THE ART-JOURNAL.

LONDON, JANUARY 1, 1854.

LITHOGRAPHY, AND OTHER NOVELTIES IN PRINTING.

LITHOGRAPHIC PRINTING BY STEAM—CHROMO-LITHOGRAPHY—NATURAL PRINTING, OR PHYTO-GLYPHY—BLOCK-PRINTING.

We presume lithography is now so familiar to our readers, that but little necessity exists for any detailed description of the processes and the principles involved. Being desirous, however, of communicating the recent advances which have been made in colour-printing from stone, we feel that it is necessary to furnish some little information of the general manipulation; that each particular stage in advance may be well understood and the difficulties to be overcome clearly perceived. The interesting character of the inventor of lithographic printing, and the opposition which he met with in his attempts to introduce the novelty of printing from stone, presents so instructive a lesson, that a short space may be devoted to the consideration.

Alois Senefelder was a resident in Munich, his father being connected with the Royal Theatre in that city, and Alois himself, after his father's death, was employed as a supernumerary actor in the same establishment, which he left to enter on the no less uncertain life of an author. Senefelder has told us his own story, but we do not learn from it the reasons which led him to think of printing from stone. We are told by some writers on the subject, that it was pure accident, but none of the incidents in Senefelder's own narrative lead to such a supposition; on the contrary, they show the most pains-taking research, and gradual advance, step by step, as the result of well devised experiments. The young author was anxious to print a work of his own, and not being able to incur the cost of a printing-press, he obtained some blocks of Kellhein stone and endeavoured to *etch* upon these.

"I had just succeeded," he says, "in my little laboratory in polishing a stone plate, which I had intended to cover with an etching-ground, in order to continue my exercise in writing backwards, when, my mother entered the room, and desired me to write her a bill for the washerwoman who was waiting for the linen. I happened not to have the smallest slip of paper at hand, as my little stock of paper had been entirely exhausted by taking proof impressions from the stones, nor was there even a drop of ink in the inkstand. As the matter would not admit of delay, and we had nobody in the house to send for a supply of the deficient materials, I resolved to write the list with my ink, prepared with wax, soap, and lamp-black, on the stone which I had just polished, and from which I could copy it at leisure. Sometime after this, I was going to wipe this writing from the stone, when the idea all at once struck me to try what would be the effect of such a writing with my prepared ink, if I were to bite in the stone with aqua-fortis: and whether, perhaps, it might not be possible to apply printing ink to it, in the same way as to wood-engravings, and so take the impressions from it." The experiment was successful, but Senefelder was too poor to pursue his discovery, and for the purpose of raising money he determined to enlist as a private soldier in the artillery. He continues, "I was quickly resolved, and on the third day after forming my resolution, I went to Ingolstadt with a party of recruits to join my regiment. It was not without some feelings of mortification and humbled pride that I entered the city, in which I had formerly led the independent life of a student, but the consciousness of my own dignity, and enthusiasm for my new invention, greatly contributed to restore my spirits. I slept in the barracks, where I was not a little disgusted by the prevailing filth, and the vulgar jests of a corporal. The next morning I was to enlist, but to my great disappointment the commander of the regiment discovered that I was not a native of Bavaria; and, therefore, according to a recent order of the elector, could not serve in the army without obtaining a special license. Thus my last hope failed me, and I left Ingolstadt in a state of mind bordering on despair. As I passed the great bridge over the Danube, and looked at the majestic river in which I had been twice nearly drowned while bathing, I could not suppress the wish that I had not been then saved, as misfortune seemed to persecute me with the utmost rigour, and to deny me even the least prospect of gaining an honest subsistence in the military career." Fortune however was disposed to smile upon the inventor, and on his return to Munich, a musician in the Elector's band, Mr. Gleissner, employed Senefelder to prepare a series of lithographic stones with the music and words of some songs which he desired to publish. These were the first specimens which the world saw of Lithography; and as a commercial transaction it was moderately profitable. Some other works having been executed in the same manner, Senefelder communicated his process to the Electoral Academy of Sciences, which treated the invention coolly, and merely rewarded the inventor by the gift of twelve florins. Senefelder, however, assisted by Mr. Gleissner, was enabled to execute several important works, and he struggled on through many difficulties until the commencement of the present century.

In 1800 a patent for printing from stone was obtained in this country, and, of course, an accurate description of the process lodged in the specification at the patent office. The process was introduced by Mr Philip André under the name of Polyantography. From this period the progress of Lithography has been one of steady advance. For a period the artists and engravers, alarmed at the idea of the production of fac-similies of their works with so much ease, were not at all disposed to favour printing from stone. These prejudices were however gradually overcome until, at length, the artists discovered many advantages in the process, and it became of general use throughout Europe.

The process of the art of Lithography depends upon the following principles:—

The adhesion of an encaustic composition to a peculiar kind of limestone.

The lines being drawn on the stone with this fat, the power acquired by these parts of receiving printing ink, which is a compound of carbon and oil.

The power which we have of preventing the adhesion of the ink to the other parts of the stone by the interposition of a film of water.

And lastly, on our being able to remove the ink from the greased portions by simply pressing an absorbent paper into close contact.

Lithographic stones are produced in several parts of Europe, but the principal supply of the best stones is from the quarry of Solenhofen, a short distance from Munich; and the quarries of limestone which occur in the county of Pappenheim, on the banks of the Danube. In England, stones of a similar character have been found at Corston, near Bath; and at Stoney-Stratford; but these are generally considered as inferior to those from Bavaria. Some attempts have been made to produce artificial stones for the purposes of the Lithographic artist. The most successful have been formed by combining lime and very fine sand with caseine, or the cheesy portion of milk. When dry, this becomes as hard as marble, and is moderately absorbent; but in all respects very inferior to the stones obtained from Munich.

Although these calcaro-argillaceous stones have much the character of the liasic limestones, and in their natural conditions present the like conditions of occurring in *layers*, as the lias does, they do not belong to the same geological epoch, being of much more recent formation.

These stones are prepared in different ways, according to the work for which they are intended. When the stone is to be used for writings, or ink drawings, it must be polished by means of finely powdered pumice stone, and pumice stone in the lump, until the surface reflects objects to the degree in which they are reflected by polished marble.

For printing chalk drawings, this polish is not required, but a perfectly smooth and uniform surface. This is produced by taking two stones of the required sizes, fixing one securely on a table, and dusting its surface with very finely powdered quartz or silicious sand, and sprinkling water upon it:—by some an addition of starch is made to the sand. The other stone is now placed on this, and by circular sweeps in various directions, so that the lines shall regularly cross each other at right angles, a uniform surface is eventually obtained. The greatest care is necessary in cleaning the stone of the sand, by means of a brush and abundance of water.

Lithographic crayons for drawing upon stone require the most careful preparation. They must be composed of ingredients which will adhere to the stone; the unctuous preparation must not diffuse itself on either side of the line drawn, howsoever fine that line may be. The crayons must be hard enough to admit of finely pointing, without the liability of breaking, so that the artist may have the power of producing with certainty the most delicate lines.

The following receipt, by Bernard and Delarue, is said to be of superior excellence.

Finest White Wax	4 ounces.
Soap (finest White Tallow)	2 ,,
Pure Russian Tallow	2 ,,
Gum Lac	2 ,,
Finest Lamp Black—a sufficient quantity to give a dark tint.	

The wax being melted, the lac broken small is added by degrees, and stirred until uniformly incorporated; the soap is then added: next the tallow, and lastly the lamp-black. It is not unusual to set fire to the melted mass, which process certainly prevents the escape of offensive exhalations, and, as some Lithographic artists say, improves the composition. This is not easily understood, and for the latter purpose it would appear far more reasonable to seek for improvement by altering the proportions of the materials by *weight* instead of by *fire*, for the combustion acts more energetically upon one of the materials than upon another. Lasteyrie's crayon composition is much more simple in its character, and made on a more improved method. Six parts of white soap, and the same quantity of white wax are melted carefully in a vessel closed up, and the lamp black gradually dusted in, carefully stirring the mixture. Either of these compositions is poured into brass moulds while hot, and when cool they should afford brittle slices.

Lithographic ink is, in principle, the same as the crayon composition, the proportions only being varied. Lasteyrie's is made of

Dried Tallow Soap	30 ounces.
Mastic, fine	30 ,,
Carbonate of Soda	30 ,,
Shell Lac	150 ,,
Lamp Black	12 ,,

When the ink is to be used, it is to be rubbed down with water in the same way as with China ink, till the required shade is produced. The temperature of the room should be from 85° to 90° Fahr., and the palette upon which it is rubbed should be warmed. As this readily dries, no more should be mixed than is required for present use.

With the stone prepared, and the crayons or ink, the artist commences his work; the ink is

used in steel pens manufactured for the purpose. This is, of course, an operation of much delicacy where the production is of an artistic character. For a long period it was found almost impossible to repair an injury or correct a fault. Mr. Coindet, in 1827, however, succeeded in overcoming this difficulty, and now the artist has the power of retouching his drawings, and even, to a certain extent, of varying the composition and altering the effect.

To place a chalk drawing on the stone, the outline may be traced upon it with a black-lead pencil, or a stick of red chalk. A method is sometimes adopted of placing a little rice-paper, one surface of which has been previously rubbed with red lead, upon the stone, and then with a steel point carefully tracing the outline. The red lines left upon the stone are a sufficient guide to the artist, and he proceeds to fill in with his crayons precisely as if he was drawing upon paper.

For writing, the ink above mentioned is employed, but for either process the utmost cleanliness is required, to keep the stones free of spots. If it is touched by the draughtsman's hand, the organic moisture produces a spot which will take ink from the inking roller; even breathing on the plate produces an injurious effect.

To write on the stone so that the printed impression shall be correct, it is of course necessary that the writing should be inverted from right to left; this is a tedious process, and difficult to acquire. To overcome this, autographic paper is used, the writing or drawing is made on this in the usual manner, and then transferred to the stone.

Autographic paper is prepared by laying on successively three coats of sheep-foot jelly, a layer of white starch, and a layer of gamboge. When the paper is dry, it is passed through the press for the purpose of receiving a polished surface. The ink used upon this paper consists of white wax, soap, shell-lac, and lamp-black.

To transfer the writing or drawing to the stone, it is necessary to moisten the transfer-paper, and then placing it on the stone and subjecting it to a little pressure, the ink is infallibly removed from the gamboge. Indeed, by moistening, the starch separates from the gelatine, and the paper is restored to its original condition.

The drawing or writing being, by any of these methods, made upon the stone, it is placed obliquely over a tank, and a weak solution of nitric acid poured upon it. The stone is then reverted, and the acid poured again over it. The strength of acid usually employed is about one part of strong nitric acid to one hundred parts of water. This—the etching process as it is called—requires great care; the acid acts on the limestone, and there is some effervescence; it requires therefore considerable practical skill to determine the amount of abrasion which should be allowed to take place. If continued too long the fine lines are destroyed, and the drawing otherwise injured. The drawing is then well inked with the inking roller, and a layer of gum arabic floated over the stone, the solution being about the consistence of a syrup. After these various stages have been completed, the stone is fit for printing from. The stone is kept just wet enough to prevent the ink, which is applied by rollers, as in the ordinary processes of printing, from going on any part of it but the drawing, and a very little gum is allowed to remain on the stone during the whole process. It will now be seen that the object has been to produce a drawing or writing by the formation of greased lines. Grease and water, or acid, are repellent of each other, and, therefore, since we employ an ink which contains unctuous matter, it will only be received on those lines which are already greased, the moistened parts of the stone rejecting it. The paper prepared to receive the impression from the lithographic stone is now placed upon it, and it is submitted to a peculiar scraping pressure, which is found to produce a far better effect than a direct and equal action over every part at the same time.

Without a drawing it is difficult to describe the construction of the lithographic printing press, but it will be sufficiently indicated by stating that the scraper is a wedge-formed plate of steel, fixed with the bottom of the platten with its edge downwards, and capable of nice adjustment by screws, so that it may lie parallel with the face of the stone lying on the table of the press. The table on which the stone with the paper for receiving the impression is placed, and the tympan, as in the ordinary press, brought down, is by means of a handle and rollers brought under the scraper, and the pressure is thus gradually continued from one end of the plate to the other; when it has passed through, the scraper is lifted, the moving table brought back to its original place, and the impression removed.

Various attempts have been made from time to time, to employ steam presses for the purpose of expediting the process of lithographic printing, but without any great degree of success. Messrs. Napier and Sons, some years since, devised a very ingenious arrangement for securing the scraper motion in a machine urged by steam power. We have lately had an opportunity of examining a new steam lithographic printing-press, or rather self-acting lithographic machine, invented at Vienna, and which has been used for some time at the lithographic printing establishment of Messrs. Maclure, Macdonald and Macgregor, who are the patentees for the United Kingdom. In this machine the lithographic stone is moistened, inked, and printed, by a series of adjustments which exhibit a very high order of mechanical ingenuity.

The patent self-acting lithographic machines appear to possess advantages over every other description of machine hitherto invented for this art, in consequence of their speed. It is stated that they outstrip the best hand printer at the rate of thirty to one, at the very lowest calculation, and that this is done without any sacrifice of quality. The higher kinds of drawing must still be printed by hand, but this new process is perfectly suitable for all purposes of business advertisements, circulars, maps and plans, transfers from copper and steel plates, for the multiplication of impressions of newspapers, as an agent for the production of a daily or illustrated journal.

The stone traverses through beneath a damping roller of most ingenious construction, then comes in contact with the inking rollers, two in number, is caught by the pressure, making the impression complete; it then delivers the perfected work, printing, as we are told by the patentees, large folio at the rate of 800 per hour, or 8000 per day.

Chromo-Lithography, or printing in colours, has for some years been attracting considerable attention, and has lately made surprising advances in this country. It may be remembered by many of our readers that there were in the Great Exhibition some very beautiful specimens of printing from stone in colours, furnished from the Imperial printing offices at Vienna. These productions were by Hartinger, and were accompanied by the several impressions in single colour to show the manner in which the various tints were combined. In the Fine Art Court, Class 30, there were also many examples by our English Lithographers, the finest examples being those then produced by Messrs. Day and Son. Their very striking work, "The Destruction of Jerusalem by Titus," from Roberts's picture, remarkable alike for size and correctness of imitation, and some other works by Louis Haghe, Lane, &c., advanced this process to a pitch of excellence. Since that time the same firm has produced a copy of the "Blue Lights," by Turner, which, when placed beside the original, wanted but one thing to the production of a perfect fac-simile. Atmospheric effect required the application of a semi-transparent glaze, which can scarcely be produced by printing from stone; but this might we think have been obtained by a subsequent application of colour by an artistic hand In all chromo-lithographic works, as many stones must be employed as there are colours upon the picture. The preparation of them demands that great care be taken in the respective drawings, so that each part combines perfectly with those corresponding with it. The registration, as it is called, of each must be carefully maintained throughout every stage of the operation; consequently the process is essentially a slow one, although the results produced are of exceeding beauty. About one hundred impressions of the large plates in Roberts's splendid work on Egypt can be produced in a day. This, however, must be regarded as fine specimens of tinting in lithography rather than examples of chromo-lithography.

It will be understood that the only difference in the process of colour printing, and the ordinary printing in black ink, is in adding the required colour to the ink instead of lamp-black.

Amongst other examples of the perfection to which this process may be carried, we must refer to the reproduction of the head of Shakspeare, in chromo-lithography, by Mr. Vincent Brooks, of King Street, Covent Garden. It is difficult at a distance to determine whether we are looking at the old oil painting, or a copy of it merely, every crack upon the varnish being preserved in all its truthfulness. This lithographer has also executed some flowers—which, for delicacy of colouring and exactness of detail, are amongst the finest examples we have seen. Mr. Brooks' most recent work from the picture by Ansdale shows still more perfectly the capabilities of the Art, and leads us to believe that in a few years we may expect to see chromo-lithography taking the place occupied by fine line engravings. The reproduction of some of Mr. Hunt's works—in particular, a "Fruit-Piece," and the "Bird's Nest," by Messrs. Hanhart, are equally beautiful realisations or reproductions of the artist's work.

Woodcuts can be well imitated in lithography by covering the stone with ink, taking out the light parts with a steel point, and putting in the fine lines with a camel-hair pencil. Copperplate prints may also be imitated by an etching process, but, by taking an impression from a copperplate upon transfer-paper, and then immediately communicating the impression to the stone, *fac-similes* are obtained.

Amongst the latest advances in lithography is its combination with photography. The photographic impression is obtained by covering the stone with a sensitive resin. All the parts most acted upon by the sun's rays are rendered soluble and easily dissolved off. These parts being etched, as we have already described, the lines covered with the resin are in a condition for receiving the unctuous ink, and for printing from. We have seen some exceedingly good results produced in this way, and we doubt not but in a few years the combination of these two Arts will place us in possession of copies from Nature in all that beauty and correctness of detail which belongs to the process of sun-painting, and which can be so successfully multiplied by stone printings.

Natural Printing, or Phytoglyphy.—We briefly noticed in our last number the process introduced into this country under this name, and patented by Messrs. Bradbury and Evans, Whitefriars. We again refer to it for the purpose of describing all the conditions of the process. It appears that this natural printing, (*Naturselbstdruck*) as it is termed, is the invention of the superintendent of the Galvanoplastic department of the Imperial printing-office at Vienna, named Andrew Worrung, but in conjunction with whom it has been patented in Austria by Councillor Auer, the director of the establishment, who has in the pamphlet which he has published, printed at his own office in different languages, and circulated over Europe, claimed for himself a far larger share in this interesting process than he merits. The first experiments were made upon patterns of laces; the lace was laid upon and secured to a plate of polished copper, and then a plate of soft surfaced lead being placed upon it, the whole was passed through the rollers of a copper-plate press. By this method a perfect impression of the textile fabric was obtained; and upon inking the plain surface of this indented lead plate impressions could be printed off at the surface-printing press, presenting the design in white upon a dark ground; or by another method, namely by taking an electro cast of the lead plate and producing impressions in black upon a white ground, at the ordinary copperplate press.

It is not improbable that the idea may have been borrowed from the practice of the workers in German-silver, who ornament that metal by placing pieces of lace between two plates of it,

and passing them through rollers. The *leaves* of *plants, branches, roots, sea-weeds, feathers,* or any substance that is capable of being impressed into lead (as the patentees have described it) are made to impress their figures upon lead-plates in a similar manner. The thickest parts of the plants, the roots and stem, make a deep impression in the lead, and all the other parts produce indentations equal to their thicknesses. It will be evident, therefore, that the thin leaves of flowers and leaves are the most superficial parts of the impression; and, in all the printed specimens we have seen from Vienna, as well as those produced by Messrs. Bradbury and Evans, are exceedingly transparent, but all the venations of the leaves are drawn with the greatest delicacy and fidelity to nature.

To print impressions from a lead-plate would obviously be impracticable; therefore, a copy of the lead-plate is obtained by the electrotype process in copper, and from these any number of equally perfect impressions can be obtained. The Austrian patent includes every process by which copies can be obtained from natural objects; hence, such as are bulbous, and which could not be squeezed, are copied by means of gutta-percha moulds.

Agates are represented on paper with very great fidelity. The several layers constituting the agate itself are not equally dense; they are therefore acted on by fluoric or other acids; some lines are thus etched to a greater or less depth, and others left untouched. A proof might be taken at once from the stone; but in printing the Vienna specimens, the face of the agate after biting in with acid has been copied by means of the electrotype process. Several impressions are arranged upon one sheet of the gutta-percha; consequently, the resulting electro-plate may include any number of copies of the etched agates. Fossil remains that will not, from their brittle nature, admit of being pressed, are copied by means precisely similar in result, though not in manipulation—instead of applying gutta-percha by pressure, it is applied with care in a soft soluble state, forming a mould, and when dry removed and copied by means of the electrotype process.

The extensive capabilities of this new art are already shown in the very perfect manner in which we have seen the wing of a bat copied by it; the resulting impression on paper showing in the most delicate manner the peculiar structure of the membranaceous part, and preserving all the firmness of the bony frame-work. The copies of mosses produced in the Vienna establishment are so singularly true to nature, that it is difficult to believe that the representations on paper are not the plants themselves, mounted with great care, and we shall look forward with some interest for the progress of an art which in its infancy affords so many proofs of the immense value it is likely to afford towards revivifying nature with such truthfulness.

This *Natural Printing*, as Auer has called it, exhibits some remarkable facilities for the reproduction of natural images. The processes are simple, and when by experience a few of the existing imperfections are overcome, we may look to it as a probable means of affording illustrations for many works on natural history.

The plates of flowers are printed in colours, and we learn that it is not necessary, as in chromolithography, to employ a separate plate for every colour; the colours are applied to the plate, and all the colours obtained on the paper, by one application of the press.

Messrs. Bradbury and Evans have afforded us the opportunity of seeing the process in work, and from the explanations given by these gentlemen, it is very evident that, simple as the process may appear from reading of it, there are a great many troublesome details that only experience can explain.

The English patent embraces, in addition to phytoglyphy, mineralography, and the other processes of copying from nature, each of which, strictly speaking, is nothing more than phytoglyphy, the difference being only in the manipulation—not in the result. Towards spring the public may expect to have an opportunity of expressing their opinion upon the subject, which is one of exceeding interest. We have submitted some of the specimens to a first-class botanist, and he assures us the value of the process—as showing the venations of the leaves and the most delicate lines of structure—must ultimately be great. A series of leaves thus printed would furnish the geologist with the means of identifying the fossil plants; and the reproduction of the images of fossil animals, as they lie imbedded in the rock, cannot but be of great assistance to the palæontological student. To the designer this process offers many advantages, as procuring for him truthful representations of nature, and disclosing peculiar lines of structure—available for the purpose of ornament, which could not be obtained in any other way.

The impulse which has been given to industrial instruction, particularly in the National and British schools, has led to the production of scientific diagrams, at an exceedingly cheap rate, by the means of block-printing, and we have lately seen some specimens of botanical diagrams, produced by Mr. Griffin, of Finsbury, by the process of cylinder-printing, remarkable for their correctness in drawing and in colour. A large sheet containing as many as twelve or fourteen colours can thus be produced for about sixpence. The educational means afforded us are being increased with remarkable rapidity. We must hope that the result will be the gradual introduction of more correct knowledge than that at present possessed by the masses, and the diffusion of a higher order of taste. By increasing the rapidity of production, by applying steam to the lithographic press, by the process of chromo-lithography which appears equal to the production of works of the highest order in Art, by the introduction of this new means of copying nature with ease and certainty, may we not hope we are advancing the state of civilisation? This advance, too, is not in the direction of those luxurious habits, which by enervating soon produce a retrograde movement, but in that of stimulating the mind to the study of the true and beautiful in art and nature, thus giving strength to the mind, and improving, as a consequence, the moral condition of the race.

ROBERT HUNT.

WHAT IS HERALDRY?

OR,

AN ENQUIRY INTO THE ORIGIN AND NATURE OF ARMORIAL ENSIGNS

IN CONNEXION WITH

HISTORY, BIOGRAPHY, POETRY, AND THE ARTS.

BY WILLIAM PARTRIDGE.

UNDER this title it is not intended to write a formal treatise on heraldry, with all its details and technicalities; of such learned works there is a sufficient number already extant, expressly and only fitted for those who mean to make it the business and profession of their lives. But are there not a large number of persons in every possible branch of Art and manufacture, ornamental and decorative, who have constant occasion for some heraldic badges, devices or symbols, in various portions of their works, and to whom a little more correct idea of the real nature of such symbols, and how they should be treated, would be a benefit—inasmuch as it would give consistency where it is now very frequently wanting, and thus improve the style and raise the tone of their works; besides another very large class of intelligent general readers, who, not wishing to dive into all the intricacies of the subject as professed antiquaries or archæologists, yet would always be interested in seeing the correct meaning of many hundreds of passages and allusions in our historians, poets, &c? For this purpose it is proposed to embody, in a few papers, the substance of a course of lectures, which have been delivered at many of the principal literary and mechanics' Institutions.

We will not now pause to dispute with the learned the relative antiquity of heraldic ensigns; some maintaining that they are as old as civilisation itself; others can see the origin of family distinctions in the phonetic alphabets of ancient India and China; some have found its origin in the lofty national banners and the double shields, titular and patronymic, of the ancient Egyptians; some, again, in the crests and cognominal ovals, since discovered in the sculptures of ancient Mexico; not a few, again, have seen in the emblematical standards of Nineveh a remarkable agreement with the symbols used by Daniel, Ezekiel, and the Apocalypse, as the origin of symbolical distinctions, and have maintained the connexion, or even the identity of the standards of the twelve tribes of Israel, with the twelve signs of the zodiac. But all these opposite systems are not so hostile as they at first sight appear, if we only recollect for a moment that they are all parts of that great system of symbolical teaching, which prevailed among the nations of antiquity before the use of letters.

Those who say there was no heraldry before the time of the Crusades should state in what sense they apply the term. It is evident, if we reflect on the early stages of society, that as mankind increased from individuals to families, from families to tribes, and tribes spread into states, nations, empires, and as civilisation progressed, all the relationships and requirements of society would become more complex, and would induce a self-evident necessity for some mode of recognition, by which the head of a family, or the chief of a clan, might be readily distinguished from other leaders. Hence ensigns and landmarks; indispensable in time of peace for order and discipline, much more so in war, to distinguish friends from foes. This principle appears manifest in the early history of every nation. All the writers of remote antiquity give to their chief personages certain symbols. Diodorus Siculus ascribes to Jupiter a sceptre, to Hercules a lion, to Macedon a wolf, to the ancient Persians an archer; and we all know the Roman eagle, a term synonymous with Rome itself from B.C. 752, down to the fall of the empire. These allusions in the earliest writers, poetical and mythological as they may be, all testify to one great principle or fact, viz., that no nation has ever yet appeared on the page of history, nor has any poet ever conceived the idea of any tribe or state, which did not use symbolical distinctions of some sort; what those distinctions were, and in what way they were carried out, is another question which we shall consider subsequently; it is sufficient now to establish the universality of the principle, and of which we have a fine example in Holy Writ, (see the Book of Numbers, ch. ii.) When the oppressed Israelites were brought out of Egypt, and encamped in the wilderness, the first thing was to marshal them in order; the twelve tribes forming four grand divisions, each with three sub-divisions; thus, on the east, under the standard of Judah, were to be planted the tribes of Judah, Issachar, and Zebulon; on the south side the standard of Reuben, and the tribes of Reuben, Simeon, and Gad; then the tabernacle in the midst of them; on the west the standard of Ephraim, and the tribes of Ephraim, Manasseh, and Benjamin; on the north side the standard of Dan, with the tribes of Dan, Asher, and Naphtali; "And thus every man of the children of Israel shall pitch by his own standard, with the ensigns of his father's house; far off about the tabernacle of the congregation shall they pitch." Now there can be no question that the ancient modes of distinction were very various; in some cases they would be standards carried aloft in the field, in others a device depicted on their tents, or dwellings, in some a mark on the costume, in others on the skin itself, as in tattooing, which strange to say is heraldry.

In Fenimore Cooper's "Last of the Mohicans," we have an admirable anecdote to this effect. A young Indian is taken prisoner by a hostile tribe, and in the struggle his hunting shirt is torn, and discloses the figure of a tortoise tattooed upon his breast; they at once identify him as a leader of the principal family of the Delawares, who had seceded some years before, and supposed to be lost, the tortoise being the known badge of that family, and thus, instead of being put to death as a prisoner, he received the honours due to a chief of high blood, and