A NEW SPECIES OF ZEBRA.

(*Equus Grevyi, M. Edw.*)

The progress in our geographical knowledge, the exploration of distant countries that had not before been visited by Europeans, and a profound study of certain corners of our own soil, have, in recent times, singularly increased the domain of the natural sciences. Animals of all sorts have been described, and, thanks to the zeal of traveling naturalists, and to the commercial relations established with foreign countries, a host of new species has come to enrich our museums. Yet, in such acquisitions, all branches of natural history have not been equally favored; for, as regards the number, if not the value of the specimens, entomology and malacology have received the larger part. Under such circumstances, the discovery of a mammal, especially one of large size, assumes the proportions of a true scientific event. So we have thought we should interest our readers if we gave them as faithful a representation as possible, along with a succinct description, of a zebra which will soon ornament the galleries of the Museum of Natural History at Paris.

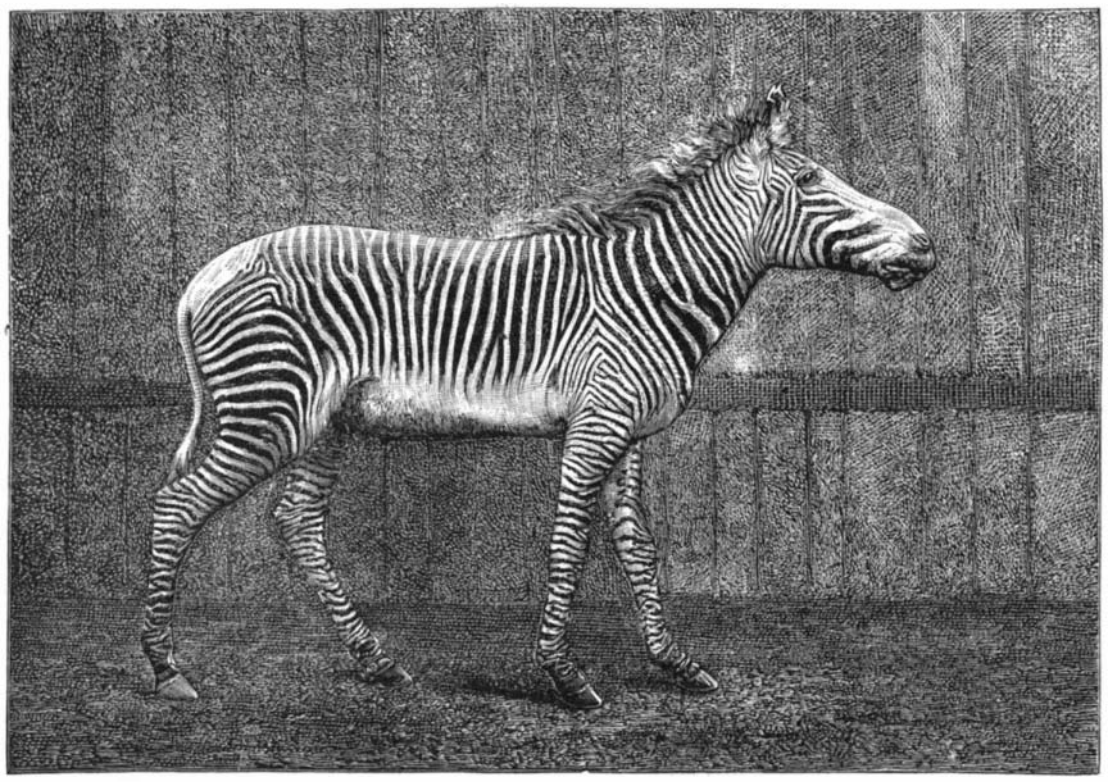

Fig. 1.—A NEW SPECIES OF ZEBRA.—FROM A PHOTOGRAPH.

This zebra, which was captured in that region of Eastern Africa which is called the country of the Gallas, has been for some days at the Menagerie of the Jardin des Plantes. It was offered as a present to the President of the Republic of France by His Majesty Menelek, the King of Choa, and given by the former to the Museum of Natural History. The animal, which was brought to France by Mr. Brémond, was given, during its voyage and on its arrival, all the care desirable; but, at the moment when it was hoped that some interesting observations were to be made upon it, it was suddenly taken off by a stroke of apoplexy, brought on no doubt by the fatigue attending a long trip by rail succeeding an ocean voyage that occurred at the hottest season of the year. Happily, the remains have been preserved, and, mounted with much art, they permit of appreciating, as well as if living, the distinguishing characters of this species which, up to the present time, had entirely escaped the researches of travelers. Comparisons between this zebra and other representatives of the genus *Equus* are the more easy in that the group contains, at the present day, only a very small number of species. These, moreover, are divided into two categories—on the one hand, species having a coat of uniform color, or one marked only with a dark band on the dorsal line, as the horse, ass, dzigguetai, and hemippus; and, on the other hand, such as have a coat marked transversely by more or less numerous bands, as the common zebra, the dauw, or Burchell's zebra, and the quagga. It is evidently to this latter category that belongs the animal whose portrait we now publish, the likeness being reproduced from an excellent photograph taken by Dr. Viallanes. But this zebra, which Mr. Milne Edwards proposes to name Grevy's zebra (*Equus Grevyi*) cannot be confounded with any form previously known. In fact, in the quagga, which inhabits Southern Africa, and which in its proportions resembles a horse rather than an ass, the head, neck, and front of the body only exhibit stripes of a dark chestnut-brown, while the posterior portions, the legs and the tail, are grayish white. In the dauw (*Equus Burchelli*), which lives in the same country, the brown stripes are prolonged on the posterior part of the body, but the tail is hairy up to the root like that of the quagga and horse. Finally, in the ordinary zebra (*Equus zebra*), which is met with from the Cape up to the south of Abyssinia, and which, in the markings of its coat and the form of its tail, makes a nearer approach to Grevy's zebra, the transverse stripes are much less numerous, not so fine, and are less clearly defined than in the new species, and there is not along the spine a so well defined dark stripe. This latter, which is of a purplish black, starts from the beginning of the mane, on the withers, and is bordered on either side, on the rump, by a wide, white band, and is prolonged into a tapering stripe along the tail. Two-thirds of the tail is cylindrical and covered with short hairs, as in the ass and zebra, while the extremity carries a tuft of long black and white ones.

The animal that we are describing was still young, judging from its dentition, and yet its size was that of a fully adult zebra, it measuring not less than four feet in height at the withers. The markings that ornament its coat seem as if traced with the pencil, and are of a purple brown verging on black, standing out boldly on a ground which is white with just a suggestion of gray. As may be judged by the figure, a few of them bifurcate and anastomose on the shoulders and thighs, and also on the forehead; but a little lower, between the eyes, they run parallel and end before reaching the extremity of the nose (which is of a brownish color), so that the latter is marked transversely by a colorless zone. On the contrary, there is remarked upon each ear, a little under the tip, a black band, which is prolonged along the edge of the pavilion. As for the mane, that exhibits an alternation of black hairs with tufts of white.

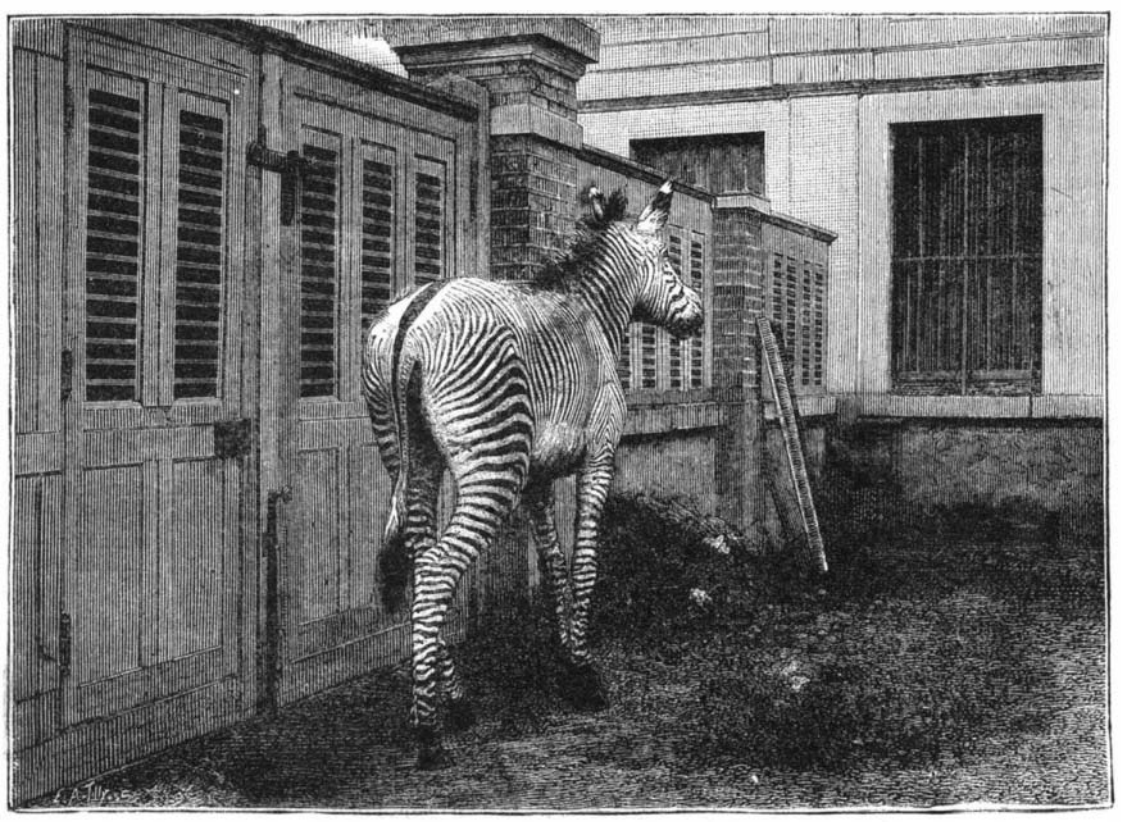

Fig. 2.—NEW SPECIES OF ZEBRA.—THREE-QUARTERS VIEW.

Unfortunately, we know nothing of the habits of this interesting species, but everything leads to the belief that they are the same as those of other horses with striped coats. All travelers are in accord in saying that the latter live either in the plains or in the broken portions of Africa, in herds of ten to thirty individuals, which are generally placed under the leadership of one or several males, and which sometimes associate with herds of antelopes, or even of ostriches. But, strange enough, in spite of their sociable instincts, it appears that zebras of one species never mingle with those of another. The voice of these animals is harsh and resounding, partaking of the braying of the ass and the neighing of the horse.

In gait they are extremely swift, and when running at full speed can hardly be ridden down by the best race horse. So it is generally through strategy that these quadrupeds are caught, and it is even alleged that when a horseman has succeeded in entering into the midst of a herd, and in separating the young from their parents, he can without difficulty make himself followed by the colts, who take the horse for their mother. The majority of the zoological gardens possess dauws, zebras, or quaggas, and at different times the directors of such establishments have endeavored to tame these animals and make them serve as saddle or wagon horses; but their efforts have rarely been crowned with success. On the contrary, the dauw, the zebra, the quagga, the ass, the dzigguetai, and the horse have been successfully crossed with each other in different ways; and it is a fact worthy of remark that hybrids have been constantly obtained which exhibit the zebra stripes on the legs, even when one of the parents had a coat of uniform color. The persistence of such a character after crossing gives proof, evidently, in favor of its antiquity, and we may, strictly speaking, in relying on this phenomenon of atavism, hold that the horses of tertiary periods had a coat striped like that of the zebras of the present epoch.—*E. Oustalet, in La Nature.*

ASH IN FLOUR.—Ten grms. of the sample are carbonized in a spacious platinum capsule, which is readily effected in less than ten minutes. The charred mass is then broken up with a platinum spatula into fragments the size of a pea, and transferred to a middle-sized platinum crucible. If any carbon adheres to the sides of the capsule it is easily incinerated, and may then be added to the bulk. Over the open crucible is turned a cylinder of mica, wide enough to leave an interval of 2 to 3 mm. between its inside and the outside of the crucible, about half the height of which is within the cylinder. A common Bunsen burner effects the complete incineration of the carbon in six to eight hours at a low red heat.—*C. Weigelt.*

Alumina in Ferric Oxide.

The solution of alumina and ferric oxide, which should not exceed 100 c. c., is mixed with ammonia until the free acid is chiefly neutralized. He then adds a concentrated solution of hyposulphite to reduce the ferric oxide to the ferrous condition. The solution thus prepared is slowly poured into a boiling ammoniacal solution of potassium cyanide, the volume of which is at least double that of the solution of alumina and iron. The clear greenish yellow liquid thus obtained, after being heated for a short time, is cooled quickly and completely by setting the beaker in cold water, and is then acidified with hydrochloric acid. The alumina is then precipitated with ammonium carbonate; the precipitate is allowed to settle, collected on a filter, and washed with boiling water. The alumina appears nearly white if the proportion of iron is relatively small, and if the separation of iron cyanides has been avoided by working expeditiously. If the precipitate has a dirty yellowish color, it is digested along with the filter in dilute hydrochloric acid (1: 4). The iron cyanides remain insoluble, while the alumina is dissolved, and is reprecipitated from the filtrate in the known manner.—*E. Donath.*

THE Albany Aniline and Chemical Works, Albany, N. Y., are adding new buildings, an average of 300 feet square, and are arranging to manufacture all the colors that can be made in Europe.

Naphthaline.

BY DR. GUSTAV SCHULTZ, INSTRUCTOR IN CHEMISTRY AT THE UNIVERSITY OF STRASSBURG.

In visiting gas works, the attentive observer will notice a white crystalline sublimate which accumulates, frequently in considerable quantities, on the walls of the gasometers. It consists of almost pure naphthaline, a hydrocarbon made up of 93·7 per cent of carbon, and 6·3 of hydrogen. When heated to 217° C. (422½° Fahr.), this substance begins to boil; but like many other substances, musk for example, it possesses the property of volatilizing to a very considerable extent at ordinary temperatures. Although the illuminating gas that is made from coal is purified over and again, both by physical and chemical means, before it is sent out into the street mains, yet the naphthaline is so volatile that some of it is always present in coal gas, and, indeed, increases its illuminating power. Frequently, when gas pipes are cleaned that are distant several miles from the works, fine plates of naphthaline are found in them. In fact, the pipes are often stopped up with this naphthaline which has been carried along and then deposited there.

HOW IT IS FORMED.

Naphthaline is formed, like many other hydrocarbons that are capable of resisting a great heat, whenever stone coal, brown coal, or wood are subjected to what is known as dry distillation, *i. e.*, strongly heated out of the air. When alcohol, vinegar, ether, and many other organic substances that contain hydrogen, are subjected to a high temperature, as, for example, passing them through iron tubes heated to redness, more or less naphtha is formed. For the same reason, this hydrocarbon last named is *always* present in coal tar, wood tar, and similar products obtained from organic bodies by the application of great heat.

ITS OCCURRENCE IN COAL TAR.

Naphthaline is present in large quantities, up to 8 per cent in coal tar, and as this has been consumed in enormous quantities for several years past in the manufacture of colors, of carbolic acid, and of benzole, the amount being estimated at about six million hundredweight, it may not be uninteresting to learn how the naphthaline thus obtained is disposed of and made useful to mankind.

THE FIRST NAPHTHALINE RED.

This hydrocarbon has been known since 1820, when it was first discovered by Garden, but its introduction into the arts only dates back about 20 years, when the distillation of coal tar in large quantities for the production of benzole, to be used in making the aniline colors, began. In order to utilize the naphthaline, which was then won as a by-product, attempts were made to make dyes in a total analogous way to what they are made from benzole, and by the same methods as those by which the aniline dyes were produced. But poor success at first rewarded their efforts. Of all the dyes made at that time, only one, the *naphthaline red*, that was discovered by Schiendl, of Vienna, and named by him Magdala red to commemorate the Abyssinian victory, attracted any considerable attention, on account of its delicate pink tint and its fluorescence. But at present even that dye is almost entirely supplanted by eosine, so that but little of it is manufactured now. For a short time a small quantity of naphthaline was used in making benzoic acid, by a process in which phthalic acid formed the intermediate stage. But all these varied uses of it do not consume an amount at all proportioned to the great quantity of it that is made, so that it became necessary, in order to get rid of it or to make any use at all of it, to burn it and convert it into fine lampblack that can be used for India ink and varnish.

In this, as in many other waste products furnished by the great industries, the progress of science points out a road that is likely to lead to a rational utilization of it. Although at present the naphthaline obtained in making gas from coal and in working up coal tar, is not all used economically, still the quantity which is either used directly or converted into valuable products is very considerable, and daily increases.

ITS PREPARATION FROM COAL TAR.

Before taking a survey of the naphthaline industry of the present, let us briefly consider the method by which the hydrocarbon is separated from the coal tar, and purified. The tar is first distilled in wrought iron boilers, which are provided with covers and pipes to carry off the vapors, which are carefully cooled and collected.

First come over low boiling oils and ammoniacal water; next follows the "light oil," called so because it floats on water; then a product which sinks in water, and hence called "heavy oil." A portion of the latter solidifies to a buttery mass of a green color. This is very valuable because it contains anthracene, the starting point in making artificial alizarine, and hence also called anthracene oil. The residue remaining in the kettle is drawn off, and when cold forms a brilliant black pitch, used under the name of artificial asphalt for street pavement, for making pipes, and numerous other purposes.

The latter portion of the light oil and the earlier portion of the heavy oil furnish the material from which naphthaline is made. When this product is cool, the naphthaline gradually separates and is freed from the oily contaminations by filtering and pressing out. Since the hydrocarbon always contains basic and acid bodies, they are to be removed by sulphuric acid and caustic soda lye. Finally, the purified substance is subjected to distillation or sublimation, when it is obtained in a pure white condition.

IN CARBURETERS.

In this condition the naphthaline is ready for use, as, for example, to increase the illuminating power of gas. For this purpose, small lamps have recently been constructed which have a small metallic capsule to hold the naphthaline. The gas that is to be carbureted is passed through the hydrocarbon, when it becomes charged with the vapors, and then passes to a burner where it is ignited. The flame heats a metallic plate which is connected with the metallic capsule above mentioned, so as to vaporize the naphthaline more rapidly, and thus increase the brightness of the gas flame.

AS AN ANTISEPTIC.

Naphthaline has recently found a new and important use in medicine. It has been found that this hydrocarbon is an excellent antiseptic, which kills fungi and bacteria in a short time. For surgical bandages and in contagious diseases, so far as experiments have been made, it has answered an excellent purpose, and seems well adapted to replace in many cases those antiseptics now so much used, namely, carbolic and salicylic acids, and iodoform. It has one great advantage over carbolic acid, being absolutely free from poison, and can therefore be used in any desired quantity without causing any disturbance. It also surpasses all other antiseptics in cheapness. As 100 kilos of pure naphthaline can be bought for 60 marks (about 7 cents per pound), there is no doubt that it will soon find general use for medical purposes.

TO DESTROY MOTHS.

The lower animals are easily driven away or killed by the vapors of naphthaline, and it has been used for a long time as protection against moths, both in museums, especially in collections of beetles, and in the household. Recently, it has been used with success in the itch, and in general it can be used for all kinds of vermin and insects, especially in summer.

NAPHTHALINE DYES.

All these uses are, however, insignificant, both in quantity and multiplicity, in comparison with its use in making dyes, for which purpose several thousand kilogrammes are used daily. The reds are the chief dyes made from naphthaline, but yellows and blues are also produced. Among the former, especially, are the numerous representatives of eosine, and the azo-dyes, which are so abundant in the trade, and by their excellence threaten to supplant cochineal, just as artificial alizarine from the anthracene of coal tar has crippled the madder industry, which a few years ago was so flourishing in southern France.

It is worthy of remark that these artificial dyes made from naphthaline were not discovered "by chance," but are the result of extensive scientific investigations. This again shows what an advantage it is to science and to industry when theory and practice go hand in hand, and mutually aid and sustain each other. While science is aided by industries that furnish her with materials to investigate, she, on the other side, points to valuable methods of utilizing discoveries, and of making use of what would otherwise be waste products. Thus she has indicated rational uses for naphthaline that had formerly been an almost useless product of the aniline color industry, which was only in the way, and a nuisance.

With the entrance of naphthaline into the circle of other coal-tar products which can be converted into magnificently colored substances, we approach the fulfillment of the hope of those enthusiasts who would celebrate, in the artificial dyestuffs from coal-tar, the resurrection of the colors of the flowers of an early vegetation now submerged and converted into coal.—*Humboldt.*

Poisonous Leaves.

Beset as children and the ignorant are by dangers which they cannot measure and can hardly be blamed for falling into, it is a wonder rather that they so seldom incur fatal consequences than that they should sometimes eat leaves of an injurious character. The only safe rule for children to observe is never to eat anything that they have not been positively assured is wholesome by their parents.

No doubt it is an excellent thing that children should be so well nourished as to remove to a large extent the temptation to eat wild leaves. Moreover, modern gardening has brought into perfection so many table vegetables that we are enabled to enlist a natural dislike to the juices of uncultivated plants on the side of caution, as compared with the pleasantness of the wholesome green meat of home. But children sometimes will stray on a ramble, and become hungry when at a distance from "shops" or home, and thus it cannot be useless to know what are the more dangerous kinds of leaves which must be avoided by all who wish to preserve their lives. The strongest barriers of prohibition we can erect should be placed to protect the young from their own heedlessness, which at times leads them to do all forbidden things and to test all maxims and commandments, disobedience to which is supposed to entail divers pains and penalties.

Some of our most admired flowers, which we should least willingly banish from cultivation, are associated with green leaves of a very poisonous character. The narrow long leaves of the daffodil act as an irritant poison; the delicate compound leaves of laburnum have a narcotic and acrid juice which causes purging, vomiting, and has not unfrequently led to death. The narrow leaves of the meadow saffron or autumn crocus give rise to the utmost irritation of the throat, thirst, dilated pupils, with vomiting and purging. The dangerous character of aconite or monkshood leaves is doubtless well known, but each generation of children requires instruction to avoid above all things these large palm-shaped leaves, dark green on the upper surface. The utmost depression, often blindness, tingling all over the body, parching and burning of the throat and stomach, are some of the horrible symptoms which are preludes to death from this most deadly of vegetable poisons. Almost equally desirable is it to avoid the large ovate leaves of the foxglove. The heart has been known to be depressed so exceedingly by the action of these leaves as to beat only seventeen times a minute, with the pupils of the eyes widely dilated. In a case of this kind it cannot be too forcibly recollected that the sufferer should be kept strictly lying down, to save the strength of the heart as much as possible. The leaves of the pasque-flower (*Anemone pulsatilla*) and of various species of ranunculus (crowfoots) are to be named as being injurious, and belonging to attractive flowers.

Leaves of coarse weeds, however, provide an abundant quota of danger, but frequently their strong scent and bitter or nauseous taste give timely warning against their being consumed. Of all our British orders of plants, perhaps the umbelliferous order contributes the rankest and most widespread elements of danger. The tall hemlock is everywhere known to be poisonous, and it is one of the most abundant occupants of the hedge. A peculiar "mousy" odor can generally be recognized on squeezing the leaves, which are deep green in color and trebly compound, the small lobes being lanceolate and deeply cut. It is said that the mousy smell can be detected in water containing not more than a fifty-thousandth part of the juice. Hemlock is both an irritant to any sore place and a general, narcotic poison, producing headache, imperfect vision, loss of power to swallow, and extreme drowsiness, with complete paralysis of voluntary muscles and muscles of respiration. The water dropwort, too, a flourishing ditch plant; the water hemlock (*Cicuta virosa*), fool's parsley (*Æthusa cynapium*), must be ranked among our most dangerous poisonous plants belonging to the umbelliferous order. The fool's parsley leaves are sometimes mistaken for genuine parsley, but their nauseous odor and darker leaves should prevent this. The nightshade order is another with dangerous and often extremely poisonous leaves. Indeed, no nightshade can be regarded as safe, while the deadly nightshade, with its oval uncut leaves, soft, smooth, and stalked, are in the highest degree to be avoided. Henbane and thorn-apple, again, with their large and much-indented leaves, are conspicuous members of the "dangerous classes." Holly leaves contain a juice which is both narcotic and acrid, causing vomiting, pain, and purging. Even elder leaves and privet leaves may produce active and injurious irritation when eaten.

The leaves of the arun or cuckoo-pint, large, arrow-shaped, and glossy, have often caused death. Two are sufficient to produce great pain, vomiting, etc. One of the very disagreeable symptoms is a great swelling-up of the tongue from the amount of irritation; children's tongues especially may become so swollen that the swallowing of remedies or of emetics is very difficult. In such a case the administration of melted fresh butter freely has proved beneficial, and after vomiting has taken place freely, strong coffee should be given. Savin and yew leaves are both most poisonous, yew being narcotic as well as acrid, although it is vulgarly supposed that the fresh leaves are not injurious—a mistake from which some have suffered. With regard to treatment in cases of poisoning by leaves, the principles are the same as we mentioned in our article of February 4 last. If no doctor is at hand, produce vomiting till all offending matter is expelled, and when considerable sleepiness or drowsiness has come on give strong tea or coffee, and again bring on vomiting; then stimulate and rouse the brain in every possible mode, as formerly recommended.

Finally, we would say do not too readily regard leaves as harmless because you may know or hear of cases in which no injury has resulted from eating them. From the eating of almost every kind of leaf we have mentioned repeated deaths have been occasioned, and none of them can be eaten with impunity.—*Land and Water.*

Salting out Soap.

The large quantity of salt in the under lyes from which soap has been removed by the ordinary method of salting out, has hitherto made the recovery of glycerine from it either difficult or unprofitable. This suggested the conversion of the common salt into some other soda salt that was not so difficult to remove. Still this conversion presented great difficulties. Jaffé and Darmstaedter, of Charlottenburg, therefore concluded to try salting out with other salts. [Caustic soda was used long ago for this purpose, and we believe is patented in this country.—ED.] They found that the sulphates, especially sulphate of potash, soda, or ammonia, could be used with advantage. The under lye obtained by salting out with these salts is neutralized with sulphuric acid, whereby the excess of caustic soda, necessarily employed in the saponification, is converted into a sulphate. It is then filtered and evaporated, when the sulphates crystallize out. They may be purified and used over again for the same purpose, namely, salting out a new batch of soap. The glycerine that remains after the salt has crystallized out is not so impure but that it can be easily purified in the usual manner, viz., distilled in a current of steam.