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JOURNAL

OF THE

SOCIETY OF ARTS

AND

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CONTENTS.

Notices:—Conversazione.—Examinations.—Applied Art Section.—Indian Section.—	
Foreign and Colonial Section	627
Applied Art Section (—Pewter, by J. Starkie Gardner.—Discussion	627
Notes on Books	648
Meetings for the Ensuing Week	648

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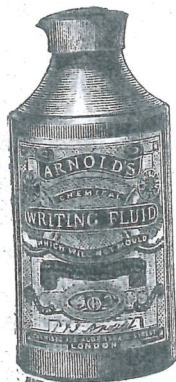
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FRIDAY, JUNE 1, 1894.

All communications for the Society should be addressed to the Secretary, John-street, Adelphi, London, W.C.

Notices.**CONVERSAZIONE.**

The Society's *conversazione* will take place at the Imperial Institute, South Kensington (by permission of the Council of the Institute), on Friday evening, June 22, from 9 to 12 p.m.

The reception will be held from 9 to 10 p.m., in the vestibule, by Sir Richard Webster, G.C.M.G., Q.C., M.P., Chairman; Sir Frederick Bramwell, Bart., D.C.L., F.R.S., Deputy-Chairman, and the members of the Council of the Society.

Each member will receive a card for himself, which will not be transferable, and a card for a lady. A limited number of tickets will be sold to members of the Society, for the use of their friends, at a charge of five shillings each, if purchased before Saturday, 16th June.

Further particulars as to the arrangements will be given in future numbers of the *Journal*.

EXAMINATIONS, MARCH, 1894.

The results are nearly ready and will be issued in a few days to the various centres of examination, and copies of the list sent for distribution to the successful candidates.

APPLIED ART SECTION.

Tuesday, May 22, 1894; Sir HENRY DOULTON in the chair. The paper read was "Decorative Art in connection with Elementary Education." By SELWYN IMAGE, M.A.

The paper and discussion will be printed in a future number of the *Journal*.

INDIAN SECTION.

Thursday, May 24, 1894; Sir ALEXANDER WILSON in the chair. The paper read was

"The Commerce of Siam in relation to the Trade of the British Empire." By C. S. LECKIE, of Bangkok.

The paper and discussion will be printed in a future number of the *Journal*.

FOREIGN AND COLONIAL SECTION.

Friday, May 25, 1894; FRANCIS COBB, Treasurer of the Society, in the chair. The paper read was "The Industries and Prospective Sources of Wealth in New South Wales." By the Hon. J. INGLIS, M.L.A.

Tuesday, May 29, 1894; SIR CHARLES M. KENNEDY, K.C.M.G., C.B., Vice-President of the Society, in the chair. The paper read was "Black and White in Afrikanderland." By W. A. WILLS.

The papers and discussions will be printed in future numbers of the *Journal*.

Proceedings of the Society.**APPLIED ART SECTION.**

Tuesday, May 8, 1894; Professor W. C. ROBERTS-AUSTEN, C.B., F.R.S., member of the Council, in the chair.

The paper read was—

PEWTER.

BY J. STARKIE GARDNER.

We should scarcely expect to find in these days of art revivals and competition any field practically unoccupied. Yet, though the venerable craft of the pewterer can hardly be called extinct, it is from an art standpoint distinctly moribund. This neglect is the more remarkable because there is no sort of reason why it should be so, and any intelligent revival would have brilliant prospects of success. There is still a Pewterers' Company, which might be induced to recollect the purposes for which it exists, and there yet survive some firms with trained workmen who are adepts at manipulating the metal. For several centuries the pewter-worker was the potter of the community, the *potier d'estain*, as the French called him (one cannot help suspecting some forgotten connection between the terms potter and pewter), and pewter held the whole field since occupied by crockery. Even half a century since the pewterers' list was equal in the number and variety of its items to a modern earthenware potters' Staffordshire list, and

contained articles, the very recollection of whose names and purposes are forgotten; but now it has dwindled to the meagre thing I hold in my hand, which, small as it is, contains much that is practically obsolete.

The reasons that led to the disuse of pewter were primarily the introduction of cheap pottery and glass, together with zinc, block tin, and japanned iron, which are very much cheaper. Secondly, the discovery of more silvery and harder alloys, such as Britannia metal, German silver, nickel silver, &c., more fit for electro-plating, and very much more showy. But these could not so nearly have annihilated the trade, had not the pewter workers, who were mostly old-fashioned and wealthy firms, played into the hands of their competitors by their supineness, and their inveterate habit of making shift with what they had by them, rather than incur any outlay for new patterns. These combined causes were supplemented by the general collapse of good taste that overtook the country, when the era of science first diverted the thoughts and acts of the small leaven of intellectual and cultured workers in the community, from the channels of art, which had been one of their chief outlets, to science and mechanics, which for many years were all-absorbing. These together sufficed to banish pewter so effectually from our households, that until quite lately, the few who had kept their stores of pewter did not venture to let them see the light of day; while the many had sent them to the melting-pot as useless lumber.

There is, however, absolutely nothing in all this to discourage the pewterer, since similar reasons led to the disuse of oak-panelling, casement windows, Oriental carpets, stamped leather, and wrought metal work. Let him take courage, for we look on art differently from our immediate predecessors; and, happy omen, I am told by a friend, whom I see here to-night, that an octagon beaded pewter dinner set sold in a country sale, last March, for £59, while a plain one fetched £22. Keen collectors are already in the field, and old pewter will become a fashion.

The working of pewter as an art craft in France dates back to the time when Jules Bratteau and others commenced the production of most beautiful plaques of pewter for cabinet work and *bas-reliefs*, as well as coffee sets, canisters, flacons, and other vessels, both of original design, as well as copies of the great works of the past. In Germany also, most successful work has been

produced, including engraved work, and etching with the effect of niello. American enterprise, though not catching on to pewter itself, is expending large sums to place a metal with not dissimilar artistic capabilities—aluminium—on the market, an aluminium factory on a gigantic scale being one of the group that is to utilise Niagara. I think, however, that pewter as a metal that can be worked without the need of such large establishments and machinery, with its deeply-rooted traditions and harmonies, should easily beat newer, and in some respects, more meretricious alloys out of the field. To digress for a moment, how pleasant it would be when we visit say Killarney or the Hebrides, to be able to bring back a quaint piece of pewter engraved or embossed on the spot with old celtic patterns, as a memento of our visit, and what incalculable good such industries would bring to the inhabitants of lands where winter idleness and the verge of starvation are the present conditions of existence. Vessels in the rough might be produced at common centres, and good people would set the thing going if they knew how, and others with knowledge and capacity would co-operate in such work if haply they came together.

Pewter, by colour a dark subdued oxidised silver, is restful and soft to the eye and smooth to the touch, without the dead and yielding look of lead, or the crude, white, meretricious look of pure tin. It is essentially a compromise and does not pretend to rival silver; nor are the most beautiful works in it to be compared with those gems of last century silver work, the pots and castors which fetch three or four times their weight in gold. It stands in fact towards silver exactly as pale polished brass does to gold, or grey earthenware to fine porcelain. It is an easy, middling, metal, the sentiment of whose sober subdued lustre captivates many who could quite well afford the display of gold and silver plate, if disposed that way.

There is unfortunately, in our language at least, no text-book upon pewter to refer to, and I must therefore begin the story at the beginning, by stating that like its sisters, bronze and brass, pewter is an alloy or mixture of two or more metals. These should be tin and lead, but pewters of a hard kind are made with copper or antimony as a substitute for the lead, or perhaps with small proportions of bismuth, zinc, or silver. The proportions are so variable that it is scarcely possible to exclude any in which

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tin forms the bulk, where the result is a darkish silvery soft metal, fusible at a low temperature, inexpensive, and eminently adapted to a variety of household and artistic purposes.

In the presence of the distinguished metallurgist who so fortunately for us this evening occupies the chair, I feel absolved from all necessity of entering into the scientific side of the subject. He is able to, and no doubt will tell us, which are the proper alloys and why some are better than others, and which were chiefly used in the past, for he has, I believe, analysed many of the specimens in the South Kensington Museum, which are lent to the Society this evening. I will merely say that I imagine tin brings almost everything into the partnership, a pure white lustre, lightness, resonance, and the quality of not appreciably oxidising in common air. The lead, no doubt, corrects the want of tenacity and brittleness inherent to tin, gives plasticity, and raises the very low fusing point, rendering the colour, at the same time, richer and bluer. It has the drawbacks that if used in too large proportion the metal tarnishes more readily, and may develop poisonous oxides.

The frequent laws and edicts regulating the pewter trade in the past were mainly framed to check the use of an excessive proportion of lead, by far the cheaper metal, the maximum officially tolerated in England having formerly been about 18 per cent., and 17½ per cent. in France. The precise mixture should naturally be determined by the process of manufacture to be adopted, the use the article is to be put to, and the amount of ornament it is to receive. For art purposes I should fancy perhaps the old tin and lead alloy, which presents the softness, colour, touch, and taste traditionally associated with pewter. That the pewter alepot, almost the sole survivor of multitudinous pewter plate, has endeared itself to Englishmen is due to its being unbreakable, cool, not repulsively hard, inoxidisable, easily cleaned, and perhaps to a reputation for giving taste to beer, explained, as I have heard, by a slight electrolytic action on the lead.

Pewter can be hammered, spun, or cast into shape. The present mode of dealing with it, for my knowledge of which I am indebted to Messrs. Brown and Englefield, successors to the traditions of one of the last of the great pewter firms, is to cast it. The moulds, as you will see by examining one, are of brass or gun-metal, very carefully fitted and massive, and consequently costly. The metal is poured

directly into them, as with lead and zinc; and if hollow castings are required, as in the case of the handles to tankards, &c., the mould is reversed before the metal is chilled all through. What is still molten runs out, leaving a cavity in the interior of the casting, just as in the French art zinc work. As in the latter, it is the initial cost of the mould that is the great expense. The surface of the casting requires no touching except where the surface is to be left plain and bright, when it is turned on the lathe and burnished—operations by no means laborious. After turning, they are generally hammered over to improve their appearance and toughen the metal. Spun, hammered, and embossed pewter, I gather, is no longer made, except in the quality of Britannia metal. Common pewter pots and inkstands are now made of a very low grade of pewter, known as black metal, with the excessive amount of 40 per cent. of lead; while a superior quality has 20 per cent.; and the highest priced metal in the trade, known as tin and temper, is an alloy with copper, in which no lead at all enters. The staples remaining to the trade are hospital wares, inkstands, tankards and measures, and moulds for ices, though some few old-fashioned customers linger on who still require plates and dishes, castors, salts, and sets for Holy Communion.

Tin, as a constituent of bronze, must have been known from remote antiquity, in spite of the fact that its ores are unattractive to the eye. Everything about its early history, however, is conjectural, except that centuries before Christ it was taken in ships by Phœnicians and Carthaginians to Mediterranean ports, and that after Cæsar's invasion it found its way overland, through Gaul, to Italy and the East. The stream tin workings of Cornwall, picturesquely situated among the granite hills of that half-drowned land of legends, are thus almost, if not quite, the most venerable historic landmarks in our isles. It was recorded by Strabo, and confirmed by Diodorus Siculus, that the tin was shipped from Cornwall in small cubes of the size of dice, when its value was perhaps little inferior to silver. Tradition has it that an Irishman, St. Piran, at some unknown date, first imparted the secrets of the manufacture of tin to the Cornish tinmen: but there is no evidence of any incorporation into a guild of Stanners until the time of Edmund, Earl of Cornwall, who conferred privileges, which were confirmed in 1305 by Edward I., who exempted the stanners from all duties, and allowed the singular

privilege of digging for tin and for peat, and turning water-courses, wherever they pleased, without respect to the rights of private property. They were subject to special laws, and answerable to their own wardens, of the Stannaries alone, except in capital offences, and their head-quarters and prisons were at Lostwithiel.

Lead has also grown grey in the service of man, and was supplied by ancient Britain to Rome. Ingots or pigs, bearing the Roman legionaries' stamps, lost by the wayside on the long journey from Weredale or Derbyshire, are still frequently picked up. The two metals were only distinguished by Pliny as *Plumbum candidum* and *Plumbum nigrum*. Our trade in lead must have been very large. In the 17th century, 200,000 lbs. of lead, and 8,588 lbs. of tin were consumed in the royal buildings of France in one year, nearly all of which came from England. Versailles absorbed 32,000,000 livres' worth of lead.

The most ancient use of tin as a distinct metal was for the purpose of inlaying various substances, as other metals, wood, and even pottery (in the Swiss Lake dwellings), as well as amber and ivory. Homer and Hesiod describe shields and armour as inlaid with embossed tin, Moses speaks of it among the spoils of the Midianites, and it is mentioned in Isaiah and Ezekiel. The process of tinning iron and bronze, on one side only, was extensively practised by the Gauls long before the Roman invasion, and fibulæ, parts of chariots, and various utensils have frequently been discovered thus coated in France and Belgium. The Merovingians and Saxons were not ignorant of the process. The Romans made excellent looking-glasses from English tin, until silver came so generally in place, as Harrison quaintly puts it, that "in a manner every dish-washer refused to look in other than silver glasses for the attiring of her head." Pewter vessels, too, must have been in common use among them, for Plautus describes a luxurious banquet as served on pewter, and Suetonius relates that Vitellius robbed the temples of their silver utensils and replaced them with pewter. Boxes and flasks for medicaments of pewter are also constantly mentioned. Few actual specimens, however, have survived; some vases and vessels of various alloys have been found in France, and the handle of a vase from near Montluçon, being analysed, was found to contain two-thirds tin to one-third lead. Lead vases, chiefly used for sepulchral purposes, with slight mixtures of tin, are quite

common on the other hand, and as in the case of a magnificent specimen in the British Museum, were sometimes richly decorated.

Owing to the fact that like gold and silver, it oxidises but little, and the oxides are quite harmless, tin has always been included as one of the canonical metals of which sacred vessels might be made; and thus we find chalices and patens made of pewter this thousand years past, whilst the use of all other materials, save the precious metals, has been forbidden since the 7th or 8th century. The greatest use has naturally been made of it in the poorer countries, such as Friesland or Switzerland, but no country has been able to dispense with it altogether for ecclesiastical purposes, and in some, as in France down to the Revolution, it was an almost universal custom to keep a set of pewter vessels for every day use, whilst those of gold and silver were locked away except on festivals. The pewter seems to have been invariably spared by the Protestants in France and the Low Countries when they were sacking the Romanist churches, as when the Duc d'Aumale in 1589 looted the silver chalices in Tours and left the pewter, or when the Prince of Condé so thoroughly ravaged the environs of Paris in 1649, that it was reported that he had left nothing except the pewter chalices in the churches. England appears to have been the only country, and it speaks volumes for her wealth, that seriously attempted to suppress the use of pewter for this purpose. Roger de Hoveden says that it was decreed at a synod at Canterbury in 1175 "that the Eucharist shall not be consecrated in any other than a chalice of gold and silver, and from henceforth we do forbid any bishop to bless a chalice of pewter." It was perhaps in consequence of this that the councils of Nismes and Albi (1252-1254) thought it necessary to expressly permit the use of pewter to poor communities. When in England the ransom of Richard I. made a clean sweep of all the gold and silver church plate of the country, we too must have been glad to fall back on the use of pewter, and the enactment has never since been enforced.

Unfortunately for this history, no early church plate of pewter has been preserved. It is true that lead and pewter chalices, croziers and crosses, were buried with ecclesiastics, but they were but counterfeits of the originals, like the properties of a stage banquet. The singular illustration of one of the very early chalices in pewter, of the 7th century, is from a copy of an old drawing published by Ger-

main Bapst in his excellent history of tin (Fig. 1). It shows that pewter chalices were thought worthy of rich decoration and were of the same shape, with handles, knops and foot, as those of gold or silver. Before passing on, I wish to acknowledge that nearly all I am able to say about pewter in France has been derived from this valuable work, and the inestimable art dictionaries by Havard and Bosc.

In addition to the ministerial, presentation, and offertory chalices of various sizes, there were pewter jars for storing unconsecrated wine and amphoras for holding water for washing the chalices, &c., from the days of Charlemagne to the later Valois, when highly decorative vessels were produced. The inventory of Soignies, 1382, mentions pewter candelabra

FIG. 1.

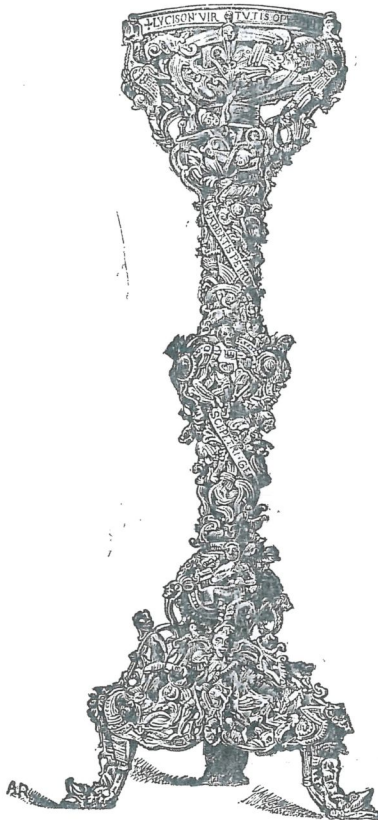


Reduced facsimile of a drawing, made in 1725, of a pewter chalice, now destroyed, dating from the 7th to the 11th century. From the *Revue des Arts Décoratifs*.

and chandeliers, and that of Vence, 1361, six candelabra of tinned iron. None that I can hear of have come down to our times, except, perhaps, the remarkable and venerable candlestick made in Gloucester in the early part of the 12th century (Fig. 2). This unique relic is of a white metal alloy, difficult to class, and consists of a richly worked stem expanding into knops, with a basket-like pan at the top and a rich tripod base. The whole is a mass of small figures of men, birds, monsters, intertwined with volutes, foliage, knots, and inscriptions. A mediæval church chest at Newport is elaborately decorated with ornaments of gilt pewter. In Nuremberg Museum is a beautiful altar cross of pewter which has been mercury gilded. In connection with church pewter, the old English

lead fonts naturally come to mind, but though we have none in pewter, there are some rather handsome examples in Bohemia, of the form of inverted bells on richly foliated tripods. Holy water stoups were very often of pewter. There is a record of a pewter canopy being erected over the figure of a saint in St. Vincent's Church, on the Garonne, in Merovingian times, and Gregory of Tours mentions a basilica roofed with pewter. Finally, organ

FIG. 2.*



The Gloucester candlestick: a work of the 12th century in the South Kensington Museum. From "Gold and Silver Plate," by J. Hungerford Pollen.

pipes consumed a vast quantity of the metal, a record of 1481 showing 14,500 lbs. of pewter absorbed at one time for this purpose. Outside the church, in the cloisters, were lavabos very frequently of pewter, together with pitchers for washing; while kitchen inventories present large arrays of pewter for culinary purposes, and for the table.

This brief *resumé* of the uses pewter has

* This illustration has been kindly lent by the Science and Art Department.

been put to for ecclesiastical purposes is, I think, in the highest degree suggestive. There is no single one to which pewter would not be as appropriate now as in the past, and in this direction alone a great revival of pewter work may be in store. In addition, the roofs of *flèches* and cupolas, which become black when covered with lead, would keep some colour and metallic look in pewter. The same applies to statues, whether internal or external, to finials, gutter spouts, cisterns, and a variety of objects susceptible of decorative treatment, and whose colour we might wish to preserve. A vast and lucrative trade was also carried on by the clergy in pilgrims' signs, badges, and tokens, which were made both in pewter and lead, the monopolies and rights to sell them leading to frequent disputes. These are sometimes most refined and artistic specimens of the highest ecclesiastical art of the day, while again, they may be rude and indecorous. Perhaps no great outlet for pewter work is to be looked for in this direction in the future.

Though the clergy were thus the great patrons of the pewterers, and used pewter extensively long before the laity were educated up to it, yet the necessity for some cheap substitute for silver for domestic use must have made itself felt at an early period. Neither bronze nor brass exactly met the requirements, being liable, like lead, copper, and antimony, to become poisonous. Tin was brittle and unworkable, iron rusted, and the rest of the solid metals were unknown. The happy blending of so exceptionally safe and inexpensive a metal as tin, with some alloy to make it workable, entirely solved the problem. From the time of St. Louis, to whose reign Viollet le Duc assigns the pewter spoon and porringer which he found in the ruins of Pierrefonds, lay pewterers must have been at work; but it was only after such things as ragouts and creams were added to the *menus* in the 14th century that the large and deep pewter dishes made their appearance. The use of pewter for table and toilet requisites commenced in the palaces of popes, kings, and bishops, though actually the first mention of its use is, I think, in an early Templars' inventory, in which pewter quarts and pint measures occur. Edward I., in 1290, possessed 100 dishes, 100 platters, and over 100 salts. In 1328, Clement of Hungary owned 142 pewter porringers. The accounts of John of France, 1351, record payment to a pewterer for six quart pots; and in 1380, Michelet le Breton, Parisian pewterer, fur-

nished 6 dozen dishes and 12 dozen porringers for the use of Charles VI. In 1370, the Bishop of Troyes possessed decanters, flagons and pots, and 14 dozen of porringers in pewter. The Archbishops of Rheims, 1389, and Rouen, 1391, were furnished with an abundance of pewter, comprising alms dishes, covered and uncovered tankards, flagons, cans, canisters, pitchers, ewers, plates, porringers, cups, &c., valued at 7d. to 8d. per lb.

A curious and graceful custom prevailed at this time and afterwards, in which pewter seems to have been invariably in request. This was the presentation to kings or princes upon their stately entry into a city, of the *vin d'honneur*. For this purpose Thibant la Rue in 1386 furnishes 17 *poz demi-los* to the city of Amiens, and a gallon flagon weighing 28 lbs. is furnished to Rouen to present the wine in to the lords of the Exchequer. Amiens again purchases cups for the *vin d'honneur* in 1463, and as late as 1516 the good city purchases 35 small pewter mugs of Jeane d'Avesne, to present wine to Francis I. and Louise of Savoy. The use of pewter for such a purpose may be explained by the custom among the kings' retinue of appropriating the drinking vessels on these occasions.

Another curious custom associated with pewter in the 14th century was that of hiring by the month or year. Thus we are told that the Archbishop of Rouen commonly hired pewter plate for six or seven weeks at a time, for which he was made to pay very handsomely. The Earl of Northumberland hired 100 dozen of pewter vessels for household use at 4d. per dozen for the year; and in the Hengrave inventory is an item for the hire of nine garnishes of pewter for Christmas.

We cannot more fittingly close this brief and imperfect account of the use of pewter in the 14th century, than with the statement that, according to the contemporary *Ménagier de Paris*, the proper quantity of pewter plate to be provided for a dinner of any pretensions was six dozen porringers, six dozen small plates, 2½ dozen large dishes, eight quart and twelve pint tankards, and two pots for the *aumône*, in other words, to receive surplus victuals to be given to the poor. It is unfortunate that hardly a vestige of pewter work of this date has been preserved. So soft a metal wears away rapidly when in daily use, but, besides this, the small price at which it can be melted and recast has been fatal to its preservation. Thus the king's pewterer, Michelet le Breton, received in 1383 but 24 sols 9 deniers parisien

for recasting two dozen large pewter dishes which had cost 119 marcs, or at the rate of three deniers per marc; and in 1401 Jehan de Montrousti, Isabel of Bavaria's pewterer, delivered six dozen porringers, worth 121 marcs, against a similar weight of old vessels, with a drawback of only two deniers per marc for labour and profit.

The 14th century is that in which pewter was used at the tables of the higher nobility. In the 15th it was in the hands of the gentry, and commenced to generally displace the use of wooden pottery. The Paris *livres des mestiers*, or trade directories, exhibit the commencement of the supplanting of the one industry by the other at an even earlier date.

Naturally in such a case of gradual replacement there could be no sharp line of demarcation, and the gentry no doubt began to acquire a taste for pewter plate, and the means of gratifying it, in the 14th century. This was probably more especially the case in England, always a wealthy country and the home of the pewter industry. Rymer's *Fœdera* (1382) seems to show that services of pewter plate were in the possession of many. The inventory of a *bourgeois* of Normandy comprises a pewter service with vessels for sauces and salt; and we find in the possession of a Canon of Troyes, in 1386, salvers, flagons, mugs, cups, and five dozen porringers. The plentiful supply of pewter pots in the inns and *cabarets* was not even without its drawbacks, for they were used as weapons in the frequent brawls that followed upon drinking bouts; and that they could be murderous is signified by a passage in Montrelet, in which the murder of a distinguished prisoner was rumoured to have been effected by a blow on the head from a pewter pot. The sign of the pewter flagon or dish is still a favourite with innkeepers in France.

Neither did princes wholly discontinue the use of pewter plate with the close of the 14th century. Thus in 1401 Isabel of Bavaria added nine dozen of dishes and 23 dozen of porringers to what she already possessed; while she caused another 30 dozen to be delivered to the Hôtel St. Pol; and in 1422 Jean Goupil, of Tours, furnished 64 dishes and 158 porringers to Charles VII. This may have been intended for use in the kitchen, as in the case of the magnificent Jacques Cœur, 1453, who provided pewter for his work-people. The very complete inventory of Sir John Falstolfe, in 1459, which comprises no less than 19,000 ounces of plate, at all events includes no pewter, so that in this century

wealthy magnates must have disdained its use. When Charles of Burgundy was defeated, his plate was of silver and fell into the hands of the Swiss, who broke it up and sold it in the belief that it was pewter.

To illustrate its extensive use among the middle classes during the 15th century, it must suffice to cite a progress of Buschius of Hildesheim, about 1470, to inquire into the condition of the convents of Saxony. In the Holy Cross of Erfurth he found 150 amphoræ, 70 cups, 12 jugs, 33 porringers; at St. Cyr, 200 amphoræ, flagons, and tankards; in the White Ladies of Erfurth, 41 amphoræ, 10 porringers, 4 flagons; and in the Cistercians of St. Martin, 150 amphoræ, flagons, and porringers. A curious record of "Synt Stephnes in Colman strete," of the year 1467, mentions "3 pair of cruets, 22 dishes for the sepulcur, 2 for the pascal, and 1 on a stokke befor Synt John in the church." In France we find even a blacksmith in possession of 12 pewter plates and a tankard.

It is probable that 15th century pewter was intended for use and not for display. The small prices for which it was melted and recast seem to settle the question.

The 16th century introduces us, for the first time, to a pewter *de luxe*, apart from ecclesiastical pewter, which was probably always decorative. In this century the bourgeois displayed his pewter on the buffet with the same pride as the nobleman displayed his silver and gold; and there is no doubt but that art was lavished upon it as it never had been before; even the great nobles did not disdain to possess the larger, and, as we may suppose, the handsomer pieces. In 1497, the Countess of Angoulême had tankards and ewers of different sizes, to the weight of 116 lbs.; the Duke of Bourbon, in 1507, possessed three pitchers and three ewers; the Duke of Bourbonnays, three quart flagons, three pitchers, and two ewers. However, the esteem pewter was held in will be apparent, when we look at the work itself; for the moment, I merely wish to illustrate the extent to which it was used among various classes.

Princes still continued to use it for their households. In 1507, the Duke of Burgundy's inventory comprised the modest service of 32 plates, 32 porringers, and a mustard. The Archbishop of Canterbury, in 1575, possessed 18 score and 10 lbs. of pewter vessels in the kitchen, in jugs, basins, porringers, sauce boats, pots, and 19 pewter candlesticks; also pewter measures in the wine cellars, and eight

pewter salts in the pantry at Lambeth, and two garnishes of pewter, with spoons, at Croydon. Lord Northampton's kitchen, in 1614, was furnished with 300lbs. weight of pewter, which, in great houses in England, was put under the charge an officer, called the "yeoman of the ewerie." Pewter is seldom absent in the 16th century from middle-class inventories. To take one example from Paris: a mercer, in 1572, bequeaths to his son six plates, two-eared and two deep, and four shallow porringers, three large dishes, three sauce boats, a mustard, salt, a couple of basins, water pitcher, and pint pot. One provincial example, the inventory of Pierre de Capdeville, merchant of Bordeaux, in 1591, must suffice, especially as it is very complete. It contains a variety of measures, and a number of jugs, some very large, probably for holding, transferring, measuring, and selling wines; then for household use a ewer, 2 flagons, and 2 *ollieres*; 6 great dishes, *du grande molle*; 13 dishes, *du deuxième molle*; 1 *du tiers molle*; 8 *du petit molle*, whatever these qualities or sizes may mean; 36 round plates, 14 eared porringers, 7 sauce-boats, 2 large *gardelles*, and a quantity of old pewter, weighing 120lbs., besides a shallow basin, "silver fashion," to wash hands, and its water-can, or rather cistern, *de belle fasson*. The use of the terms, "silver fashion" and "handsome fashion," evidently denote artistic objects. Coming to England, Harrison, whose work was written from 1577 to 1587, states that it was usual for the great nobility to have drink served in silver vessels, "or, at leastwise, in pewter." "Likewise, in the houses of knights, gentlemen, merchantmen, and some of the wealthy citizens, it is not geson [*i.e.*, uncommon] to behold generally their great provision of tapestry, Turkey work, pewter, brass, fine linen, and there costly cupboards of plate." Old men yet dwelling in the village tell of the exchange of vessel, as "of treen platters into pewter, and wooden spoons into silver or tin." For so common were all sorts of treen stuff in the olden time that a man should hardly find four pieces of pewter (of which one, peradventure, was a salt) in a good farmer's house. But now a farmer will think his gains very small if, towards the end of his term, he cannot have "a fair garnish of pewter on his cupboard," "a bowl for wine (if not a whole neast), and a dozen of spoons to furnish up the suit."

It is, on the other hand, remarkable how

very little pewter was seized by Henry VIII. when he despoiled the monasteries, some of the inventories of which are so minute that its absence is pretty assured. Ludlow Priory had only three pewter platters and fayre lavers of tynne, and three old pewter plates; Burton-on-Trent, a ewer and basin in the buttery; Balsall, three tynne candlesticks; and Whitefriars at Newcastle, a lavetarye of tynne and lead in the cloister. An extract from the parish register of the Waltham Abbey Church shows that a pewter chrismatory was purchased in 1554 for 3s. 6d., and a pix for 2s. Thefts of pewter being common in this century, severe laws were enacted, and on the 30th January, 1599, a pavior was hanged at the gate of Paris for stealing a couple of pewter platters from a tavern.

In the 17th century, pewter vessel or plate was still less in use among the nobility, except that certain large and artistic pieces were tolerated or sought after. The Duke of Bourbon, 1660, had a large flagon holding a bucket full, and in 1664 there was a great pewter ewer for water in the Chateau de Turenne. Pepys, who was nothing if not in the fashion, in his diary for 1667 says, "Thence to the pewterer to buy a pewter sisterne, which I have ever hitherto been without," from which we may understand that this was an essential possession to persons of quality. The extent to which it was out of fashion for the table may be gathered from the fact that when the nobles of France were obliged by Louis XIV. to sell their silver, they showed a marked repugnance to going back to pewter; and in the provinces it was painted, lacquered, and gilt to disguise its, by that time, humble exterior. The Grande Mademoiselle writes, recounting her arrival at Nanteuil, in 1656, that she supped well, but indeed on dishes of pewter. To the middle classes, however, it was as indispensable as crockery is to us now. The French inventories illustrate its use, and contain the names of a number of objects of which I cannot discover the equivalents. The inventory of the domain of Chate-lard, 1672, contains the mention of pewter forks as well as spoons, and vessels with covers. That of the Chateau of Montpipeau, 1692, totals to 650 lbs. of pewter vessel, estimated at 10 sols the pound. Quite an extensive use was made of it in the Court of Louis XIV. for such purposes as *pots de chambre*, *chaises percées*, baths, and other utensils of like nature. In the last century pewter wares were largely advertised, Renard of Troyes

boasting, in 1760, that his work was as handsome, and had the contours of silver; and in Paris such new fashioned items in pewter were

The pewterers of Paris chiefly lived with the silversmiths about Notre Dame and the Palais de Justice, and on the Grand Pont; but the

DIENST VOOR KUNSTEN EN WETENSCHAPPEN DER GEMEENTE 'S-GRAVENHAGE.

Korte Vijverberg 7

14/5 1925

Howard V. Cottrell

Dear Sir

In reply to your note from the 9th I sent you to-day a copy of the catalogue of the pewter - loan - collection.

As it has no illustrations, and is written in dutch, I wonder if it will be of much interest to you.

English pewter is represented by one piece only, the enormous platter no 256.

The preface, intended as guidance for the ignorant visitor, will scarcely bring you any reward.

You will probably not know, that the first time, English pewter is mentioned in a town regulation was in 1390 (Dordrecht), and in 1544 the English crowned rose was officially adopted as a hall-mark (I mean an alloy-mark) by the town of Maastricht.

Yrs very Truly

H. C. Gallois

H. C. Gallois.

were prone in that vision was that perthe baser ed to be prudent use of all army, but at of the to 2,000

e imme- 1, and its flasks of nense use ttles, and rles V. of lles d'es- r bottles England, gleterre."

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to 1369 in ven, fixing metal, and y arranged municipal s issued as the same ed in other ed. The

Handwritten notes and signatures in the right margin, including 'J. Gallois', 'H. C. Gallois', and 'R. Gallois'.

boasting, in 1760, that his work was as handsome, and had the contours of silver; and in Paris such new-fangled items in pewter were trumpeted abroad as popular coffee pots, economic lamps, filters, fountains, syringes, &c. A fire which destroyed the Paris Jesuit establishment at this time melted 10,000 lbs. of pewter vessels.

This brings a sketchy and somewhat tedious history to a close. It gives however, I hope, and for the first time, a tolerably clear idea of the use of pewter in the past.

The next point is the history of the pewterer's craft.

There is little difference between the crafts of the blacksmith, whitesmith, silversmith, brazier, and pewterer, except in the materials they respectively use. All alike were under stringent regulations in the Middle Ages, but none more so than the pewterer. The earliest descriptions of one of their corporations is that by Etienne Boileau in the middle of the 13th century, who tells us that the pewterers of Paris were separated into six classes—the potters, toymakers, nailmakers, lorimers, and makers of buckles, &c., for hats. The potters numbered about twenty, and were under two wardens, and controlled by nine articles, not differing much in effect from those imposed on the London pewterers in 1348 by Edward III. Apprentices and approved workmen might enter the corporation free of toll, as long as they were known to be law-abiding, while there were no restrictions as to the number of apprentices and assistants that might be kept. It was strictly forbidden to work at night, artificial light being considered insufficient to produce good work by, and no work was allowed on festival days, unless public fairs were being held. For the use of unauthorised alloys a small fine was imposed, as well as loss of material; and leaden imitations of pewter were equally punishable. The guildsmen, unlike the Cornish stanners, were subject to ordinary taxes, and, save in the case of the wardens, to serve on the watch until the age of 60. The commencement of their great increase in numbers is shown in an imperfect list of Parisian craftsmen, eighteen wood potters disappearing between 1292 and 1300, and apparently making room for eight potters of pewter. Not long after, in 1304, in France, the State exacted a premium or entrance fee from all admitted to the guild, except the sons of masters. It was not until the reign of Louis XIII. that Paris pewter was ordered to be stamped.

The pewterers of Paris chiefly lived with the silversmiths about Notre Dame and the Palais de Justice, and on the Grand Pont; but the silversmiths, in 1545, at all events, were prohibited from working in pewter, since in that year some found in Richer's possession was confiscated. It was not till 1650 that permission was granted to gild or silver the baser metals, and then they were required to be specially marked. A curious and prudent edict of Louis XIV. disallowed the use of all plate but pewter to generals in the army, but even these outfits could be costly, that of the Duc de Luynes having amounted to 2,000 livres.

Bruges, however, was, from time immemorial, the great depôt for English tin, and its potters were making porringers and flasks of pewter long before 1303. An immense use seems to have been made of pewter bottles, and in the "Livre des Mestiers" of Charles V. of France (1457) we read of "bouteilles d'estain," &c. Moreover, the leather bottles of that date were imported from England, or made in France "à la mode d'Angleterre." The Bruges pewter "pintiers" furnished eight sergeants to the militia in 1376, and those of Ghent thirteen in 1356. After the battle of Gavres the Ghent pewterers decorated their guild-house with grey cloth and coats of arms, and carried 13 torches to honour the Duke of Burgundy. There were pewterers in Mons in 1353, and in 1467 their pewter was marked "fin" with a crowned hammer, but if spun the mark was a small castle and the arms of the town. Fine English pewter, manufactured out of the town, but brought in for sale, was stamped with a rose and crown. The Liège marks are quite as ancient and were an angel and balance for first quality, a crowned rose for the middle, and a fleur-de-lys for the inferior. The beauty of the pewterer's marks everywhere is quite remarkable. At Ath, the Corporation headed the processions in 1328, and we find it only second in importance at Namur, in 1429, when the Dukes of Burgundy succeeded to the possessions of the Count of Flanders.

A pewterers' guild existed prior to 1369 in Rouen, when Royal letters were given, fixing the exchange value of new for old metal, and in 1454 their papers were carefully arranged and locked in a chest. In Poitiers a municipal decree against fraudulent alloys was issued as early as 1333. Enactments, with the same object, but of later date, are preserved in other towns, and their stamps are described. The

July

Bruges

Liège

Ath

Namur

Bruges

Rouen

July
Bruges
Liège
Ath
Namur
Bruges
Rouen

were generally the City arms with letters to denote quality. The Duke of Burgundy, in 1478, established guilds of pewterers in many of his principal towns, to prevent the use of fraudulent alloys; when, in the grape country, it was enjoined that new members were to regale the guild with copious libations on their admission.

Germany was, perhaps, not far behind in pewter work, for it was enacted in Augsburg in 1324, that the sworn masters must visit all workshops and stores four times yearly, to satisfy themselves as to the purity of the alloys, when, if any inferior or slovenly work is found, the objects are to be destroyed and a fine levied. Sebaldus Ruprecht soon after, gave to pewter the colour of silver, and was renowned for the fineness of his work. In Nuremberg the potters formed the leading corporation, and by the latter half of the 16th century there were 44, and a little later, no less than 56 masters. The marks were a crowned eagle for beaten, and for unmixed English tin, and for the same alloyed with a maximum of 10 per cent. of lead, a half eagle and two nails on a shield. Many Nuremberg pieces, however, are found marked with a rose. From 1579 no silversmith was allowed to work in pewter, nor might a pewterer work in any other metal.

Little pewter ware seems to have been made in Italy, and not a great deal in Spain; while Switzerland and Holland produced it rather largely.

The history of our own Pewterers' Company is now being written by Mr. Charles Welch, F.S.A., and the following particulars are gathered from articles contributed by him to the *City Press* a couple of years since. The earliest record is dated 1348, when ordinances were granted by the Mayor and Alderman upon the petition of the makers of pewter of London. They were framed to defeat fraud, and maintain the good reputation of English pewter, and appear to be based on the Paris ordinances which I have just described. The only additional matters of importance are, that two qualities of pewter were permitted: the first called *fine pewter*, contained as much brass as the tin "of its own nature will take." Of this quality were made esquelles or porringers, salts, platters, salvers, pitchers squared, cruets squared, chrismatories, and other things that are made squared or ribbed. The second quality consisted of tin with about 20 per cent. of lead, used for vessel, otherwise pewter plate. Further, pewter goods might not be

brought into the City for sale without being assayed. Some new ordinances being added in 1438, without authority of the Mayor, were annulled, and only allowed afterwards upon solemn petition. In 1430 the exact weight of all the principal vessels made was fixed, to prevent light weight being sold. In 1444 the warden acquired the right to a fourth part of all the tin imported into the City, and to search and assay it. An income was made up of this quarterage, admission fees of brethren of the craft, and bequests. The company received a charter from Edward IV. in 1473 confirming their powers of search and assay, and in 1503 an Act of Parliament was passed prohibiting the sale of pewter off the premises of a pewterer, except in an open fair or market, and ordering it to bear maker's marks. A little later the wardens were empowered to make search for defective ware five times in the year. Statutes of Henry VIII. forbade imports of pewter on pain of forfeiture, and no foreigner was permitted to practice the trade in any capacity here, nor were English pewterers allowed to exercise their calling abroad under pain of alienation. Further charters were granted under Mary, Elizabeth, James I, and Anne. Under the latter each member was obliged to deliver to the master for the time being a private mark or touch, to be impressed on a plate kept in the company's hall, with which all his wares were to be marked under a penalty of 40s. All defective and unmarked pewter to pay 1d. per lb. A quaint and salutary enactment was, that all pewterers applauding or boasting of their goods and disparaging those of other pewterers, or improperly enticing the customers of another pewterer, were to pay a fine of 40s. In 1555 it was agreed that anyone buying metal by night, or of tylers, labourers, boys, or women, should, if it proved to be stolen, be dismissed the Company and brought before the Lord Mayor and Aldermen for further punishment. From these brief extracts it will be seen that the records are remarkably perfect and interesting. The touch plates, of which I am enabled to show a series of reproductions, through the kindness of Mr. Welch, are extremely curious and will be valuable when dated; though unfortunately those recorded for the first hundred years have not been preserved. The oldest here represented is dated 1640, and the latest 1824. The practise of the Pewterers' Company, whose jurisdiction eventually extended over England, was that the makers should stamp their own

ware at home; whilst the Goldsmiths' Company mark all silver at Goldsmiths'-hall with their own marks for the year. To prevent a common imitation of the latter marks, the pewterers were ordered, in 1635, to strike but one stamp on their pewter, unless the customer desired to have added his own mark or arms.

Respecting the celebrated Belgian and Dutch *steimerie*, I have as yet learnt but little. Those wishing to join the craft had to present themselves to the "rewards," who handed them the freedom and a diploma. The Netherland interiors, so frequently delineated in the 17th century, introduce most exquisite, and evidently faithful copies, of pewter vessels, from which we can form the most exact idea of their admirable forms and decoration. In our Museum, however, we have only one specimen of reputed Dutch manufacture, a small-eared porringer, decorated with a Tudor rose in the bowl, and undated.

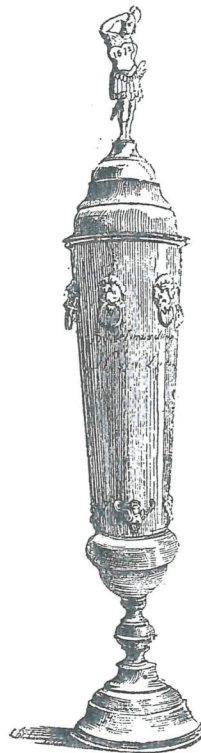
This brings us to the concluding portion of our history. We have now traced the rise and decline of the use of pewter, and also the regulations under which it was manufactured. It only remains to realise what the work was like.

Scarcely any early work remains, owing, as we have seen, to the slight cost of melting and recasting the metal. In France, the peasants still regard their own pewter with superstitious veneration as the metal *pur et sain par excellence*; and they cannot be induced to part with it, either for money or in exchange for new, though they will readily stand by and see it recast by the perambulating *rétameur*, who carries his furnace on his back, and his moulds in a sack. The very small price allowed for re-casting even the royal pewter, the particular forms of which were not permitted to be sold to others, shows that "fashion," as the silversmiths call it, counted for so little, that it must have been all but absolutely plain. But this was certainly not the case with pewter for sacred use; if we may judge from the Gloucester candlestick and the chalice which we have illustrated, it was highly decorative; in fact, many of the minor objects that have been preserved, such as buckles, buttons, nail-heads, tokens, pilgrims' signs, inkstands, &c., show that it was treated with fine feeling.

In France it is possible that pewter was treated artistically by the 14th century, perhaps much sooner, since Jean de Jeandun writes in 1323, that there were many chasers of vases of gold, silver, *pewter*, and bronze on the Grand

Pont; and Guillebert de Metz, in 1407, tells us that a pewterer dwelt facing the palace, who was a worker of marvellous vessels. The inventory of a Rouen pewterer furnishes a valuable list of tools, moulds, &c., in use in 1402, and an inventory of only a year later mentions two pairs of bronze moulds and wooden chucks, for casting and turning apparently some particular pattern of plate and porringer. A seizure of goods at Nismes in 1438 illustrates a pewterer's stock in trade, which consisted of a score of platters, six

FIG. 3.



Cymaise, 17th century. (Havard.)

dozen dishes, a few others with handles and ears, some covered and uncovered pint pots, a few water pitchers, and other odds and ends. The trade by this time had reached larger dimensions in France, no less than 116 names of French pewterers of the 15th century having been collected by Bapst. The ewers, salvers, and flagons used to decorate their buffets by the middle classes, and even at times by the nobles, must necessarily have been works of art. We constantly read of pewter *de belle fasson* and *fasson d'argent*, in the inventories and accounts so industriously collected by Havard for his Art Dictionary. For example,

in 1389 the Bishop of Rheims wills 18 dishes great and small, 48 porringers, a square measure, 2 square quart pitchers, 2 round *silver fashion*, 1 square pint, 2 measures of 3 chopines *silver fashion*, &c. The municipal accounts of Amiens show many such payments, as to Pierre Hemioron, pewterer, for 4 small ewers of fine pewter, *silver fashion*, 1508-9. A small pewter ewer and basin, holding about 3 pints, is described, in 1521, as a *lavabo de belle fasson* to wash hands. That silver designs were really used for pewter seems to follow, from an extract taken by

FIG. 4.



Ewer, French Renaissance. (Havard.)

Havard from the "Comptes de l'Argenterie," for 1470, when drawings and patterns of cups in pewter and clay were purchased from J. Chenau and G. Poissonnier, goldsmiths of Tours, and Lambert de Sey, goldsmith of Amboise. Among the most decorative objects was a vessel called a *cimaise* (Fig. 3*, p. 637), destined to hold the *vin d'honneur*, of an elongated form, with cover and handles. Later on similar flagons were given as prizes for shooting, especially in Burgundy and Switzerland. For example, François de Roussy, armourer to Francis I., received a pewter work of art as a shooting

* Permission to use the illustrations from Havard's "Dictionnaire de l'Ameublement" has been kindly granted by the Maison Quantin, Paris.

prize at Lyons. They were usually embellished with the arms of the town and representations of the weapons used. Artistic interest, however, culminates round the name of Briot, the Cellini of pewter, who was born probably about the year 1550, and lived under Henri II., Charles IX, and Henry III. He was living in 1615, but the date of his birth and death are alike unknown, though enough has come to

FIG. 5.



In the British Museum. Aiguïère or Ewer by Briot. From Bosc's "Dictionnaire de l'Art."

light regarding his life to show that he was really a Frenchman, born in or near Besançon, and a medallist and die-sinker by profession. One of the oldest of the works, in the style of François Briot, is the salver, of which we have a fine original, lent us by the South Kensington Museum, representing, in relief, the history of Susanna and the Elders. The umbilicus has been replaced at a later date with an enamel, but otherwise the specimen is in good preservation. Germain Bapst very properly considers that this and two salvers representing Diana and Acteon, and the life of Hercules,

and a ewer, perhaps belonging to one of them, are too crude to be by the hand of the great master. There is also in existence a wall-fountain by one of the same unknown hands. The *chef-d'œuvre* indubitably worked by Briot is the superb ewer and dish representing Charity and Temperance, a description of which is superfluous, as we have an original before us of this famous and oft-described, but not over-praised, piece. The best examples are signed "Sculpebat Franciscus Briot" on the umbilicus, with a portrait. It has often been reproduced in silver at different dates, and Palissy moulded a copy of it somewhere about the year 1580. The patterns for the reliefs appear to have been made to the order of a pewterer and sunk, as dies are, in metal or stone, not embossed; and the pewter was cast in bronze or stone moulds, and required no touching up, except that the plain mouldings were turned on a wheel. The ewers (Fig. 5, p. 638), however, are believed to have been cast in several pieces and soldered together.

1580
N.B.
*

The fine specimen of the salver or basin, signed, with the portrait of Briot, lent by the South Kensington Museum, is in admirable

preservation. The British Museum possesses

FIG. 6.



Tankard by Briot, in the British Museum. Bosc's "Dictionnaire de l'Art."

one of the covered tankards (Fig. 6), with three

FIG. 7.



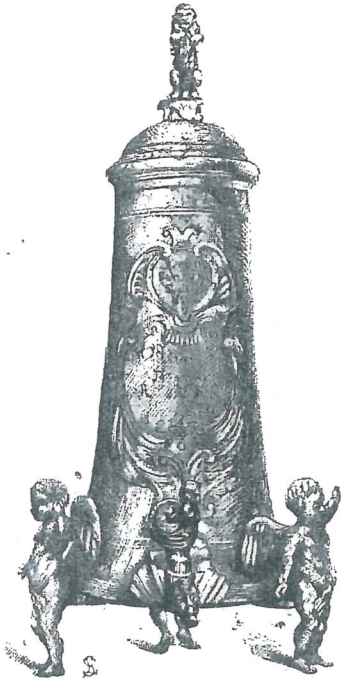
Basin in the Louvre, made for Henry III., the reliefs by Briot. (Hav. rd.)

* Bosc's Dictionnaire de l'Art.
your thoughts are
* Bosc's Dictionnaire de l'Art.
Hav. rd.

medallions, representing "Patience," &c., signed F. B., and evidently an authentic work of the great artist. The Louvre collection have some superb dishes (Fig. 7), probably for baptismal purposes, made for Henri III., with Briot medallions. These are almost the only objects by this master, and, exquisitely fine as they are in detail, they are open to the criticism of over elaboration.

The scarcely less celebrated Gaspard Enderlein was born in Bâle, worked in Nuremberg, and died in 1633. He was much esteemed by his contemporaries as an embosser and caster of figures, a die sinker, and as the first to cast hanging chandeliers of pewter. A singular

FIG. 8.



Cistern of the 17th century work. (Havard.)

fact, which has led to much controversy, is that Briot's celebrated *chef-d'œuvre* is often found inscribed "Caspar Enderlein sculpsit," with his portrait, and dates like 1611, which are many years after its first production, as proved by the fact, if by nothing else, that it is alissy moulded from it. Specimens thus signed are in the British and South Kensington Museums.

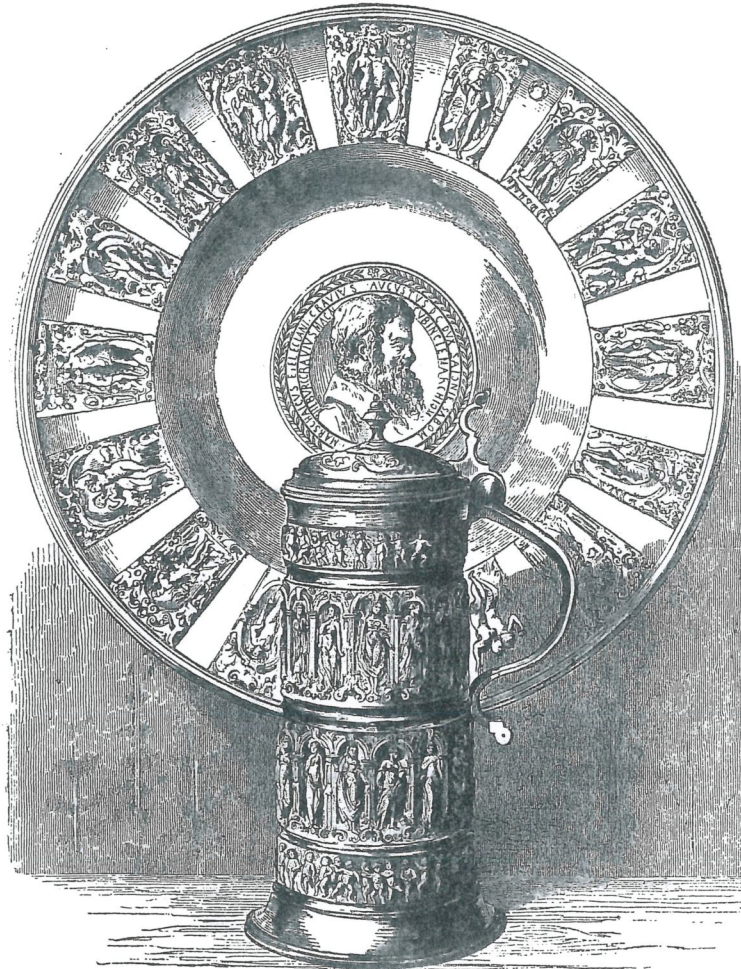
True German specimens are much coarser in the modelling, like one in the Sauvageot collection, signed M. H., for Martin Hurscher (Fig. 9), in which a medallion of Augustus of Saxony is inserted, and they usually, bear

Nuremberg marks. From their similarity they must have proceeded from few studios.

The British and South Kensington Museums possess a number of the small German plates, dating from 1619 to 1650, with medallions and arabesques in relief. Fig. 10 represents one in the British Museum, dated 1619, which illustrates the story of Adam and Eve. Another, dated 1654, bears equestrian portraits of Ferdinand III., and the electors (Fig. 11); and a third (Fig. 12) has portraits of the emperors. For the most part, however, their decorations are religious subjects, and they almost always bear Nuremberg stamps. We are also enabled, by the kindness of the Maison Quantin, to illustrate three German pewter tankards of the 15th, 16th, and 17th centuries from Havard's "Dictionnaire de l'Ameublement."

Art, if not of a high quality, was expended upon pewter long before the rich relief work, which we must consider to have been introduced in France and imitated in Germany. The name of Carel, a Nuremberg pewterer or *ziungiezaer*, is recorded in 1324; and by the end of the 14th century, Sebald Ruprecht was renowned for giving to pewter the colour and appearance of silver, and for the fineness of his work. Martin Hurscher, who died in 1523, at the age of 83, executed in pure pewter everything that a silversmith could make in silver. His tin, purified and alloyed, equalled in quality and brilliancy that of England. He not only made pots, vessels, and plates, but candelabra, bénitiers, bowls, basins, and statuettes. Neudörffer and Doppelmayer were his friends, and the latter bears testimony also that he was very clever, and executed the works of silversmiths quite as well as they did themselves, in a special pewter, which yielded in nothing to the English. These flattering testimonies to the quality of our English ware are, by-the-by, far from rare. Doppelmayer also relates that Melchior Kock, pewterer, carried out his work with great care; he discovered a particular material by which he made bowls, dishes, and plates look as if gilded with the best gold. The art perished with him in 1567. Hans Lobsinger, who died in 1570, made hollow figures in tin and wax, and was very clever, being able to render the metal as soft as paste, while he stamped and modelled it, afterwards restoring it to its original hardness. His quality, likewise, equalled the English. By ordinance, in 1575, everyone aspiring to be a master pewterer was obliged

FIG. 9.



Salver and Flagon, with Medallion Portrait of Augustus of Saxony. (Havard.)

FIG. 10.



German plate, dated 1619, and signed G. M., in the British Museum. (Havard.)

FIG. 11.



German Plate, with Ferdinand III. and the Electors, 165 (Havard.)

1
1
C
1
1
C
2
1
C
1
1

to make, within the space of a week, a quart ewer on a foot, a dish about 4 lbs. in weight, and a pitcher holding four or five pots, bearing a written snatch or proverb. Eobanus Hessus, poet of Nuremberg, speaks of the numerous

FIG. 12.



Plate in relief, German, 17th century. (Havard.)

foundries of pewter, and the quantity of workmen who manufactured all kinds of objects in it. Hartman Schoper, in his "Treatise on Industries," 1573, makes his pewterer say, "I make vases of all sorts of molten metal. I

FIG. 13.



Tankard, end of the 15th century. (Havard.)

produce the bowls with out-turned rim, the ewers, and other kindred objects, with pewter, which I melt in my furnaces. You will find with me, according to your tastes, the sparkling bowl, the broad craters, the

flasks, and the tankards, in short all that can make your guests merry and taste the goodness of wine." Three grand flagons belonging to the close of the 15th century are in the Museum of Breslau, of which I give an illustration

FIG. 14.



Tankard, 16th century. (Havard.)

(Fig. 16, p. 643) from the *Revue des Arts Decoratifs*.

These, like the fine salver belonging to the South Kensington Museum, with a border of historical subjects broken up with medallions

FIG. 15.



Tankard, 17th century. (Havard.)

of equestrian figures, and a female holding two music horns in her hands in the centre, have a sort of incised decoration, exactly as if they had been cast from old wood printing blocks. The salver, which is dated 1567, might other-

wise, as to the outline and arrangement of its decoration, have served as a prototype to the embossed salvers which preceded Briot's.

Side by side with these elaborately decorated works were made humbler articles with incised ornament, such as pitchers, porringers, plates, bowls, flagons, salts, and candlesticks. They are quite distinct from silversmiths' work, as in Nuremberg the latter were not allowed to meddle with pewter, some candlesticks cast by Peter Schmitt in 1579

FIG. 16.



Flagon made for the Bakers' Company, deated 1497, decorated with religious subjects. In the Breslau Museum.

having led to this prohibition, and also to pewterers being forbidden to work in brass or copper, and the makers of moulds from taking casts from them. The fine series of guild cups in the South Kensington Museum, are of much later date, but more pleasing and appropriate in general design. Those of the United Carpenters and Masons, and of the Millers and Bakers, are dated 1695, and of the Shoemakers 1704; while a wedding anniversary cup is of 1684. The finest and most suggestive piece I have ever seen, however, is the noble flagon inlaid with brass or auricalchum

belonging to Mr. Gurney, which he has kindly lent to the Museum, and allowed to be exhibited here to-night.

We have, unfortunately, no recognised English pewter to vie with that we have just been describing. Harrison, with pardonable exaggeration, perhaps begotten of the intensely patriotic feeling in Elizabethan days, says that "in some places beyond the sea a garnish of good flat English pewter of an ordinary making (I say flat, because dishes and platters in my time begin to be made deep, like basins, and are, indeed, more convenient both for sauce, broth, and keeping the meat warm), is esteemed almost so precious as the like number of vessels that are made of fine silver, and in manner no less desired among the great estates, whose workmen are nothing so skilful in that trade as ours, neither their metal so good, nor plenty so great, as we have here in England." Again, he remarks that our pewterers "are grown into such exquisite cunning that they can in manner imitate, by infusion, any form or fashion of cup, dish, salt bowl, or goblet, which is made by goldsmiths' craft, though they be never so curious, exquisite and artificially forged. Such furniture of household of this metal as we commonly call by the name of vessel is sold usually by the garnish, which doth contain 12 platters, 12 dishes, 12 saucers, and those are either of silver fashion or else with broad and narrow brims, and bought by the lb., which is now valued at sixpence or sevenpence or eightpence. Of porringers, pots, and other like, I speak not, albeit in the making of all these things there is such exquisite diligence used, I mean for the mixture of the metal, and true making of this commodity (by reason of sharp laws provided in that behalf) as the like is not to be found in any other trade. I have been also informed that it consisteth of a composition which hath 30 lbs. of kettle brass to 1,000 lbs. of tin, whereunto they add 3 or 4 lbs. of tingle; but as too much of this doth make the stuff brickle, so the more the brass be the better is the pewter, and more profitable unto him that doth buy and purchase the same." The most remarkable piece of English pewter that I have seen, is the South Kensington Museum salver engraved with the royal arms and garter in the centre, and with lightly incised branches of oak, roses, tulips, and sun on the rise. It is inscribed, as you see, "Vivat rex Carolus Secundus Beati pacifici 1662." The ornament, unlike that of all the German examples, is engraved, not cast. There are on exhibition

a variety of other objects of English pewter work of great interest. Among them I would especially call your attention to the platter engraved with homely incidents, of the time of Hogarth, with rococo borders, lent by the Pewterers' Company. The South Kensington Museum has recently been fortunate enough to acquire a service decorated with engravings from Hogarth.

FIG. 17.



I sat Measure, 17th century. (Havard.)

Now, as to the future of pewter, we can scarcely flatter ourselves, or wish that the march of progress is to be reversed, and that our beautiful pottery, porcelain, and glass will be laid aside. Civilisation will no more consent to dine off pewter platters again, than off wooden trenchers. It may furnish, however, once more, the larger vessel or plate for the tables and buffets of those who cannot afford, or dislike the ostentation of silver, and despise electro-plated shams. For presentations, again, how infinitely more desirable those noble pewter tankards and flagons before us are than electro-plated goblets and mugs, or even silver of shopkeeper's patterns. Then, merely as part of its decoration, a wainscoted room seems no more completely furnished without the decorative glint of pewter, than without the harmony of blue and white or grey pottery. Again, there are the beautiful cisterns, or wine-coolers, which Pepys could not do without. Something good might be done with pewter bas-reliefs for cabinet work and inlays, as in France. Inlays of pewter in the fashion of Boule work were made in the 15th century, and rafters and cornices in the royal palaces

of France were decorated with pewter ornaments, while in Germany entire doors were sometimes wholly covered with stamped and painted plates bearing armorial devices. Some rare and very beautiful coffers of the 14th century also exist, entirely decorated with pewter ornaments. What, again, could excel pewter for flambeaux, lamp-stands, candelabra, candlesticks, appliques for the wall, and pendant lustres. They could be inlaid with brass or copper, touched with niello, incised like sgraffito, and filled with black oxide, or heightened with enamels or subdued earthenware.

It seems our fortune to follow in the matter of art revivals in the wake of the French. In lead and zinc work, in good iron casting, in bronze, in forging iron, in tin and pewter, and in enamelling, they have preceded us by quite ten years at the least. They have never in fact, as we have, ceased to recognise the beauty of the industrial master pieces of their own country of preceding centuries; and hence their art revivals have been more rapid and more consistent than ours. Moreover the French nation is relatively largely leavened with artistic appreciation, which in our country is still almost as rare as gold grains in quartz. But if the French still stand first and almost unrivalled in art, we quite as certainly stand second, and there are indications that we may soon run them close. What we require, and what a great Society like this might do somewhat to accomplish, is the raising up of an intelligent artisan class with artistic feeling; which our educational outlay must be preparing for, in place, to some extent, of the operative class of the ignorant past. It is difficult to contemplate with patience the retrogression of skilled and industrious men, who have been highly instructed at school into the ranks of trades' unionism, whose tendency is to reduce the gifted and the automatic to one dead level—a happier and more prosperous one, no doubt, yet dull, and machine-like. Forced into ranks, where the majority rules and the minority has no rights, there is but one outlet for exceptional energy and skill, agitation, which is the destruction of good workmen. This might be checked by the revival of guilds of skilled craftsmen, with as complete freedom of action as ourselves. The part such a Society as this might take in guiding and helping such a movement is not for me to point out, but, however valuable the advice and sympathy of other classes may be, it can only be brought about by the actual

workers in the world who come in contact with the rising artisan, and who are familiar with his requirements and prejudices.

The author wishes to express his deep obligations to Mr. Thomas A. Simmonds, the Director of the Arts' Company of Derby, for the loan of the lantern slides, which rendered the metallic look and details of the objects with fidelity and precision. This company has with great spirit expended a large sum in photography, and producing lantern slides of a vast number of art objects in this country, especially of those in the South Kensington Museum. Also to the Director of South Kensington Museum, for the matchless collection of pewter lent in illustration of the paper, and to Mr. Gurney, for permitting his unique flagon to accompany it. To the Master of the Pewterers' Company, for the fine display of old English pewter belonging to the Company, and Mr. C. J. Shoppee, F.S.A., for the interesting collection of old pewter, admired for its perfect condition, and to Lieut.-Colonel Lambert, for some valuable specimens. Also to Mr. Henry C. Eyres, for specimens of English pewter table ware; and to Messrs. Brown and Englefield, for old and new price-lists, moulds and specimens in illustration of the manufacture of pewter.

DISCUSSION.

The CHAIRMAN said they must have all listened with great interest to this very learned and valuable paper. With regard to the analyses of the pewter in the South Kensington Museum, very little progress had been made, but the few specimens submitted to examination proved to be nearly pure tin, 99.0 per cent., he found in three platters, the exact date of which he did not yet know. There was no doubt that the presence of a small amount of lead gave, as in the case of bronzes, a certain velvety patina to the pewter; but, on the other hand, if the material was to be used for "spinning," a little antimony was necessary. He hoped they would soon see a great revival in the use of pewter. The use of flagons and other vessels had not been prohibited, he believed, since early times by the Church, but there were, as far as he knew, no chalices, or only one, in a little church recently built not far from Guildford, which, though it was for a poor community, they were endeavouring to make as beautiful as possible, and they had a pewter chalice of great delicacy and beauty; and there was no reason why this fine material should not be more used for church work. He almost regretted that the figure at the top of the fountain in Shaftesbury-avenue was not in pewter instead of aluminium, though it might be that it

would be too heavy for the attitude which Mr. Gilbert had thought fit to give to it; but it would have been more interesting and more likely to take a fine patina than aluminium, as far as he could judge from the few specimens of the metal which had yet been subjected to the London atmosphere. There were some very fine specimens of pewter recently exhibited in the Grafton Gallery, amongst a great deal which was remarkably bad, principally inlaid work in cabinets. It had been suggested that, in many cases, men like Briot, the son of Nicholas Briot, one of the greatest medallists, persistently made patterns, as it were, of gold and silverware in pewter, using this material much as a sculptor might use clay for his preliminary models. At any rate, there were accounts in the Rouen Mint of works executed in pewter, being subsequently cast in silver.

Mr. W. GOWLAND said he might be able to add a few remarks on the use of pewter in the far East, China, and Japan, but he must first refer to a difficult piece of research by the Chairman into the constitution of alloys, because it had a distinct bearing on the patina which the Japanese gave to their pewter vessels. Professor Roberts-Austen had shown, by means of the thermo-electric pyrometer, that when an alloy was in the act of cooling several definite alloys, in which the molecules of the metals were differently grouped from those of the mass, fell out at definite temperatures, so that the solidified metal did not consist really of one alloy, but was a mixture of several, more or less regularly diffused throughout its mass. This property, which was specially marked in the case of pewter, had been unconsciously taken advantage of by the Japanese in giving a patina to their old pewter tea-jars. These jars had a very fine surface, consisting of a dark grey patina, over which darker patches were scattered, forming a clouded pattern. Some of these old jars were very valuable, more so even than a silver jar of the same dimensions, especially when this mottled appearance was well developed, and uniformly distributed over the surface. In Japan, pewter articles were never polished after they left the hands of the maker, the sole treatment was to rub them over from time to time with a cotton or silk cloth, the result being that as they got old the surface became coated with a fine grey patina of two tints, the lighter forming the ground, over which was scattered dark patches, which produced a beautiful mottled effect. These were undoubtedly due to a grouping of the metals in different proportions, or in a different manner, to that which existed in the lighter parts. The action of the air and the gentle rubbing, in fact, rendered visible one, or perhaps more than one, of those alloys which fell out in cooling. This appearance was not visible on any of the specimens now shown, and he thought this was due to the vigorous polishing some of them had received, and in other cases to a neglect of any rubbing. He had analysed

the cover of one of these old Japanese tea-jars, dating from about the middle of the 18th century, taking two different parts, and, of course, they showed slightly different results, again proving the segregation which he had referred to. One part of the lid contained 80.48 per cent. of tin, and 20.02 of lead; the other 77.64 per cent. of tin, and 22.5 of lead; there was only a trace of copper and iron present, and no arsenic, antimony, zinc, nickel, or cobalt. Practically, therefore, Japanese pewter did not differ greatly from ordinary English pewter. So far as he had examined the pewter of the East, he always found that it consisted of tin and lead only; in old days they might have used antimony, but certainly not recently. In China, the use of pewter went so far back that there was no record of its introduction. Of its composition they knew nothing, but the mediæval Chinese pewter probably contained an excess of lead, because it was stated in the "Hon-zo-ko-moku," an old treatise on natural history, and *materia medica*, published in the 16th century, that wine—meaning a liquor prepared by fermenting rice—which had been kept in pewter vessels, acquired poisonous properties. The author attributed this to arsenic, saying it was well-known that arsenic generated itself in the space of 200 years, but after the lapse of another 200 years, by the action of the feminine principle of nature, it was converted into tin. When, therefore, these vessels were poisonous, the tin which had been used in their manufacture consisted of a mixture of arsenic and tin, an insufficient time having elapsed for the complete transmutation of the former into the latter metal. He added that when the tin so formed was acted upon by the male principle of nature it was converted into silver, but he did not specify the time required for this transmutation. He thought it highly probable that lead, and not arsenic, was the cause of the poisonous properties referred to. In Japan the first record of the use of pewter was during the reign of the Empress Shotoku, A.D. 765 to 770, when vases and utensils were made of it, from tin found in the country, which it was said was better for making pewter than the tin obtained from China, so that this alloy had evidently been in use at a much earlier date. The oldest specimens he had seen were in the ancient treasure-house at Nara, in which the paraphernalia and costumes of the court at the accession of the Emperor Kwammu were placed, when the capital was changed to Kioto, in 784. The specimens he saw there were spoons, resembling very much some of the duller specimens shown that evening, but he found it impossible to get even any scrapings for analysis. With regard to the use of pewter in Japan, it commenced about the 10th century, and was used with mother-of-pearl to inlay some of the finest lacquer work, and also for the rims of the larger boxes of lacquer. You might generally conclude that a lacquer box with a pewter rim was an old specimen. The ornamentation given to the pewter was very rarely *repoussé*—nearly always incised or pierced. In some cases pewter vessels were

entirely coated with gold lacquer. For some of the vessels used at the marriage ceremony, pewter, highly ornamented by inlaying with gold and silver and some alloys of brass and bronze, was occasionally employed; but at present the chief commercial use of pewter was in the manufacture of tea-jars and canisters, and for vase-shaped bottles, which were used in offering wine at the Shinto shrines. It was not much used for domestic utensils, for which wood, pottery, porcelain, copper, or brass seemed to be preferred. Probably the old Chinese belief as to the arsenical origin of tin might have something to do with this limited use of pewter.

Mr. PHENÉ SPIERS said he had no knowledge of pewter himself, but meeting Professor Church that day, he asked him if he could give him any information about it, and two things he learned from him might be of interest. He said he had found, in two or three cases, that the fonts in churches which were supposed to be of lead, were really of pewter; one in particular he referred to, near Cirencester, of 13th century design, of which he had made a drawing, showed that in its design it was similar to the work found in 13th century tomb-work in hard stone. He also told him that Chancellor Ferguson, of Carlisle, had lately published a work in which he gave illustrations of chalices and church plate found in the northern province, showing that there still existed specimens of church plate in pewter in the north. In the early part of the paper Mr. Gardner referred to the great cost of the mould for casting pewter, but subsequently he remarked on the facility with which old pewter was re-cast, and the nominal cost at which it was done; and he did not understand how those two facts were reconciled. Perhaps the expensive moulds were for elaborate work, and did not refer to ordinary platters and pots. He should also like to have the word "spinning" explained, as it was quite new to him.

Mr. ENGLEFIELD said pewterers in London did very little spinning. It was done on the lathe with a spinning stick, according to the shape of the article required.

The CHAIRMAN said pewter was plastic, just like clay; a disc of the metal was put on the lathe, "spun" at a certain rate vertically, and a hard tool being pressed laterally against it, it followed the tool with as much facility as if it were clay.

Mr. HUGH STANNUS desired to express thanks to Mr. Gardner for the interesting paper, illustrated as it was so fully by engravings, lantern-slides, and a fine collection of old and modern pewter-work. He ventured to express his opinion that if anyone were fitted to prepare a text-book on the subject, it would be Mr. Gardner himself, who possessed the practical knowledge, the artistic instinct, and the literary ability; as had been shown in the book on

Iron-work, prepared for the South Kensington Museum. Allusion was made to pewter pots having been used as weapons in brawls, and he thought brass candlesticks must have been used in the same way, for he had collected some, and found they were often out of shape, as if they had been used as clubs. With regard to the use of vessels in a "sepulchre," it might be expected perhaps in this way. In Italy, the recesses underneath the raised choir portion of the church are sometimes furnished with life-size figures, in terra-cotta, on one side a representation of the Last Supper, and on the other side one of the Entombment; and perhaps the pewter plates might find their place as part of the furnishing of the table in the former. He was much interested in the possibilities of pewter, both as a medium of artistic expression, and as a suggestive material for village industries. He asked Mr. Gardner to give his opinion on the various methods of decorating the material—engraving and punching, embossing and chasing, or die-sinking and casting.

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Mr. STARKIE GARDNER said he was much indebted to Mr. Gowland for the admirable manner in which he had supplemented the paper, on point about which he was quite ignorant himself. What he said about the patina of pewter was quite new to him, and probably to most people; for he did not know that it was one of the beauties to be looked for in pewter. No doubt, when they were more advanced in the manufacture, and understood it better, they would avail themselves of this property. He was glad to learn that Japanese pewter was tin and lead, as he was in favour of that alloy, rather than tin and antimony or tin and copper. The antiquity of the Japanese and Chinese pewter put ours quite in the shade, as we could not go back farther than about the 8th century, there being amongst the specimens until lately preserved a chalice of the 8th or 10th, and a candlestick of the 11th century. The old English fonts, to which Mr. Spiers referred, had always passed for lead, and had become dark in colour by age and neglect. There were many pewter chalices in the north, especially in Scotland, and he believed they were still made. Re-casting was so cheap, by reason of the enormous demand, as soon as pewter generally replaced wooden platters; and, as thousands of articles could be produced from one mould, the initial cost of the mould was not important. Spinning was a well known operation in brass-finishing, and there were many spinners in London who did nothing else, and some of the products were very beautiful. He was obliged to Mr. Stannus for his suggestion, but he had no inclination to undertake any more text-books; they involved such an amount of research that one or two in a lifetime were as much as should be expected from anyone. Briot's work was all cast; he was a medallist and die sinker, and the dies from which all these beautiful things were produced were sunk in



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the cover of one of these old Japanese tea-jars, dating from about the middle of the 18th century, taking two different parts, and, of course, they showed slightly different results, again proving the segregation which he had referred to. One part of the lid contained 80.48 per cent. of tin, and 20.02 of lead; the other 77.64 per cent. of tin, and 22.5 of lead; there was only a trace of copper and iron present, and no arsenic, antimony, zinc, nickel, or cobalt. Practically, therefore, Japanese pewter did not differ greatly from ordinary English pewter. So far as he had examined the pewter of the East, he always found that it consisted of tin and lead only; in old days they might have used antimony, but certainly not recently. In China, the use of pewter went so far back that there was no record of its introduction. Of its composition they knew nothing, but the mediæval Chinese pewter probably contained an excess of lead, because it was stated in the "Hon-zo-ko-moku," an old treatise on natural history, and *materia medica*, published in the 16th century, that wine—meaning a liquor prepared by fermenting rice—which had been kept in pewter vessels, acquired poisonous properties. The author attributed this to arsenic, saying it was well-known that arsenic generated itself in the space of 200 years, but after the lapse of another 200 years, by the action of the feminine principle of nature, it was converted into tin. When, therefore, these vessels were poisonous, the tin which had been used in their manufacture consisted of a mixture of arsenic and tin, an insufficient time having elapsed for the complete transmutation of the former into the latter metal. He added that when the tin so formed was acted upon by the male principle of nature it was converted into silver, but he did not specify the time required for this transmutation. He thought it highly probable that lead, and not arsenic, was the cause of the poisonous properties referred to. In Japan the first record of the use of pewter was during the reign of the Empress Shotoku, A.D. 765 to 770, when vases and utensils were made of it, from tin found in the country, which it was said was better for making pewter than the tin obtained from China, so that this alloy had evidently been in use at a much earlier date. The oldest specimens he had seen were in the ancient treasure-house at Nara, in which the paraphernalia and costumes of the court at the accession of the Emperor Kwammu were placed, when the capital was changed to Kioto, in 784. The specimens he saw there were spoons, resembling very much some of the duller specimens shown that evening, but he found it impossible to get even any scrapings for analysis. With regard to the use of pewter in Japan, it commenced about the 10th century, and was used with mother-of-pearl to inlay some of the finest lacquer work, and also for the rims of the larger boxes of lacquer. You might generally conclude that a lacquer box with a pewter rim was an old specimen. The ornamentation given to the pewter was very rarely *repoussé*—nearly always incised or pierced. In some cases pewter vessels were

- TUESDAY, JUNE 5...Royal Institution, Albemarle-street, W., 3 p.m. Rev. W. H. Dallinger, "The Modern Microscope: an Instrument of Recreation and Research."
- Central Chamber of Agriculture (at the HOUSE OF THE SOCIETY OF ARTS), 11 a.m.
- Biblical Archæology, 37, Great Russell-street, W.C., 8 p.m.
- Zoological, 3, Hanover-square, W., 8½ p.m. 1. Dr E. A. Goeldi, "Critical Remarks on the Opossums of the Serra dos Orgaos, Rio de Janeiro, Brazil." 2. Mr. O. Thomas, "The New Algerian Gazelle, *Gazella loderi*." 3. Dr. C. I. Forsyth Major, "Necrolemur and its Affinities, and on retrogressive Evolution in the Lemuroids and in the Mammals generally." 4. Dr. W. Benham, "An Abnormal Vertebral Column of the Bull-frog."
- WEDNESDAY, JUNE 6...Geological, Burlington-house, W., 8 p.m. 1. Sir Archibald Geikie and Mr. J. J. H. Teall "The Banded Structure of some Tertiary Gabbros in the Isle of Skye." 2. Mr. H. H. Arnold-Bemrose, "The Carboniferous Dolerites and Tuffs of Derbyshire." 3. Mr. R. D. Oldham, "The Origin of the Permian Breccias of the Midlands, and a Comparison of them with the Upper Carboniferous Glacial Deposits of India and Australia." Archaeological Association, 32, Sackville-st., W., 8 p.m.
- Obstetrical, 20, Hanover-square, W., 8 p.m.
- Archæological Institution, Oxford-mansion, Oxford-street, W., 4 p.m.
- THURSDAY, JUNE 7...National Veterinary Association (at the HOUSE OF THE SOCIETY OF ARTS). Conference. Royal, Burlington-house, W., 4½ p.m.
- Antiquaries, Burlington-house, W., 8½ p.m.
- Linnean, Burlington-house, W., 3 p.m. Sir John Lubbock, "Stipules and the Protection of Buds." Chemical, Burlington-house, W., 8 p.m. 1. Election of Fellows. 2. Mr. Herbert Jackson, "The Nature of Phosphorescence." 3. Mr. A. E. Tutton, "The Crystallography of the Normal Sulphate of Potassium Rubidium and Cæsium." 4. Dr. James Walker, "The Boiling points of Homologous Compounds." (Part II.)
- Society for the Encouragement of Fine Arts, 9, Conduit-street, W. 8 p.m. Mr. J. Starkie Gardner, "Ironwork in Europe during the Renaissance." Royal Institution, Albemarle-street, W., 3 p.m. Prof. W. M. Flinders Petrie, "Egyptian Decorative Art."
- FRIDAY, JUNE 8...National Veterinary Association (at the HOUSE OF THE SOCIETY OF ARTS). Conference continued.
- Royal Institution, Albemarle-street, W., 8 p.m., Weekly Meeting, 9 p.m. Prof. C. Vernon Boys, "The Nerotonion Constant of Gravitation." Astronomical, Burlington-house, W., 8 p.m.
- Physical Science Schools, South Kensington, S.W., 5 p.m. 1. Discussion of the paper by Mr. Baly and Prof. Ramsay, on "The Relations of Pressure Volume and Temperature of Rarified Gases." 2. Captain Abney, "An Exhibition of Photographs of Flames."
- SATURDAY, JUNE 9...Botanic, Inner-circle, Regent's-park, N.W., 3½ p.m.
- Royal Institution, Albemarle-street, W., 3 p.m. Mr. R. W. Lowe, "The Stage and Society." Zoological, Regent's-park, N.W., 4 p.m. Mr. F. E. Beddard, "Sketches in Geographical Distribution." (Lecture IV.)
- CORRECTION.—Page 623, col. 1, *del* line 7 from the bottom.