributes the disaster to the dense fog which was prevalent at the time, underestimation of the tides, which at this point at the time of the accident were running at five knots per hour, combined with the fact that he was keeping a sharp lookout to avoid one of the hostile cruisers which was in his vicinity. The court, considering the responsible nature of the work upon which the officer was engaged at the time, only reprimanded him.

THE TEMPORARY FOOTWAYS OF THE NEW EAST RIVER BRIDGE.

One feature of the new East River Bridge which illustrates the great labor and cost of erecting these long-span suspension bridges is the fact that the suspended structure, shown in position in the photographic views on the front page of this issue, is, all of it, temporary, and will have to be removed after the four great cables themselves have been completed. Of the two views, one is taken from the roof of a tall building to the south of the bridge on the Manhattan shore, and in taking the other photograph, the camera was placed at the center of the erecting platform on the summit of the Manhattan tower. From this point, 335 feet above the water, the view, as may well be imagined, is superb. Beyond the graceful sweep of the suspended footways, the view extends far to the eastward over Long Island, and northward up the Sound to New Rochelle and Larchmont, while to the south there is a magnificent panoramic view of New York Bay, Sandy Hook, and the New Jersey and Long Island shores.

The superstructure of the 1,600-foot main span of the bridge will be hung from four cables 18¾ inches in diameter. Each cable will be made of thirty-seven strands, and each strand will consist of 282 steel wires, 0.16 of an inch in diameter. Therefore, in each cable there will be 10,434 wires whose aggregate breaking strength will be 20,000 tons. The cables are being built by the John A. Roebling's Sons & Co., of New York, and the method of stringing and assembling the cables will be as follows: In the first place there will be four endless wire ropes extending across the bridge from anchorage to anchorage, which will be capable of being moved in either direction by steam power. There will be one of these ropes in the plane of each cable, and each will pass around sheaves at the anchorages and will serve to carry a bight of the cable wire across the river. The wire will be carried to and fro from anchorage to anchorage, passing each time around shoes which will be made fast at a point several feet back from the anchor pins. When the end of the one coil of wire is reached it will be spliced to the end of the next coil, and the strand of 282 wires will be made continuous throughout. During the process of making, the strand will hang from 12 to 16 feet higher than its final position in the finished main cable; and as soon as it is completed, it will be slacked away at the anchorages until it has been lowered and included among the thirty-seven strands that form the cable.

To accommodate the numerous workmen who will be scattered throughout the whole length of the cables, and who will have to see that the wires are laid parallel under an even tension, and properly lashed together into strands, a working platform, or foot-bridge, has been built from anchorages to top of towers and across the main span of 1,600 feet. The foot-bridge affords a working platform, placed in the vertical plane of each cable for its full length, and it is so arranged that two strands of each cable, or eight in all, can be made at one and the same time. In the middle span, the foot-bridge consists of two parallel, double-decked bridges, which are about 70 feet apart and are connected by transverse truss bridges which are 160 feet apart. These connecting bridges are very clearly seen in the view of the bridge taken from the top of the tower. Each of the footways is carried on two temporary cables, each of which is made up of three 2¼-inch steel-wire ropes. The upper deck of the foot-bridge will be used for the construction of the strands and the lower deck for the assembling of the strands in the finished cable. The platforms are 3½ feet wide between the centers of the handrails, and they are made continuous throughout the whole 1,600 feet of the main span.

In order to stiffen the main span and prevent violent swaying and distortion in strong winds, there are four 2¼-inch storm cables, which are attached to the towers and curve upward to meet the underside of the foot-bridge at the center of the span. There is also a series of ¾-inch guide-ropes, extending diagonally from the point of connection of the storm cables to the tower, to a connection with the bottom floor of the foot-bridge. The storm cable is also tied at regular intervals to the foot-bridge by vertical ⅝-inch suspenders. At the top of each tower there is a large working platform measuring 36 feet x 107 feet. Over each pair of saddles is a heavy wooden frame with a hydraulic lifting gear to raise the strands, as they are completed, from their temporary saddles, and transfer them to the main saddles. When the whole thirty-seven strands of a cable have been thus assembled, they will be bound with a special pattern of steel clamp at intervals of every 20 feet, the clamps having formed in them saddles to receive the suspenders by which the floor of the bridge is carried. Half-round, steel covering plates, or shields, will then be clamped over the cables to protect them from the weather.