Up to date only about 5,000 tons of bauxite has ever been shipped from Alabama. It has gone to Philadelphia and Natrona, Penn., and to Syracuse, Buffalo, and Brooklyn, N.Y., and to other places. It has been used principally for the manufacture of alum by the sulphuric acid method. The Alabama ores cannot be laid down in the above markets as cheaply as the Baux ores, and hence, if it was not for their superiority, they could not compete at all with the Baux ores. As it is, the profits are said to be small, and so it is not likely that the bauxite industry of Alabama will become very great until a home market is created for the ore. This, it is hoped, will soon be the case, as an aluminum plant is said to be now under way near Rome, Ga.

THE INTRODUCTION OF FOREIGN SPECIES.

BY JOHN GIFFORD.

NATURE maintains an equilibrium, and when this is interfered with by man evils ensue which are even more serious than the one he attempts to obviate. No man can predict the results of the introduction of an exotic animal or plant. Such a step should be attended with more study and caution than are usually exercised. One animal preys upon another to such an extent that by the introduction of other species the damage indirectly done is much more real than apparent.

When the cultivation of cane and the manufacture of sugar, molasses, and rum were at the height of their glory, the plantations of Jamaica were infested by rats. In order to rid the island of this pest the mongoose was introduced from India. In spite of the damage done to some of the domestic animals of the small property owners, the result was on the whole at first beneficial, since the prosperity of the island depended upon the products of the large plantations. Times changed, and the sugar industry faded. The negroes now have their own patches, and being favored by an indulgent Nature, with low ambitions and few wants, are forced to keep dogs to protect their poultry. They feel the loss of a pullet more than ever before. This class of people constitutes more than half the population. The mongoose has been increasing, and other small animals in consequence decreasing. Snakes are now extremely scarce, and many of the birds which nest on the ground have been destroyed. This animal inhabits both the lowlands and mountains, so that rats and mice take refuge in banana bunches, where they often build their nests. But these are only the direct consequences. Animals upon which this animal preyed fed upon other animals, especially insects. These have increased accordingly. Tics, for instance, which they say were introduced on South American cattle, have become an awful pest. There was no enemy to subject them, and only those who have walked through the beautiful pastures of this island, shaded with pimento and ceiba trees, can judge of their abundance. In crossing a pasture your legs become covered with these parasites, which, unless removed at once, bury in the flesh and cause much pain. While botanizing in the region of Mandeville, in the mountains, after each excursion the writer was forced to undergo a tedious operation: it was to have these tics picked out of the skin by negro boys, who have become expert by long practice, and many are the sixpences they have thus earned.

Out of revenge the Indians introduced the fer-de-lance, the ugliest and deadliest of reptiles, into Martinique and other West Indian islands. This snake increases rapidly in numbers, and many are its victims yearly. By the thickness of its skin the pig, and by its agility the cat, alone withstand this animal. Thus what they failed to do in war the Indians accomplished by a peculiar stratagem.

The abominable life-plant was introduced, perhaps as a curiosity, into certain parts of the West Indies. It has become a troublesome weed. It is impossible to combat or exterminate it. It grows in spite of you. Cut it up as you like, and it will sprout. Pull it up and hang it in a dry place or put it in your pocket, and from every indentation on the edges of its leaves there will come a sprout.

Every visitor to Nassau knows of the Giant Ceiba, with its far-reaching branches and curious butresses on the public plaza. This was planted by John Miller, and its history is of interest in showing how accidentally and rapidly the introduction of a species may be effected. He was a sea-captain, and traded to Brazil. He admired the ceibas so much that he brought home a seed or sprout to plant in his garden in one of our southern cities. He was a Loyalist; and when the War of the Revolution began he went to Nassau with his ceiba tree. This is the tree to which I refer — a tree many times photographed and described, the object of much admiration and the pride of Nassau. From the seeds of this others have come until now it is one of the commonest trees of the Bahamas. Thus animals and plants of benefit and detriment to a country have been almost everywhere accidentally introduced. In spite of warnings, grape-cuttings were introduced from America into Europe, and with them went the diseases of our vine with serious consequences. No matter how beneficial the introduction of a foreign species may at first appear, a sort of quarantine should be established, the government alone taking it in hand, introducing species only, after much study, with much caution.

New Orleans, Nov. 5.

PALÆOLITHIC MAN IN THE SOUTHERN PORTION OF THE DELAWARE VALLEY.

BY DR. HILBORNE T. CRESSON, PHILADELPHIA, PENN.

THE revival of the old feud in regard to palæolithic man is certainly a most interesting one, and I fully concur with my friend, Professor G. Frederick Wright, that "full discussion will dispel the uncertainty that may exist."

A great deal has been said about the finds in the Wilmington gravels (Columbian of McGee), and I notice that for some inexplicable reason the finds of others than myself have been ignored. I will give, presently, a brief *résumé* of the finds in supposed Columbian deposits, but before doing so it may be well to explain that I am not a professed geologist, but I do claim to have had the opportunity, by reason of a residence of twenty years in the vicinity of Wilmington, to study the aqueous deposits in that vicinity, and at times, in company with those who are authorities upon the subject. I take pleasure in quoting the names of Professors McGee and Wright and the late Professor Lewis. Messrs. McGee and Wright visited the Wilmington gravels at my request, and the former gentleman was accompanied by so distinguished an archæologist as Mr. W. H. Holmes of the U. S. Bureau of Ethnology. It was my good fortune to meet Professor Lewis at Claymont, during visits that he made to relatives who lived in a property adjoining my father's, and in these, our youthful days, we made many excursions over the gravels and brick clays which now bear his name. As Dr. Abbott suggests, in a recent publication in *Science*, "When I find gravel stratified and unstratified, I know and assert the difference," and it may be suggested, without conceit, that those who have spent years in studying glacial deposits, and searching among them for evidences of primitive man, aided at times by suggestions from the full-fledged geologist, ought to have some slight development of the perceptive faculty, in this respect, and be able to judge whether the condition of the gravels, in question, was disturbed or undisturbed, as the case may be.

During Professor McGee's visit to the Wilmington gravels (I have designated them thus, as Carpenter Station, on the Baltimore & Ohio Railroad, is but a few miles distant from this place), Mr. Holmes found what is now called, at the Peabody Museum, Harvard University, "the Holmes Palæolith." It is a piece of white quartz, bearing, according to the opinion of Professor Putnam, Dr. Abbott, Professor Wright, and Professor Wilson, evidences of artificial fracture. When the quartz in question was found by Mr. Holmes, I requested Professor McGee to examine the place from which it had been taken. He pronounced it to have been found in undisturbed Columbian deposits, but I here call especial attention to the fact that neither Holmes nor McGee deem the implement in question to be artificial. The palæolith was then submitted to Dr. D. G. Brinton for examination, who also condemned it. There is this to be said, however, that when

Mr. Holmes picked the implement out of a bank, among hundreds of other pebbles which surrounded it, he was attracted by its resemblance to a palæolith. If I recall our conversation at the time correctly, Holmes stated that although he believed the quartz to be a natural form, it resembled somewhat such implements. Certainly, then, this discovery is entitled to due consideration, for although the implement has been condemned by some, has it not received the approval of others who are also authorities upon the subject, among them Professors Putnam, Wright, Wilson, and Dr. Abbott.

Palæoliths have been found in the Columbian gravels at Trenton by Dr. Abbott and his son, Richard Abbott, according to the labels attached to the specimens preserved at the Peabody Museum, and presented by these gentlemen to that institution.

Two other palæoliths have been found in the Wilmington gravels by different gentlemen and are now in the Peabody Museum, Harvard University, together with the letters accompanying them. It has been suggested that they have been found in a talus. Whether this be so or not remains to be determined. I, some time ago, called attention to the fact that the old aqueous deposits in the vicinity of Wilmington have evidently been subjected to considerable disturbance (see remarks on a "Fallen Forest and Peat Layer," Bull. of Geol. Soc. Am., Vol. II.), and it may be that this took place in times comparatively recent. In fact there is a probability that this may have been even after "the ancient talus" at Trenton was deposited. I am predisposed to this opinion from the fact that during the extraction of clay from the pits at Richmond's brickyard (mouth of Naaman's Creek) leaves of oak and sycamore trees were found beneath the brick clays of Lewis, and in other portions of these excavations the more ancient and recent gravels were intermingled together among the fallen forest layers.

Implements have been found in the brick-clays just mentioned, and these are at the Peabody Museum with the records of the donors attached.

Looking over the list of finds in supposed tertiary and post-tertiary deposits, it appears that some class all of these as neolithic implements, that is, judging by the character of the implements themselves. May it not be queried, is the neolithic classification of European countries applicable to certain finds on our western continent? for it seems that some of our ancient deposits contain the handiwork of neolithic man. The antiquity of certain deposits which seem to have yielded in the majority of cases implements claimed to be of neolithic type is a question for the geologist to decide, until then arguments upon this subject have but little weight. Still, as we said in the beginning of this article, they are interesting; and, we may add, allow all concerned to express their opinions.

LETTERS TO THE EDITOR.

*** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

On request in advance, one hundred copies of the number containing his communication will be furnished free to any correspondent.

The editor will be glad to publish any queries consonant with the character of the journal.

Natural Implements.

THERE are some things suggested by Dr. Brinton's recent article relating to early man in America, and three quotations may be made bearing on the subject of supposed primitive human art. It may be premised that no working archæologist has failed to find things of a puzzling character, those which he hesitates to retain as being of human workmanship, and yet which he is not altogether willing to cast aside. He accepts the fact, also, that many articles were so nearly fitted for man's use naturally that he often used them just as they were found.

An article, entitled "Observations on Stone-Chipping," by George E. Sellers of Illinois, prepared at Dr. Rau's request, was published in the Smithsonian Report for 1885, and is well worth reading. The various artificial processes are described, and some of the natural ones. He says: "The river-drift or gravel bars, when subjected to the grinding and crushing action of drift-logs or rolling bowlders, would furnish many suggestive forms and shapes that a little ingenuity would apply, and out of which would naturally grow the art of flaking. The streets of Paducah, Ky., are paved with partly rounded, angular, silicious gravel, mostly of jasper. Seeing heaps of this ready for spreading, I was struck by the many forms, mostly highly water-polished, that if found on a flaking ground would pass for refuse flakes and rubbish left by the workmen. On inquiry, I was informed that this coarse gravel was from banks on the Tennessee River, above the ordinary overflows. I selected many forms that any archæologist would pronounce to be the work of man."

He observed that a heavy wagon, driven over these, produced no effect on the surface gravel, but did on those lower down. "Many of the fresh fractures presented the form and appearance of genuine cores, and would be mistaken for the work of man." This led him to make an experiment by pressure, in a vessel. "On emptying the cylinder, the result was many representations of the rude implements found in the drift."

The second quotation is from a paper read by Dr. D. S. Kellogg of Plattsburgh, N. Y., at the New York meeting of the American Association for the Advancement of Science, in 1887, and entitled "Aboriginal Dwelling Sites in the Champlain Valley." "The material of which the chipped implements were made is found throughout this whole region. The so-called flint is abundant in the limestone of the locality. On Butler's Island in Lake Champlain detached pieces of the dark and striated flint, a foot or more in diameter, are so driven against each other by the action of the waves that their surfaces resemble the roughened surfaces of ordinary flint hammers."

The third quotation relates to the same lake, and will be found in the "Jesuit Relation" of 1668. The French had come within two miles of the Ticonderoga River. "Here we halted, without knowing why, until we observed our savages gathering from the shore pieces of flint, nearly all cut in shape." Then follows an Indian superstition connected with this customary gathering. "The occasion for this ridiculous story is the fact that the lake is often swept by severe storms, which cause high waves, particularly in the bay where Sieur Corlart, of whom we have spoken, perished, and when the wind comes from across the lake it casts upon the shore quantities of flint ready to strike fire."

There is one supposed trace of early man in New York that seems injudiciously used. Near the summit of the Lake Ridge, in the town of Gaines, was a spring, and in sinking a well on the spot traces of fire were found at the depth of eighteen feet. It is assumed that a fire was built on the beach when the lake was receding, and that it was buried in some way by the waters below it, under nearly twenty feet of soil. How this curious geological action was brought about is not explained. To produce such a deposit the waters should have risen above the fire, not fallen away from it. The probable solution might be that a fire was built in a ravine by a stream; that the ravine was filled in, turning the stream into a spring; and that other natural processes followed. That the lake could have buried the fireplace thus deep is clearly impossible. The depth by itself, however, is nothing very rare; but a field archæologist soon learns to distrust evidence of this nature. In some cases known to the writer, early villages and lodges, standing on open ground exposed to the wind, were buried in the sand, and the forest grew over them. The forest was cleared away all around, and the wind, with a wider sweep, carried the sand away again.

W. M. BEAUCHAMP.

Baldwinsville, Nov. 4.

Jealousy of a Dog.

IN an article in *Science* of Oct. 28, Mr. Stevenson remarks upon the jealousy of infants. Would you not place an infant of ten months upon a higher standard of development than a dog? Yet dogs are jealous. My brother owned one, a well-grown, bright fellow, who was usually upon excellent terms with my kitten but showed jealousy if the kitten was petted in his presence. On one occasion I held the kitten in my arms and pur-