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AN EVENTFUL CAREER.

**I**T is reported that two priests have visited the valley of the Mohawk for the purpose of discovering if possible some trace of the spot where the French Jesuit Isaac Jogues was murdered by the Indians, and that the intention was to have the place marked by an appropriate memorial stone. The most satisfactory conclusion reached by the explorers was stated to be that the scene of the tragedy is near the residence of Mr. Veeder, not far from the village of Fonda.

The story of this man's adventures among the Indians, as told by Parkman from records which are accessible only to the specialist in such fields of research, is one of the most interesting of the tales connected with the Jesuit missions among the northern tribes. Jogues—or Jagues, as some

prints have the name—was a native of Orleans. He was educated for the priesthood and when scarcely thirty years old he was sent out to Canada to take part in the elaborate scheme which the Jesuits had laid for converting the natives of this country. His special field of labour was among the Hurons, a tribe which was more susceptible to the influence of the missionaries than any of the others were found to be.

The summer of 1642 was one of great destitution among the tribes which inhabited the territory about the northern lakes, and the French missions among the Hurons came near being wiped out by want of food. In order to procure certain supplies that were needed to properly conduct the religious part of the mission with which Jogues was connected, he with two French laymen Goupil and Couture, and a number of Hurons, set out on a trip to Quebec, making the journey for a large part of the way in canoes.

They had met with success at the trading points, and were rowing along the northern shore of Lake St. Peter on their return voyage, when they were surprised by a party of Iroquois, who were in that country in search for any Frenchmen that might be so unfortunate as to fall in their way. The missionary and his companions were easily overpowered and taken captive. In the skirmish which took place one of the attacking party was killed.

The Iroquois, enraged at the fate of their companion, visited severe punishment on Jogues and the other Frenchmen, lacerating their flesh and despoiling them of their clothing. When the captives were all secured they were started on a long and wearisome tramp toward the seat of government of the Mohawks. The way was up the Richelieu river and Lake Champlain to Lake George, crossing which they set out for the Mohawk valley by a straight line.

Thirteen days were occupied with the journey from the St. Lawrence to the Mohawk. The hardships of so long a tramp were aggravated by all manner of ill usage of the

captives both white and Huron. The villages of the Mohawks to which the party was brought had been made aware of the approach and great preparations were in waiting for so distinguished a capture. The prisoners were put through the gauntlet and made to undergo the regulation series of torture. They were marched from one village to another until all of the Mohawks who were in the settlements at the time had had an opportunity to see and inflict suffering on them. Several of the Hurons were burned to death and Jogues every day expected a like end. His hair was pulled out, his flesh was cut and one of his thumbs was sawed off with a clam shell. The other Frenchmen fared no better treatment at first, but, strangely enough, the one who had at the time of the capture shot and killed one of the Iroquois, was adopted into one of the families of the tribe and was protected from further harm. In a short time Goupil was killed while he and the missionary were apart in the woods saying their prayers. From that time Jogues led a solitary and desolate life in hourly fear of some new torture. In November he was compelled to accompany a band of his captors on a fishing and hunting expedition to what is now Saratoga lake. After undergoing great deprivation and being half starved he was sent back to the village on the Mohawk.

While he was with the Indians Jogues made no effort to escape. He spent his time in religious devotion and in trying to enlighten his enemies on the teachings of the gospel. The Indians were obdurate, however, most of them regarding his forms as incantations of the evil spirit.

The long winter of 1643 wore away and the spring found the missionary in good health. With the exception of the trip to Saratoga he had not been out of call of the three villages of the Mohawks. In July he was allowed to go with a company of his captors on a fishing excursion to the Hudson, the point of destination being about twenty miles

below Albany. While there, word came that the Mohawks had been victorious in a fight with the Hurons and that they had returned to the villages with a fresh lot of prisoners.

When the faithful Jesuit heard of this he begged to be allowed to return up the Mohawk in order that he might be on hand to administer the rite of baptism to the unfortunate captives in case any of them should be put to death.

He was accordingly placed in a canoe with a guard and sent up the river as far as Rensselaerswyck, where a landing was made for the purpose of enabling the Indians to do some trading with the Dutch in and about Fort Orange. The Dutch had heard of the captivity of the French missionary, and being on good terms with the Mohawks they had already made overtures for the latter's ransom. These efforts had been in vain, the Indians seeming to place special significance upon the possession of so valuable a captive. While the Indians who were in charge of Jogues were busying themselves with the Dutch, their prisoner made the acquaintance of the clergyman of the church that had only the year before been organized, and for the worship of which a rude edifice had been erected hard by the fort. This is the church of which Rev. Dr. Clark is now pastor. It stands at the corner of North Pearl and Orange streets, and over the entrance, cut in stone is the date 1642. If Father Isaac Jogues, the Jesuit captive, could return to the scene of his captivity he would scarcely recognize the spot where Dominic Megapolensis pointed with pardonable pride to his new sanctuary.

While the returning fisherman with their captive still tarried among the generous-hearted Dutchmen, news came from the Mohawk valley which greatly alarmed the missionary. Some time before he went on the fishing excursion to the Hudson he had written to the commander of the French forces at Three Rivers, near Quebec, and had sent it by a Mohawk, who had shown special attachment to the writer.

This letter was a word of warning to the French to be on their guard against an attack by Iroquois, who were on the warpath. Instead of holding the letter till he reached Three Rivers, the Indian who had consented to bear it, delivered it to the officer of an inferior post at the mouth of the Richelieu river. As soon as the letter was read, the commander ordered the guns of the fort to be turned on the Indians. The latter fled, and stopped not till they reached their village on the Mohawk. If Jogues had been at home when the treachery of the French was announced in the village he would in all probability have been made a vicarious sacrifice of. When the sad results of his correspondence was made known to him at Fort Orange, he seems to have for the first time seriously considered the feasibility of escaping from his captors. He was told by his newly found friends among the Dutch that if he went back to the Mohawk village he would be killed. One of the settlers, Arendt Van Corlaer, offered to provide a boat in which Jogues might row across the river where lay a vessel in which passage could be secured to France. This vessel was also owned by Van Corlaer, therefore nothing appeared to be in the way of success for the proposed attempt to escape. The missionary, however, hesitated because he was unable to decide whether or not it was his duty to return to the Indians so as to continue his religious labours as long as he might be permitted to live. After a night of prayer he told his benefactor that he would make the attempt to get away. The next night he slept in a long barn which belonged to one of the more fore-handed of the Rensselaerswyck farmers. The building, which was without partitions, was occupied by the farmer and his family at one end, the horses and some cattle at the other, while about the middle of it the Indians and their charge were hospitably lodged. This combination of barn and dwelling served for the time as the foremost Albany hotel. When the household, including

the cattle and the guests of the night, were sound asleep, Jogues stole out and was about to clear the premises when he was attacked by a watch dog which bit him and tore his flesh. Retreating for the moment, he made another effort later in the night and was successful by the aid of a man who quieted the dog. He reached the vessel safely and was taken on board, but before the ship could sail the Indians had made such a stir about his escape that the Dutch settlers felt obliged to reveal his hiding place. He was accordingly brought to shore, but he eluded the search of both the the Indians and settlers, except a few who were in the secret of his new lurking place. Among the friends who stood by him and who furnished him food during the six weeks of concealment the most trusted was Dominic Megapolensis. Finally the Dutch settlers negotiated a ransom for Jogues and the latter then dropped down to Manhattan and took ship for France.

On arriving in his native land he pushed his way as fast as he could to Reunes in order to see the rector of the Jesuit college from which he had received his commission, and to make a report on the work of the missions in Canada.

Few men of any time would care to repeat the risks and undergo the hardships of a calling which had brought on them the suffering which Jogues had sustained. The loss of his thumb and other scars on his person had disqualified him for further service as a priest, but so far did his zeal in the missionary cause carry him that he sought and obtained a dispensation from the pope by which his disabilities were removed. He then hastened back to Canada. Meantime a sort of peace had been arranged between the French and the Indians, and when Jogues arrived among the Hurons again, Couture, who had been captured by the Mohawks at the time that Jogues was first made prisoner, was still among the Mohawks acting as mutual agent for the French and Indians. The need was felt, however, on the part of

the French, that a more influential man should represent them in the Mohawk valley. Such a man was found in Father Jogues and he undertook the mission. He set out from Montreal in the summer of 1646, and with a company, of Hurons and friendly Iroquois proceeded to the mouth of the Richelieu, thence up that river to the Champlain. Until he reached Lake George he traversed the same course he had passed over in captivity. Instead of crossing the wilderness into Montgomery county he took canoes down the Hudson and landed at Fort Orange, where he visited his old friends. Thence he came up the Mohawk and soon found himself in the midst of the red men who had scourged him as an enemy and a sorcerer. He now appeared among them as the accredited agent of the French nation.

He was kindly received and was respected. When the special object of his mission was accomplished he returned to Montreal, where he arrived in July and made report to the government.

Again taking up his work as a missionary of Christ, he started in the latter part of August for the Mohawk Valley, hoping to spend many days of usefulness among those tribes whose acquaintance he had been forced to make.

Before he reached the valley of the Mohawk he heard that the tribe to which he was going had become dissatisfied and that it would be dangerous for him to pursue his journey. Those who accompanied him turned back in alarm, but Jogues pushed on, urged by enthusiasm for his Christian work. There was special reason for the threats that came to the ears of the missionary from the Mohawks. When he was among them as the ambassador of the French government he left a small box containing things which he thought he would need when he might return on his legitimate business of converting the Indians. After he started on his return to Montreal sickness had broken out among the Mohawks. The summer was unusually productive of

vermin and the corn of the tribe suffered much from the ravages of worms. The Indians quickly ascribed these disasters to the influence of the white men who had been among them, and the Hurons, who were in the valley, took pains to direct attention to the box which the missionary had left behind. This came to be looked on as the source of the troubles. A division rose among the clans of the tribe as to what ought to be done with Jogues when he should reappear among them. The clan of the tortoise and the wolf voted to remain faithful to the treaty that had been made with the French, while the clan of the bear decided that there should be war on all who had anything to do with the missionary's people. A band of the Bears set out to intercept the approach of Jogues if he should return, and the latter was met about half way of the journey from Lake George to the Mohawk. Jogues was seized and stripped and tortured. The band then hurried him to the village where, on the evening of October, 18, 1646, he was struck down by a tomahawk in the hand of an Indian who had concealed himself behind the door of a wigwam to which the missionary had been invited to hold a parley with one of the chief men of the clan.

It thus appears that the murder of this good and zealous Christian is not chargeable to the memory of the entire Mohawk tribe. His body was thrown into the river and there is no record by which it can be shown that it ever had Christian burial. If the project of erecting a tablet to his memory shall be carried out, one good thing will be done toward consecrating the many historic spots of the Mohawk valley.

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—He who learns to make no use of his learning is a beast of burden with a load of books. Comprehendeth the ass whether he carries on his back a library or a bundle of fagots?—*Saadi*.



## STEAMERS IN 1814.



**I**N Buchan's *Treatise on Propelling Vessels* published in England, we find the following:— At present (1814) there are five steamboats on the Thames.

1. The *Thames*, (originally the *Argyle*), 14-horse power, plying between London and Margate; reckoned the best boat. The paddles alternate with each other, and are set at an angle of 54 degrees.

2. The *Regent*, 10-horse power, paddles set square, with rims like an overshot wheel; is expected to ply between Chatham and Sheerness. She was first built for the wheel to work in the middle, but this, not having been found to answer, has been altered.

3. The *Defiance*, 12-horse power, to Margate, with double horizontal cylinder engine.

4. A boat which plied between London and Gravesend was laid aside on account of a lawsuit, as she was not worked by a privileged person. Such a person has now taken her, and she will soon start again, with a new 12 or 14-horse power Scotch engine, being originally fitted with a high pressure engine. The wheels of this have rims, and the paddles swing like top butt-hinges.

5. A boat with double keel, 6-horse power, is now building above Westminster Bridge; paddle; upright; said to be for London and Richmond.

6. Mr. Maudsley built a small boat last year for Ipswich and Harwich, 16 miles done in two and a quarter hours, but against a strong wind in three hours. This has six frying-pan paddles set square, without rims.

I have been informed, by letter of August last, from Gainsborough, of a steamboat from thence to Hull, which performs the voyage, 50 miles, in eight hours. And this week

from Canada, that at present there are two steam-vessels on the River St. Lawrence, one 48, the other 36 horse power, which go at seven miles an hour, measure about 170 feet long and 30 feet wide! That another 48-horse power vessel will be launched next year on that river. So that one may go by steam from Quebec to New York, in eight days, with a short land carriage.

### LA GROTTÉ DES FÉES.



FEW weeks ago an exploration took place of the famous "Grotte des Fées," (Grotto of the Fairies,) situate 800 feet above the level of the Richelieu, on the northern flank of Belœil Mountain. L.D. M., in a communication to the *Star* gives the following particulars:

The cave is situated in the most northernly of the mountains, and may be seen from the river as a dark archway high up on the rugged cliff. Beneath it are piled up huge fragments of rock, which tell suddenly one night some forty years ago. They bear the name of the *deboulis*, and are extremely difficult and fatiguing to cross. In the interstices a number of hardy trees have sprung up, and their branches materially aid the tourist and save him many a fall over the slippery edges of the boulders. The cave itself is a long, deep fissure, vaulted over by a number of fallen rocks which form a perfect arch, but present a most threatening aspect to all comers. This cave is entered by a steep precipitous path up an almost perpendicular slope, and is about 30 to 40 feet in depth. Its walls are damp and covered with fungi and slime, and the temperature is very low. In the vaulted roof at the inner extremity is a dark aperture not visible from without, which bears the name of "Trou des Fées," and which is situated some 45 feet above the floor of the grotto. Many persons have already entered the outer

cave and beheld the inner aperture, but hitherto the precipitous walls and height of the opening, have rendered all efforts fruitless. The other day, however, the mystery of the spot was solved, and the upper cave was explored by a party headed by Rev. Mr. de La Croix, of St. Hyacinthe. He was accompanied by Rev. M. Choquette, of St. Hyacinthe College, Rev. Father Rottor, S. J., Curé Boivin, of St. Hilaire, Captain and Mr. Bruce Campbell, of the Manor House, and Dr. L. D. Mignault, of Montreal.

The ladder arrangements were under the superintendence of Mr. Hamel, of St. Hilaire, aided by ten or twelve of the villagers. We started from the village at 10 a. m., and soon arrived at the foot of the *deboulis*. Then began a hard climb over the huge rocks, and more than once the party were compelled to stop in order to take breath. The route also was not unattended with danger, as many deep chasms yawned between the stones. At last, as the western breeze brought us the sound of the distant Angelus bells, we arrived at the foot of the outer cave, and waited for the ladders which were being dragged up behind us. Meanwhile, lunch was served, and the complaining inner-man pacified.

The ladders were three in number - a stout one which served to enter the outer cave, and two others of 30 feet each.

These were made to act together by the adjustment of iron collars which allowed them to be extended while in position. After considerable difficulty, they were reared in the outer cave, and held in position by ten strong arms, otherwise they would have slipped down the steep and slimy floor.

M. de La Croix, as leader of the party, was the first to mount; he soon reached the aperture and beheld before him the second cave it was simply a chamber of moderate dimensions, formed by the disintegration of a dike of trap rocks. The walls were moist, one covered with fungi, and the only living occupants were a few coleoptera

and some spiders. These latter insects, having never been disturbed, had spun some very large webs and seemed to regard our intrusion with terror and surprise. Several specimens of their labour were secured by Rev. Father Rottot.

All the more enthusiastic members of the party ascended the ladders to survey the discovery, and the sensation of giddiness experienced by the explorer as he mounted between the frowning vault of the cave above, and the slippery floor beneath, will be long remembered. Finally, before leaving, a bottle containing the names of the visitors and some coins of the year 1881, were deposited in the upper cave, to bear witness in future ages. Perhaps, some day, they may be displayed in a museum and give rise to grave discussions upon their anthropological significance.

## THE ART OF FOUNDING IN BRASS, COPPER AND BRONZE.

BY EDWARD TUCK.

We copy the following interesting paper from *The Iron Age*.



THE origin of the art of founding can only be a matter of speculation, extending, as it does, so far back in the past history of the race, a history to a very large extent wrapped in obscurity and mystery. But the marvellous results of the various operations and the immense importance they are to mankind, have caused many in ancient times to assert that the art was communicated to man by the gods. Some, and with a larger share of truth, consider that man, finding by accident that certain minerals by the force of fire yielded a metal, repeated the experiment on other minerals, finding out other metals; and thus ultimately all the differing forms in which they exist in the earth. As late as 1762 a large mass of mixed metals, composed of copper, iron, tin, and

silver, was melted out of the earth during the conflagration of a wood accidentally set on fire, and various ancient historians speak of metals having been melted out of the earth during the burning of woods in the Alps and Pyrenees.

Copper is occasionally found in nature in a metallic state so pure as to be used for manufacturing purposes, either for making articles of copper or alloys. There are examples of this in the mines of Lake Superior in North America, where large masses of copper have been found weighing several tons. It may, therefore, be considered quite possible that quantities of copper were found in the earth in the olden time, so that the ancients could possess the metal without the necessity of smelting. But, however, this fact must be stated, that where a mass of copper is found embedded in the earth at any depth, it would require a greater amount of skill and mechanical knowledge to get this into working operation than to smelt the ore. Such a mass could not be broken up like stone, but must be cut, and therefore would require tools of particular hardness, and other mechanical appliances, to obtain which requires a greater and more refined knowledge of metallurgy than smelting copper from the ore.

But whatever or wherever may have been the origin of the art, it is quite certain that it originated at the very earliest period of man's history, and has gone down with him along the stream of time to this age. It has had, as all arts have had in varying ages and nations, its rise and decline, which make the investigation of its history a somewhat difficult task. Still, by the aid of researches which have been made among the ruins and relics of past buried ages, we have been able to gather together some facts which help us to form something like a history of the art; very imperfect in many points, yet enabling us to gain some idea of the methods of working and the means by which certain results, which are matters of wonder to us even now, were accomplished.

We have, it is true, in these modern days advanced far, very far, in the metallic arts; but in the great facts and principles we are no further than the men of the past. In the matter of tools and means of production we have advanced so that we may produce in one week as much as they did in one year. But still the fact remains, they accomplished the work, and in the especial matter of bronze we have not yet reached the height of perfection to which certainly they attained.

Pliny and other ancient writers are very far from being correct in their descriptions of the manufacturing processes, and even the translators of their works have added to the confusion, either through ignorance or on account of the poverty of the original language in technicalities, as we find brass in one place, white copper in another, copper in a third, all referred to indiscriminately whether referring to pure copper or the alloys whitened by the addition of lead, tin, or any other process, although Pliny certainly does describe more correctly the casting of bronze, for he says: "The mass of copper was brought to a liquid state, then was thrown into a third part of old bronze and 21½ per cent of plumbum argentarium" — *i. e.*, tin and lead in equal parts. We shall, therefore, trace the history of the art of founding, so far as we have been able to gather it from the past history of ancient times and the researches into and about the buried cities, and trace its course down through the ages to the present time.

The oldest reference we find in Holy Writ is in the Book of Job (the oldest work extant,) Ch. xxviii, 2, "Brass is molten out of the stone." In the original Hebrew the word is *Nechosheth*, meaning literally copper. This must be so, as brass, being an alloy and not a pure metal, is not smelted, or, as it is put here, "molten out of the stone." The next reference is in Genesis iv, 22: "Tubal Cain, an instructor of every artificer in brass and iron." The same word, *Nechos-*

*heth*, is used here, literally copper ; but seeing that copper is a difficult metal to work, we believe that the alloy of copper bronze is really meant. We incline to this belief because there is only one other reference to copper in the Old Testament (Ezra viii, 27), "Two vessels of fine copper precious as gold." And here the same word is used. We find that tin, which mixed with copper forms bronze, certainly was known to the ancient Israelites, as in connection with the spoil taken from the people of Midian, 1452 B. C. (Num, xxxi, 22), they are commanded by Moses to purify the silver, brass, iron, tin and lead, by passing it through the fire (Moses appears here to mention all the metals then known.) Whether the tin came from India or not, there is no sufficient evidence to prove, but it appears certain that the productions of that land were known in the earliest times, by "the gold of Ophir" being mentioned in Job.

If the Phœnician ships did not actually sail to India, its productions arrived partly by land through Arabia, partly through more distant marts established midway from India by the merchants of those and later times ; and we have evidence of their having arrived in Egypt at the early period of Joseph's having been taken there, by the spices which the Ishmaelite caravans were carrying to that land. And the amethyst and other objects discovered at Thebes, of the time of the third Thothmes and succeeding Pharaohs, and which must have been brought to Egypt, argue very strongly that the intercourse was constantly kept up. Bronze, composed of tin and copper, was found in Egypt of the time of the sixth dynasty, 2000 years B. C.

The first work of art of which we have any details in Holy Writ is the Ark made by Moses, and generally called "the Ark of the Covenant." It was also the first work performed by the Israelites as a nation. A large portion of the works in connection with this are of pure gold beaten out with the hammer ; and although these show

mechanical skill of a very high order, they are outside the scope of our paper.

We read (Exodus xxxviii, 8), " And he (Moses) made the laver of brass, and the foot of it of brass, of the looking-glasses of the women," &c. The word translated " foot " should be, as given in the margin " cover." This laver, or large basin, in which the priests were to wash, must have been a large work to cast ; and it shows a complete and accurate knowledge of the different sorts of bronze for different purposes that the cover should be made of the mirrors of the women, brought by them out of Egypt, and which, containing about one third more of tin in the alloy, constituted speculum metal ; so that the cover of this huge washing basin formed when raised, a mirror in which the priests could examine themselves before approaching the altar. There were besides this many other articles used in the erection of " the Ark of the Covenant " made of bronze. Dean Prideau gives as the weight of bronze used 10,277 pounds Troy weight. The entire weight of the articles made in the three metals—gold, silver, and brass or bronze—was 14 tons 2 cwt. No one can read over the narrative of that undertaking, viewed independently of the adverse circumstances of the Israelites, wanderers in the wilderness, without perceiving that many among them possessed great skill ; some had most probably been among the highest class artisans of Egypt. The ease with which these elaborate works connected with the Ark, as well as the Golden Calf and the Brazen Serpent, were produced, show that they had not been employed solely in the labour of brick making while in Egypt, but that in all probability many of them were workmen in the Egyptian foundries and other public works in which metal articles were manufactured.

Bronze being a mixture of copper and tin in variable proportions, every variation produces a bronze of different quality, more or less suitable for different purposes. One



quality will have great hardness and be very brittle—another hard and flexible. One gives a bright reflecting surface when polished, suitable for mirrors—another is famous for its sonorous quality, and is therefore suitable for bells, gongs, &c. Before these properties and differing qualities could have been found out, some length of time must have intervened as such knowledge of practical facts could not have been obtained until society had gained a considerable advancement in the arts. We are able to show by analyses that have been made of the bronze of the Egyptians and other ancient nations, that it was of such varied qualities, requiring a great amount of knowledge and practical skill as well as pure materials. Consequently these ancient people must have attained the knowledge before they could procure the varied articles. A chisel found by Wilkinson in an Egyptian quarry gave copper, 94.0; tin, 5.9; iron, 1=100. A dagger analyzed by Klaporth, copper, 91.6; tin, 7.5; lead, 0.9=100. Bowl or dish from Nimroud, copper, 89.57; tin, 10.43=100. Bell analyzed by Dr. Percy, copper 84.70; tin, 14.10, thus showing where sound is required the amount of tin is increased, and where strength is required the amount of tin is decreased. Dr. Percy found also a small casting, in the shape of the fore leg of a bull, forming the foot of a stand consisting of a ring of iron standing upon three feet of bronze. A section made, disclosed a central piece of iron over which the bronze had been cast. The casting was sound and the contact perfect between the iron and the surrounding bronze, and it was quite evident on thorough inspection that the bronze had been cast round the iron, and not the iron let into the bronze. The analysis gave copper, 88. 37; tin, 11. 33. No perfectly satisfactory conclusion can be arrived at whether the iron was employed because required in the construction or to economize the more costly metal—the bronze required for the ornamental purpose. We are inclined to the former in this case. Sir Henry Layard speaks of the

bronze vessels, which he supposes to have been used in the religious ceremonies, as especially deserving of attention as demonstrating the skill of the Assyrians in their treatment of bronze. One specimen may be particularly noted. A thin hollow casting in bronze, which was attached to the end of one of the arms of the throne. This casting had evidently been chased, and for that purpose must have been filled with some substance, such as pitch, which is used at the present time, as in the interior was some black compound which was like pitch and left an earthy residuum, and was probably a mixture of asphaltum and earth." It is quite evident that the Egyptians, at the time the children of Israel were in captivity among them, and even long before that period, were very skilful in working the metals, especially bronze. We have no exact idea of the form of the furnaces or the materials used in their construction, but that they had great facility in constructing such furnaces is evident from the short time taken by Aaron to cast the calf or bull when in the wilderness. So we may presume that the Hebrews had been many of them labourers with the skilful artificers of Egypt, and, when leaving, had taken away their tools and the knowledge of the art in which they had worked with them. But whether the same or similar means were adopted for overcoming the difficulties of founding as in the present day, this fact remains—the difficulties were overcome, and the metals then known were used in abundance, and as pure as we now have them. Wilkinson, in his "Ancient Egypt," gives the figure of a smelting or melting operation from one of the ancient monuments. The furnace seems only a heap of fire on the surface of the earth, and the bellows are two large bags filled with air, upon which a man is standing with a foot on each bag, the aperture of the bag being connected with a pipe leading into the fire. While the man appears to be putting all his weight on one bag to compress the air out into the fire, he is lifting up his other foot, and at the same time the upper

fold of the other bag by a string in his hand, by which the bag is again being filled with air. This apparatus is, no doubt both simple and rude, and if it refers to the ordinary metallurgical operations performed by the nation, one could hardly suppose that castings of any great size could be obtained except with much difficulty. Still it shows that the methods adopted for getting an intense heat were similar to ours, viz., by bellows or blowing.

Ordinary bellows are said to have been invented by Anacharsis the Scythian, but that must have been long subsequent to this period. Very little can be discovered to illustrate the means employed in metallurgical operations from the objects found in the excavated tombs or from the paintings, beyond the use of the blow-pipe and forceps and the concentration of heat by raising cheeks of metal round three sides of the fire in which the crucibles were placed.

Homer notices "that the Egyptians and other Asian workmen excel in the manufacture of arms, rich vases and other objects inlaid and ornamented with metal." Herodotus and Helanius both say. "The Egyptians drank out of bronze goblets." We find that statues, musical instruments, implements of all kinds, adzes, axes, and chisels, articles of furniture, bedsteads and footstools, and many other domestic utensils were all made of bronze. Also biers, on which the bodies were placed after death. The Egyptian vases are numerous, and to be noticed for beauty of form and the design ornamenting them, as well as for the superior quality of the material. Those used in the service of the temples were especially beautiful. One found by Mr. Salt had an elastic spring to the cover, and the nicety with which it is fitted exhibits evidence of great skill in the workmanship.

The sistrum was, *par excellence*, the sacred musical instrument, and was usually of bronze or brass, sometimes inlaid with silver. One now in the British Museum is en-

tirely of bronze, having a hollow handle closed by a moveable cover of the same metal. The cymbals, or clappers, which, when struck together, emitted a sharp metallic sound, were of mixed metal, probably copper and silver, and in shape much resembling those of modern times.

It is not known at what time the ancient Egyptians began to cast statues and other objects in bronze, or how long the use of beaten copper preceded the art of casting. Many bronzes, however, have been found of a very early period. A cylinder with the name of Papi, of the sixth dynasty, has every appearance of being cast, and other bronze implements of the same age bear still stronger evidence of having come from a mould, all of which date more than 2000 years before our era. The Egyptians, too, appear to have possessed the secret of giving to their cast bronze blades a certain degree of elasticity, as in the dagger now in the Berlin Museum, which probably depends for this property on the just proportions of the peculiar alloys used in its manufacture, as well as on its mode of having been hammered. Another remarkable feature in this bronze is the resistance it has offered to the effect of the atmosphere, continuing smooth and bright though buried for ages, and since exposed to the damp of the European climate. It may be said that the Egyptians had not any mines of tin wherewith to produce the bronze alloy. It is true that the mountainous districts of Egypt, between the Nile and the Red Sea, produced iron and copper only. Copper was also found in Arabia Petræa, which district was known to them, and even now among the heaps of refuse there we come upon the tubs used in the smelting apparatus. Mines are mentioned by Agartharchidas, a Greek writer of the age of Ptolemy Philometer, and he gives a curious picture of the mode of working these mines, which were probably near the coast now called Jebeel Allaka. For additional evidence we learn from Mak-rizi an Arab writer, that this region produced silver and copper.

and tradition names both Egyptian Pharaohs and Greek Ptolemies as workers of the mines. But, as we have already shown, they traded with India, and at this time, as well as from Spain, tin could be procured there.

The Phœnicians, to whom the art of navigation is so much indebted, and who carried the spirit of adventure beyond all the ancient nations, obtained tin from both India and Spain long before they visited the more distant shores of Britain, and discovered how rich were the mines of that metal there. It was worth their while to undertake a long and risky journey at sea, with possibly no other method of ascertaining their course than the stars, from the high price they were able to obtain for this commodity in Egypt and other countries where, as at Sidon, the different branches of metallurgy were carried on to great perfection.

Strabo, Diodorus, Pliny, and other writers mention certain islands discovered by the Phœnicians, which, from the quantity of tin they produced, they called Cassoterides, though the locality is not given, for Strabo says, "The secret of the discovery was carefully concealed;" and it is said that a Phœnician trader ran his vessel on a shoal and was shipwrecked, when pursued, rather than disclose his country's secret, for which he was rewarded from the public treasury. Strabo and Pliny both mention that tin was found in Gallicia and Lusitania, and further say that in consequence these countries became a rich mine of wealth to the Phœnicians.

Herodotus describes the doors of the Temple of Belus, at Babylon, as made of metal, probably bronze. The people would be more induced to attempt such work as bronze doors for their temples and public buildings in consequence of the scarcity of good timber suitable for the purpose in the land.

The next great work of ancient times of which we have any details, is the making of the various bronze and brass

articles used in the building and fittings of Solomon's Temple at Jerusalem, 1011 B. C., and this gives a really good and complete idea of the progress made in the art at that period of time.

After the formation of the ark and its various fittings, the Hebrews were not called upon again publicly to exercise their skill in metal work. The 40 years of desert wanderings rendered such quite unnecessary; and as all those that came up out of Egypt died in the wilderness, in all probability with their death passed away much, if not at all, the skill and ingenuity then shown, except for weapons of war and possibly implements of agriculture. They (the Hebrews) for some centuries were so much engaged in taking possession of the land they were to inhabit in wars and fightings, that the ordinary arts of civilized life were not and could not be cultivated; so that, notwithstanding the enormous wealth they had accumulated in the time of King David, yet when Solomon, his son, began to erect the Temple (which was a work their forefathers, when they left Egypt, could have accomplished without assistance) there were none among the people who could do the skilled work necessary in casting and working the various metals. In consequence, Solomon had to negotiate with the King of Tyre to send him men and materials to do the work. "Send me, therefore, a man cunning to work in gold, in brass, and in iron," "and that can skill to grave with the cunning men with me whom David my father did provide" (referring to some skilled workmen whom the same king had sent to King David at an earlier period.)

Singularly enough, the man sent by the King of Tyre as chief of the workmen was himself of Jewish descent on his mother's side, and had come of a family of metal workers, for we read, "his father was a man of Tyre, a worker in brass." This man directed the whole of this department of the work. The vastness of the quantity of bronze or brass

used we are unable to determine, for we find (1 Kings vii, 47) "Solomon left all the vessels unweighed, for they were so many, neither was the weight of brass found out."

It is impossible for any one to read the graphic account given of the Temple construction in the Book of Kings, especially of the productions in metal, and not be amazed at the great variety of the work done, and the beauty and finish with which it must have been executed, as well as the great quantities and immense castings, which would require the highest mechanical skill and knowledge.

The two bronze pillars which were fixed up in the porch of the Temple must have been splendid specimens of workmanship. Taking the cubit at the generally recognized measurement (21 inches,) the pillars, inclusive of the capitals, will have measured over 40 feet in height and 7 feet in diameter, and the weight of the metal would be from 23 to 28 tons. Another question arises in connection with these pillars; if they were hollow, as Whiston in his translation of "*Josephus*" considers they were, it follows that the use of cores must have been known and practised at this time, although this invention is ascribed to Theodorus and Rhæcus of Samos at a much later period; but this may be only another instance of the knowledge of certain kinds of manufacture being lost and re-discovered at some later period.

In addition to these pillars, there was the Brazen or Bronze Altar, another gigantic work probably weighing about 200 tons; also the Molten Sea, an immense semicircular vessel measuring  $17\frac{1}{2}$  feet in diameter and  $8\frac{3}{4}$  feet deep, and containing 16,000 to 20,000 gallons of water, supported on a pedestal of twelve bronze oxen. We get no idea from the account of the size of these castings, but they must have been of sufficient size and strength to support the vessel, which, when filled with water, would weigh probably 100 tons.

In addition to these large articles, there were a great number of smaller ones, equally good in construction and work-

manship, but a full description of these cannot be given in this paper. It is apparent that different qualities of bronze were used, for some of the articles are stated "to be of bright brass," evidently different mixtures of the alloy for the differing purposes. It is clear from the vast size of the castings that good mechanical contrivances must have been used to remove, fit up and place them in position.

These works were cast "in the Plain of Jordan, in the clay ground," or, as should be more correctly rendered, "in the depth of the clay ground between Succoth and Zarthan," showing them to have been moulded in clay. Such large quantities of metal would require to be melted in a series of furnaces, in which the metal could be fused at one time, all tapped together and the metal let run into the mould. A series of such furnaces would be constructed in a sort of circle or square, under one large dome or roof, forming a chimney or tower.

It is most probable that such a method was adopted in those days, as we find from Nehemiah iii, 11; "Malchijah, the son of Harim, and Hashub, the son of Pahath-moab, repairing the other piece and the tower of the furnaces." This would refer to such a structure which, erected in the Plain of Jordan for the Temple works, may have continued a sort of national foundry up to the time the Jews were carried captive into Babylon. And again, the restoration and consequent rebuilding of the Temple would require the same operations, and hence the repairing of the furnaces would be a necessary work.

The knowledge of the art of working in metals thus brought into Palestine by the Tyrians at the building of the Temple seems not to have afterward declined, for we find frequent references in Scripture to works of this kind. In 740 B. C. King Ahaz, visiting King Tiglath-pileser at Damascus, saw an altar which pleased him, and sending Urijah, the priest, a drawing of it, one was made for him exactly similar.



In 595 B. C. Nebuchadnezzar, King of Babylon, broke up the bronze pillars, the sea, and the bases of the Temple at Jerusalem, and removed the pieces to Babylon (a work of considerable difficulty,) and it follows that probably many of the bronze articles found by Sir H. Layard and others in the ruins of that city may have been made from the bronze of the Temple furniture.

A singular confirmation of the idea that the brass and copper of Scripture are bronze is given by Mr. Edwards in the *Edinburgh Philosophical Magazine*, 1850, where he describes certain relics found near Marazion or Marghazin, one of the oldest towns in Cornwall, leading to the conclusion that the Jews had smelting houses near the shore. The remnants of these smelting pits are still called by tradition Jews' houses, and the town itself is also called Market Jew, in addition to Marghazin, which means Market Mount; called so, no doubt, by the Jews, as the place where the metals were purchased and sold. Possibly the bronze alloy, the mixture of copper and tin, may have been cast here in ingots and shipped in that form; but this is conjecture.

The bronze of classical antiquity (Greek, *χαλκός* Latin, *æs*) consisted of copper, with an alloy of one or more of the following metals—tin, lead, silver, zinc; the quantity and character of the alloy changing with the changing times or different purposes. Among existing bronzes, copper varies from 67 to 95 parts. The Phœnicians who traded with the Egyptians would also bring the tin alloy to the Greeks and Romans. Homer calls the metal *Kassiteros* and this is equivalent to the Arab word *Kasdeer*, by which tin is known in the East; it is also called *Kastira* in Sanscrit. We are enabled from the analysis of coins to arrive at some results as to the admixture of the metals. It thus appears from their coins that the Greeks adhered to a mixture of copper and tin till 400 B. C., after which they used lead. Silver is rare in these coins.

The Romans used lead in their coins, but gradually reduced the quantity, till, under the Emperors Caligula, Nero, Vespasian and Domitian, they coined pure copper, but afterwards reverted to the mixture of lead.

This word χαλκός originally appears to have been the word for pure copper, and is so employed by Homer, who calls *ερυθρός* (red,) *αίθων* (glittering,) *φαεινός* (shining,) terms which will apply to pure copper or the bright alloys of bronze, such as the ancient mirrors were made of.

The old Greek poet describes the process of casting in almost similar terms to those in which it would be poetically described to-day, showing us that the processes then used and now were as nearly as possible alike, and proves the art of working the various substances to have been well understood at that remote period.

The passage referred to is in the Iliad of Homer, in the description of the manufacture of the shield of Achilles by the god Vulcan :

Thus having said, the Father of the Fires  
To the black labor of his forge retires.  
Soon as he bade them blow, the bellows turned  
Their own mouths ; and where the furnace burned  
Resounding breathed ; at once the blast expires,  
And twenty forges catch at once the fires,  
Just as the god directs ; now loud, now low,  
They raise a tempest or they gently blow,  
In hissing flames huge silver bars are rolled,  
And stubborn brass, and tin, and solid gold,  
Thus the broad shield complete, the artist crowned  
With his last hand, and poured the ocean round ;  
In living silver seemed the waves to roll,  
And beat the buckler's verge and bound the whole.

In this description of the casting, Homer uses the word *χαλκός* so that we can scarcely tell whether he means copper pure or alloyed. Further, it is more difficult when we read of the mythical Dactyles of Ida in Crete, or the Cyclops, being acquainted with the melting of *χαλκός* It is not, however, likely that the later Greek writers, who knew bronze

in its real sense, would have used the word *χαλκός*; without qualification to objects which they had seen, unless they meant it to be taken as bronze.

Pausanias speaks of an old statue he had seen made of separate pieces of metal fastened together with nails, and, using the same word, we understand him to mean bronze, as there exist very early figures of bronze thus made. We read also of the process called "sphyrelaton," being to hammer out the plates and fasten them together with nails. Pausanias also tells that "the Phœnicians pretended that Ulysses dedicated a statue of bronze to Neptune Hippius," but adds that "he does not give credit to the statement, as the art of fusing the metals and casting them in a mould was not then known." "In fact, the first who cast statues were Theodoros and Rhæcus, both natives of Samos."

It has been generally thought that their merit consisted in casting the statues with an inner core, which could afterward be removed, leaving the castings light, and, therefore, less costly. But this is open to question, as we have before seen from Assyrian bronzes having been found cast with an inner core of a date older than Theodoros and Rhæcus, and there is now in the British Museum an early Etruscan statuette from Sissa, on the Volturno, with a core of iron.

The Samians were very early noted for their skill in this branch of art, and before the foundation of Cyrene, B. C. 630, they made a bronze vase ornamented with griffins, supported on three colossal figures of bronze, for the Temple of Juno.

The art was known at a very remote period in Italy. Among the Etruscans bronze statues were common before the foundation of Rome, 750 B. C., and Romulus is said to have placed a statue of himself, crowned by Victory, in a four-horsed car of bronze, in the new city. Pliny states that "King Numa Pompilius, the immediate successor of Romulus, founded a fraternity of brass founders and bronze workers."

By the Romans a compound was used under the name of *oncalchum* or *auncalchum*," which appears to have possessed the composition and properties of brass.

A brazen bull is traditionally said to have been contrived by Pericles at Athens for Phalaris, tyrant of Agrigentum, 570 B. C. It had an opening in the side to admit the victims, and a fire was kindled underneath to roast them to death. The throat was so contrived as to make the groans of the victims resemble the roaring of a bull. The artist was made the first experiment, and the tyrant for whom it was made was roasted in it 549 B. C.

The oldest seat of bronze founding to any extent was the island of Delos, and next to that the island of Ægina. Between these two there existed a rivalry in the times of Myron and Polyclethus, of whom the former used the bronze of Delos, the latter that of Ægina. More celebrated than either was the bronze of Corinth, about which it is said "that when Lucius Mummius burnt Corinth, 146 B. C., all the metals in the city melted during the conflagration, and, running together, formed the valuable composition called Corinthian brass. This is exceedingly doubtful, but there may be a spice of truth in it, as long before this period the Corinthian artists had obtained great credit for their method of combining copper with gold and silver. Pliny says of it: "It consisted of gold, silver and copper, and was considered more precious than silver, and little less valuable than gold." There were three kinds of it, varying in colour from white to dark yellow.

Corinthian brass appears, for the most part, to have been used for the manufacture of drinking cups and ornamental utensils. The Syriac translation of the Bible says: "Hiram made the vessels for Solomon's Temple of Corinthian brass." Pumps were invented by Ctesibus, of Alexandria, 224 B. C., and were wholly or partially of cast brass or bronze. The most distinguished colossal statue of ancient time was the Co-

lossus of Rhodes, one of the seven wonders of the world. In the days of its prosperity the capital of the island of Rhodes, was adorned with over 3,000 statues, but this one exceeded them all. It was erected at the port of Rhodes, in honour of the sun, by Chares of Lindus, a disciple of Lysippus, 290 or 288 B. C., out of the spoils which Demetrius left behind him when he raised the siege of the city.

It is asserted to have spanned the entrance to the harbor of the island, and to have admitted the passage of vessels in full sail between its widespread legs. Its height was about 105 feet, the time taken for its construction was twelve years, and the cost amounted to 300 talents—about £70,000.

This stupendous work was thrown down by an earthquake about 224 B. C., and for nearly nine centuries lay in ruins on the ground. Pliay says: "It was a wonder to behold. Few persons could embrace the thumbs, and the fingers were longer than the bodies of most statues. Through the fractures were seen large cavities, into which large stones had been placed to balance it while standing." After the fall of the Roman Empire, when the island of Rhodes was conquered by the general-in-chief of the Caliph Othman, he sold the metal lying on the ground, weighing 720,900 pounds, to a Jew, who loaded 980 camels in transporting it to Alexandria.

A statue of Zeus, executed at Tarentum, 326 B. C., by Lysippus (the master of the maker of the Colossus of Rhodes,) was 40 cubits high, and though it could be moved by a touch of the hand, yet resisted the force of storms by a support at the point of greatest stress.

On the number of bronze statues in those ancient times often depended the wealth of a State, cities such as Athens and Delphos having some thousands each.

Of the vast number made by the ancient sculptors nothing but a few fragments remain; but if the colossal head of Venus in the British Museum be taken as a typical example,

it will show with what thinness and fineness the figures were cast. Or, again, as an instance of the quality of Greek bronze, the figure of Siris, also in the British Museum, on which a plate of bronze will be seen beaten out till it reaches the thinness of note paper.

But if the larger works fail, there is an abundance of statuettes, candelabra, mirrors, cestæ and vessels of all kinds, Greek, Roman and Etruscan.

Works in relief *ῥιπύρα* whether beaten out, chased or cast, are comparatively rare, though this branch of the art was practised by the greatest sculptors. The Temple of Athene, Chalkoites, in Sparta, had its walls covered with bronze reliefs, but this was an exception to the general rule adopted in the temple decoration.

The greater number of mirrors that exist are Etruscan; a few may be Roman and Greek. But the general rule of their being Etruscan reminds us of the reputation the Etruscans had for the production of works in bronze—not, perhaps, of high art, but what may be correctly termed "industry art."

They were also celebrated for modelling in clay, and this, according to Pliny, "was the stage of art which immediately preceded casting in bronze, and went hand in hand with it."

The mirrors give the finest examples of patina which we find; in the alloy there seems to have been mixed a considerable quantity of silver in order to obtain a highly reflecting surface.

For articles of furniture the Romans employed Greek artists and workmen. In bronze were made the *sella*, square seats carried about at Roman entertainments; also footstools.

In the excavations made at Pompeii and Herculaneum, various works of bronze are found, showing the general adaptation made of bronze by the Romans.

In the theatre are *bissellii*, or chairs of state, made of bronze and ornamented with silver, for persons of distinction and municipal authorities.

In the tepidarium of the baths are bronze benches, 6 feet by 1 foot, supported by four legs, terminating in the cloven hoofs of the cow, and ornamented at the upper end with heads of the same animal. In the same baths, a brazier of bronze, 7 feet 6 inches by 2 feet 6 inches, supported on cast bronze legs, representing winged sphinxes, terminating in lions' paws. In one of the shops a bronze urn, evidently used for making warm decoctions, and similar to the muller now in use; a bronze mould for making pastry and a pair of scales—articles of these kinds in addition to the large number of statues and ornamental articles.

In all the bronzes from Pompeii and Herculaneum, the blue color of the patina is very brilliant, although in other bronzes it is more generally some shade of green. This arises from their lying so long in the earth. A difference of soil probably makes a different patina, but something is also due to varieties in the alloy.

Greek seats (*thronoi*) are sculptured on the Parthenon frieze, and sumptuous Greek furniture during the last two centuries B. C. was made of bronze, damascened with gold and silver. It does not appear that the process of gilding bronze was carried to any extent in classical times, except in the production of finger rings, of which a considerable number remain.

During the excavations made in the palace of Tiberius at Capri, the bronze cock of a reservoir was discovered. As there were conduits of water, and pipes necessarily conveying it to the baths, the knowledge of cock making must have been known and practised, of which this discovery gives a practical proof.

By the time of the Byzantine Empire the power of modelling seems to have declined, and a taste for glittering appearance took its place, and hence the process of ornamenting bronze with reliefs was superseded by inlaying it with silver and other materials.

The art of bronze casting, which had thus sunk during the Byzantine period, was revived with great vigour in Germany in the eleventh century, and there used for the ornamentation of gates and doors of public buildings; notable instances being the bronze gates of the Cathedral of Hildesheim, A. D. 1015, and the column decorated with reliefs on the model of the Trajan Column at Rome, A. D. 1022.

In the twelfth century the art spread southward to Italy, and was at first taken up energetically in lower Italy. But though many interesting works of this date exist—and also from the thirteenth and fourteenth centuries—it was not until the fifteenth century that the art obtained its full mastery. Then the revival of classical art became a real revival under the Florentine artists. Andrea Pisano had made a bronze gate in the gothic style for the Baptistry of St. John at Florence, 1330 A. D., and in 1401 A. D. the Florentine Council decided to erect another. A competition of artists for the work resulted in the selection of Lorenzo Ghiberti. The contract was entered into with him and his father November 23, 1403 A. D., and the gates completed and fixed April 24, 1424 A. D. They are truly a magnificent piece of art workmanship, remarkable in several respects as specimens of figure and ornamental modelling of the greatest possible excellence, and which have formed the models in this style for artists of all the following years, and of metal casting which cannot be surpassed.

The subjects of the 28 panels of the gates are from the life of Christ.

On January 2, 1424 A. D., Ghiberti received the commission for the second pair of gates for the same building, and these, containing subjects from the Old Testament, were completed and fixed June 16, 1452 A. D. The Martinengo Tomb in Brescia, erected about the year 1530 A. D. to Marcantonio Martinengo, though by what artist is unknown, is a fine specimen of this period. The *bas reliefs* of bronze are



subjects from profane history, and a triumphant procession in bronze adorns the principal frieze.

This development of taste extended to Naples, Rome, Milan and Venice. Even Raphael designed ornament for the moulders of purest taste and most exquisite fancy. In the sixteenth century it is found carried on with extraordinary skill in Germany at Nuremberg, Augsburg, Munich and Coburg.

In France also we find the art gaining importance, as may be seen from the *bas reliefs* in the Chateau d'Anet, the residence of Diana of Poitiers, which was restored under Philibert de Lorme, 1547-8 A. D., and the monument erected to the memory of Charles VIII, 1499 A. D., around which were figures of the Virtues, executed in gilt bronze. Since then the art of sculpture in bronze may be said to have reverted to nearly its original limits, namely, the production of statues and groups in the round.

In 1699 a bronze equestrian statue of Louis XIV was erected in the Place Vendome, Paris. This was of gigantic size, containing 60,000 pounds of bronze. It was demolished during one of the revolutions, 1792 A. D.

The wood furniture during the Renaissance period was decorated and inlaid with brass and bronze. In the eighteenth century we find Ciseleurs mentioned as makers of such brass edgings for furniture.

Perhaps the grandest bronze work of modern times is the colossal statue of Bavaria, completed and inaugurated at Munich, Oct. 3, 1850. This statue was, at the suggestion of King Ludwig, designed by Schwanthaler, the sculptor, and his friend, Lazarini, who modelled the figure under his direction. For the casting it was necessary to melt 20 tons of bronze, a most perilous labour. To give some tangible idea of the size of the figure, in the head or upper part of the bust twenty-five men have found room, in the central part of the figure thirty-five to 40 persons could dine, and the space of

ground covered by the lower section is enormous in proportion. The figure of this colossal maiden, with the lion by her side, is 54 feet in height—nearly twice the height of the equestrian statue of Wellington, opposite Hyde Park corner, London, England.

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AN OLD BELL.



**A** HANDSOME new Church has just been completed at St. Ours, on the Richelieu, but the old Temple, still standing, possesses a venerable relic. The first Church was originally built on the banks of the St. Lawrence, at a place called the Grand St. Ours. Toward 1749, the ecclesiastical authorities determined to rebuild the Church on the Richelieu, where St. Ours now stands, and the bell of the old church was set up there. This bell, imported from France, bears the date of 1680. The Church was opened to worship in 1755, under the direction of the first curé of St. Ours, M. D'Youville, son of Madame D'Youville, founder of the order of Grey Nuns, at Montreal. The second bell at St. Ours, dates from 1811 and had for sponsors Roch de St. Ours and his wife, Marguerite Murray.

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SOME VAGRANT NOTES ON BOOKS.

BY HENRY MOTT.



**M**R. Joseph Sabin, the well-known bibliophile, second-hand bookseller and publisher of No. 64 Nassau Street, New York, died on 5th June ult., and it seemed that a few random thoughts suggested by this event would not be out of place.

When in New York, the store in Nassau Street was a favourite house of call with me, and I venture to lay before you some notes about books, many of them arising out of such visits.

Before doing this, however, a few preparatory words may be necessary.

There has been no name on this continent more broadly associated with American literature than Mr. Sabin. For about two years his health had been gradually failing. His physicians told him that his ailment was the result of overwork, and prescribed absolute suspension from labour; but as soon as he felt better he entered with renewed zeal upon the completion of his "Dictionary of Books relating to America," his great life-work, as for years he was in the habit of designating it, and regarding which, he was, in fact, so enthusiastic that he often said his only desire was to live long enough to finish it. This longing of his life,—and with him it was literally a ruling passion strong in death—was not destined, however, to be gratified, and the loss to bibliography will be most seriously felt, as it is doubtful if any one can be found who will complete the volumes with the same spirit of untiring enthusiasm and pains-taking fidelity with which he prosecuted the work.

Mr. Sabin, was born in England, on December 9th, 1821. His father was a mechanic, and only able to give him the opportunities of a limited common school education. At the age of 16, he was apprenticed to Mr. Chas. Richardi, the bookseller and publisher at Oxford. The indenture of apprenticeship hung for years in a frame over Mr. Sabin's desk at the store in Nassau Street. He served the full term of his apprenticeship, and then opened a similar establishment of his own at Oxford. This, however, did not prove successful. In 1843, he came to the United States, and "went west," and buying a farm in Iowa settled there; but he soon abandoned agricultural pursuits and moved to Philadelphia where he found employment as salesman in a publishing house. After remaining there for several years he returned to New York, and entered the employ of Messrs. Bangs & Co., the book auctioneers, which he soon supplemented by entering upon the same line of business on his own account, at the corner of Broadway and Fourth Street. He did not long continue in this avocation; in 1865, having bought out

Mr. Michael Noonan, he went into the book and print business at No. 84 Nassau Street, he remained here about four years, and then removed to the well-known No. 64 in the same street, where he continued in business up to the time of his death, having taken in two of his sons as partners, two other sons being proprietors of a similar establishment in London.

There have been few book and print stores that have enjoyed more extensive patronage. It has been the great Mecca of literary men in search, more especially, of books of quaint and forgotten lore connected with the literature of America. The collection of prints is a rare museum of antique curiosities in this line.

The cataloguing of libraries was a speciality with Mr. Sabin, and few were endowed with more ample facilities for doing such work well. As stated, however, the great book of his life has been his, "Dictionary of Books relating to America." It is a most important and exhaustive work, and will give to him lasting fame as a compiler. The work at the time of his death was carried down to the letter P., and embraces thirteen large 8vo volumes of about 600 pages each. He commenced this work about 25 years ago, and was in the habit of rising at 4 o'clock in the morning, and working several hours before entering upon his other daily duties. He has left a large mass of memoranda, which, it may be hoped will render the task of completing the work comparatively easy. It was this incessant labour, as already intimated, that finally undermined his health.

He gave great attention to the reprint of rare American works, and was also the publisher of "Sabin and Son's American Biblioplist, a Literary Register and Monthly Catalogue of Old and New Books and Repository of Notes and Queries."

He was also a frequent contributor to the *American Pub-*

*lisher's Circular, the Rechabite Magazine, and Temperance Advocate.* I may add that next to his devotion to his "Dictionary," was his devotion to the cause of Temperance. He and Father Mathew, were most warmly attached friends. A source of great personal pride to him was the exhibition of a silver medal presented to him by Father Mathew, and a temperance pledge signed by the Apostle of Temperance.

He was a member of the New York and Long Island Historical Societies, and of the American Geographical Society.

His life was one of unobtrusive labour and usefulness, and his genial countenance will long be missed at the old Nassau Street store, where during twelve years it was so well and familiarly known by the leading literary men.

I am naturally led to a glance at the trade in second-hand books. The second-hand book-dealer is almost invariably a man of more than ordinary intelligence, a man who has a wide and comprehensive knowledge of English literature, more especially a thorough acquaintance with the market value of not only standard works, but of primers and dictionaries and the volumes of common-place and even obscure authors. He can tell to a cent what any book will sell for, if it will sell at all; and he knows the tastes and fancies of his customers so thoroughly that he can calculate to a nicety who will buy it and what they will pay for it. On a certain street we call to mind, stands a low building, which bears a mottled and out-of-repair aspect, that is heightened by dusty and broken window-panes, and several home-made signs.

Great sprawling letters tell that the "Highest Prices are paid here for Old Books," and across the window lettered in ink upon brown paper is the significant word

"SHAKESPEARE."

A passer-by, recently, thinking that possibly within this tumble-down exterior might be found some literary treasure—some pearl that had been cast before swine—went in at the low, narrow, doorway and looked about him. The in-

terior was not a bit more attractive. On all sides were rough shelves upon which were ranged books of all sizes and in all stages of dilapidation, or of preservation,—while upon a table in front of the door lay a pile of torn and dirty novels of the ten-cent library variety, and just above them several dozens of old magazines resting upon a swinging bookshelf. The floor was not too clean, and from the rear of this unpretentious sale-room came the odour of a savoury stew.

In the centre of the apartment stood the proprietor, a small man of fifty or thereabouts, with an unshaven face, and attired in clothes remarkable neither for their cleanness nor their neatness. He smiled benignly as his visitor entered, and eyed him from head to foot, evidently endeavouring to divine the object of his call—whether he came as an intending purchaser, or whether to offer his library for sale at an unprofitable figure.

“Good morning, Sir,” ventured the dealer. “Anything I can do for you to-day Sir?”

The visitor made no reply for a minute or two, but gazed about him inquiringly, hoping that his eyes might fall on some literary treasure that might be bought for a song. But, alas, no such volumes met his searching glance, and he answered his questioner with a query.

“Have you anything in the way of English Classics, well preserved?”—“Ah, no, Sir,” replied the man, as he drew a packet of tobacco from his pocket and placed a good-sized pinch in his mouth, “this is no place to find such as that.” People seldom want anything of real merit, I couldn’t sell a copy of the *Tatler* at any price. My customers wouldn’t take it if you’d give it to them. This is what they buy,” and he picked up a paper copy, dirty and with torn edges, of “*The One-Eyed Scalper, or the Dark Deed Done in Deadly Gulch.*” “Yes,” he continued, “that’s the trash they want, they prefer it to magazines that you would revel in. I can sell all the novels I can buy, but second-hand magazines I can’t get rid of at any price.”

"Heaven knows what the world is coming to. The people are not only ignorant, but they are villainous. I used to be of a credulous nature. I believed all that was told me. I had some confidence in humanity, but it is all gone now. Several times I have paid big prices for books one day, and on the day following found that they had been stolen, and I had to give them up and lose my advance. A year ago a well dressed young lady made a fool of me. She came with a copy of Thiers, French Revolution vol. 1. I told her it would be worth nothing without the other volume. She said that she had it at home and would bring it, so, I took her at her word, and bought the one she offered. Vol. 11 never came."

Let us pay a visit to a more extensive second-hand shop which I have in my "mind's eye;" it is right in the heart of the business life of a great city. It is a narrow, dark apartment, the shelves around being crowded with volumes. Also, upon tables up the middle of the store books were arranged with systematic precision. A quaint air hung about the place; it seemed—with its musty tomes, some more than a century old,—a relic of the past dropped amid the bustling life of the present. The dealer, though lacking the originality of idea on the subject of men and their ways possessed by our last tradesman, is more representative of his class, being well acquainted with the details of his business, having an admirable knowledge of books and their values and understanding the necessity of keeping posted as to the movements of dealers the world over.

"Yes," said he, "we are required to pay much more attention to our business than the dealers in new books. They must keep their eyes on the present publishers, but we must also know all about books published centuries ago; must know what are now in existence, what are, and what are not plentiful. We must watch every chance for buying up, and must never miss an opportunity of selling, to advantage."

"How do you obtain most of your books?" was asked.

"Well, we advertise to buy all second-hand volumes at the highest rates, and we offer to make estimates. Occasionally we get answers from people who have had books lying away in their garrets for years. Especially in houses in the old part of the city, we frequently pick up rare old books in this way—sometimes valuable works in American history.

About six months ago, we got some fine antiques in that way. There was a young gentleman living in the house where his grandfather used to live. This old gentleman had some old books, and as the young man wanted to sell the house, he wanted to clean out what he supposed to be trash. He was just about selling it for waste paper, but he sent for us, and we found that some of the volumes were really valuable. Here, for instance is one of them, it is a copy of the first edition of *Josephus*, published in 1609. Sometimes books are picked up in this way that from their scarcity, are worth \$50 to \$100 each."

"You spoke of books of American history," suggested the visitor, "is there much demand for that class of literature?"

"Oh, yes, *Americana* is the rage just now. You will remember the marvellous prices paid in New York, not long ago, for the old books and papers of the Brinley collection."

"Does age alone give a book value?"

"Not always. Rarity is the chief consideration. For instance, here is a book which a few years ago sold for \$1.50. It is *Ford's History of Illinois*, published in 1854. It was suppressed on account of certain disloyal passages, and has become very rare, only comparatively few being in existence. They sell now for \$8.

"Then again, the imprint has much to do with the value. A book printed by Bradford, one of the first American printers, in 1698, was bought in New Jersey not long ago for ten cents, and was sold the other day for \$1.50.

There is also a great interest in books relating to the



Rebellion. Histories of the war, &c ; books printed in the South during that period bring good prices, because they are not plentiful. Works on the American Indians are also in good demand."

"Do you often get one volume of a work and not the other?"

"Yes, of course we don't pay much for the first, because we may wait for years before we get the second, but we can afford to pay well for vol. two."

Taking a volume with rough edges down from a shelf, the dealer said, "That adds to the price. Books with untrimmed leaves bring much more than those in which the leaves are cut down. Rare old classics are sought for, and even the large publishing houses buy them. Well-preserved editions of the *Spectator*, *Guardian* and *Tatler* bring good prices. Among books that are desired are works on manufacturing subjects."

The dealer went on to say that books were sometimes secured that when sent abroad brought almost fabulous prices. These generally were books that had been brought to this country by emigrants.

Sometimes they were sold by poor foreigners to rag dealers and so came into the hands of the second-hand book men. Speaking of the business done by corner bookstalls, he said that this was gradually losing ground, and in a few years they would be but memories.

"Who buy your books?" the visitor asked.

"We publish a catalogue at intervals, and this we send to every library in the country. It contains a descriptive list of all the odd, curious and rare volumes that we have, and should they want any of them, they know where to send."

"Are there many collectors in your city?"

"Not nearly so many as there used to be. The lovers of old books seem to be dying off; but there are a few who still come and always have an eye for the queer and rare. One is very enthusiastic on the subject; he comes almost every

day, and if we have nothing for him he is dissatisfied. He has a whole houseful of books now, and a great many more than he wants, I am sure. Another customer buys innumerable books, and I am told that he has package upon package at his home that he has never opened.

The really earnest collector is always looking about among the second-hand shops, while the ordinary collector goes to some publishing house and asks for certain books that he may have heard of, and wishes to buy. It is from the second-hand dealer alone that many books can be obtained, such as important reports of societies &c."

"Here is a book of which you might not find another copy in the city, an English and Arabic Dictionary worth \$15. Then we have valuable works on architecture, medicine, law, &c. Of course, to secure these we must buy an immense quantity of stuff that we have to sell for a mere song. We sell some of the works mentioned to libraries, and we have a large trade with dealers all over the country."

As the visitor was about to wish the dealer good morning, thanking him for the interview, as a parting pleasure, a volume by Eusebius was brought forth, published in 1659, printed in both Greek and Latin and valued at only ten dollars.

I am desirous of not growing tedious, but nevertheless I cannot refrain from saying a few words about some modern books.

From the tablet brought down from the mountain, through the covenant in the ark that the seed of Abraham preserved with such reverence, books have built up civilization and led on to learning till men are little below the gods, and art and science are wrought to a perfection that emulates the handicraft of the Master of the Universe.

But what kind of books have done this wonderful work? It is not the novel, nor the magazine or current literature of any age that has enabled that era to advance. Each era has built its literary structure out of the material created by its

predecessors. Most of the learning of the present generation was bequeathed by an ancestry which likewise built on foundations left by those who had gone before them. The work of our contemporary authors serves us for diversion and amusement, but will hardly go down as a profitable legacy to the next generation. The new-bookmakers are so busy now, and they crowd upon us volume after volume in such rapid succession that we find but little time to glean the rich harvest that the reapers have left behind, in their haste to get their crops to the market. Millions of people read quite complacently works whose literary merits are so small that they are intolerable to any who have the least sense of style. Yet this defect does not affect their popularity. Some men write with the end of a broomstick, some with a gold pen, some with an etcher's needle. The broomstick man is perhaps the most popular. Then people read books just as they look at a picture or go to a play, "for the story." That is all they care about. The story read, they dismiss it from their thoughts. Over-much reading and promiscuous reading are great hindrances to the formation of a critical habit. The critic does not gulp, he tastes; he discriminates between Hamburg sherry and the true wines of Xeres by the aid of a wine-glass, not a tumbler. But the omnivorous reader is like unto one who takes his draught from a quart pot. Fancy a city dinner at which pea soup, tripe and onions, fried fish, roast pork and stuffing, raw onions, and such viands were served up side by side with the most delicate preparation; where thick-sugared stout was handed round with *Johannisberg*, and *Piper tres sec*; fancy the guests indiscriminately taking one after the other, without discernment, enjoying one quite as much as the other, with a leaning in the direction of roast pork and stout—that, if you please, is a fair example of the intellectual meal taken continually by the all-devouring reader. He reads everything; he reads whatever is set before him; he reads without consi-

deration ; he reads without criticism ; all styles are alike to him ; he is never greatly delighted, and seldom offended.

I am scarcely a lover of biography, but I feel sure that I should enjoy more of this literature if it were better in its kind. Without being prepared to define the ideal biography, I have arrived at some notion of what the best biography is not. In the first place, it is not too long ; most lives are too long by half, or at least one-third. Biographers appear to grow too fond of their labour, and put in much of what were better left out. No incident or trait is too trivial to insert which in any real sense helps to reveal the man, but much of what goes to swell the pages of the ordinary biography is there, only because the writer of it has fancied that, his subject being a great or notable person, nothing that he said or did could be without interest. Biographers are often without the sense of proportion ; they seem impelled by a mistaken conscientiousness to put in everything they know, rather than to sift and resift their material until what remains is of real value. Lives of literary men are, perhaps, least interesting, for the reason that we already have the best of them in their writings ; but there are, of course, exceptional cases of marked individualities, where a knowledge of the man's private life is a most useful supplement to the commentary upon his written utterances. Lives of Shelley and Byron are numerous, but we hardly feel that we know everything about them yet. I often have a feeling, when reading memoirs, that the unfortunate subject of enquiry and discussion would decidedly object to such dissection of his private self, if he could have a voice in the matter, and it hardly seems an excuse for taking the liberty with him that he cannot possibly prevent our doing so. It is a consolation for being an entire nonentity that the world will not be concerned to take possession of and pull one to pieces after one is gone, to ascertain what manner of man one was. Our curiosity may be natural, but I am not sure it is quite justifiable to know all

that can be known about dead notabilities. I suppose there will be a Life of George Eliot forthcoming ; but I, for myself, am willing to forego all the information it may contain, for I am certain that she would have intensely disliked such personal scrutiny. If biographies must be written, however, they ought to be done by competent hands, for a superficial account of a man or woman is sure to be an untrue one. The friend chosen to write the life of another because of his superior opportunities for knowing his subject intimately may in reality know less of him than another man who, with slightest familiar acquaintances, has had a keener insight into the character before him.

The great authors of every age, whether in the field of poetry, prose, fact or fiction, have built their fame out of material which others had overlooked.

*Cervantes* sought the unwritten phase of chivalry ; *De Foe* took a trip to an unknown island ; *Shakespeare* wrought his magic on neglected incidents in English and Continental history ; *Homer* wove lost legends into everlasting verse ; *Josephus* gathered fading traditionary lore into a monumental pile that will turn up to light the path of endless ages yet to come.

Newton and Davy and Tyndall took up the burden when Ptolemy and Galileo and Copernicus and others had laid it down.

Beecher and Spurgeon borrow all that is good from Paul and the other apostles.

Garnet Wolseley and Grant and Lee and Sherman fought after the manner of the Cæsars and Alexanders and Napoleons whose genius has been pictured to them in books written in the days when they won their glory.

The best books to read for information are such as were written in the times and among the events, which they relate. We thus get a picture painted from sight, while in compilation we have caricatures cut from hear-say.

Here let me enter my protest against the last two literary

abominations ; Mr. Jefferson Davis has promised, if his life is spared, to write a history of the United States from his own stand-point. "A proper and truthful" history, to take the place of those now used in public schools in the South, and he proposes to prepare a narrative which "it will not pain the pupils to recite."

The second monstrosity against which I desire to record my dissent is the "popularizing" the novels of Sir Walter Scott, publishing them at 1d per volume ; Miss Braddon, (who has forfeited her place amongst modern writers of fiction, by disloyalty to literature,) has undertaken to eliminate, or tone down, or translate the Scotticisms for the benefit of conservative English readers. It is a desecration of a memory that is fragrant with the freshest and richest crowns that literature can bestow, and an indignant public should protest against any such indecent mutilation of one of the grandest records in literature.

The habit of studying old books is, I fear, dying out. There is too much that is fresh and fair and foolish to occupy our minds, and we are losing our grip on the substantial past to grasp at the foolish of the fashionable present.

The shelves of every modern bookstore are cleared of "obsolete trash" periodically to make way for much of "absolute trash," and brand-new bright bottled juice is put in the place of the "old crusted" wine, which finds its way eventually to some second-hand concern, where it lingers at a dingy desk and feeds the epicure who has learned to love it for its flavour and delicate bouquet.

Ah! but the *gourmand* with the *bon bouche* is to be envied, and the mouldy pages are coveted by those of us who would sip the vintage that makes the mind leap with exhilaration.

If every school-house and every family library could but become an old book-store, instead of a refuge for "That Hog of Mine" and "The Science of Love made Easy," how cheap would be the education of youth and how rich might be the

reward of the diligence that is now wasted on useless and profitless reading.

In conclusion I will add that it seems to me, profitable reading should leave some such sentiments in the mind as are expressed in these lines :—

Quaint poems of a far-off age,  
 In binding dark and old,  
 But strewn o'er each discoloured page,  
 Sweet fancies, sweetly told,

That seem, as though a child were I,  
 To take me by the hand,  
 And lead me through the years gone by,  
 Back to a much-loved land.

Where sunshine falls in golden bars,  
 Through woodland labyrinths,  
 And frail white wind-flowers lie like stars,  
 'Mid purple hyacinths.

Now, though I softly close the book,  
 The vision with me stays ;  
 On green young leaves and rippling brook,  
 On flowers and sky, I gaze.

O poet ! dead and gone thou art ;  
 But this, thy magic lore,  
 Doth enter in the reader's heart,  
 And live there evermore.

O poet ! that did'st sing so sweet,  
 To gladden weary men,  
 Perchance some day we twain shall meet,  
 And I may thank thee then.

Since the foregoing lines were written, Sir John Lubbock made a capital scientific point against books that would be better burnt, in his address to the medical students of King's College Hospital. Such malarious volumes, which the banker-entomologist did not hesitate to term deadly poison, contained, said Sir John, the bacteria of mental disease, as certain in their operations as any of the infusions of the physiologist! The warning was most timely, and lends force to some of the statements made at the recent Œcumenical Con-

ference as to the insidious working of pernicious literature. It is to be hoped thoughtless devourers of garbage in disguise may take alarm at the dangerous bacteria the learned member for London University held up *in terrorem*. Nor need this be any deprivation. For there still remain, worthy survivors of the fittest, "books, dear books," that—"St. Lubbock" would be the first to admit—

Have been, and are, comforts, morn and night,  
Adversity, prosperity, at home,  
Abroad, health, sickness—good or ill report,  
The same firm friends; the same refreshment rich,  
And source of consolation.



### THE OLD SEMINARY CLOCK.

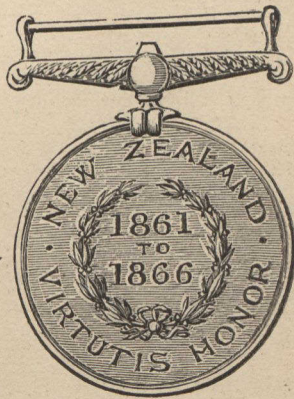
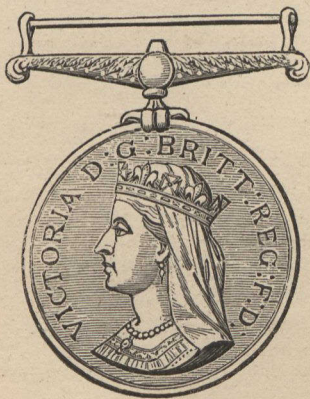


NE HUNDRED and fifty years old! Before 1701, the belfry of the Seminary had a clock, the remains of which were found in a lumber room in 1770. M. de Belmont, Superior of the house, from 1701 to 1732, imported the present clock from France at the cost of 800 francs, equivalent to \$800 of our present money. From that date, military, civil and religious time was regulated by its needles. In 1751, it got out of order for the first time and though repairs were attempted by its guardian M. Guillon, it was until the administration of M. Montgolfier (1759-1789) that it was completely renovated. This brings us to the beginning of our century, when the Anglican Church, hard by, on the actual site of the Crystal Block, Notre Dame street, set up a clock, which could be seen from afar, but it did not indicate the hour! So the old seminary clock still retained its monopoly for official time, and is not likely to be replaced until we get the promised horloge on the Post Office. For many interesting particulars on this historic clock and on clock-making in Canada from the early days, the reader is referred to an interesting paper by Mr. Benjamin Sulte, in the October number of *La Revue Canadienne*.





THE AUSTRALIAN "DUMP."



THE NEW ZEALAND MEDAL.