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is totally dissolved when the smoke has entirely abated in the matrass; pour into it, by little and little, prepared nut oil, stirring it in order to incorporate the whole completely. Afterwards, and in the same manner, the spirit of turpentine is poured in, and the mixture is then taken from the fire, filtered, and cooled; it is then made use of to grind with the Prussian blue and indigo in small quantities at a time, and the whole is well mixed together.

This mixture forms the fine varnish for the purposes indicated.

II. *Memoir upon Waters distilled from Plants described as being inodorous, upon the Distillation of Water intended for Chemical Experiments, and upon Alembics. With a Note subjoined by M. DEYEUX on the Subject. By M. DESCHAZILLES sen.**

AMONG those whose professions lead them to the preparation and application of medicines, there are various opinions upon the efficacy of waters distilled from plants described as inodorous. I shall by no means decide upon the question in a medical point of view; I shall only request that before entering on the discussion the question be stated in precise terms.

I was induced last summer to repeat some experiments on the distillation of inodorous plants, in consequence of reading some observations on the subject in a former number of the *Annales de Chimie* †.

The observations of the learned author in the above memoir lead me to offer some hint which may tend to give a new direction to his useful researches.

Waters distilled from a great quantity of inodorous plants yield a smell so much the stronger, the oftener that the produce of the first distillation has been cohobated upon fresh quantities of the same plant; but I do not think it has been yet demonstrated that such waters are susceptible of putre-

* *Annales de Chimie*, tome lvii. p. 175.

† See page 3, of our last volume.

faction when they have been distilled in B. M.; and I hope to be able to prove by and by, that the putrefaction to which even waters distilled from aromatic plants are subject, is owing to a portion of the decoction of the plants being extravasated, or forced into the tubes of the apparatus, when distillation in the open fire is made use of.

Before proceeding to explain some of the probabilities upon which I rest my opinion, that down to the present moment the greater part of such waters as are distilled from plants in the open fire have been adulterated with their respective extracts, I consider it my duty to say a few words on the subject of alembics. My hints are the results of a course of reflections and experiments on the improvement of the above apparatus, in which I have been constantly occupied since the year 1775, a space of more than 30 years.

The old chemists had certainly observed, that during the ebullition of water a part of that fluid is thrown to a height of more than 30 centimetres in a multitude of small drops or globules, which can with difficulty be perceived by the naked eye. They must have also observed, that during the time of distillation the decoction of plants has the property of swelling up when boiling, and of being raised with the greatest facility into the neck of the cucurbits; they consequently contracted their distilling apparatus to moderate the tendency of the boiling liquor to bubble up, and they interposed between the cucurbit and the head cylindrical tubes, either straight or spiral, or zigzag, &c., and of a length equally inconvenient and unreasonable.

Baumé, to whom, in spite of his obstinacy in rejecting the theory of pneumatic chemistry, we are indebted for a great number of useful observations, has particularly contributed to the reform of the construction of alembics; but in bringing the head so near the body of the alembic as he has done, he has fallen into an opposite extreme, the inconvenience of which did not occur to me until within these two years. At the above period I interposed between the body and the head of my alembic a cylindrical funnel 40 centimetres high. Besides, I gave an inverse inclination the length of a decimetre to the beak, at the place where it is soldered to

the head of the alembic. I had a long time before suppressed the ridge or furrow in the latter.

By means of these precautions, and of some others which I am about to communicate, I obtained distilled waters, which never putrefied although the plants were distilled in the open fire, and with a strong ebullition; and although I afterwards put these waters into bottles with ground-stoppers exposed to the rays of the sun, and in an apartment constantly heated by a stove, they preserved all the delicacy of their aroma and their limpidity.

We know that the orange flower water, prepared at Paris with great care, ought to be kept in a cool place, and in the shade, in vessels not closely corked, if we wish to prevent their undergoing any alteration; but we know also that the orange flower water, which comes from our southern departments in large bottles of very thin copper, is preserved a much longer time without alteration, although they are well corked. I have reason to believe that this difference arises from the distillers of Provence making use of alembics of the old form with long necks, while those of Paris employ the modern flat alembics. I know it will be said that a little spirit is mixed with the Provence orange water; but I do not think, if that were the case, that the quantity of spirits thus added is sufficient to stop, for so long a time, the putrefaction of a distilled water, which contained a little of the extract from which it was produced.

Some chemists complain that pure water, when distilled once, still shows traces of the muriatic acid when tried by the nitrate of silver; they consequently prescribe that this water should be redistilled. I request them to take the precautions I have here suggested, and they will obtain at the first distillation purer distilled water than they could otherwise do by two distillations.

Although these observations are very succinct, I flatter myself they will excite the attention of such chemists or artists as make use of alembics; and the question of the properties of waters distilled from plants being placed in this new point of view, there must consequently be more certainty in the observations of such medical gentlemen as have a partiality for these kinds of medicines.

Before

Before concluding my observations on distillation by alembics, I shall briefly notice the various improvements I have successively made on these articles, a great number of which I have made both for myself and my friends.

Since the year 1775, I have used cylindrical instead of serpentine tubes, sometimes straight, flattened, inclined, or vertical, but always so disposed as to accelerate the distillation greatly by their largeness; and being perfectly well polished, I could easily clear them, after every new operation, from every foreign taste or smell.

Before any thing had been announced relative to what might be made of the heat contained in the vapours which form by their condensation the distilled liquids, I presented to the National Institute an alembic, where this heat was rendered profitable in producing the rectification of the produce of an anterior distillation, and in preparing the subsequent distillation.

The following are the principal advantages of the alembic of which I am about to publish a description; and in the construction of it I have observed every possible precaution, in order to æconomize the heat and to facilitate the operations.

Every part of it must be of pewter.

We may distil in it, without inconvenience, 25 given measures of liquid, or only a single 25th part of any measure, and afterwards reduce it to a fourth part by evaporation.

Each distillation, without augmenting the expense of fuel, and without delay, may be accompanied with a rectification; and immediately after this double operation, the cucurbit being emptied by a syphon, a cock adapted to it evacuates the liquor intended for a subsequent distillation in a state very near the boiling temperature; the subsequent distillation is consequently effected much more quickly, and with much less fuel.

By means of four watch-glasses and three small tubes, every thing is seen which passes inside the body of the still and its cylinder, the rectifying vessel, and the preparatory one.

After

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After the most nauseous distillation, all the parts of the alembic may be so cleaned in a quarter of an hour, that the most delicate liqueur may be immediately distilled in it.

Such is the result of the experiments of more than thirty years. I alone know what this experience has cost me; I shall, however, consider myself in some measure indemnified for my labours, if these hints shall be of any service to the progress of the arts and sciences.

Note by M. Deyeux.—I do not rightly understand what the author means in the beginning of the above memoir. He seems desirous that the question relative to the efficacy of waters distilled from inodorous plants should be stated in precise terms. It appears to me that this question cannot be presented in the form of a problem, since it has been proved, by a multiplicity of experiments, that it is highly improper to doubt the efficacy of waters distilled from these kinds of plants.

As to the observations relative to the necessity of distilling these waters in B. M., or at least of rectifying them in this manner, I am not only of opinion, that in some cases such a process may be useful, but I also think that the above method is not always sufficient to obtain distilled waters in a state which may bid defiance to all alteration. I have often had occasion to distil waters in B. M.; and in spite of this precaution I have remarked that some of these waters become turbid at the end of a month, and that they often acquired a disagreeable smell and taste.

To conclude: As the author announces a work upon distillation in general, and as he also promises us some details upon the best form of alembics, I shall wait for the publication of his memoir, which will, without doubt, contain the results of experiments made with that care and acuteness which characterize every production of M. Descroizilles.