

ACCOUNT
OF
A SINGULAR VARIETY OF
URINE,
WHICH TURNED BLACK SOON AFTER BEING
DISCHARGED;

With some Particulars respecting its Chemical Properties.

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IN the month of December 1814, Dr. Babington showed me a phial of urine which was quite black and opaque, though without any sediment or turbidness, and on the surface of which, when examined in a strong light, a dark purplish hue was discernible, giving to the liquid the appearance of a strong solution of extract of liquorice. This urine had been discharged by a healthy male child, of the age of seventeen months, whom Dr. Babington was so kind as to give me the opportunity of seeing; and from whose father, an Irish gentleman, I obtained the following particulars :

Almost immediately after the child's birth, it was observed that the urine tinged his napkins of a dark

purple hue. This circumstance, at first, gave great alarm to the parents, as they conceived it to depend upon some accidental, and perhaps very serious, ailment; but, as the child appeared to be in perfect health, though the peculiarity in question never abated for any length of time, the alarm soon subsided, and all medical treatment was laid aside, the parents imagining that, as the child grew up, the secretion would return to its natural state.

When the child had reached the age of about nine months, and when his urine could be more easily collected, it was found that, though perfectly clear on being first discharged, it assumed, in a very short time, a dark colour, somewhat like that of Port wine, which became dark by standing, till it assumed the appearance above described. This phenomenon, however, though an almost constant occurrence, admitted of occasional variation in degree, or even sometimes totally disappeared; and it was observed to prevail in the greatest degree when the child's bowels were confined, a circumstance which induced his parents frequently to administer small doses of magnesia. The child, nevertheless, always enjoyed a good state of health, having only experienced some occasional symptoms of irritation from difficult dentition. When I saw him, he was seventeen months old, and was active, robust, and lively, though as subject as ever to the peculiarity in question. It is to be regretted, that after this period we lost sight of him entirely. I have

lately made several inquiries after him, but to no purpose; and Dr. Babington has been equally unsuccessful in discovering where this family has fixed its residence.

With regard to the chemical properties of this urine, I find in my notes the following particulars:

I collected three specimens of the child's urine, (No. 1. 2. and 3.) passed at different times in the same twenty-four hours.

No. 1. was the specimen described above, procured by Dr. Babington.

No. 2. was a portion of urine passed by the child in the morning, which was quite colourless, and continued so in the evening.

No. 3. was a specimen of the urine collected in the evening during my visit.

On the following day, the specimen No. 1. now two days old, continued quite black; it had an ammoniacal smell, and was sensibly alkaline. After an interval of six weeks, it remained precisely in the same state; and after a lapse of seven years, I now find it perfectly unaltered, having preserved its colour, having deposited no sediment, and possessing the same ammoniacal pungency, without any distinct urinous smell. A small quantity of this urine is laid before the Society for their inspection.

The specimen No. 2., on standing twenty-four hours, was not sensibly discoloured, and had not become alkaline. After a few days, however, it acquired a slight tinge not unlike the colour of Madeira wine, and soon after this it became putrid, without undergoing any farther change of colour.

The specimen No. 3. was poured into a glass, an hour after being discharged, and when yet quite colourless. It had already acquired an ammoniacal smell. The next day it was found slightly coloured only; but in a few days longer it assumed a reddish colour, like that of pale claret; and, on adding to it a few drops of carbonate of ammonia, a white powdery precipitate subsided, and the supernatant fluid, in the course of about two hours, acquired the same black colour as the specimen No. 1. Carbonate of potash produced a similar change; and on supersaturating the urine with acid, the colour did not disappear. It is scarcely necessary to observe, that the addition of alkali to common urine does not produce any such change of colour.

The specimen No. 1. being the one in which the peculiarity under consideration was the most strongly marked, I made it the subject of farther examination.

Its specific gravity was 1022.2; the addition of any of the mineral acids produced an effervescence, and slight turbidness, but without altering the colour. A solution of alum lowered the tinge, and

produced a precipitate. No red globules could be perceived in the urine by the aid of the microscope, as was ascertained by Dr. Wollaston. It yielded by evaporation a black deliquescent residue. During the first part of the process, an uncommon quantity of ammonia was evolved; but, as the evaporation advanced, the urinous smell was perceived. No iron could be detected in the residue. Dilute nitric acid being poured upon it, and evaporated to dryness, no pink stain was produced; showing that the urine contained no sensible quantity of lithic acid. Alcohol seemed to have very little, if any, effect on the colouring matter; for, after being poured on the dry residue, and decanted off, it was not sensibly coloured by it, though it was rendered slightly turbid.

It appears, therefore, from the above results, that the colouring matter in question, whatever the nature of its basis may be, is developed either by the addition of an alkaline salt, or by the spontaneous evolution of alkali from the urine itself; but that, when once developed, the colour is not destroyed by the neutralization, or even the supersaturation, of the alkali.

I am not acquainted with any account of this condition of the urine occurring in the state of health; but I saw myself an instance of black urine, in the year 1802, (among the patients of the City Dispensary, to which I was then Physician,) in a young female who laboured under a very singular

and anomalous disorder, which, however distantly connected with the subject of this paper, I shall make no apology for briefly noticing on this occasion. She was subject to daily paroxysms partaking both of the febrile and hysterical character, during which her urine acquired this black colour. She was likewise subject to a remarkable intermittent affection of the integuments in particular parts of her body, the attacks occurring in irregular paroxysms, and generally following or alternating with the febrile fit. This cutaneous affection usually began with a tingling of the parts, soon succeeded by a considerable swelling or puffiness over an extent of several inches, which lasted for several hours, and ultimately followed by the appearance of a black or dark purple colour, which often continued for some days after the other appearances had subsided. The seat of this affection varied very much, the toes, legs, hips and face being in succession liable to these attacks.

For some weeks she took the Peruvian bark, without any sensible benefit. To this was afterwards added the nitrate of silver, which was continued for three weeks, at the end of which the complaint was perfectly removed. The whole disease lasted between two and three months*.

* The occurrence of black urine, in certain states of disease, has not escaped the observation of some of the older physicians, as will appear from the following expressions of LOMMIUS, in his *Observationes Medicinales*, page 280:—"Nigra urina, si rubram viridemque sequitur, extremi caloris index est: si post ceruleam,

With regard to the chemical examination of the black urine, which was the chief purpose of this communication, being sensible of the unfinished state of the analysis which I had formerly made, and not having at present the command of a laboratory to enable me to render it more worthy of the Society, I requested the assistance of Dr. Prout, whose skill and experience in such investigations are well known, and from whom I was soon favoured with the following interesting particulars.

NOTE BY W. PROUT, M.D. F.R.S.

On the Chemical Properties of the Black Urine.

“ THE residuum obtained from this urine by
 “ evaporation not only does not contain any lithic
 “ acid, as was observed by Dr. Marcet, but no
 “ urea can be detected in it by the tests which
 “ indicate its presence.

“ Although the addition of dilute acids pro-
 “ duced no immediate change of colour in the
 “ urine, yet, on standing for some time, a black
 “ precipitate slowly subsided, leaving the super-
 “ natant fluid transparent, and but slightly coloured.

et post lividam fuit, summæ frigiditatis. In utraque mortis periculum veritur, idque eò majus, quò ea ipsa est paucior, quoque id, quod in ea subsidet, nigrius est. Cæterùm, ubi morbus ex atra bile natus præcessit, utpote lienis tumor, quartana, melancholia, et hujusmodi: tum profectò nigra urina (maximè sub istorum morborum decessu) certam spem secundæ valetudinis facit.”