

CURIOS FROM BENIN.

The city of Benin, not far from the Niger, in Guinea, Africa, has proved a mine of ethnographical treasure, quite eclipsing in this respect the more familiar capital of Ashanti. The number and excellence of the carved ivory tusks and castings in bronze or brass which have already reached this country have taken experts completely by surprise. The accompanying illustrations represent a few specimens. They are bronze or brass plaques with figures in relief, selected from a collection of about three hundred now exhibited, by

The subjects represented may be roughly divided into three classes. The first consists of human figures, and principally those of native chiefs, warriors or musicians, either singly or in groups. The second draws its inspiration from the animal world, leopards,

seems nothing inherently improbable in the guess that Nos. 3 and 5 represent Europeans of rather earlier date than No. 1. Antonio Galvano tells us that the kingdom of Benin was discovered by one Sequeira about 1472; and that about 1485 "one John Alonso d'Aneiro came from the kingdom of Benin, and brought home pepper with a taile: which was the first of that kind seene in Portugall."

In the long period of commerce and adventure which ensued, European fashions changed more than once. In this connection it is interesting to remark that another plaque in the collection wears a kind of hood



Fig. 1.—EUROPEAN WITH MATCHLOCK.



Fig. 3.—HEADS OF EUROPEAN TYPE.



Fig. 5.—FIGURE OF A EUROPEAN.

the courtesy of the Secretary of State for Foreign Affairs, in the British Museum, whence it is hoped that the greater part will never be removed. For what purpose these plaques were used we have at present no accurate information, but the holes at the corners suggest that they were nailed against the walls of a house or temple. They nearly all show signs of having been buried in the earth; and it seems that they were not, like the ivory tusks, actually seen placed in the positions for which they were designed. The high relief and extreme elaboration of the figures make it clear that the process adopted in their manufacture can only have been that known as the *cire perdue*, a pro-

cess generally necessitating the destruction of the mould after use upon a single occasion. The briefest of summaries of this method may not here be out of place. A model is first made in wax. This is then covered with a coating of finely levigated clay. A hole is now made in the clay, and heat is applied in order that the wax may run out. Into the clay mould thus formed the molten metal is poured. From such facts alone some idea may be formed of the artistic and mechanical skill possessed by the unknown artificers to whom these remarkable casts are due.

crocodiles, serpents and fish being especially conspicuous. The third embraces such inanimate objects as armlets, knives, a leopard's skin and a tree which appears to be the Palmyra palm, with its fruit depending from it. The first and largest of these classes is the most interesting from almost every point of view, but more especially because the artists have not entirely confined themselves to the representation of their own countrymen. A glance at Nos. 1, 3 and 5 will at once suggest the non-African origin of their subjects. The figure in No. 1 has a matchlock in his hand, and appears to be wearing a kind of ruff. It seems incontestable that he is a European of the sixteenth

with a vandyked edge, which, as Mr. C. H. Read has pointed out, had almost, if not quite, gone out of fashion in the sixteenth century. The remaining illustrations have not quite the same high interest for us as those already mentioned. No. 6 represents leopards tearing the body of what may be meant for a calf. This kind of theme has several parallels. In No. 2 we see two native executioners, each bearing the ax of their office and wearing on their breasts the bell which announced the doom of their victims. In the Ethnographical Gallery at the British Museum may be seen a dress faced with red cloth and fringed with long pendants, terminating in little bells.



Fig. 2.—NATIVE EXECUTIONERS.



Fig. 4.—FIGURES SUPPOSED TO REPRESENT A NATIVE CHIEF AND HIS ATTENDANTS.



Fig. 6.—LEOPARDS DEVOURING A SLAIN ANIMAL.

century. Nos. 3 and 5 present us with a variant on this type. The full-bearded faces are certainly not those of negroes, while the noses are of the pronounced aquiline contour usually associated with the Semitic race. It is not necessary, however, to seek their prototypes in Asia; for even if Semites had a monopoly of the hooked nose, the fact that the features of No. 1 are modeled in a very similar way should make us cautious in emitting any theory of an Asiatic origin. Opinions on a subject requiring so much further elucidation are naturally subject to revision; but there

which may well be the kind of garment from which those worn by these cast figures were modeled. In the same place may be seen the originals of the bell which is so constantly seen worn round the neck, and of the curious horned box which is sometimes held in the hands. The three persons in No. 4 are more enigmatical. The two lateral figures may be attendants, supporting the arms of a central princely or divine personage. There are other analogous groups in the series, in which the lateral figures are kneeling, while the central figure is seated on a stool. In other casts,

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again, the arms of a central figure are similarly supported, while he holds in his hands knives or other objects not easy to determine, for in most cases they have, unfortunately, been broken off.

Much might be written about these interesting objects. They abound in illustration of native costumes, weapons, musical instruments, and, in a less degree, of African fauna and flora. And yet they only represent one style of the castings which have reached us from Benin, for the more life like figures in the round are not represented among them. The portraits of Europeans give us some idea as to date; possibly a chemical analysis of the material out of which they are cast might furnish us with further evidence. For if they are brass, a knowledge of the date when brass was first exported to West Africa might have an important bearing on the question. Whatever may be the origin of some of their peculiarities of style or ornament—and these are both various and remarkable—it seems unlikely that a hoar antiquity can be ascribed to the bronzes themselves. But whether they are the work of negroes or of some wandering tribe of alien craftsmen, with whom casting was an hereditary occupation, they are certainly the most interesting works of art which have ever left the western shores of the Dark Continent. We are indebted to The Illustrated London News for the engravings and article.

Mr. Landor's Expedition to Tibet.

The Chronicle publishes, says The New York Sun, a vivid description of the torture inflicted in Tibet on Mr. Landor, the British explorer, who sought to reach Lhasa, and his two faithful Hindoo servants, all the other members of the party having deserted their leader. The following is a sample of the tortures inflicted:

The victims were bound naked to a tree and slashed and bruised, the cords cutting deep into their wrists and ankles. Mr. Landor's eyes were burned with red-hot irons. He was bound for hours on a rack and twisted and wrenched out of all semblance to a man. He was made to ride eighty miles on a saddle stuck full of spikes. One of these entered the base of the spinal column and shattered the nerve centers. His flesh was reduced to a lacerated jelly. An attempt was made to draw from him or his men some expression of pain, but in vain.

Mr. Landor has quite lost one eye, though the doctors say that in time sight may return. The hot irons were held just close enough to his eyes not to touch the skin, with the result that they were withered and shriveled, the Tibetans deeming this more painful than instantly burning out the eyeballs. Day after day this was practiced, but no sign of feeling were they able to extract. Landor's ankles and wrists are still livid from the cords with which he was bound on the rack, and, as he says, an animal in his condition would be instantly shot.

With indomitable will he forces himself to stand and walk and sit, using his extremities as wooden machines, declaring that they were made to use, and use them he will.

A photograph of the victims after their release shows them to be unrecognizable. Years seemed to have passed over their countenances. The skin is lacerated and seamed with burns and slashes. The hair is burned to the scalp, the beard singed to powder, the eyebrows and lashes burned to the quick, and the eyes two ghastly slits.

When the rescuers, two Englishmen and a Hindoo, reached the sufferers after thrilling adventures, Landor was within a few hours of death. His reason had already gone, and it was only by the most prompt action that he was kept alive. After three hours' attention he so far regained consciousness that he was able to tell where he had concealed one of his cameras, and he caused to be taken, for he could not take it himself, a photograph of the savages cowering in terror of the avenging white men.

Never for a moment during all the horrible time did Landor forget his photographs and sketches. Up to the moment of his capture he had kept his diary complete. After that time each hour was impressed with hideous vividness upon his mind.

His outfit has now been given up and his precious diary and maps of surveys secured. Many of the instruments with which he was provided by the Royal Geographical Society he was obliged to bury in the Himalayas. There they will lie for a time until some brave man recovers them. Landor himself will probably never be able to return.

[The tableland of Tibet in the heart of Asia is 10,000 to 17,000 feet above the sea and is a cold and forbidding country. Foreigners have been systematically kept out of the sacred city of Lhasa. Thomas Manning, in 1811, was the first Englishman to visit Lhasa and Mr. Landor will probably be the last, as the Grand Lama is determined to keep out foreigners from the famous pilgrimage city of the Buddhist world. The attitude of the authorities of Lhasa is not hostile to foreigners except as concerns their city, and those who push on toward it do so at their peril, as the refusal to permit the entrance of visitors is based entirely on religious grounds. Viewed from this standpoint, their

attitude is justified. Tibet has been a dependency of China since 1720. Imperial delegates direct the foreign and military administration of the country, while in matters of civil and religious government the supreme authority is the Grand Lama, who resides at Lhasa in the Potala or palace temple.—ED.]

World's Consumption of Metals.

With the exception of iron and steel (which were produced in 1896 in quantities as follows: Pig iron, 8,623,127 tons; steel, 5,281,689 tons), the common metals used in large quantities are: Copper, of which the world produced in 1896, 387,207 metric tons; lead, 670,000 metric tons; zinc, 421,313 metric tons; tin, 83,000 metric tons. Next to these, probably at present heading the list of minor metals, is aluminum, with a production of about 3,000 tons in the year 1896 and less than 4,000 tons in the year 1897.

The investigation of what becomes of such enormous quantities of the common metals, which are produced every year at an increasing rate, is an interesting one. The amount of scrap in any second-hand form of these metals which is being sold upon the market is not a very large factor.

With lead, by far the greater portion is converted into white lead, red lead, and orange material, which are used as pigments of paints, which are distributed over great surfaces in such thin coatings that their metallic contents is practically never recovered. A good deal of lead is manufactured into sheet, and a considerable proportion into bullets, shot and other projectiles, and, though still remaining in a metallic form, it is so widely distributed in use as to cause it to be irrecoverable in the form of scrap. A portion of the lead product used as sheet lead and pipe does come back into the market, but the portion of lead used in these ways is comparatively small as compared with the other uses of the metal.

The consumption of zinc is largely in galvanizing steel or iron sheets; in the manufacture of brass; as sheet zinc; and as the oxide of zinc used as a pigment in paint. That portion of the metal which is used in galvanizing is distributed as a thin covering over a large surface of iron; and the metal is entirely lost in the oxidizing and general disintegration of the zinc sheet. It has never been attempted to recover the zinc from galvanized iron. Zinc which is manufactured into brass, in the proportion of one-third zinc to two-thirds copper, remains in a permanent form, which is often available for new use as scrap brass, which, next to iron and steel, is the largest commodity in the scrap metal market.

The major portion of the tin product of the world is used in covering tin plates. Ordinary tin plates carry 1½ to 3½ per cent of tin. Many attempts have been made to recover this tin from old tin scrap, but no considerable amount of metal has thus returned to the markets of the world as recovered from tin scrap up to the present time.

With reference to iron and steel, it is interesting to note that the weekly production of coke in the Connellsville district is over 150,000 tons.

Of the common metals next to iron and steel, copper is the one which is used in the largest extent in the metallic form; only a small proportion of the production being utilized in the salts of copper, blue vitriol (the salt of copper used in galvanic batteries) being the principal salt of the metal sold in the market. The great uses of copper are in the manufacture of brass, of which it forms a two-thirds component part ordinarily, and in electrical conductors and in the form of sheet used in roofing, the bottoms of cooking and other utensils, in the manufacture of pipes to be used where a considerable amount of elasticity and pliability are required. The proportion of scrap copper for sale in the market is greater than that of any other metals, with the exception of iron and steel, but the total amount of old copper offered for sale is comparatively insignificant compared with the total copper production.

As indicative of the world's consumption of electrical conductors, it is interesting to note that the total length of the world's telegraph system has reached 4,908,823 miles, exclusive of 181,440 miles of submarine cables. This mileage is apportioned as follows.

Europe.....	1,764,790 miles.
Asia.....	310,685 "
Africa.....	99,419 "
Australia.....	217,479 "
America.....	2,516,548 "

America still leads the van, with almost double the mileage of telegraph lines of Europe.

As compared with the tonnage of the more common metals, the consumption of aluminum, nickel, antimony, bismuth and the like, is comparatively very small.

The increase in the consumption of aluminum has been very marked within the last ten years, and it is confidently believed the metal will soon obtain a place with a tonnage commensurate with the tonnage of the other common metals.

The steps which have been taken by the Pittsburg Reduction Company during the past year, by which aluminum sheet is now 10 per cent cheaper than brass and 15 per cent cheaper than copper, section for

section, and the steps which are now being taken to produce aluminum for electrical conductors as a substitute for copper make us more confident than ever that the metal whose interests we have espoused is destined to be ranked with the common metals, not only in the number and character of uses of the metal, but in the actual tonnage of metal produced and consumed in the world.

The exports of all the metals, including aluminum, show a very satisfactory increase, both in quantity and value, for the first eight months of last year as compared with a like time in 1896.

The building of electric railroads in Europe is increasing, and heavy contracts for equipping these roads have lately been placed with American manufacturers, which will result in large exports of copper and aluminum to England, France and Germany. Zinc, lead and aluminum have each had marked increase in exports from the United States during the past year.—Alfred E. Hunt, in Aluminum World.

Capture and Arrest of a Set of Patent Swindlers.

We learn with much satisfaction, through The Inventive Age, that on November 18, 1897, a set of patent swindlers were arrested through the efforts of United States Post Office Inspector Holmes, and indicted by the federal grand jury at Indianapolis, Ind. They were John S. Thurman, E. T. Silvius, and J. C. Buggess, known as the "blacksmith." The members of another set arrested in Cincinnati, Ohio, were Alpheus Fay, C. B. Avery, doing business under the name of C. B. Avery & Company, and John Burnit, a model maker. John Leavell, another member, was arrested at Louisville, Ky. Some of the parties have given bonds for appearance, while others have been committed to jail in default.

Inspector Holmes has evidence to show that Avery & Company have been sending out about 1,000 letters a month to inventors. He has also accumulated a large amount of evidence about similar cliques of swindlers throughout the country, and from now on it is expected a fierce warfare will be carried on against these disreputable frauds.

The peculiar frauds which these parties are guilty of we described some time ago, consisting of securing abstracts of titles and basing thereon fraudulent prospective sales of patents.

If there was any delay on the part of the patentee, the broker would demand funds to pay his railroad fare to the place where the supposed purchaser was. In nearly every case where the fare was sent, the broker would not make the trip, but pocketed the money.

The next stage in the fraud was to tell the inventor that the prospective purchaser was all right, but that before the inventor could be put into correspondence with him, the attorney would demand that, as his pay, he be given one-tenth interest in the patent. The necessary papers would be drawn up and then the inventor would be given the name of the intended purchaser. The latter, after corresponding for a short time, would tell the inventor that he must show that he had a clear title to the patent. Of course, it was encumbered with one-tenth, which he had given to his attorney. The latter would inform the inventor that he would release himself from any further interest in the patent if the inventor would pay him say \$100, or more if possible. If the inventor fell into the trap, the would-be purchaser would suddenly give some excuse for not wanting the patent, and there the matter would end. Then, again, the inventor would be made to sign over the patent right before any money was paid over, and the patent would be stolen.

There are likely to be other ingenious, plausible schemes got up to defraud inventors and patentees, and though successful for a time they are bound to be checked, if brought to the attention of Inspector Holmes or the Patent Office. It is a great gain to secure the assistance of the Post Office Department in putting a stop to these frauds.

Prof. Libbey's Hawaiian Expedition.

Prof. William Libbey, of Princeton University, proposes to conduct a scientific expedition to the Hawaiian Islands during the coming summer. He will take four or five students with him, and the party will be gone four or five months. Prof. Libbey went to Hawaii a few years ago and he is thoroughly convinced there are scientific treasures in the islands, duplicates of which cannot be found elsewhere. The party will thoroughly explore the lava beds, the forests and other places likely to contain specimens of biological, archaeological or botanical value.

Bolivian Trade Mark Law.

According to the decree of March 24, 1897, the registration of trade marks is compulsory in Bolivia, that is, no goods bearing a trade mark can be sold or offered for sale in Bolivia unless the trade mark has been previously registered. In case of non-compliance, fines will be imposed. The registration is for a term of ten years and may then be renewed, but annual taxes must be paid to keep the registration in force.