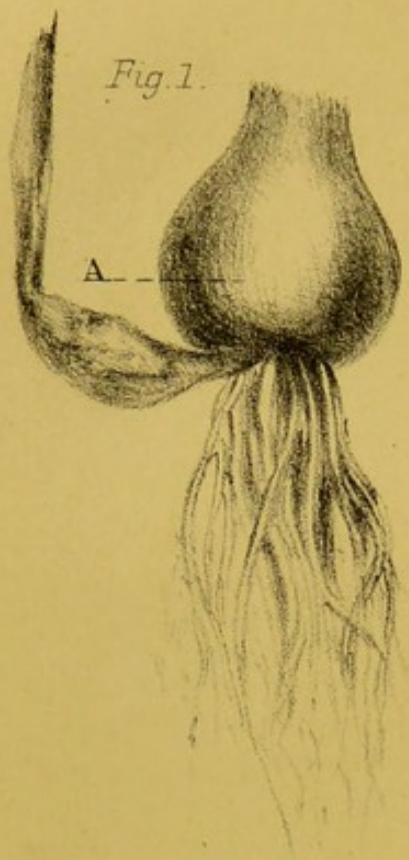
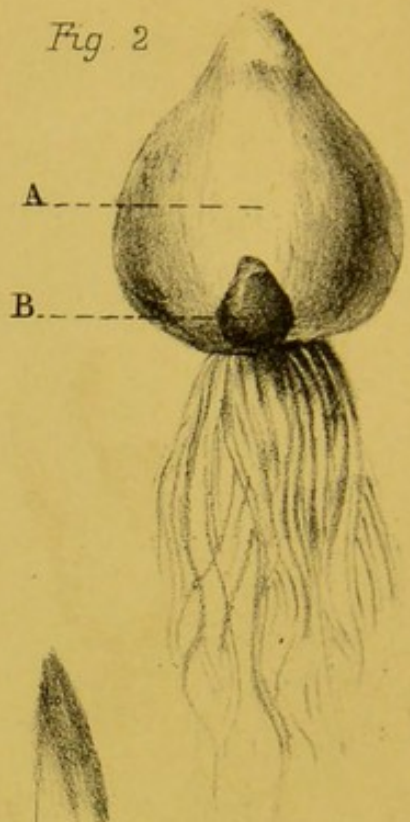
On the natural history, physiological actions, and therapeutic uses of colchicum autumnale : chiefly with reference to the growth of the plant, and the chemical changes it produces on the blood and urine / by J. M'Grigor Maclagan.

Fig. 1.



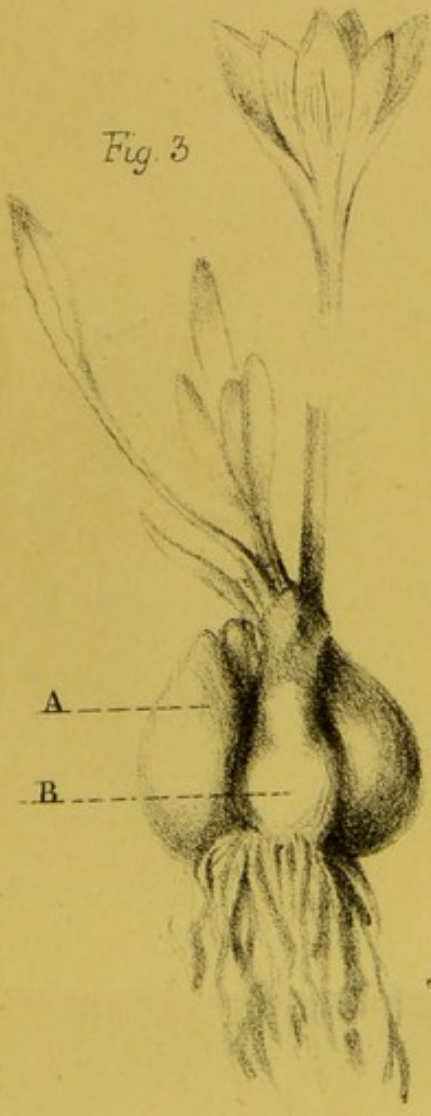
June

Fig. 2



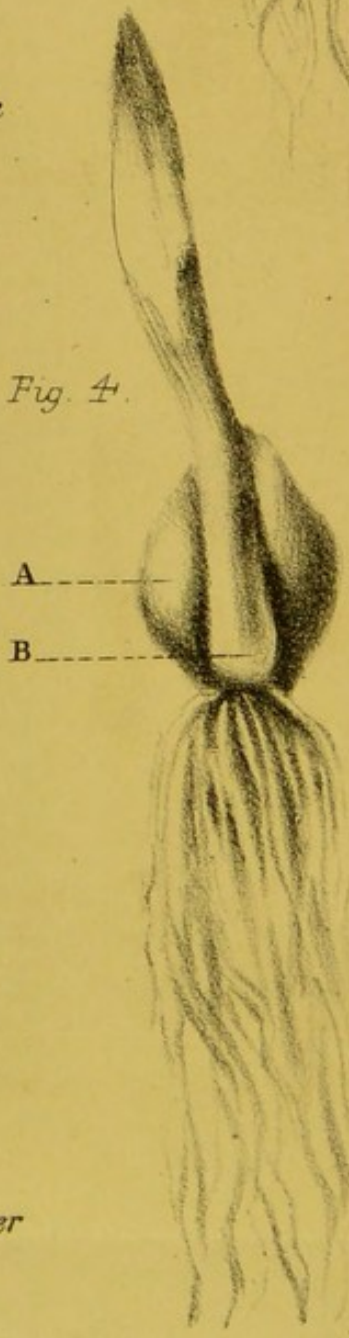
July

Fig. 3



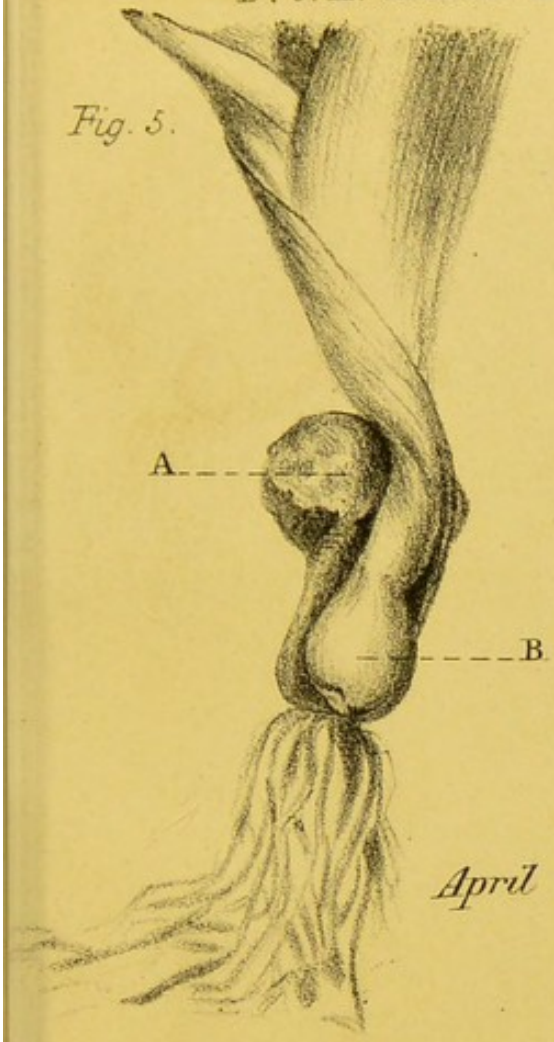
September

Fig. 4.



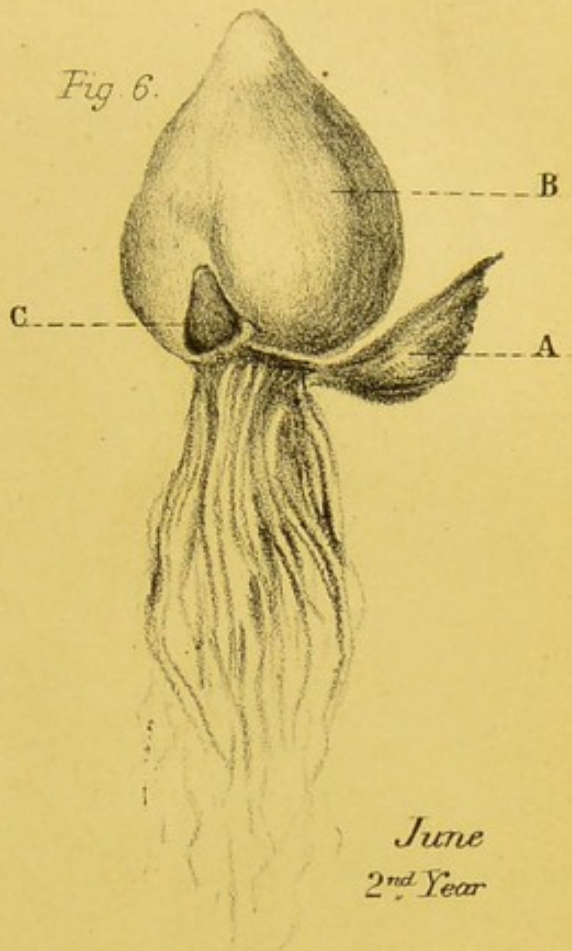
February

Fig. 5.



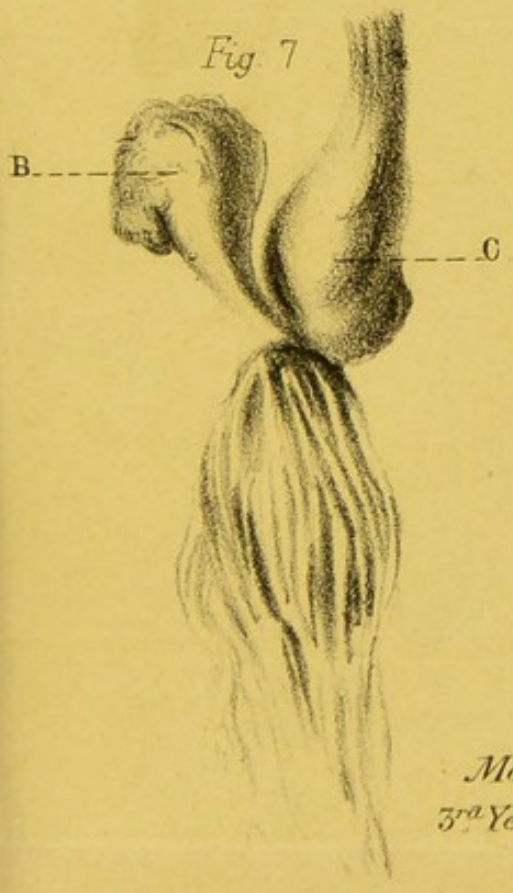
April

Fig. 6.



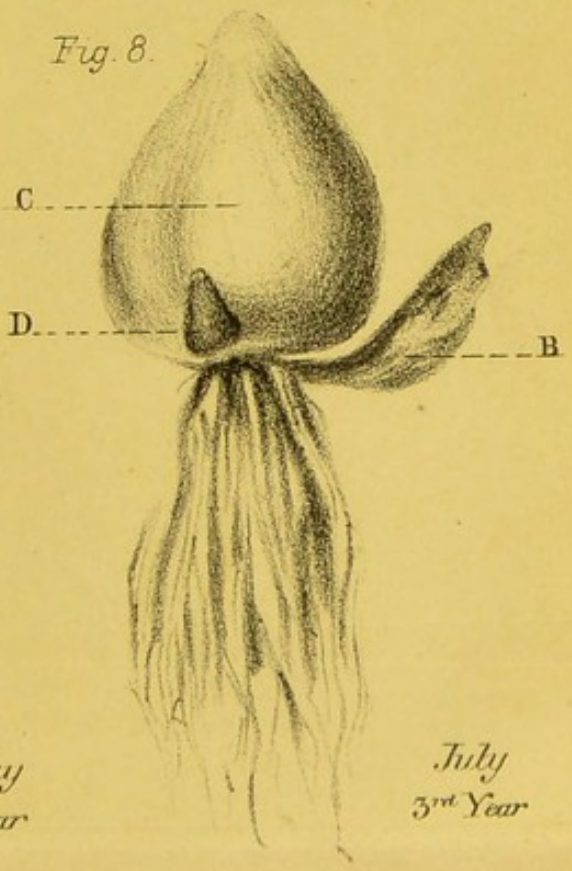
June
2nd Year

Fig. 7



May
3rd Year

Fig. 8.



July
3rd Year

With the Author's Compts

ON THE

NATURAL HISTORY, PHYSIOLOGICAL ACTIONS,

AND

THERAPEUTIC USES,

OF

COLCHICUM AUTUMNALE,

CHIEFLY WITH

REFERENCE TO THE GROWTH OF THE PLANT, AND
THE CHEMICAL CHANGES IT PRODUCES
ON THE BLOOD AND URINE.

BY

J. M'GRIGOR MACLAGAN, M.D. EDIN.,

PRESIDENT OF THE ROYAL MEDICAL, AND FELLOW OF THE BOTANICAL,
SOCIETIES OF EDINBURGH.

EDINBURGH:
SUTHERLAND AND KNOX, GEORGE STREET.

MDCCCLII.

[FROM THE MONTHLY JOURNAL OF MEDICAL SCIENCE, FOR 1851-52.]

MURRAY AND GIBB, PRINTERS, EDINBURGH.

ON COLCHICUM AUTUMNALE.[1]

It appears probable that this drug is identical with that known to Dioscorides,[2] Paulus Ægineta,[3] Alexander Trallianus,[4] and other ancient authors, under the names of "Κολχικον" and "Ἑρμοδακτυλος;" but it is equally probable that its use in medicine did not become established till so late a period as 1763, when it was introduced, with many other remedies, by Baron Stoërk,[5] of Vienna. Subsequently it has been examined with much attention by Sir Everard Home,[6] Sir Charles Scudamore,[7] Dr Haden,[8] and Mr Want.[9]

In the following inquiry, I propose to direct attention,—first, to the botanical and chemical histories of the drug, chiefly with reference to the growth and preservation of the bulb, and to the nature of the active principle obtained from it; and secondly, to its physiological and therapeutic actions.

BOTANICAL HISTORY.

Colchicum belongs to the endogenous natural order *Melanthaceæ* of Lindley, and *Colchicaceæ* of De Candolle, of which order the following are the principal distinguishing characters:—

They are in general bulbous, or fibrous-rooted plants. In some the flowers are half-subterranean, like the *Crocus*; in others they

---

[1] Being an abstract of an Inaugural Dissertation, delivered to the Medical Faculty of the University of Edinburgh, August 1851.

[2] Dioscorides—Materia Medica, lib. iv., cc. 84, 85.

[3] Paulus—Materia Medica, lib. vii., c. 3.

[4] Alexander—Medici Libri, lib. xi.

[5] Stoërk de Colchico, 1763.

[6] Sir E. Home—Philosoph. Transac., 1816-17, part 2.

[7] Sir C. Scudamore on Gout and Rheumatism, 1819.

[8] Haden on Colchicum, 1820.

[9] Want—Lond. Med. and Phys. Jour., vol. xxxii.

A, at its lower part. This small bulb we shall call B. At this time it is a little larger than a grain of wheat, and lies in a small fissure on the side of the parent bulb, a little above the origin of the radicles. It increases slowly and gradually in size till the beginning of *August*, when it appears as a mere dilatation of the flower-stalk, which it then commences to put up.

In *September* the flower is in full perfection, the long tube of the perianth of which, has raised the six-partite limb to the height of from six to eight inches above the ground. The flower remains for two or three weeks, and then dies down; and nothing of the plant is seen above the surface till the beginning of *February*, when the leaf-stalk commences to rise.

If at this time the plant be taken up, A and B will still be found to be united, but B will be observed to have increased little in size since autumn, being but still hardly larger in diameter than the leaf-stalk.

The bulb B thus grows little during the autumn, but in winter it increases rapidly in size; in *April* it is like a large hazel-nut, and from that time it increases still more, till the end of *June* or beginning of *July*, when it is, as Dr Christison states, as large as an apricot.

In *April* the leaf-stalk is found perfected by a fine group of dark green leaves, generally three in number, and having within their sheath the capsules which ought to ripen their fruit in the course of summer.

In *May* the old bulb will be found dry and withered, and with very little starch; and in *July*, if the plant be taken up, three bulbs will be found,—A, now reduced to the form of a membrane, bearing no resemblance to a bulb at all; B, now arrived at full growth; and a new member of the series, C, the progeny of B.

This third bulb, C, it is unnecessary for us to trace further; it follows a course precisely similar to that through which B has passed, and which has just been described.

The history is now complete, so far as regards the rotation of flowers, leaves, and fruits; but the lifetime of B has not yet expired; for if we take up the plant in *May* of the third year, we still find the shrivelled remains of B, and C large, firm, and amylaceous, now bearing leaves, having flowered during the previous autumn. We may go on still further, and if in *July* the plant be examined, B will be found to have almost disappeared, C large, amylaceous, and extremely bitter, and at its base a new bulb D, of very minute size, which in the ensuing autumn will produce the flower.

Thus we have traced the growth of COLCHICUM from its infancy, through maturity, to decay.

It must be evident, from the foregoing observations, that the plant is essentially biennial, but it has been thought by some to be triennial. "It sees a part of three successive years, but only outlives two revolutions of each season." (Christison.)

Of peculiarities in the growth of COLCHICUM, I may mention one, which has struck me forcibly on account of its frequent occurrence.

In *February* and *August*, instead of one leaf-stalk and one flower-stalk making their appearance at their respective periods, I have often remarked that two have occurred, one on either side of the parent bulb. I believe this to be one of the effects of cultivation, as I have nowhere seen it remarked in descriptions of the plant by botanical authors.

Having observed, in cases where the leaf-stalk was accidentally removed from the parent bulb, that a new bulb was thrown out from the top part of the old one, I made the following experiment, in order to ascertain, if possible, the cause of this peculiarity.

Two bulbs were taken up on 1st *November;* from these the leaf-stalks and their bulbs were detached, and the parent bulbs replanted. Three weeks afterwards a small leaf-stalk was observed to have been given off from the top part of each bulb; and on another occasion, on which the same experiment was tried, two of these leaf-stalks made their appearance. In both of these instances they were found to proceed from very minute bulbs, not larger than barley-corns.

I believe that there is always one of these adventitious bulbs at the top of each parent bulb, but that they never germinate, where the plants are indigenous, unless the proper leaf-stalk and its bulb be removed. When they do so, however, they always remain attached to the parent bulb, and are perfected in much the same time as the normal bulb of the leaf-stalk.

Dr Christison has mentioned that the full size of a COLCHICUM bulb is that of a small apricot. This I believe to be perfectly correct, in places where the plants are indigenous; but I have frequently procured specimens from the Botanic Garden here, where they were cultivated for the purpose of examination, of the size of large apples; and in *October* 1849, I procured one which weighed nine and a half ounces.

I have lately received from the North-Western Provinces of India two specimens of COLCHICUM bulbs, which respectively bear the names of "SORINJAN TULK," or bitter *Sorinjan*, and "SORINJAN SHEERUN," or sweet *Sorinjan*. Both of these were brought from Bombay, and I believe are identical with those mentioned by Dr Royle,[1] and thus described by Dr Pereira:—"The SORINJAN SHEERUN resembles the cormus of colchicum autumnale. The cormi are flattened, cordate, hollowed or grooved on one side, convex on the other; they have been deprived of their coats, are externally dirty-yellow or brownish, internally white, easily broken, farinaceous, odourless, tasteless, or nearly so, and worm-eaten."[2]

---

[1] Royle's Materia Medica. [2] Pereira's Materia Medica.

This description entirely coincides with the specimens in my possession. They are so easily broken, that when I received them nearly one-half was reduced to powder.

Geoffroy[1] has correctly pointed out how they may be distinguished from the cormi of COLCHICUM AUTUMNALE. "They are not rugose, are white intenrally, are moderately hard, easily broken, and form a whitish powder; whereas the dried cormi of COLCHICUM AUTUMNALE are rugose, softer, and have a reddish or grayish tint, both internally and externally."

The SORINJAN TULK appears to me to resemble the bulb of COLCHICUM *variegatum;* they are much smaller than the preceding, and possess considerable bitterness; they are not so easily broken. Pereira states that they are marked by longitudinal stripes, indicating a laminated structure. I have failed to discover this in the specimens in my possession; and I presume if the true HERMODACTYL possesses a laminated structure, it cannot be considered as a true cormus, and therefore cannot belong to the colchicum tribe. The Hakeims use both kinds in *rheumatism*, and in many nervous disorders, in doses of two to four grains of the powder three times daily.

I also received from the same source a few seeds, which were said to be those of COLCHICUM *Illyricum*. They were of the size of, and altogether not unlike, *Lupin* seeds. I attempted to grow them, but in vain. They are used in the same diseases as the SORINJAN, and are said to be diuretic.

PHARMACOLOGY.

Every part of the plant, excepting the leaves, has been used in medicine. The flowers have been used galenically, and have been supposed to be that part of the plant used in the preparation of the *Eau médicinale d'Husson*. In most modern pharmacopœias, as in those of the British Empire and of France, the seeds and corms alone are officinal.

As found in commerce, the seeds of COLCHICUM are rough, small, and almost spherical, imparting to the mouth a bitterness and acrimony which surpasses that of the bulb. They are about the size of millet seeds, and have a dark brown colour.

The slices of the bulb are grayish-white, somewhat kidney-shaped, and have a dark-brown covering externally. When in good preservation, they are dry and easily fractured. They should not be thicker than a half-crown. Their taste is extremely bitter, and somewhat acrid.

There has been much difference of opinion as to the time of year in which the cormus should be taken up for medicinal use. According to my own observations, the middle of JULY is the most

[1] Geoffroy—Traité de Matière Médicale.

fit time for this purpose. The bulb is then of its greatest size, it is firm, amylaceous, and extremely bitter. The *bitterness* is the character which affords the best criterion of its activity.

According to some, the amount of *Starch* and firmness in the bulb are the proper guides; but the amount of active principle does not necessarily bear any corresponding ratio to that of the starch, in proof of which I may observe, that the bulb, when more spongy and watery, and less amylaceous, as in *April*, possesses almost as much bitterness as when nearly mature,—a circumstance remarked by Dr Christison, and which I have confirmed by repeated observation.

I feel confident that we can place no reliance in a test of goodness proposed by Dr A. T. Thomson.

In 1820 Dr Thomson[1] published a paper showing the tincture of *Guaiacum* to be a test for *Gluten*, and pointing out its applicability as a test for the goodness of COLCHICUM. His manner of procedure was as follows:—Ten grains of the bulb were rubbed in a mortar, with sixteen minims of distilled vinegar, and immediately afterwards sixteen minims of the *tincture of guaiacum* were added. A beautiful cœrulean-blue colour was produced with those specimens which, according to Dr Thomson, were good.

I have several times made, with specimens which I knew to be good from their bitterness, similar experiments, and obtained no cœrulean-blue colour, but only a dirty brown.

In the same year (1820) Mr Battley[2] published similar experiments which he had made, but with entirely different success from Dr Thomson.

In order to ascertain what the true nature of this re-action might be, I expressed the juice from several bulbs, and having filtered away the starch, applied the test to the fluid; a beautiful blue colour was immediately produced. It was evident from this that the *gluten* was not the part acted on. The blue liquid was then heated well, the albumen coagulated, and the blue colour remained with the coagulum, whilst the remaining fluid was free from colour. On raising the heat to 212°, the blue colour entirely disappeared. On the other hand, the test was applied to the starch collected on the filter, but without effect. The experiment was varied in the following manner:—

The fluid was first filtered to separate *starch*, then boiled and filtered to separate *albumen*. On the test being applied both to the filtered fluid, and to the *albumen* on the filter, no blue colour was obtained.

From these experiments I drew the following conclusions:—

I. That albumen is the principle acted on.

II. That a heat above 180° destroys this action.

---

[1] Thomson—London Medical Repository, vol. xiv.

[2] Battley—London Medical Repository, vol. xiv.

III. That the value of this test is to prove that the bulbs have been dried at a temperature not higher than 180°.

During the summer of 1849 I endeavoured, by another process, to determine the medicinal value of the drug at different seasons, by ascertaining the amount of alkaloid contained in the bulb at monthly periods, and thus to determine the fittest time for gathering for medicinal use.

Having expressed the juice of several bulbs, and separated the *albumen* and *starch*, I attempted by precipitation in a graduated test-tube with *tincture of galls*, to determine by the bulk of the precipitate the amount of active principle. This, however, failed, on account of the precipitate partly floating to the top, and partly remaining at the bottom. This I believed was occasioned by the fluids being of different densities. A similar experiment was tried with an alcoholic solution of the bulb, but with little better success, as the small quantity of active matter procured from a necessarily small amount of bulbs gave an almost imperceptible precipitate.

At whatever period the bulbs are taken up, they should be sliced into small pieces about the thickness of a half-crown, the outer membrane having been previously peeled off. They should be then spread out upon trays to dry, either at ordinary temperatures, or at any rate not exceeding that of 150° F., after which they must be carefully preserved from moisture. (Christison.)

Mr Houlton [1] recommends that the bulb should be stripped of its dry coating, carefully deprived of the bud or young bulb, and then dried whole.

CHEMICAL HISTORY.

Vegetable chemistry has of late years made great and rapid progress, and in no way more practically useful than in the discovery and examination of the organic bases which constitute the active principles of many vegetables used as medicines.

It is hardly necessary to do more than allude to *quina* and *morphia*, as examples of the valuable contributions which chemistry has made of late years to the resources of the medical practitioner.

It happens, however, in many instances that we may be quite aware of the existence, in a medicine, of an active principle, and yet, on the one hand, from the difficulty of obtaining it pure, or on the other, from the activity of the crude drug in small doses, it may, in a practical point of view, be of little consequence to ascertain the precise chemical and other qualities of the active ingredient. Yet assuredly the more we can investigate these active principles the

---

[1] Houlton—Pharmaceutical Journal, vol. iv.

more precise will be our knowledge of the properties of the original drug.

The active principle of COLCHICUM AUTUMNALE was, on the authority of Pelletier and Caventou,[1] supposed to be identical with that of Veratrum album,—namely, VERATRIA. Geiger and Hesse,[2] however, discovered in COLCHICUM an alkaloid differing from veratria, and which was named by them COLCHICIA.

The following was their process for preparing it:—

The seeds were bruised and exhausted by digesting them in *rectified spirit*, acidulated by *sulphuric acid*. The excess of acid was removed by the addition of *hydrate of lime*, and the fluid filtered to separate the *sulphate of lime* which was deposited. Any excess of *lime* which might remain in the spirituous fluid was removed by the careful addition of one or two drops of *sulphuric acid*. The fluid was then filtered and distilled to recover the alcohol, and the watery residue of the distillation was mixed with an excess of *carbonate of potass*. The precipitate which fell was dried between folds of bibulous paper, and then was taken up in *absolute alcohol*, the alcoholic solution decolorised by *animal charcoal*, and evaporated for crystallisation at a gentle temperature.

By this process, it is said, COLCHICIA may be obtained also from the flowers and corms.

During the winter of 1849, and again during that of 1850, I endeavoured to procure Geiger and Hesse's COLCHICIA by this method, but without success, although I followed their process exactly. I was particularly cautious in the application of heat; for it is well known that many of the vegetable bases, such as those from *Hyoscyamus* and *Stramonium*, are very easily destroyed by an undue elevation of temperature, which may probably account for those and other similar bases not having been accurately examined and analysed. COLCHICIA is perhaps as easily destructible as *hyoscyamia* and *daturia*.

I have not been able to find that any chemists have procured crystals of COLCHICIA, except Geiger and Hesse. My account of its properties, therefore, rests solely on their authority.

"COLCHICIA crystallises from its alcoholic solution, when that is mixed with water, in colourless prisms and needles. If the alcoholic or ethereal solution be evaporated, the COLCHICIA remains in the condition of a transparent varnish-looking substance."

It was in this state alone that I procured anything which could be considered to be COLCHICIA. I am very sceptical with regard to the crystalline nature of COLCHICIA at all; for having dissolved this matter successively in *alcohol*, *ether*, and *water*, and having left

---

[1] Pelletier and Caventou—Journal de Pharmacie, tome vi.

[2] Geiger and Hesse—Geiger's Pharmacie, tome i. Annalen der Pharmacie, tome vii. Journal de Chimie, tome x.

the solutions to spontaneous evaporation, no trace of crystallisation ever appeared, but the bitter matter was invariably deposited in the state of a brown resinous-looking mass.

This brown mass was without smell, and possessed considerable bitterness, the bitter taste being generally followed by a slight sense of irritation in the throat, but not with the intense acrimony of VERATRIA.

"COLCHICIA in its hydrated condition has but a feeble alkaline re-action, but neutralises acids completely, and forms with them salts, which are in part crystallisable, and which have a bitter, acid, and slightly acrid taste.

"COLCHICIA dissolves pretty easily in water. It is very soluble in rectified alcohol and ether.

"It strikes a yellow colour with solution of *chloride of platinum*, but does not form an insoluble *platino-chloride* with it. *Tincture of galls* causes a white precipitate, and with *tincture of iodine* it becomes rapidly turbid, producing a russet-brown colour.

"It is persistent in the air, melts easily at a gentle heat, and is destroyed by a higher temperature." (Geiger and Hesse.)

The alkaloid VERATRIA, discovered by Pelletier and Caventou, in the root of *Veratrum album*, and in the seeds of *Helonias* or *Asagræa officinalis*, is prepared much more easily. I found no difficulty in procuring it by the process of the Edinburgh Pharmacopœia, which is nearly the same as that described by Couerbe,[1] and is as follows:—

"Grind the seeds of *Cevadilla* in a coffee-mill, and form them into a thick paste with *rectified spirit*. Pack this firmly in a percolator, and pass *rectified spirit* through it till the spirit ceases to be coloured. Concentrate the spirituous solutions by distillation so long as no deposit forms, and pour the residuum while hot into twelve times its volume of cold water. Filter through calico, and wash the residuum on the filter so long as the washings precipitate with *ammonia*. Unite the filtered liquid with the washings, and add an excess of ammonia. Collect the precipitate on a filter, wash it slightly with cold water, and dry it, first by imbibition with filtering paper, and then in the vapour bath. A small additional quantity may be got by concentrating the filtered ammoniacal fluid, and allowing it to cool."

The Pharmacopœia, I think, has erred in not ordering the immense volume of water, into which the hot alcoholic solution is thrown, to be evaporated down. In one of my operations the quantity of water amounted to twenty-four pints; and it was found quite impossible to precipitate this immense quantity by *ammonia*. It was therefore evaporated down to four pints, when an abundant precipitate was obtained.

The quantity of impure VERATRIA which was obtained from

[1] Couerbe—Annales de Chimie et de Physique, tome lii.

fifty-six ounces of seeds was *fifty grains;* but Couerbe states that *a drachm* of VERATRIA may be obtained from *sixteen ounces* of seeds; but, as Dr Christison remarks, "the product to be so large must be very impure."

The impure *Veratria* which I procured was taken up in very weak *hydrochloric acid*, decolorised with *animal charcoal*, and re-precipitated by *ammonia*. It was then nearly pure white, and weighed *twenty-seven grains*.

That VERATRIA and COLCHICIA (if Geiger and Hesse's account of the latter be correct) are in no respect identical, is obvious from their great difference in properties, viz.,—

(1.) VERATRIA is entirely incrystallisable.	(1.) COLCHICIA crystallises in delicate acicular prisms.
(2.) VERATRIA possesses a powerful persistent acridity of taste.	(2.) COLCHICIA, though extremely bitter, possesses none of this.
(3.) VERATRIA, when it comes into contact with the nostrils, excites most violent sneezing. So powerful indeed is this property of VERATRIA, that when engaged in working with the seeds of *Cevadilla*, I have frequently been obliged to desist, on account of the sneezing induced.	(3.) COLCHICIA possesses no sternutatory effects at all.
(4.) VERATRIA is almost entirely insoluble in *water*. It is soluble in *alcohol* and *ether*.	(4.) COLCHICIA is very soluble in *water*, *alcohol*, and *ether*.
(5.) VERATRIA, by the action of *nitric acid*, becomes first red and then yellow. *Sulphuric acid* produces first a yellow, then a blood-red, and lastly a fine violet colour.	(5.) On COLCHICIA *nitric acid* first produces a bright violet, then an indigo-blue colour, quickly passing into green and yellow. *Sulphuric acid* colours it yellowish-brown.

These comparative characters are sufficient to establish the complete dissimilarity of these two bases.

COLCHICIA has not yet been analysed, and therefore no formula of its constitution exists.

Geiger and Hesse, although they did not analyse their COLCHICIA, ascertained its physiological properties, and compared them with those of VERATRIA.

The following experiments are related by them :—

One-tenth of a grain of COLCHICIA dissolved in weak alcohol was administered to a cat eight weeks old. There formed immediately much froth at the mouth. At the end of about an hour there were abundant liquid dejections, and then followed, after an interval, several attacks of vomiting. The gait of the animal became staggering, it fell, rolled from side to side, uttered a plaintive cry, and appeared agitated by convulsive movements. These symptoms augmented more and more, and death took place in twelve hours.	There was given, for comparison, one-twentieth of a grain of VERATRIA to a cat a little younger. The poison showed itself with much greater intensity. The animal staggered, moved convulsively, and died in ten minutes.

On opening the body, the stomach and intestinal canal were found violently inflamed, and congested throughout their entire course.

On inspection, no inflammation was found, except at the inferior part of the œsophagus, which part of the digestive tube was not inflamed in the cat poisoned by COLCHICIA.

It appears, from these experiments, that the poisonous properties of COLCHICIA are essentially those of the *irritant* class, whilst, from the rapid action of VERATRIA, and the absence of post-mortem appearances, it seems to have produced death by an action on the *nervous system.*

No other important principle has been announced as existing in COLCHICIA, except the alkaloid discovered by Geiger and Hesse. It was the substance taken by Pelletier and Caventon for VERATRIA; and, according to their statement, it was combined with *gallic acid.*

The following is their analysis of the corms :—

(1.) Fatty matter, composed of { Olein. Stearine. Volatile acid.
(2.) Supergallate of VERATRIA (*Colchicia.*)
(3.) Yellow colouring matter.
(4.) Gum. (5.) Starch. (6.) Inulin. (7.) Lignin.[1]

Stoltze[2] also analysed the bulb of COLCHICUM, and found that it contained in

	March.	October.
Volatile acrid matter,	a trace.	rather more.
Soft resin,	0·04	0·06
Crystallisable sugar,	0·41	1·12
Incrystallisable sugar,	5·91	2·72
Bitter extractive		2·17
Difficultly soluble extractive,	1·30	0·52
Gum,	0·81	1·65
Starch,	7·46	10·12
Lignin,	2·32	1·61
Extractive soluble in potass,	0·61	0·52
Water,	81·04	80·31
	99·90	100·80

We find by this analysis that in *March* the *starch* is diminished 3 per cent., and the bitter extract greatly increased.

Another analysis was performed by Melandri and Moretti.[3]

The *seeds* have only been analysed qualitatively by Buchner,[4] but his notice of the constituents is not worthy of remark.

---

[1] Pelletier and Caventou—Journal de Pharmacie, tome vi.
[2] Stoltze—Thomson's Organic Chemistry.
[3] Melandri and Moretti—Bulletin de Pharmacie, tome ii.
[4] Buchner's Repertorium, xliii.

PHARMACY.

Much discussion has been held respecting the comparative value of the different preparations of COLCHICUM, and especially as to whether the seeds or corms yields the most eligible forms for its administration.

"It might be reasonably expected," says Dr Barlow, "from the virtues of COLCHICUM being found to reside in the seeds as well as in the root, that the former would yield a medicine of greater uniformity, being in a state of more perfect and determinate maturity, requiring less care in the collection and preservation, and being less liable to have their powers impaired. My experience of the several preparations fully confirms this supposition."[1]

This is upon the whole the opinion most generally entertained by practical physicians.

The employment of the *seeds* in preference to the *root* was first insisted on by Dr Williams of Ipswich.[2]

There are at present seven preparations of the bulb and seeds of COLCHICUM officinal in the three British Pharmacopœias; but of all these there are perhaps only four which can be considered as in use at the present day. These are,—*Acetum Colchici*, E. L. D.; *Extractum Colchici Aceticum*, E. L. D.; *Tinctura Colchici*, E. L.; and *Vinum Colchici*, E. L. The *acetic* forms answer best as *diuretics*, perhaps because they are weaker preparations, and not so apt to act upon the bowels.

The *tincture* and *wine* are the preparations employed for general purposes; but when it is desirable to exhibit COLCHICUM in the form of pill, the *acetic extract* is certainly the most eligible form.

PHYSIOLOGICAL EFFECTS.

It is very difficult to state in a precise and definite manner what the action of COLCHICUM is, or to what class of medicinal agents it ought to be referred.

In medicinal doses it seems to have the property of lowering the heart's action, and to affect most of the secretions of the body; and hence, according to the circumstances under which it is administered, it may produce *diuretic*, *emetico-cathartic*, or *diaphoretic* effects.

It has been regarded by some as an *expectorant;* and by others it is supposed to have a peculiar effect in stimulating the *hepatic system.*

It has also been regarded as having a powerful influence over the *uterus.*

From the marked effects which it produces in GOUT and RHEU-

---

[1] Cyclopædia of Practical Medicine—Gout.
[2] Williams—London Medical Repository, vol. xiii.

MATISM, it has been regarded as possessing a *specific* action in those diseases; but this may be said to be a mere statement that it acts powerfully and successfully, for it does not appear that it often alleviates those diseases, without producing in a well-marked degree some of its ordinary physiological effects, such as lowering the pulse, causing *diarrhœa*, *diuresis*, or *diaphoresis*.

In large doses there can be no doubt that it is an active *narcotico-acrid* poison; but its action seems to be more due to *acrid* than to *narcotic* properties, as the effect on the brain is generally secondary to that on the intestines.

One of its most remarkable physiological effects was discovered by Chelius of Heidelberg.[1] He found that the URIC ACID contained in the urine of those taking COLCHICUM was nearly doubled in the space of twelve days. In one case the urine before taking COLCHICUM contained 0·069 per mille of URIC ACID; four days after commencing to take the COLCHICUM the proportion was 0·076; on the eighth day, it was 0·091; and on the twelfth day, it was 0·102. Chelius obtained the same results in other instances.

Dr Christison[2] examined the urine of a patient taking COLCHICUM, and he found that in two days the quantity of UREA was nearly doubled. In the urine before taking COLCHICUM there was no deposit of *lithate of ammonia*. Its density 1020. It contained above forty-seven parts of solid matters in the thousand, and of this quantity twenty parts were UREA. The specimens of urine passed on the first and second days after commencing to take COLCHICUM were exactly alike. They were very turbid, and their turbidity disappeared with a gentle heat; the deposit was evidently *lithate of ammonia*. The density of the first was 1033·5, and that of the second was 1034, which are both very unusually high for urine not *diabetic*. As they were obviously identical in their nature, Dr Christison only analysed the second. It contained seventy-nine parts of solid matters in a thousand, and of this quantity thirty-five were UREA. Dr Christison suspected that the quantity of urea was even greater, for not having added an excess of *nitric acid*, some of the *nitrate of urea* might have remained in solution.

Through the kindness of Dr Halliday Douglas, I had an opportunity of examining the effect of COLCHICUM on the urine of a sailor, who was a patient in the Royal Infirmary. He was under treatment for secondary syphilis, but was otherwise healthy. I was permitted to give him a few doses of COLCHICUM, in order that I might ascertain the physiological action of that agent on

---

[1] Chelius—Archives Générales de Médecine, tome xviii. Chelius—Annales Cliniques de Heidelberg, 3me vol. *Vide* paper by Dr Lewins—Edinburgh Medical and Surgical Journal, vol. lvi.

[2] Christison—Lewins, op. cit.

the kidneys, but before doing so I examined his urine. The density was 1025. It contained no deposit, nor was it affected by *heat* or *nitric acid*. It contained :—

Total solids, ...		27·500
Water, ...	972·500	
Urea, ...	12·360	
Uric acid, ...	0·281	
Inorganic salts, ...	7·436	
Organic matter, ...	7·423	
Total, ...	1000·000	

Here it will be perceived that both the UREA and URIC ACID were slightly deficient, if we compare it with the standard of healthy urine, as given by Becquerel.[1] Density 1018·9 Contains :—

Total solids, ...		31·185
Water, ...	968·815	
Urea, ...	13·838	
Uric acid, ...	0·391	
Inorganic salts, ...	7·695	
Organic matter, ...	9·261	
Total, ...	1000·000	

On the third day, after commencing to take COLCHICUM, the urine was examined. It possessed a slight turbidity, which, however, was dissipated by heat. Density 1030. It contained :—

Total solids, ...		29·650
Water, ...	970·350	
Urea, ...	15·500	
Uric acid, ...	0·491	
Inorganic salts, ...	6·350	
Organic matter, ...	7·209	
Total, ...	1000·000	

Here, it will be observed, the UREA was increased by *one-fourth*, the URIC ACID nearly *doubled*, and the inorganic salts and inseparable organic matters were considerably decreased.

The urine was again examined on the sixth day after commencing to take the COLCHICUM, with the following results. Turbidity rather increased. Density 1034. It contained :—

Total solids, ...		33·460
Water, ...	966.540	
Urea, ...	18·341	
Uric acid, ...	0·750	
Inorganic salts, ...	7·436	
Organic matter, ...	6·933	
Total, ...	1000·000	

[1] Becquerel—Semeiotique des Urines.

Here, then, the physiological action of COLCHICUM in increasing the UREA and URIC ACID was well marked.

Having obtained these results from this case (which are only corroborations of many others), it was not considered justifiable to proceed further with the administration of COLCHICUM with this patient.

It has been supposed that under the use of COLCHICUM a remarkable change takes place in the system,—namely, that the URIC ACID becomes converted into UREA; but this has not at all been substantiated, and from the above cases of Chelius, and the analyses which I have just noticed, we must be led to suppose that no such change occurs, but that an increase in both those principles is the result.

Dr Graves[1] states, that the beneficial action of COLCHICUM is not owing to its producing a more rapid excretion of *lithates* through the kidneys, but to the remarkable property the plant possesses of altogether putting a stop to the morbid formation of *lithates*.

Dr Gairdner[2] says, that he has always found that the increase of UREA was accompanied by a corresponding diminution of the *urates* in the urine. But, from the above experiments, I am inclined to believe that both of these suppositions are erroneous.

With a view to ascertain the power of COLCHICUM as a *sedative* I made the following experiments,—in the first, my pulse being 87; in the second, 84. On both occasions twenty minims of *Tinctura Colchici* were taken.

At 8 P.M.	...	...	Pulse 87	At 6 P.M.	...	...	Pulse 84
9 „	...	...	„ 87	7 „	...	...	„ 84
10 „	...	...	„ 80	8 „	...	...	„ 78
11 „	...	...	„ 75	9 „	...	...	„ 72
11½ „	...	...	„ 70	10 „	...	...	„ 66
12	...	...	„ 65	11 „	...	...	„ 60
12½ A.M.	...	...	„ 65	12	...	...	„ 62

No other physiological action was manifested, except slight nausea.

POISONOUS ACTION.

In large doses, COLCHICUM proves a violent *irritant* poison. The symptoms occasioned by it are,—"Severe vomiting and urgent diarrhœa, with a sense of burning in the throat, excessive colic, and heat in the abdomen; great depression of the circulation, and sometimes suppression of urine.

"Sometimes no other symptoms exist, and death takes place from *exhaustion*, the effect of *inflammation* of the bowels. Some-

---

1 Graves—London Medical Gazette, vol. vii.

2 Gairdner on Gout. London, 1849.

times death is preceded by *headache*, *delirium*, *stupor*, and *insensibility*, denoting an action upon the *nervous system*." (Christison.)

POISONOUS ACTION ON ANIMALS.

Orfila[1] states, that he has frequently given two or three bulbs to dogs in *June*, without producing any sensible effects; this induced him to believe that climate and the season of the year have great influence on their deleterious properties. This, however, is the season of the year when the bulbs are supposed to possess their greatest activity.

Mr Want states, "that cattle are affected by it only at the spring of the year, when the seed-vessel is fully mature."

"It happens that the seed, if swallowed, adheres to the coat of the stomach, producing at the several points of its adhesion spots of inflammation, which occasion the death of the beast."

"It is a curious fact, that they are affected by the recent plant only; for when dried and made into hay it loses its deleterious property, and is then eaten by them with impunity."[2]

Sir Everard Home[3] injected 160 drops of the vinous infusion of COLCHICUM into the jugular vein of a dog. The animal immediately lost all power of voluntary motion; the breathing became extremely slow, and the pulse was hardly to be felt.

In ten minutes the pulse was 84; inspirations natural (40 in a minute). In twenty minutes the pulse was 60; inspirations 30; and a tremulous motion had taken place in the hind legs. In an hour the pulse was 115, and irregular. The animal was capable of sitting up, but was in a state of violent tremor; the inspirations could not be counted. In one and a half hours, the tremor had gone off; pulse the same; the animal made ineffectual attempts to vomit, and continued to do so for ten minutes, with great langour; inspirations, 54. In two hours the pulse was 150, and very weak; the animal had voided an ounce and a half of urine; had vomited twice, each time bringing up a quantity of mucus, tinged with bile, and had two liquid stools. In three hours had vomited again, and had another stool; pulse too weak to be counted. In four hours continued extremely languid; and in five hours vomited some bloody mucus, and expired.

Autopsy.—The *stomach* contained mucus tinged with blood, and its internal surface was *inflamed*. The *duodenum* had its internal surface universally *inflamed*. The same appearance was met with

---

[1] Orfila—Toxicologie, vol. ii.

[2] Want—London Med. and Phys. Journ., vol. xxxii.; Annals of Philosophy, vol. iv.

[3] Philosophical Transactions, vol. xvi., part 2.

in the *jejunum* and *ilium*, and also in the *colon*, where it was more strongly marked than in the *ilium*.

Another case, with somewhat similar results, is recorded by Sir Charles Scudamore.[1] He injected 160 drops of the vinous infusion of COLCHICUM into the jugular vein of a strong dog. For the first fifteen minutes he did not seem to suffer the least inconvenience. In an hour and a quarter he was sitting on his hind legs, the eyes were bright, and there did not appear any remarkable change. In five hours he was still capable of sitting up, but appeared much dejected; and there was some difficulty of breathing, attended with an occasional husky cough. His pulse was 113; the inspirations were 56. In five hours and a quarter he vomited some bloody mucus, and expired.

Dissection.—The *stomach* was in a state of *gangrene*. The *duodenum*, *jejunum*, and *ilium*, were in a high state of *inflammation*, approaching to *gangrene*. About two ounces of highly offensive grumous blood were found in the stomach; there was also blood in the duodenum, but not offensive. The *colon*, *cæcum*, and *rectum* were much *inflamed;* with here and there deep rose-coloured spots, of the size of a pea. The bladder was nearly full of urine, of a deep saffron colour; the gall-bladder was much distended with bile. There was an effusion of bile upon the liver.

Scudamore made an experiment also with the expressed juice of COLCHICUM.

At forty minutes past 1 o'clock P.M., 120 drops of the expressed juice of the fresh roots of COLCHICUM were injected into the jugular vein of a young terrier. Immediate signs of great debility were produced; he passed a natural alvine discharge.

In about two minutes he vomited half an ounce of frothy bile, of a gamboge colour. Rising upon his legs he staggered as if intoxicated, and immediately fell. In five minutes the respirations were 52. In seven the eyes were fixed, the pupils contracted; the extremities were stiff, and drawn up.

In ten minutes he was upon his legs, passed a scanty bilious discharge, walked about, and soon again made great efforts, without effect, to relieve himself, uttering at the time a cry of distress. He ran into a dark part of the room. In lying down he had some rigors, and there was a profuse salivation.

Three o'clock.—He was on his legs, with his back raised, and showing signs of pain in the bowels. The inspirations were 42. He seemed capable of walking, but was very languid.

At *four o'clock* the lassitude had increased, and he supported himself with difficulty on his legs; a copious discharge of mucus and saliva was proceeding from the mouth.

---

[1] Scudamore on Gout and Rheumatism, 1819.

A little before *five o'clock* he appeared to be suffering much, was moaning continually, and took no notice on being disturbed.

At *six o'clock* he was still much distressed on his inspirations, being only 12 in a minute; the eyes were fixed, the teeth firmly closed, and he appeared to be dying.

At *seven o'clock* there was no perceptible change, except that his inspirations had increased to 14 in a minute.

Nine o'clock.—He respired only 8 times in the minute with much difficulty. His moaning was much fainter.

Ten o'clock.—He was found dead, and was quite cold.

Dissection.—The *stomach* was highly *inflamed*, containing about an ounce of dense mucus, mixed with grumous blood; the *duodenum*, *jejunum*, and *ilium*, were highly *inflamed;* the inflammation decreasing in the *colon*, *cœcum*, and *rectum*.

The following experiment with *Eau Médicinale*, whose principal constituent is supposed to be some preparation of COLCHICUM, probably the *flowers*, is narrated by Scudamore:—

Sixty minims of Eau Médicinale, with the sediment which it forms shaken up, were given to a very strong rough terrier, at half-past ten A.M.

Two o'clock.—He was lying down, and looked lethargic.

Half-past Four.—Pulse 96, vibrating and intermitting every five beats.

Eight o'clock.—Pulse was softer; he had vomited some frothy mucus, and appeared very languid.

Next morning.—Pulse 164, and irregular. The dog had recovered his strength.

Ten o'clock.—A further dose of 160 drops was given.

Half-past Two.—He looked dejected; the pulse was 104, and very irregular.

Four o'clock.—Had brought up some opaque, viscid mucus.

Six o'clock.—Had vomited a quantity of frothy slime mixed with blood, and appeared altogether very ill. Rigors; pulse 80, and small, with intermissions after every five or six beats.

Half-past Nine.—Seemed dull and languid; pulse 106.

On the following morning, at ten o'clock, he was found extended on the ground; had voided a quantity of urine. He was quite insensible, and now and then stretching out his limbs. His inspirations were 6 in a minute.

At *one o'clock* he did not seem to suffer.

Half-past Two.—He was stretching himself out, as if in the act of dying. There were slight convulsions of one of the legs. The pulsation of the heart was not to be felt; and no distinct respiration could be observed.

At *three o'clock* he had expired.

Dissection.—The *stomach* was highly *inflamed*, and contained a dark-brown fluid. The marks of *inflammation* increased in the *duo-*

denum, and through the *jejunum;* decreased in the *ilium*, and increased again in the *colon*, which appeared in a state of general ecchymosis, from venous blood extravasated under the mucous membrane. The *cæcum* and *rectum* were highly *inflamed.*

Various other experiments with the different preparations of COLCHICUM are noticed in Scudamore's work on gout, but these it is unnecessary to detail.

Dr R. Lewins,[1] in an essay on COLCHICUM, describes several experiments which he made on the lower animals with different preparations of that plant.

On the 15th December, 70 minims of the *Vinum Seminum Colchici* were administered to a middle-sized dog, without any immediate sensible effect.

A short time afterwards it devoured a large quantity of meat very greedily, and continued gnawing bones for some time with great avidity.

At *seven* P.M., nearly four hours after he had swallowed the COLCHICUM, he ate another large quantity of beef, and lapped barley-broth with great eagerness. He was visited for the last time that night about *nine* P.M., when he appeared in his usual state of health.

Next morning, at *half-past eight*, sixteen hours after the COLCHICUM had been given, he seemed weak, low, and very sick. He remained prostrate on some straw in the corner of the room, and could not be induced to move. During the night he had been most severely purged, and in every part of the room were egesta from the stomach, in some places mixed with a fluid of a dark brown colour, in other places mixed with food; and near where he was lying there were large watery evacuations, intimately mixed with a fluid resembling blood. No attempts were made to vomit during the visits on this day, nor did he express by outward symptoms any indication of suffering acute pain. The eyes were hollow, and had a dull glazed appearance. On presenting food of the same kind that he devoured greedily the previous afternoon, he would not touch it. The prostration of strength and insensibility to external impressions became greater and greater throughout the day.

On visiting him next morning, at a little after *eight o'clock*, he was quite dead, cold, and stiff. The food which had been placed before him yesterday morning had never been touched.

Dissection.—The body, examined at *half-past eleven*, presented the following appearances:—The *intestines* were found very much *contracted* and *vascular*. The internal surface of the *stomach* presented rather more rugæ than natural, and was lined with mucus; its cavity was nearly full of dark brown coloured bile, and the

---

[1] Lewins—Edin. Med. and Surg. Journ., vol. lvi.

pyloric orifice was contracted. The *duodenum* was much injected, and coated with mucus; the whole course of the *jejunum*, and upper part of the *ilium*, were of the most intense red colour. On the lower part of the *ilium* were observed a number of dark streaks, slightly raised, running in a longitudinal manner. The *large intestines* were likewise very *vascular*, although not so vivid as in the small intestines. In the *ilium* a large tapeworm, measuring considerably upwards of a foot, was found dead. There was not the slightest appearance of food or fœcal matter in any part of the intestinal canal; a large quantity of bloody serosity, mixed with thin mucus, lined the parietes in almost their whole extent. The *gall-bladder* was full of dark-brown bile, and the *urinary bladder* was distended with natural coloured urine. All the other organs were perfectly normal.

Dr Lewins found that, notwithstanding the powerful effects which COLCHICUM produced upon men and dogs, it acted with very different degrees of energy upon other classes of animals, and with the view of ascertaining in what respect this action is different, he made the following experiments :—

On 7th December, half a drachm of the *Vinum Seminum Colchici* was administered to a small rabbit. It commenced eating immediately afterwards; and on the following day nothing unusual was observed, except that it appeared to have passed a larger quantity of urine than natural.

On the 8th, at *six* P.M., twenty-four hours after the last dose, one drachm was administered, and with the exception of a *diuretic* effect, no particular change was observed.

On the 9th, no perceptible effect having resulted from yesterday's dose, at *nine* P.M., twenty-seven hours after the last experiment, two drachms more were swallowed, and no evident change was observed in the animal.

On the 10th, at *six* P.M., twenty-one hours after the last dose, three drachms more were given. After one drachm had been introduced, the rabbit began to squeak, and struggle violently; and on being let loose ran about as if in pain. The same effect followed after the exhibition of the second dose; but after the third drachm it began to eat, and appeared quite as lively as usual.

Thus to a very small animal, in the course of four days, *six drachms and a half* were given (more than six times the quantity which proved fatal, with the most violent symptoms, to a dog), with little effect except acting upon the kidneys.

Another case is mentioned, where *seventeen drachms* were given in *six* days, without any material change being produced on the animal. An experiment was also made on a cold-blooded animal,—viz., a frog. In this case, in the course of *six* days, 350 *minims* were administered, with comparatively very slight effects

being produced, and which might very well be attributed to the quantity of wine swallowed.

From the results of these investigations, Dr Lewins says, it appears that we are warranted in concluding, that the action of COLCHICUM is most decided upon carnivorous and omnivorous animals, whilst its action on herbivorous, graminivorous, and cold-blooded animals is comparatively feeble.

POISONOUS ACTION ON MAN.

THE following cases of poisoning by the various preparations of COLCHICUM are illustrative of the fact which has been pointed out, that its action in this respect is due more to *acrid* than to *narcotic* properties, inasmuch as the symptoms of the latter, when they appear at all, are generally subsequent to those of the former. In all the cases—*colic*, *vomiting*, and *purging*, *slow and almost imperceptible pulse*, and great *prostration of strength*, are represented as having occurred, whilst only in three was there any distinct manifestation of an action upon the *nervous system*. In one case only does the action on the nervous system *precede* the symptoms of acrid poisoning, and in this, *convulsions*, followed by complete *opisthotonos* and *paralysis*, were present. In three cases, the *pupils* were remarked to be *dilated;* in one, *contracted;* in the majority, *suppression of urine* existed; but in one, *diuresis* was present from the time of poisoning to that of death—a period of six weeks.

The post-mortem appearances are in general *redness* and *inflammation* of the intestinal canal; but in the cases mentioned by Chevallier and Caffe, no morbid appearances existed.

The following case, illustrative of the poisonous effects of the *seeds* of COLCHICUM, is narrated by Mr Fereday, of Dudley :[1]—

I.—David Cole, æt. 44, a stout muscular man, feeling pains in his bowels, to which he was subject, on the morning of 8th March, about six o'clock, swallowed, believing it to be rum, about two ounces of wine of the seeds of COLCHICUM.

He immediately discovered his error, but knowing its effects in small doses, conceived it would be followed by vomiting and purging sufficient to avert mischief. He sought no medical aid till four in the afternoon, when he was first seen. He was sitting on a chair, his elbows on his knees. He said that he felt no inconvenience for an hour and a half after taking the dose, when pains in the bowels came on; but that he continued his work until eleven o'clock, when pains in his stomach and bowels, retching, and copious vomiting of a yellowish fluid, compelled him to desist.

Four o'clock p.m.—He describes the pain in the epigastrium as agonising, and says it is like a knife piercing him. The retching is incessant and extremely violent, but no fluid is evacuated; there is tenesmus; a small quantity of fœcal

---

[1] Fereday—London Medical Gazette, vol. x.

matter has passed. No tenderness on pressure, either in the epigastrium or abdomen. The appearance of the tongue is natural; the pulse small, slow, and feeble; breathing not much affected; the feet cold; his countenance is anxious; features sharp; his cheeks, lips, and palpebræ purple. On attempting to walk, says he thinks he shall lose the use of his limbs.

A mustard emetic was given, followed by copious draughts of warm water and gruel. These were soon returned, with apparently no admixture. Cathartic medicine was given, and immediately returned. Was put to bed; warm bricks were applied to the feet, and hot flannels to the stomach. To take forty drops of laudanum immediately; gruel and coffee plenteously.

Nine o'clock p.m.—The retching, vomiting, and pain in the stomach continue with undiminished violence; the fluid vomited contains a sediment like coffee grounds; he complains greatly of thirst; has made little water. Twenty drops of laudanum every two hours; a blister to the epigastrium; sinapisms to the feet; an enema every hour.

9th March, six o'clock a.m.—Has passed a sleepless night; the symptoms remain unaltered; the eyes are sunk; feet warmer; skin generally natural; no perspiration; pulse scarcely to be felt; respiration hurried; great thirst; no urine. Enemata returned without fœcal matter; camphor, calomel, and opium every three hours; an effervescing draught with brandy every hour.

Eight o'clock p.m.—The retching and pains continued until four o'clock, when the bowels were much distended. Has since had copious liquid stools, dark coloured, and very offensive, and expresses himself better. Makes a few drops only of urine; loses his sight for a minute or two after getting out of bed to the night chair; the pulse is scarcely perceptible, and occasionally intermits; he is perfectly sensible, but talks with effort; calls continually for water. Aromatic confection, carbonate of ammonia, and camphor mixture, with brandy, every hour.

10*th March*.—In the course of the night his stools passed involuntarily, and in great numbers, his weakness increased, and he died a few minutes before five o'clock this morning, perfectly sensible to the last moment.

Sectio Cadaveris.—The face, neck, upper and front part of the thorax, insides of the arms, front of each forearm, and insides of the thighs, were covered with patches of a purple efflorescence, as were also the integuments of the scrotum and penis. The muscles of the forearm were very rigid, and their fibres contracted into hard knobs. The great omentum, instead of covering the front of the intestines, was turned up between the stomach and convex surface of the liver behind, and the diaphragm in front, from the efforts of vomiting. There was increased redness in a portion of the peritoneum covering the jejunum. The stomach and bowels were coated with a thick, tenacious, but colourless mucus. On a portion of the mucous membrane of the stomach, near the cardiac orifice, and corresponding to its great arch, was a patch of redness, about the size of a half-crown piece; its secretion here did not vary in tenacity, quantity, or colour, from that of any other portion of the membrane. Upon dividing it at this part, its section presented nothing beyond its usual appearance; there was no pulpiness, no thickening, but a small quantity of blood was effused between it and the muscular coat, giving the reddened internal appearance. Careful examination of that portion of the reddened peritoneum covering the jejunum, demonstrated the like hemorrhagic condition of the blood-vessels. Blood was effused between the peritoneal and muscular coats; but the mucous membrane corresponding to this portion was perfectly healthy, at least it was perfectly free from inflammation. No other trace of inflammation was observed in other portions of the abdominal viscera. The gall-bladder was distended with healthy bile, the urinary bladder was contracted and empty.

II.—Case of poisoning by a decoction of the *seeds* of COLCHICUM, by Dr Newbrandt.[1]

Caspar B., of Aesthausen, æt. 52, of a sanguine temperament, drank, by mistake, on the night of the 18th February 1830, some of a decoction made with a large spoonful of colchicum seeds and three pints of water; he had, in the night, more than fifteen stools and vomitings. When Dr Newbrandt saw him next day, he was in a disturbed state. The stools and vomitings were less frequent; the patient, although weak, did not complain of any pain, and could raise himself; the abdomen was not distended, and it contracted spasmodically on being touched; the pulse was small and frequent; the stools, which were very fœtid, contained small whitish membranes. The patient was made to drink a great quantity of warm water containing butter. This drink provoked vomiting and stools. Immediately after, coffee was ordered, and a strong infusion of marsh-mallow with lemon-juice. Next morning, the 20th, at eight o'clock, the physician found his patient in the following state:—

Face pale; respiration precipitate; eyes sunken; pupils much dilated; tongue covered with a whitish matter, and could be put out only with difficulty; region of the stomach rather painful; breath, face, and extremities cold; pulse very frequent, scarcely perceptible; no thirst; stools more frequent since last evening, and containing matters of a light blue colour. The patient took with pleasure some mucilaginous soups and coffee. Although he replied correctly to questions addressed to him, his intellectual faculties seemed to be confused. Death at ten o'clock.

Sectio Cadaveris, 23 hours after death.—Countenance unaltered; pupils much dilated; eyes sunken; the abdomen scarcely more swelled than during life, was of an extraordinary hardness, and showed peculiar stains, more numerous in the cavity of the stomach, and at the sides, towards the back; they were violet, greenish-blue, not circumscribed. The muscles were of a deep blue when dried in the air. The trachea, towards the bifurcation, was inflamed. The lungs collapsed, small, pale, and soft to the touch, containing much coagulated blood; on their surface were large black, violet, and brownish spots. The œsophagus was brownish-red at its opening into the stomach. The cardia was of a violet-black colour. The stomach, at its exterior surface, was of a light violet, and much deeper at the interior; the veins of the stomach and other intestines were greatly distended with perfectly black blood. The liver had a violet tint at its concave surface. The gall-bladder was bulky, and full of green bile. The large and small intestines were hardly inflamed without, and showed only a few red, brownish spots within. The other organs presented nothing abnormal.

III.—In the same journal as the above, a fatal case of poisoning by the *leaves* of COLCHICUM is mentioned.

IV.—Blumhardt[2] relates a case of poisoning caused by an infusion of a large tablespoonful of the *seeds*.

In three quarters of an hour the man was seized with griping, and then profuse diarrhœa and vomiting. Next morning, twelve hours after the poison was taken, the physician found him still affected with vomiting and purging, but not with pain. He seemed indeed to suffer so little, and to improve so much under the use of emollients, that he was thought to be fairly recovering; but next day the pulse was almost imperceptible; the countenance and extremities were cold; the voice hoarse; the breathing hurried; the eyes sunk; pupils dilated; the epigastrium tender; and the forehead affected with pain. He died at twelve the same day.

---

[1] Newbrandt—Medicinisches Correspondenz-Blatt.—The Chemist, vol. i., 1840.

[2] Blumhardt—Repertorium für die Pharma xix. Christison on Poison

V.—M. Ollivier[1] met with two cases of death within twenty-four hours, in consequence of a tincture being taken, which contained the active part of forty-eight grains of the dry *bulb;* and a third case of death in three days, caused by three doses of a watery decoction, made each time with forty-six grains of the bruised *bulb* collected in *July*. Severe purging and prostration followed each dose. There were no symptoms of any affection of the brain.

VI.—A case is mentioned by Chevallier[2] of fatal poisoning from the intentional administration of a vinous infusion of the dry *bulb*, in which death took place in three days, preceded by violent burning in the intestines, great thirst, frequent vomiting of mucus, and intense suffering. The dissection revealed no morbid appearance at all.

VII.—Three American soldiers, who drank by mistake a large quantity of colchicum wine, prepared from the *bulb*, died with symptoms of burning pain, urgent thirst, and frequent vomiting of mucus. One of them, who took eighteen ounces, and died in two days, presented the leading symptoms of malignant cholera,—viz., frequent vomiting ; copious rice-water stools ; cramps of the abdominal muscles, and flexion of the extremities ; coldness of the skin, tongue, and breath ; blueness of the nails ; dull sunken eyes, contracted pupils, and collapse of the features. The two others had at first similar symptoms, which passed into those of chronic dysentery, and proved fatal in a few weeks.[3]

VIII.—M. Caffe[4] relates the case of a young lady, who, in order to destroy herself, took five ounces of the wine of colchicum. She was soon seized with acute pain in the stomach, then with frequent vomiting ; general coldness and paleness ; a sense of tightness of the chest, and oppression of breathing ; a slow thready pulse, and extreme prostration ; and subsequently, with severe and constant cramps in the soles of the feet. In eleven hours she had less frequent efforts to vomit, but was excessively exhausted. In twenty hours the pulse was imperceptible, and in two hours more she died.

There was no suppression of urine ; no purging ; no diminution of sensibility; no delirium ; no convulsions ; no change in the state of her pupils.

About a twelvemonth afterwards, her sister destroyed herself by taking the same preparation, of which she took the same quantity, and she died with exactly the same symptoms in twenty-eight hours.[5]

On examination, in neither of these cases was there any inflammation detected.

IX.—Mr Taylor[6] records the case of a gentleman, who, in November 1839, swallowed, by mistake, one ounce and a half of wine of colchicum. He was immediately seized with severe pain in the abdomen, other symptoms of irritation came on, and he died in seven hours. No post-mortem examination was required by the coroner !

In another instance, in which an ounce was taken, death occurred in thirty-nine hours.[7]

Mr Taylor also mentions an interesting case of poisoning by the medicinal administration of colchicum, communicated to him by Mr Mann. Three and a half drachms of the wine of colchicum were taken in divided doses, and

---

[1] Ollivier—Journal de Chimie Médicale, 1839.
[2] Chevallier—Journal de Chimie Médicale, viii. Second Series. 1832.
[3] Repertorium für die Pharmacie, lxxi.
[4] Caffe—Annales d'Hygiène Publique, xvi.
[5] Annales d'Hygiène Publique, xii.
[6] Taylor's Medical Jurisprudence, p. 268.
[7] Schneider's Annalen, i., 232.

caused death on the fourth day. There was no inflammation of the mucous membrane, but simply extravasation of blood into the mucous follicles.[1]

X.—One ounce and a half of the vinous tincture of colchicum was by mistake givenone evening to a feeble man, æt. 56, labouring under chronic rheumatism. No complaint was offered for at least one hour after, but then retching came on, with acute pains referred to the stomach, to which vomiting and purging soon supervened. This state continued the whole succeeding night, and a great part of the day following, when the alvine evacuations ceased; but the most distressing nausea continued, with frequent retching. The stools were in the course of the night often involuntary, but not bloody. Excessive thirst came on the day after the accident, and continued till death, with severe pains of the stomach and bowels, which occasioned fomentations to be employed. In the evening the patient seemed nearly exhausted, delirium appeared, the pulse was scarcely perceptible. He lived, however, through the second night, but died the following morning. On dissection, there was no appearance of inflammation of the bowels, but redness of the stomach.[2]

XI.—M. Leroy des Barres[3] has reported to the Academy of Medicine the following case of poisoning by Colchicum:—

A female, æt. 57, suffered from pain in the epigastrium. Her medical attendant prescribed for her thirty grammes (an ounce) of tincture of colchicum, of which she was to take a teaspoonful night and morning in a simple julep of taraxacum. Before commencing this treatment, she was directed to take a purgative draught, composed of syrup of buckthorn and sulphate of soda. By some unfortunate mistake, the whole of the colchicum was swallowed instead of this draught. In five minutes she felt severe pain in the stomach and bowels, and there was great anxiety. In this state she was seen by M. des Barres. Her face was pale, the features contracted, and the eyes sunk. The pain in the abdomen was very severe. She vomited once a glairy mucus-like matter, and this was followed by several liquid dark-coloured stools, accompanied by violent colic. The patient complained of a sense of suffocation and strangulation. The pulse was weak, and only fifty in the minute. The extremities were cold, vision was not affected, and the intellect was clear. Small doses of tartar-emetic were administered. These brought away a yellowish-coloured fluid, having a spirituous odour, like that of the tincture of colchicum. Vomiting was promoted by draughts of warm water, and the patient then took the ioduretted water recommended by M. Bouchardât; this appeared to relieve the cramps in the stomach and the colic pains. In about an hour the dose of ioduretted water was repeated. In two hours the patient still continued to suffer from incessant vomiting, with cramps in the muscles of the legs and arms. The extremities were cold, and the lips and arms had a livid hue. Frictions were employed, stimulating poultices were applied to the abdomen, and sinapisms to the feet. The patient still continued to take occasional doses of the ioduretted water. Thirteen hours after the poison had been swallowed, the woman was suffering from great prostration of strength, vomiting, diarrhœa, cramps in the limbs, twitchings of the tendons, great agitation, and severe pain in the abdomen; the pulse was 65; only a few drops of urine had been passed. On the following day the symptoms continued, the pulse having risen to 90. The heat of the body was more equally distributed, the tongue was dry, thirst intense, and there was entire suppression of urine. The cramps and convulsive motions of the limbs, with the feeling of strangulation, had disappeared. Leeches were

---

[1] Taylor—Op. cit.

[2] Edin. Med. and Surg. Journ., vol. xiv.

[3] Leroy des Barres—Gazette Médicale de Paris, 1848.—Journal de Médecine de Bourdeaux, 1848.—Monthly Journal of Medical Science, 1849.—London Medical Gazette, March 1849.

applied to the abdomen, and emollient medicines prescribed. In the afternoon the patient had considerably improved, and urine was freely secreted. On the fifth day the fever had disappeared, but there was still some diarrhœa. In the course of a week or ten days the patient had entirely recovered.

In this case the employment of M. Bouchardât's antidote seems to have been of no use whatever.

XII.—Dr Bleifus[1] has related the following case of poisoning by the *leaves* of COLCHICUM :—

A man gathered the leaves in the beginning of May, and after cooking them, ate about two ounces for supper. In six hours he was seized with violent colic, vomiting, and purging. In fifteen hours, when his physician first saw him, the countenance was ghastly, as in malignant cholera, the pupils dilated, and, scarcely contractile, but the mind entire. He complained of rheumatic pains in the neck, and burning pain in the pit of the stomach. He had frequent vomiting and purging, spasms of the abdominal muscles, coldness of the skin, a small, slow, wiry pulse, cramps of the fingers and calves of the legs. Coffee and lemon juice allayed the vomiting, and a temporary amendment ensued; but early on the third morning he became worse, and soon after the narrator of the case found him dying.

XIII.—The *flowers* are not less poisonous than the leaves, bulbs, and seeds. A case is mentioned in "Geiger's Journal," of poisoning with a decoction of some handfuls of the flowers, where death occurred in twenty four hours, under incessant colic, vomiting, and purging. In this case the stomach and duodenum only were inflamed.[2]

Another case is mentioned by Garibel, of a servant who died from the effects of poisoning by the *flowers*, which were given to cure intermittent fever.[3]

XIV.—The following case of poisoning by the *bulb* of COLCHICUM, taken for the purpose of procuring abortion, is recorded by Mr Dillon.[4]

Susan Laing, was about 30 years of age, and of good health and constitution. She was about two months gone in pregnancy with a bastard child, and having read in a newspaper that a woman had caused abortion by taking meadow saffron, she determined on getting rid of her burthen by a similar measure. She accordingly procured some, and having made an infusion, took it on an empty stomach, early on the morning of the 10th March 1827. Mr Dillon was called to her about four o'clock in the afternoon of the 11th, and on inquiry learnt that she had miscarried the preceding evening. He found her in a very hopeless state, her extremities were quite cold, and the whole of her body, particularly the hands, feet, and face, livid; the expiration was hurried, and the pulse could not be felt at the carotids, and but faintly at the heart. Notwithstanding, the sensorium was undisturbed, and she gave a clear account of what she had done, her motives for so doing, and the effects the poison had on her. She said, that in about half an hour after she had taken it, her stomach became sick, griping came on, and a violent purging, which continued with great severity. She had had no medical assistance, and was so tormented with pain and purging, that she had no sleep during the night. Mr Dillon administered large draughts of brandy and spices, but to no effect, as she died two hours after.

The body was opened next day, and all the viscera were found perfectly sound, with the exception, that the mucous membrane of the stomach and bowels were dreadfully inflamed throughout.

---

[1] Bleifus—Repertorium für die Pharmacie, lxix.

[2] Magazin für Pharmacie, xxx.

[3] Garibel—Histoire des Plantes des Environs d'Aix.—Stephenson and Churchill's Medical Botany, vol. ii.

[4] Dillon—Stephenson and Churchill's Medical Botany, vol. ii.—Burnett's Medical Botany, vol. ii.—Beck's Medical Jurisprudence.

XV.—The last case which I shall mention is one recorded by Dr Scilling,[1] in which the effects upon the nervous system are well marked, and *precede* the symptoms characteristic of irritant poisoning. In this case *diuresis* was present from the commencement till the time of death.

A boy, six years old, who, on the 27th June 1836, had eaten of the seeds and leaves of COLCHICUM, was attacked the same night with convulsions, which soon assumed the appearance of opisthotonos. He slept for some time, but soon after another similar attack ensued, and after this had ceased, spontaneous vomiting set in. Tartrate of antimony, ipecacuan, and copper were administered. The patient lay upon his back, and rolled about his head. He passed his urine involuntarily, and his pulse became thready and tremulous. On the 28th and 29th he seemed somewhat recovered. *3d July.*—The elbow and knee joints of the left side swollen, hot, and painful; hemiplegia of right side; perfect loss of hearing; grinding of the teeth and gastricismus. *4th July.*—The right side perfectly paralytic; abatement of the other symptoms. *5th July.*—Convulsion of the whole of the left side; pulse 180. *6th July.*—The patient ate something for the first time; continual diuresis. *18th July.*—Every quarter of an hour a quantity of urine is passed; pulse 180-185, smaller and harder. *24th July.*—Convulsions and loss of feeling on left side; the pulse thready; the breathing has for some days been intermittent. On the night of the *8th August*, the convulsions disappeared; the pulse almost imperceptible. *14th August.*—Violent convulsions, in which, however, the paralytic side did not partake. At three in the morning the patient died. A dissection was not allowed. The diuresis in this case, which began within twenty-four hours after taking the poison, and only ceased at death, is well worthy of observation.

Many other cases of poisoning by COLCHICUM are on record. Too much space, however, has already been occupied in the enumeration of several, the symptoms of which fully establish the fact previously stated, that in general its action is due more to *irritant* than *narcotic* properties; and that when the symptoms of both occur, the *latter* are generally subsequent to the *former*, the only case on record of an action on the nervous system preceding the irritant effects being the one which I have last adduced.

Treatment of Cases of Poisoning.—M. Bouchardât[2] has recommended the use of ioduretted water in such cases. It is a weak preparation of the *Liquor Iodidi Potassii compositus* of the London Pharmacopœia, and is prepared by dissolving six grains of iodide of potassium and three grains of iodine in a pint of water.[3]

Not having been able to procure M. Bouchardât's original paper on the subject, I am ignorant of the principle on which he recommends its use. In the eleventh case of poisoning which I have recorded, and in which the ioduretted water was employed, it seems to have been of no use whatever.

The proper treatment in cases of poisoning by COLCHICUM consists in promoting evacuations upwards and downwards to expel the remains of the poison, and then uniting large opiates with

---

[1] Scilling—Medizin. Annalen.—Monthly Journal of Medical Science, 1842.
[2] Bouchardât—Gazette Médicale de Paris, Janvier 1837.
[3] London Medical Gazette, 13th April 1849—*Note.*

counter-irritation of the abdomen, or the application of leeches. (Christison.)

THERAPEUTIC ACTION OF COLCHICUM.

I.—As a *Diuretic.* In 1763, Baron Stoërk,[1] of Vienna, first introduced COLCHICUM as a diuretic; and in a book which he published shortly afterwards, numerous cases cured by the use of COLCHICUM were recorded by him.

He relates two cases of *Dropsy* succeeding to *Scarlatina*, which were completely cured in fourteen days; and a case of *Asthma* and *Ascites* in an old man, both of which diseases were entirely removed in a week. The preparation which he used was the *Oxymel Colchici;* and he directs a drachm to be taken for a dose, this quantity being gradually increased to two ounces daily.

He briefly states the physiological action of COLCHICUM, according to his own observations, in the following sentence:—"It dissolves phlegm, and increases expectoration and urine."

It were needless to occupy space by enumerating more of the cases which were published by Stoërk; but having, in justice to him as the original introducer of COLCHICUM, noticed some of them, I may state, that although considered a great physician, the Baron cannot be regarded as a correct reporter of his own cases; for his contemporary Haen[2] says, that "out of thirty-six cases of cancer reported by Stoërk to have been cured by the use of hemlock, it was found on inquiry, that thirty of them had died, and that the remaining six still laboured under the disease."

Thus, although we can place little reliance upon Stoërk's cases, there can be no doubt, from the subsequent confirmation of experience, that there was good foundation for much that he stated. Notwithstanding the exaggerations imputed to him, Stoërk has at all events the merit of bringing into notice many medicines which have since found places in our pharmacopœias, and which, in many instances, have proved valuable additions to the Materia Medica.

M. Planchon[3] mentions several cases occurring in his practice, in which asthma, hydrothorax, ascites, and anasarca were completely removed by the use of COLCHICUM.

At the present time COLCHICUM, I believe, is little employed as a *diuretic*, as there is hardly any mention of it made in the works of authors of the present day.

Dr Mason Good[4] says that it is useful in dropsy, and that it

---

[1] Stoërk, de Colchico, 1763.
[2] Haen—Epistola de Cicuta.
[3] Planchon—Journal de Médecine, 1765.
[4] Good—Study of Medicine.

ought to rank next to *Squill* as a diuretic in that disease. He exaggerates the acrid properties of the drug, however, in the following passage :—" Even while cutting the roots, the acrid vapour that escapes irritates the nostrils and fauces; and the substance held in the fingers, or applied to the tip of the tongue, so completely exhausts the sensorial power, that a numbness or torpitude is produced in either organ, and continues for a long time afterwards." It is needless to say that there is not the least foundation for such averments.

Dr Craigie,[1] one of the few who mention its use in dropsies, states that it is uncertain in its effects.

That it has diuretic properties, however, is undoubted; and its power of causing increased secretion of urea seems to point it out as a proper stimulant to the kidneys, in cases of suppression of urine, when a fatal result from accumulation of urea in the blood is always to be apprehended.

In the case of a boy, who had almost complete suppression of urine for three days, the whole quantity passed in that time not exceeding an ounce in all, and where digitalis, spiritus etheris nitrici, acetate of potass, and diluents, had produced no effect, Dr Douglas Maclagan used the *Acetum Colchici* with complete success.

" In the acute states of dropsy it is best given with mercurials in powder; but in asthenic cases, it is most advantageously combined with the warmer diuretics, with tonic infusions, with preparations containing camphor or ammonia, or with large doses of the alkaline subcarbonates, particularly in the gouty or rheumatic diathesis." (Copland.)[2]

In *Dropsy* succeeding to *Scarlatina* I have frequently found Colchicum of much service, especially in cases where the urine is much suppressed, and where comatose symptoms are present. The accession of *Coma* may easily be ascribed to the accumulation of *Urea* in the blood; and the power which it has been shown that Colchicum possesses of replacing the *Urea* in natural, and often superabundant, amount in the urine, seems to point it out as a useful remedy in this and other diseases in which *Suppression of Urine* and *Coma* co-exist. In a case of scarlatina which I attended along with my friend Dr A. Christison, now of the H.E.I.C. Service, and where the urine was totally suppressed, and the symptoms of coma were present, the *Acetic Extract of Colchicum* was used with complete success. Diluents and ordinary diuretics were freely employed when the case was first seen, with the effect of causing a slight secretion of urine of low specific gravity. Having suggested that Colchicum might

---

[1] Craigie—Practice of Physic.
[2] Copland—Dictionary of Practica Medicine—*Dropsy*.

be found of some service, and being anxious to observe its effects, both as a diuretic and as an eliminator of urea, I examined the urine before its exhibition. The results were as follows :—

Urine examined on 10th April.

Total solids, ...		35·795
Urea, ...	2·427	
Uric acid, ...	a trace.	
Inorganic salts, ...	13·510	
Organic matter and water, ...	969·573	
Albumen, ...	14·490	
Total, ...	1000·000	

The *Acetic Extract of Colchicum* was ordered on the 11th April, and the other medicines discontinued. On the 12th, the comatose symptoms were considerably abated; urine, of a normal density, was passed in tolerable quantity, and was examined again on the 13th, two days after the exhibition of Colchicum. It contained :—

Total solids, ...		30·659
Urea, ...	7·500	
Uric acid, ...	0·480	
Inorganic salts, ...	8·718	
Organic matter and water, ...	975·359	
Albumen, ...	7·943	
Total, ...	1000·000	

On the evening of the 14th, the comatose symptoms disappeared; urine, of normal density, was passed in proper quantity ; the dropsical effusion and anasarca completely gone. On the 15th, considerable diarrhœa had set in ; the Colchicum was stopped, and the urine again examined. It contained :—

Total solids, ...		27·972
Urea, ...	13·573	
Uric acid, ...	0·814	
Inorganic salts, ...	7·431	
Organic matter and water, ...	978·182	
Total, ...	1000·000	

The analyses of the urine in this case will show the powerful influence which COLCHICUM possesses in altering the renal secretion, and of how much service, as a remedy, it may be in cases of threatened poisoning by *Urea* in the blood. I believe, in all cases where *Albumen* and *Urea* appear to be vicarious, and where *Coma* supervenes, evidently from the accumulation of the latter principle in the blood, that COLCHICUM will prove to others of as great service as it has already done in the small experience I have had of it.

Two other cases of a similar nature, in which the urine was examined at regular intervals, were treated in the same manner as that which I have related, with precisely the same result.

II.—As a *Sedative.* In 1820, Mr Haden[1] published a small pamphlet upon COLCHICUM, and especially takes notice of its sedative effects on inflammation.

Mr Haden states, "that in pure inflammation, if it be given so as to produce full purgative effects, COLCHICUM will be found to bring the pulse nearly to its natural state, from being either quick, or hard, or slow and full; but this action may also be produced before purging has taken place. Fevers and inflammations so removed never require the use of tonics during convalescence: the patients, indeed, generally appear to be as well as though they had never been the subjects of disease; and although it sometimes happens that a recurrence of symptoms takes place, it is in a much milder degree, and the new disorder is always immediately removed in the course of a few hours by a very little of the same treatment."

Mr Haden found that the *Tincture of Colchicum* often did not produce purgative effects until forty-eight hours had elapsed, and then it was frequently very violent in its action; with the combination of a saline aperient, however, he found that the beneficial sedative effects of Colchicum followed more quickly and were equally decided as when Colchicum was given alone. Having repeatedly found that very violent effects were produced by the *tincture*, he chiefly made use of the *powder* of the *bulbs*, which he extensively employed in a variety of diseases, the principal of which were Acute Rheumatism, Inflammatory Fevers, Inflammation of Lungs, Pleura, and Bronchi, and in Puerperal Fever. He gives numerous cases in which Colchicum was administered in the form of powder, combined generally with a saline aperient.

The following is a case of *Acute Rheumatism*:—

"A stout labourer was suddenly seized with rigors, after working for several hours in the river Derwent; violent fever followed; and the next day he was confined to bed, being incapable of moving his limbs in the slightest degree. Five grains of powdered Colchicum, with a scruple of Sulphate of Potass, were given four times a-day; and two days afterwards he was found walking in the streets, and was soon quite well. Five doses of the medicine were taken."

The next two cases are of *Lumbago*, treated in the same manner:—

"Two patients, about the same age, were unable to rise from their beds, on account of Lumbago. One of them, a gentleman, in addition to taking COLCHICUM, drank plentifully of warm fluids, took the warm bath twice a-day, and kept himself covered by the bed-clothes; he was quite free from pain in twenty-four hours, and was up and quite well in four days;—whilst the other, a lady, although she remained in bed, and the disease left her perfectly well in a week, yet did not use the warm bath, nor any other of the means used by the other patient. In neither of these cases were tonics required."

---

[1] Haden on Colchicum. 1820.

These last cases do not prove so much in favour of COLCHICUM as in favour of the warm bath and diaphoretic treatment. In the former of the two cases, where these were used along with Colchicum, the relief was rapid, but by no means unusually so; in the latter, where no warm bath was used, the disease lasted longer under the use of Colchicum alone.

It is remarkable that Mr Haden should have been so successful in his use of the powder of the bulb,—a preparation seldom used by other practitioners; but he seems to have employed it, not as being more active, but as being less irregular, than the tincture in its action. His statements, if confirmed, would lead us to esteem it as a remedy of remarkable antiphlogistic powers; but few practitioners are inclined to believe that it will ever supersede the use of the lancet, and other safer antiphlogistic remedies, in cases of pure inflammation.

He gives one case of *Pneumonia*, in which Colchicum was used with perfect success, instead of blood-letting; but nothing appears in his narrative to show that it has any advantage over tartrate of antimony, which is more manageable, and less likely to produce unpleasant effects.

Mr Haden has, towards the end of his work, expressed his opinion of the action of COLCHICUM in the following terms:—"The sensible effects of Colchicum would appear to be, to control the action of the heart and arteries, and indeed often to reduce that action below that of the standard of health. This effect is often produced long before its other sensible effects are apparent; but when continued long enough, and generally before its remedial virtues are decidedly obtained, purging takes place. Sickness and vomiting accompany the purging in some instances, whilst in others the secretion from the kidneys or from the skin is increased, sometimes without the former symptoms being perceived."

We thus find from Mr Haden's observations, that he considered the action of Colchicum essentially sedative, whilst the purgative and diuretic effects were only incidental accompaniments. This statement of the powers of Colchicum as a sedative is certainly over-rated, and its influence in this respect has not been realised to such an extent in the present day.

Dr Copland[1] says, that the kinds of inflammation in which Colchicum may be of essential service are those cases in which a torpid and obstructed state of the liver is present, and then Colchicum, combined with deobstruent purgatives, is of much use. "In cases attended by very acute pain, or by the effusion of fluids from the inflamed part, it will also be of service, when judiciously combined with other means; but its action should be carefully watched, as in some constitutions it produces most depressing and even injurious effects."

---

[1] Copland—Dictionary of Practical Medicine: *Inflammation—Heart.*

"The sedative influence of Colchicum on the circulation is also shown in cases of preternatural action of the heart, whether from functional or organic causes."

Dr Lewins[1] says,—"In all inflammatory affections of the chest, and perhaps of the brain, or its investing membranes, I am convinced that bleeding may frequently be, to a certain extent, superseded by the use of Colchicum. In many diseases of the heart and large arteries it is a most valuable medicine."

This, however, I believe to be an exaggeration of the extent to which Colchicum is applicable in inflammatory diseases.

In *Fever*. The same author has recorded six cases of Continued Fever, in which COLCHICUM was used with complete success. In all of these considerable physiological action was manifested, such as vomiting, purging, and reduction of the pulse. These, however, are, generally speaking, very unsafe results in fever.

Dr Tait[2] has noticed thirty-five cases of *Scarlatina*, successfully treated with COLCHICUM. In a few cases vomiting was induced, and a considerable quantity of bile evacuated. In most cases diarrhœa followed its use, but the most apparent phenomena were great reduction of the pulse in frequency and force, and subsidence of the palpitation of the heart, which in young subjects was often apparent to the eye. Dr Tait's cases were all of the purely inflammatory type.

Dr Lewins,[3] jun., has seen cases of *Scarlatina* effectually cured by the administration of COLCHICUM. He says,—"In every instance where Colchicum was employed, the malady very speedily proceeded to a very favourable termination; while other cases, apparently similar in their character, in which this medicine was not administered, proved by no means so satisfactory,—several having terminated fatally, and the sequelæ of others being exceedingly troublesome."

III.—As a *Diaphoretic*. COLCHICUM is now never employed merely to produce diaphoresis, although there can be little doubt that its influence in this respect is by no means inconsiderable, sweating being very often mentioned as having supervened in cases which have been treated by COLCHICUM.

When COLCHICUM is used in combination with OPIUM, sweating is frequently produced, and is often copious. The effect here is not to be ascribed solely to the Colchicum, nor is it always proportionate to the dose of Opium, but is probably due partially to both. Probably its good effects in some cases of *Rheumatism* are partially due to this diaphoretic action, and the combination of Colchicum and Opium, appears in many respects to resemble Dover's Powder in its physiological and therapeutic action.

---

[1] Lewins—Edinburgh Medical and Surgical Journal, xlvii.
[2] Tait—Lancet, 1837-38, vol. i.
[3] R. Lewins—Edin. Med. and Surg. Journal, vol. lvi.

The two diseases in which COLCHICUM is now more generally employed, are GOUT and RHEUMATISM. Its effects in these two diseases have not been decidedly referred to any one of its physiological actions, but have often been considered as being of a specific character. Instead, therefore, of attempting to refer it to any of the above divisions, it will be better to give its action in Gout and Rheumatism a separate consideration.

IV.—In *Gout* and *Rheumatism*. If we are to believe that the *Eau médicinale* has for its basis some preparation of COLCHICUM, we must assign to Dr Jones, of London, the merit of having first employed the drug in this country for the cure of Gout and Rheumatism. On the other hand, if we are to believe that the Eau médicinale does not contain COLCHICUM, to Sir Everard Home this merit belongs, he having been the first to use COLCHICUM in this country under its own proper designation. As I believe, however, that the former of these opinions is the correct one, it demands a notice of the introduction of this nostrum into Britain, and its subsequent use there.

In 1810, Dr Edwin Jones,[1] of London, first introduced the *Eau médicinale* into this country from France; and in a small pamphlet which he published in that year, he relates several cases in which he used the new drug with great benefit. He states the following to be its mode of action:—"In four or five hours after taking the remedy, the patient begins, however severe the paroxysm may be, to experience a diminution of pain; he generally falls into a quiet sleep, and awakes in the morning nearly or quite free from suffering, and often begins to enjoy some returning use of the affected limb; he then commonly feels considerable nausea, sometimes accompanied by vomiting, and generally followed by bilious stools; in the meantime the paroxysm diminishes, and on the third, or even the second day, nothing remains but a slight swelling or stiffness of the parts, which soon goes off, leaving the patient in his usual state of health. These are the common effects," says Dr Jones, "but there are others no less singular and deserving attention. Together with a diminution of pain, there is an abatement of fever and irritation; the pulse is often reduced twenty strokes in a minute, and in many instances considerably more; at the same time a moderate diaphoresis usually takes place. It very frequently also acts as a powerful diuretic, and its operation in this way sometimes lasts for several days."

Though the paroxysm was removed in the majority of his cases in the above manner, Dr Jones observed that the time in which this was effected varied under different circumstances. Sometimes a patient gets rid of a sharp fit the next day; in others, several days may be necessary. "In its action on the bowels, the Eau médi-

---

[1] Jones on Gout. 1810.

cinale is extremely capricious; it usually operates in the way above-described, sometimes it produces no evacuation at all; in others it proves powerfully emetic and cathartic; and in a few cases has acted with considerable violence." These variations in action did not appear to depend on the relative strength of the patients, as Dr Jones observed that several weak and delicate persons took full doses, without experiencing any disturbance, whilst in some robust habits it acted powerfully both by vomiting and by stool, although only half a dose was taken. This appears rather to be referable to some peculiarity of constitution. It was equally uncertain in the time required to produce these effects. It generally began to operate in eight or ten hours after being taken, sometimes not till twenty-four or forty-eight hours had elapsed, and in some rare cases not till after three days. Dr Jones concludes his remarks on the action of this medicine by stating, that "for the most part the Eau médicinale, even where it has been more violent than was expected, has not been followed by any ill consequences."

In 1815, Mr Want[1] published his conviction of the identity of the basis of the *Eau médicinale* and COLCHICUM. He successively used the menstrua of proof-spirit, wine, and water, and succeeded in forming a preparation with Spanish wine, differing in no respect from the Eau médicinale. I believe Mr Want to have been the first person to draw attention to the probable identity of these two medicines.

The publication of this paper by Mr Want paved the way for a controversy between him and Dr Sutton,[2] the latter of whom very much doubted that Mr Want had discovered the plant whose active properties were the basis of the French nostrum, and he endeavoured to show that Mr Want had only reported cases cured by a medicine well known at the time, and that the power of this remedy merely consisted in its cathartic properties, and stated that many purgatives then known would have the same effect; but Mr Want disproved this in a subsequent paper, in which he published a case of Gout, cured by Colchicum, in which no purging had been induced.

In 1816, Sir Everard Home[3] and Sir Charles Scudamore[4] both wrote upon Gout, the former advocating the identity of the Eau médicinale with Colchicum, the latter denying it. Sir E. Home quotes himself as a case in which the Eau médicinale had acted powerfully and effectually in restraining the gouty paroxysm.

Under the influence of a violent fit of Gout, Sir Everard took sixty drops of the *Eau médicinale.* The pain was intense, and he felt chill; in two hours he became rather hot and thirsty; in three

---

[1] Want—Medical and Physical Journal, vol. xxxii.
[2] Sutton on Gout.
[3] Home—Philosophical Transactions, 1816-17, Part 2.
[4] Scudamore on Gout and Gravel. 1816.

hours the pain was considerably diminished; in seven hours he had a confirmed motion of the bowels; nausea came on, and the pulse, naturally at 80, lowered to 60, and intermitted. In ten hours the nausea had gone off, he remained languid, his pulse was 70; he had some appetite. The following morning the pulse was 80, and he was quite well.

Sixty drops of the *Vinum Colchici* were given to a man labouring under Gout, and whose paroxysms were generally of three or four weeks' duration. His age was sixty. When the medicine was exhibited, his pulse was 115. In half an hour he had slight nausea, which soon went off. In five hours a profuse perspiration came on, and the pain of the Gout entirely ceased, leaving a soreness in the part affected. In twelve hours his bowels were gently moved, his pulse 105, and irregular. In fourteen hours his bowels were again acted on. In nineteen hours his pulse was 92, and natural. In forty-eight hours he was quite well, and continued so.

From his observations on the use of Colchicum in Gout, Sir Everard Home concluded, that the effects of the remedy always were to reduce the pulse ten or twenty beats in a minute, and that this effect generally took place about twelve hours after the administration of the medicine.

Sir Charles Scudamore denies that the basis of the *Eau médicinale* and COLCHICUM are identical, and he gives his opinion, that the Eau médicinale is a dangerous remedy, and one which has been much too highly praised by Mr Want; he, however, does not deny that it has some influence over Gout, as he states that on the first trial of the medicine the paroxysm is removed, and that as if by a charm, and that relief is often obtained without any sensible effects upon the stomach or excreting organs, and that the curative power of the remedy lessens gradually on repetition, and with many persons becomes entirely lost. The capricious action of this medicine seems to him to be the chief objection to its use. He states a case in which the patient had taken several bottles in a few weeks, without any effect being produced; and another, where the contents of a single bottle so paralysed the stomach, that for many days it was scarcely sensible to the strongest stimulants; the patient was recovered with much difficulty, and remained for a long time in a state of serious debility. He says,—"When the Eau médicinale does not immediately debilitate by the violence of its effects, it often leaves behind an impaired condition of the nervous system, as, that the head is affected with frequent giddiness; the stomach with weakened digestive power, and frequent sensations of sinking and vacuity; the limbs, and especially the parts affected in the paroxysm, suffer for many weeks with trembling, numbness, and coldness, and very commonly with tedious œdema; these symptoms appearing variously in different individuals. It tends also to render the bowels inactive, to diminish the alimentary secretions, and ma-

terially to weaken the functions of the liver. In the general character of the medicine, it may with truth be said, that sooner or later, in proportion as it is freely employed, it leads to a broken state of health."

Mr Ring[1] relates a case of poisoning by the *Eau médicinale*, in a person who had been accustomed to use it for the relief of Gout. Half a bottle was taken; it operated violently as an emetic, cathartic, and sudorific. Next day the Gout had disappeared, but a violent pain had seized the patient in the pit of the stomach; this increased during the night, when it became excessive, alternately affecting the stomach and bowels. On the second day the pain gradually abated; but in the evening bilious vomiting came on; and on the third day he died.

These effects observed in the *Eau médicinale* show it to have been a preparation very analogous to COLCHICUM in its general effects; but its uncertainty and violence correspond more with the accounts which are generally given of the action of *Veratrum Album*, and it is not improbable that it may have contained the active part of both these drugs.

In modern practice, however, the *Eau médicinale* has been completely superseded by the ordinary officinal preparations of Colchicum, and the little bottles in which it was sold are rarely met with, except as preparations in a museum.

There can be no doubt, from the results of modern experience, of the value of COLCHICUM as a remedy in cases of Gout; but, as I have had no opportunity of treating cases of that disease, it cannot be expected that I should offer remarks on the practical employment of any medicine for its cure. I must therefore rest satisfied with briefly reporting the experience of practical men.

1. In *Gout*. It appears probable, that COLCHICUM, in the form of *Hermodactyl*, was employed even in ancient times in the cure of Gout—now it is in very general use.

Its action is very frequently said to be specific, but, as has been previously remarked, this expression seems to imply nothing more than that its effects are energetic and marked; for the term "specific," as applied to a medicine, in strict propriety means one which cures a disease, without producing any distinct or obvious physiological action, in virtue of which it may be supposed to lead to the cure of the disorder; but it appears, from the concurrent testimony of many practical men, that Colchicum seldom cures the paroxysm of Gout, without producing some distinct physiological action. To use the words of Dr Barlow,[2]—"A full dose of this medicine purges copiously, allays pain, and lowers the pulse; its operation seems to

---

[1] Ring—Edin. Med. and Surg. Journal, vol. vii.

[2] Barlow—Cyclopædia of Practical Medicine—*Gout*.

combine the several advantages of blood-letting, purging, and the production of sedative action."

Dr Christison [1] has stated, that COLCHICUM seldom acts therapeutically before producing a slight degree of that physiological action indicated by diarrhœa, colic pains, and frontal headache, which, in a higher degree, constitutes it a poison.

Dr Gairdner,[2] however, states, that he believes the action of COLCHICUM to be *specific*, and denies the necessity of its producing any physiological effects before relief is obtained. To use his own words,—"COLCHICUM never more effectually relieves the patient than when it acts silently and peacefully, without producing any evacuation whatever, or in any way disturbing the patient's comfort and ease."

The rarity of the occurrence of Gout here has prevented me from deciding, by means of statistics or otherwise, whether or not it is necessary that some physiological action should accompany the therapeutic effect of this drug. I have found means of doing so, however, with regard to Rheumatism, to the results of which inquiry I shall immediately refer.

Dr Robertson [3] states, that while COLCHICUM acts freely on the bowels, and especially on the duodenum, it possesses a specific action on the white fibrous tissues; it is to this property, he says, that COLCHICUM owes its power over Gout, Rheumatism, and certain affections of the heart, and every disease involving febrile or inflammatory excitements, quite independently of its other effects on the system.

Dr Todd [4] states with regard to Gout, what Dr M'Leod [5] does with regard to Rheumatism, that whenever nausea or purging are induced during the administration of Colchicum in those diseases, the dose of the medicine should be diminished, or altogether abandoned.

It has frequently been objected to the use of COLCHICUM, that it confirms the Gouty constitution in the systems of those who have used it. As Gout generally occurs in persons who have the disease confirmed in their constitutions, either by having inherited it, or by having acquired it by full living, &c., Colchicum has got the credit of confirming the Gout in their systems, when that is in reality due to the inherited or acquired Gouty habit.

With regard to this, Dr Holland [6] writes,—"A suspicion has existed that, though capable of relieving the present paroxysm, Colchicum renders the attacks of the disorder more frequent. On my experience, I believe this opinion to be justified only where the

---

[1] Christison's Dispensatory.
[2] Gairdner on Gout. 1849.
[3] Robertson on Gout.
[4] Todd on Gout and Rheumatism.
[5] M'Leod on Rheumatism.
[6] Holland's Medical Notes and Reflections. 1840.

medicine has been used imperfectly, or without other precautions, which are more or less essential to its success."

On the other hand, Dr Copland[1] says,—"COLCHICUM, when used with the view of preventing or suddenly curing the paroxysm, and without reference to the removal of the morbid condition of which it is the external manifestation, is liable to many objections. The consequences of having frequent recourse to it vary in different constitutions, and with the habits and mode of living of the patient, but they commonly are a much more frequent return of the fit, or of the symptoms indicating its approach; impaired nervous power; debility of the digestive organs; torpor and irregularity of the biliary functions, and of the bowels; headaches, and a variety of symptoms referable to the encephalon." Besides this, he has met with instances of Hypochondriasis, Melancholia, Mental Delusions amounting to Insanity, Paralysis, and Angina Pectoris, evidently arising from this.

Were all physicians agreed upon this point, COLCHICUM would require to be considered in a far different light from that in which it is at present. Few men have met with such untoward results in the use of this medicine as Dr Copland, and we should believe, at least hope, that they are considerably exaggerated.

With regard to the application of COLCHICUM for the relief of the morbid conditions of which Gout consists, besides its use for the mere alleviation or prevention of the paroxysm, Dr Robertson[2] states, that "the action of Colchicum must be said to be more decided and greater on the local manifestation of Gout, and the inflammatory character of its paroxysms, than on the constitutional condition on which Gout depends, and of which the localised ailment is only a form and development."

Dr Holland,[3] however, is more favourable to its further application. He says:—"I can scarcely doubt the expediency of carrying the employment of COLCHICUM beyond the mere relief to the local inflammation of the disease. The remedy, with due care, may be made preventive as well as curative of Gout, and, according to my experience, with no less safety to the patient.

"We may reasonably, then, if this view be just, extend to its use as a medicine the remark before made,—that too exclusive attention is given to the external part of the disease, and the value of the remedy, in the constitutional form of the disorder, too little regarded. Larger experience is making a gradual change in this respect; but there is still a tardiness and timidity in its application beyond the mere fit of Gout, which is not warranted by any ascertained risk."

I offer no further remarks here, both on account of the various opinions of high testimony I have adduced, and also from the fact

---

[1] Copland—op. cit.: Treatment of Gout.
[2] Robertson—op. cit.
[3] Holland—op. cit.

previously stated, that the rare occurrence of Gout in this place has prevented my making observations on the nature and treatment of the disease.

Besides its actions before stated, COLCHICUM appears to act both as a diuretic and diaphoretic. Its principal action appears, however, to be, lowering the pulse and relieving pain, and therefore its chief object is that of a sedative and anodyne.

Bearing in mind, however, the tendency to the formation of *Lithic Acid* in Gouty subjects, and the effect of Colchicum in altering the renal secretion, it seems more than likely that its effects are partly due to changes which it induces in the chemical quality of the blood, and the secretions derived from it.

All the preparations of COLCHICUM have been employed in Gout and Rheumatism, and have been administered in various ways. Dr Watson[1] recommends forty to sixty minims of the *Vinum Colchici* in a saline draught at bed-time, and a half drachm more in a warm black dose the next morning. More commonly, however, the simple tincture of the seeds is employed. This is recommended by Dr Barlow[2] as being more uniform in strength, and more certain in operation.

It may be administered in full doses (*i. e.*, twenty to thirty minims), and repeated at intervals till the pain has abated, or till some of its physiological actions, such as purging or diuresis, manifest themselves.

2. In *Rheumatism*. COLCHICUM has been employed upon much the same principle as in Gout, and from the similarity of the two diseases we would be led to expect much the same results from its use. It does not appear that its curative powers are in general manifested, until it has fairly produced some of its constitutional effects; and when these are fairly shown, as, for example, when it produces some amount of irritation of the bowels, the disease frequently yields with great rapidity. In Dr Watson's words,—"The preparations of COLCHICUM have sometimes, whether venesection has been premised or not, an almost magical effect in quelling the disease. Frequently when most successful (though that is by no means a necessary condition of their success), they exercise some marked influence upon the stomach and bowels. Colchicum is very apt to occasion deadly nausea and vomiting, griping and diarrhœa, and when these consequences ensue from its use, the inflammation of the joints often subsides entirely. At any rate, if the Rheumatism does not give way, when the stomach and bowels become thus affected, you may be certain that to push the Colchicum further would be useless."

In an interesting memoir, Dr E. Monneret[3] gives the details of

---

[1] Watson's Practice of Physic. [2] Barlow—op. cit.

[3] Monneret—Archives Générales de Médecine, Mars 1844. London Medical Gazette, vol. xxxiv.

treatment of twenty-five cases of *Articular Rheumatism* treated by COLCHICUM. The greater number of his patients took from one to four drachms of the tincture, in one, two, or four divided doses, in the twenty-four hours. One drachm was the smallest dose of the tincture ever administered, and several of his patients took it for seven, some for ten, and others for thirteen, days. In eight of the patients the diminution, or even total disappearance, of the symptoms of Rheumatism coincided with the exhibition of Colchicum. In these cases, the disease was either of some days' duration, and was scarcely accompanied by febrile symptoms, and then ended in twelve or fourteen days, or it was completely chronic.

In either case, the powerful effects produced by the Colchicum on the bowels sufficed to suspend or expel the disease; the improvement always coincided with the diarrhœa. In most instances, diarrhœa was the prevailing feature, although in some cases retching and vomiting, without any purging, were induced. The discharges were almost always bilious, or evidently mixed with bile. The motions were usually passed with acute suffering, violent colic pains, tenesmus, and scalding of the anus. Vomiting was scarcely induced by a smaller dose of the tincture than from two to four drachms in a draught.

In order to corroborate the idea that COLCHICUM in general produces some physiological effect, before its therapeutical action is manifested, I have prepared the following table of cases of *Rheumatism* treated by Colchicum, in which will be seen the effects of this medicine in seventeen cases.

This must necessarily be more or less imperfect, from the incomplete manner in which the cases have been reported; still it is sufficiently correct to show, that the physiological effects of COLCHICUM are the almost certain accompaniments of its therapeutic action; and it would thus appear that in *Acute Rheumatism*, COLCHICUM produces its good effects, partly by its *evacuant*, and partly by its *sedative* influence.

Beyond this, however, I believe that Colchicum exerts a great influence in the treatment of this disease by the power it has of altering the renal secretion.

In *Acute Rheumatism*, Dr Garrod[1] states, that the blood contains no more *Uric Acid* than in health; this being a very minute quantity. I am inclined to believe, however, that in all cases of *Acute Rheumatism*, both *Urea* and *Uric Acid* are present in the blood in increased quantity.

---

[1] Garrod—Lond. Med.-Chir. Trans., vol. xxxi.

TABLE OF CASES OF RHEUMATISM TREATED WITH COLCHICUM.

No.	Age.	Sex.	Variety, and parts affected by Rheumatism.	Pulse before treatment.	Previous duration of disease.	Duration of treatment.	Treatment.	Physiological action.	Pulse after treatment.
1	58	M	Articular. Lower extremities.	78	12 Days.[a]	10 Days.	Colchicum Powder.	Diarrhœa, nausea.	Natural
2	40	M	Muscular, and Articular of knees.	60	5 Months.[a]	17 Days.	Colchicum and Dover's Powder.	Griping, nausea.	Natural
3	29	F	Articular. Upper extremities.	—	3 Weeks.[a]	16 Days.	Colchicum Powder.	Diarrhœa. ...	—
4	70	M	Articular.	80	6 Months.[a]	11 Days.	Colch., Morph., Iodid. Potass.	Nausea, diarrhœa.	Natural
5	32	M	Articular.	100	4 Days.[a]	4 Days.	Colchicum, Morphia.	Diarrhœa. ...	65
6	17	F	Articular.	96	14 Days.[a]	2 Months.	Colchicum, Morphia.	Diaphoresis, nausea	80
7	20	F	Articular. Ankles and wrists.	100	8 Days.[a]	4 Days.	Colchicum, Morphia.	Profuse diaphoresis	86
8	22	F	Articular. Knee and wrist.	120	8 Days.[b]	13 Days.	Colchicum, Magnesia. ...	Diarrhœa. ...	60
9	—	M	Articular. Wrists. ...	72	21 Days.[b]	12 Days.	Colchicum, Magnesia. ...	Diarrhœa. ...	54
10	18	M	Articular. All joints, more or less. ...	120	35 Days.[b]	17 Days.	Colchicum, Magnesia. ...	Diarrhœa. ...	60
11	—	F	Articular.	—	4 Months [c]	14 Days.	Vin. Colchici, V.S.	Diarrhœa. ...	—
12	—	M	Articular.	—	49 Days.[c]	14 Days.	Vin. Colchici, Leeches. ...	Diarrhœa. ...	—
13	—	M	Articular.	—	14 Days.[c]	14 Days.	Vin. Colchici, Cupping. ...	Diarrhœa. ...	—
14	—	M	Rheumatic Fever. ...	—	6 Days.[c]	3 Days.	Vin. Colchici, Opium. ...	Diarrhœa. ...	—
15	28	F	Articular. Elbows, wrists, hand. ...	—	3 Months.[d]	14 Days.	Vin. and Acet. Extr. Colchici.	Vomiting. ...	—
16	30	M	Articular. All large joints.	—	12 Days.[e]	6 Days.	Tinct. Colchici.	Profuse diaphoresis	—
17	30	M	Articular, Metastatic. Knees, elbows. ...	130	14 Days.[f]	18 Days.	Tinct. Colchici, Morphia. ...	Diarrhœa, diaphor.	100

[a] From the Journals of Royal Infirmary, Edinburgh.
[b] Tweedie—London Med. Gaz., vol. viii.
[c] Elliotson—London Med. Gaz., vol. viii.
[d] Seymour—London Med. Gaz., vol. xviii.
[e] Dublin Medical Transactions, 1830.
[f] Personal observation.

In the cases which I am about to relate, and which fell under my own observation, I shall endeavour to prove that such is the case, and to show, from the analysis of blood and urine, which I made both before and after the exhibition of Colchicum, that the remedial agency of this medicine is due, partly at least, to its power of eliminating Urea and Uric Acid from the blood, and increasing their quantity in the urine.

The first case was that of a girl, under Dr Wright's care, in the Royal Infirmary. On the 13th of October a small quantity of blood was subtracted, analysed, and found to contain :—

In 1000 parts of blood,	... ...	0·507 Urea.
" "	... ...	·864 Uric Acid.

The urine was examined at the same time. It contained :—

Total Solids, ...		28·568
Water, ...	971·432	
Urea, ...	10·496	
Uric acid, ...	·257	
Inorganic salts, ...	7·461	
Organic matter, ...	10·354	
Total, ...	1000·000	

Colchicum, in combination with Muriate of Morphia, was then administered.

The urine was again examined on the 18th October, being the fifth day. It was found to contain :—

Total solids, ...		31·459
Water, ...	968·541	
Urea, ...	12·312	
Uric acid, ...	·421	
Inorganic salts, ...	8·231	
Organic matter, ...	10·495	
Total, ...	1000·000	

The urine was again examined on the 22d October, or ninth day. It contained :—

Total solids, ...		35·613
Water, ...	964·387	
Urea, ...	13·984	
Uric acid, ...	·598	
Inorganic salts, ...	9·401	
Organic matter, ...	11·630	
Total, ...	1000·000	

After twelve days constant use of the Colchicum, a small quantity of blood was procured for examination. Now, however, not the slightest trace either of Urea or Uric Acid could be detected in so large a quantity as 3500 grains.

The urine was examined at the same time, and was found to contain :—

Total solids, ...		34·554
Water, ...	965·446	
Urea, ...	14·561	
Uric acid, ...	·737	
Inorganic salts, ...	9·649	
Organic matter, ...	9·607	
Total, ...	1000·000	

The Colchicum being still continued, the urine was again examined on the eighteenth day, and found to contain :—

Total solids, ...		38·128
Water	961·872	
Urea, ...	17·635	
Uric acid, ...	1·034	
Inorganic salts, ...	9·999	
Organic matter, ...	9·460	
Total, ...	1000·000	

The next case to which I shall refer was treated by myself in the New Town Dispensary. I had only an opportunity of examining the blood in this case once,—namely, before Colchicum was taken. It then contained :—

In 1000 parts, ...	1·416 Urea.
"	·691 Uric acid.

Before taking Colchicum, the urine contained :—

Total solids, ...		23·479
Water, ...	976·521	
Urea, ...	6·358	
Uric acid, ...	·097	
Inorganic salts, ...	7·333	
Organic matter, ...	9·691	
Total, ...	1000·000	

The urine was again examined on the fourth, ninth, and thirteenth days respectively, and contained :—

On 4th Day.

Total solids, ...		24·538
Water, ...	975·462	
Urea, ...	9·103	
Uric acid, ...	·231	
Inorganic salts, ...	8·693	
Organic matter, ...	6·511	
Total, ...	1000·000	

On 9th Day.

Total solids,	... ...	26·322
Water,	... ...	973·678
Urea,	... ...	12·981
Uric acid,	... ...	·497
Inorganic salts,	... ...	9·400
Organic matter,	... ...	3·444
Total,	... ...	1000·000

On 13th Day.

Total solids,	... ...	27·466
Water,	... ...	972·534
Urea,	... ...	16·824
Uric acid,	... ...	·936
Inorganic salts,	... ...	7·203
Organic matter,	... ...	2·503
Total,	... ...	1000·000

These are the analyses of two very favourable cases, in which it will be seen, that the UREA and URIC ACID are increased in proportion to the time that the medicine is continued. I have selected these two cases from many others, on account of their showing the increase more gradually. In all the cases, however, in which I have analysed the urine, the great increase was distinctly marked, although perhaps not in so regular proportion.

One other case I would wish to mention, in which the *Urea* and *Uric Acid*, although they increased after a few days' use of the medicine, did not continue to do so subsequently in the same proportion.

The analyses were made before taking Colchicum, and on the third, sixth, and tenth days after its exhibition :—

Before taking Colchicum.

Total solids,	... ...	25·636
Water,	... ...	974·364
Urea,	... ...	7·684
Uric acid,	... ...	·129
Inorganic salts,	... ...	8·421
Organic matter,	... ...	9·402
Total,	... ...	1000·000

On 3d Day.

Total solids,	... ...	27·479
Water,	... ...	972·521
Urea,	... ...	11·158
Uric acid,	... ...	·300
Inorganic salts,	... ...	8·303
Organic matter,	... ...	7·718
Total,	... ...	1000·000

On 6th Day.

Total solids, ...		27·907
Water, ...	972·093	
Urea, ...	15·660	
Uric acid, ...	·570	
Inorganic salts, ...	6·500	
Organic matter, ...	5·177	
Total, ...	1000·000	

On 10th Day.

Total solids, ...		28·426
Water, ...	971·574	
Urea, ...	15·730	
Uric acid, ...	·582	
Inorganic salts, ...	7·351	
Organic matter, ...	4·763	
Total, ...	1000·000	

These analyses will show to what extent COLCHICUM will alter the renal secretion, by supplying it, when deficient of its normal constituents—*Urea* and *Uric Acid*—from the blood.

I am inclined from all this to believe, that to this property of Colchicum its remedial action is in a great measure to be referred. Further analyses of the blood may, however, be thought necessary, but neither time nor opportunity have afforded me means for this purpose. The thirteen analyses of the urine recorded above are only a few selected from many others made by me, and were effected according to Becquerel's method.

COLCHICUM has been employed in all forms of the disease, but it appears to me more particularly useful in *Articular Rheumatism*. In Dr Watson's[1] words, "our wishes and our expectations from Colchicum are often doomed to be defeated. I believe that in proportion as the synovial symptoms predominate, or mix themselves distinctly with the fibrous—in proportion as the disease approaches in its characters to Gout—you may expect to be successful with Colchicum. Large doses are not requisite; twenty minims of the *tincture* or the *wine* may be given every six hours, until some relief is obtained; or a grain of the *inspissated juice*, or of the *acetic* extract of Colchicum, every four hours. Under this treatment the disease sometimes vanishes within three or four days; the medicine producing sickness and purging, and the Rheumatism or the Rheumatic Gout rapidly declining. Occasionally the same favourable event takes place, although there has been no disturbance of the stomach and bowels."

The cases in which Colchicum appears to me to be more pre-eminently useful are those in which the disease attacks the joints, and is of an erratic character—*e. g.*, suddenly disappearing from one

[1] Watson—op. cit.

joint, and as suddenly appearing in another; these, I believe, are the cases in which the heart and other internal organs are chiefly affected, and probably if the active operation of Colchicum is secured early, these formidable secondary diseases are less likely to occur.

Of the use of Colchicum topically, little need be said. It is reported to have been employed with great success by Dr Gumpert,[1] who records the case of a clergyman, who had been confined to his bed for six weeks with Rheumatism; on the fifth day, after using frictions with the tincture of the seeds, he was enabled to leave it.

Dr Laycock[2] has likewise used it with great success in Gout, Rheumatism, and also venereal pains.

V.—*Use of Colchicum in other diseases.*

1. In cutaneous diseases.—*Urticaria.*[3] In a case of this disease, where the urine was of low specific gravity (1010), and was found on examination to be much deficient in Urea and Uric Acid, Colchicum was employed with complete success. The urine before taking Colchicum was of a pale straw colour, transparent, and left no deposit on standing. It was analysed according to Becquerel's method, and found to contain:—

Urea, ...	6·91
Uric acid, ...	0·05
Inorganic salts, ...	12·03
Organic matter and water, ...	981·01
	1000·00

Colchicum was then administered, and a fortnight after the urine was again examined. Density 1029·9. It was found to contain:—

Urea, ...	20·36
Uric acid, ...	0·50
Inorganic salts, ...	12·72
Organic matter and water, ...	966·42
	1000·00

Here, then, it will be seen that the physiological action of Colchicum was well marked. The *Urea* was more than tripled in its amount, and raised above the normal standard. The increase of *Uric Acid* was in a tenfold ratio, whilst the other organic constituents and water suffered a corresponding diminution, the inorganic salts remaining nearly as before.

In *Prurigo.*[4] Dr Elliotson gives the case of a man, labouring under this disease in its most inveterate form, to whom half a

---

[1] Gumpert—Revue Médicale—I.
[2] Laycock—London Medical Gazette, vols. xxiii., xxiv.
[3] Monthly Medical Journal. 1846.
[4] Elliotson—Lond. Med.-Chir. Review, vol. vii.

drachm of the Vinum Colchici was administered thrice daily. This the patient took for three weeks; at the end of which time he was completely cured.

Colchicum would thus seem to answer well in some cases of skin diseases where the urine is of low specific gravity.

2. In nervous diseases.—*Hysteria.* Mr Raven[1] details the case of a young woman, who was thrown into strong hysterical convulsions, by seeing the death of a relation. She had been treated by fœtids, volatiles, cathartics, &c., but without relief. She was admitted into hospital under the care of Dr Alderson, who, having lately seen the good effects of Colchicum in severe cases of *Chorea*, was induced to try it on her. Thirty drops of the tincture were taken every eight hours. In a few days the convulsions left her, and did not return. In *Chorea*[2] also Colchicum has been employed with reported benefit. The cases are mentioned of three children having been relieved from this disease in three or four days, by using from ten to twenty minims of the tincture of Colchicum daily.

3. On the *Genito-Urinary System.*—Dr Clutterbuck[3] has seen in Colchicum a peculiar influence over uterine contractions. He administered ten grains of Colchicum in powder to a female in whom the uterus was contracted over the placenta. The dose was repeated, the os uteri dilated, uterine contractions came on, and the placenta was removed in a state of putrefaction.

Dr Metta[4] relates a case of abortion, in which the placenta was retained, and uterine contractions had ceased. Two doses of powdered root of Colchicum, at an interval of half an hour, were prescribed, and soon after uterine contractions came on.

In *Leucorrhœa*, Mr Ritton[5] experienced great benefit from the use of Colchicum in powder. A week or ten days was generally sufficient to complete a cure, the patient being strictly kept from all alcoholic liquors during its exhibition.

In *Gonorrhœa*, Eisenmann,[6] of Berlin, speaks very highly of the results obtained from the use of an opiate wine of Colchicum in this disease. The preparation he uses is composed of three drachms of Colchicum wine and half a drachm of tincture of opium. This is either given in increasing doses, or twenty drops twice daily. The cure is said to be generally complete from the seventh to the fourteenth day.

In *Chordee.*—In a case of *Gonorrhœa*, for which cubebs had been

---

[1] Raven—London Medical and Physical Journal, vol. xxxvii.
[2] Bibliothèque Médicale, vol. lviii.
[3] Clutterbuck—Mérat et de Lens.—Dictionnaire de Matière Médicale.—Il Filiatre Sebasio, 1843.
[4] Metta—American Journal of the Medical Sciences, vol. viii.
[5] Ritton—Lancet, 1833-34, vol. ii.
[6] Eisenmann—Casper's Wochenschrift, No. xxxv.—Medical Times, 1849.

prescribed, severe chordee supervened. Sir B. Brodie[1] remarked that Colchicum relieved the painful symptoms of chordee better than opium, and had also the effect of restraining sexual desire. He gives a drachm of the wine in one and a half ounces of camphor mixture for a dose.

4. Effects of Colchicum on the *Salivary Glands.*[2] Mention is made of three cases in which profuse ptyalism resulted from the use of *half a drachm* of the tincture of the seeds of Colchicum thrice a-day for some time. In one of these cases, the patient had never been salivated, nor had any mercury ever been taken. They were all cases of ophthalmia.

5. In *Tetanus.*[3] Dr Smith, of Port-au-Prince, employed Colchicum advantageously in tetanus, both traumatic and idiopathic. He gave it in full doses, repeated every half hour, till it produced an emetic or cathartic effect.

6. As an *Anthelmintic* and *Vermifuge.* Dr Pereira[4] states that Chisholm and Baumbach used it successfully in expelling tapeworm; and Mérat et de Lens[5] mention that Bauhin employed it as a vermifuge for pediculi of the head and pubis.

7. As an *Intoxicating agent.*—Chaumeton[6] says that the Turks procure for themselves a kind of ecstatic drunkenness with the Vinum Colchici.

These are merely mentioned as the uses to which Colchicum has been put, as much greater experience than is recorded here would be necessary before we could place much reliance on its power in any of these diseases.

8. In *Cholera Asiatica.*—In 1833, Mr Cotter[7] published a notice of having used Colchicum in Asiatic cholera. His cases are not detailed; and nothing more is remarked, than that he used it with perfect success in all stages of the disease.

No dependence can be placed on statements so vague as this, with regard to the utility of any remedy; nor does it appear easy to understand upon what principles a substance having the physiological action of Colchicum could be expected to be useful, either in the preliminary Diarrhœa or in the stage of Collapse.

The well-known fact, however, that many cholera patients, after having passed from the stage of *Collapse* into that of *Re-action*, continue to be affected with complete *suppression of urine;* that many of these die in a comatose condition, obviously from accumulation of Urea in the blood, naturally point out the employment of *diuretics*, as being indicated in the re-actionary and subsequent stages of the disease, and the power of Colchicum of eliminating that princi-

---

[1] Brodie—Lancet, 1838-39, vol. ii.
[2] Dublin Hospital Gazette, 1845.—London Medical Gazette, 1845.
[3] Smith—Wood and Bache's United States Dispensatory.
[4] Pereira—Materia Medica.
[5] Mérat et de Lens—Dictionnaire.
[6] Chaumeton—Flore Médicale, vol. iii.
[7] Cotter—Lancet, 1833-34, vol. ii.

ple, seems to indicate it as the form of diuretic most applicable to the occasion.

That the non-existence of urea in the urine, and its accumulation in the blood, are at all events pathological conditions of this morbid state, has been abundantly established.

In 1832, Dr O'Shaughnessy[1] published the case of a female, the *serum* of whose blood contained 1·40 per mille of *Urea;* and in 1849, Dr W. Robertson[2] corroborated this fact, by publishing the details of several analyses of blood, taken from the patients in the Cholera Hospital here. In the same year, Dr James Begbie[3] published several analyses of the urine, by which it was distinctly shown that little or no *Urea* is present in that fluid obtained from cholera patients.

During the late epidemic of cholera in this city (1849), I had a favourable opportunity of observing the action of Colchicum as a diuretic in this disease. In the case of a female, in whom a very small quantity of urine, deficient in urea, was voided, the *Acetum Colchici* was prescribed, and its exhibition was followed by the desired effect upon the urine, and with great benefit to the patient. Other cases occurring in the hospital were not so successful, on account of the accession of diarrhœa.

Two great indications in the treatment of this disease being to increase the amount of urine, when that is deficient, which is almost universally the case, and to aid the elaboration of those principles which it is the province of the kidneys to eliminate, the accumulation of which in the blood we may readily suppose to be the cause of the accession of coma, it appears probable that Colchicum might prove of eminent service, and is at all events well worthy of further trial.

9. In *Bright's Disease.*—A consideration of the physiological action of COLCHICUM,—namely, its diuretic action on the kidney, combined with the property of increasing the elimination of Urea, leads me to suggest the probability of its being found useful in some cases of Bright's disease. This I venture to offer as a mere theoretical speculation, which I have had little opportunity of submitting to the test of experience, and which, so far as I can find, has not been adopted in practice by any of the authors who have written on this subject. It is true that Dr Prout[4] mentions the use of Colchicum in this disease, but only where the gouty diathesis is present. Irrespective of this state, I venture to suggest its employment.

The presence of *Urea* in the blood appears to be one of the established phenomena in the advanced stages of Bright's disease.

In 1829, Dr Bostock suggested that *Urea* being deficient in the *Urine* of patients labouring under Bright's disease, might be detected in the *Blood.* He accordingly "sought for it in the serosity of

---

[1] O'Shaughnessy—Chemical Pathology of Asiatic Cholera, 1832.
[2] W. Robertson—Monthly Medical Journal, 1849.
[3] James W. Begbie on the Urine in Cholera, 1849.
[4] Prout on Stomach and Renal Diseases.

several of Dr Bright's patients, but could detect only a matter possessing peculiar properties, which seemed to approach to those of Urea." [1]

In the same year, Dr Christison[2] first detected this principle in the serum of the blood in several cases of Bright's disease. One case which he relates is as follows:—

The urine in this case, although not greater in quantity than natural, contained only a fifth of the normal proportion of *Urea*. The action of nitric acid on the extract of serum produced a beautiful radiated mass of foliaceous pearly crystals of *Nitrate* of *Urea*.

In 1840, Dr G. Owen Rees[3] published a statement of his analyses of the blood of patients labouring under Bright's disease, showing a diminution in the amount of *Albumen*, and an abnormal quantity of *Urea* in the blood.

The following are his analyses:—

(1.) Serum—Sp. gr. 1015—Contained in 1000 grains,—

Albumen, ...	46·980 grains.
Urea, ...	0·209 —

(2.) Serum—Sp. gr. 1025—Contained in 1000 grains,—

Water, ...	904·20
Albumen, ...	65·00
Extractive and salts, ...	30·30
Urea, ...	0·50
	1000·00

(3.) Serum—Sp. gr. 1029, or natural—Contained in 1000 parts,—

Water, ...	896·6
Albumen, ...	81·6
Extractive and salts, ...	21·3
Urea, ...	0·5
	1000·0

In the first two cases there is a deficiency of *Albumen;* in the last case, although the albumen is normal in quantity, we have morbidly present nearly 0·5 per mille of *Urea*, for in health but a very slight trace of that substance can be detected.

Dr Rees states the largest amount of *Urea* he has found in the blood of Bright's disease is 0·5 per mille, and the smallest 0·209.

Dr Bright[4] states,—"In one very remarkable case, where the albuminous condition of the urine has constantly existed, as far as I know, from frequent experiment, for above three years, the quantity of urea in the blood is very considerable. The results of chemical analysis by Dr Babington were, that the urine

---

[1] Vide Paper by Dr Christison—Ed. Med. and Surg. Journ., vol. xxxii.
[2] Christison—Op. cit.
[3] Rees—Guy's Hospital Reports, vol. v.
[4] Bright—Guy's Hospital Reports, vol. i., 1836.

did not contain one-third of the *Urea* which it does in health, while about one per cent. of *Albumen* supplied its place. The serum of the blood was remarkably light, in consequence of its deficiency in albumen, having a specific gravity of 1021 instead of 1030; and the quantity of *Albumen* in 1000 grains of serum, amounting, after careful drying, to only 50 grains; whereas from 80 to 100 parts in 1000 is the usual proportion in healthy serum; and it contained fully as much *Urea* as the urine did, the 1000 grains yielding nearly 15 grains of that substance."

The following analyses of the urine in Bright's disease will show the relation which *Urea* and *Albumen* bear to each other and to the other constituents of the urine; but first the analysis of normal urine, as given by Becquerel, must be noticed. Specific gravity 1018·900.

Water, ...	968·815
Urea, ...	13·838
Uric acid, ...	·391
Inorganic salts, ...	7·695
Organic matter, ...	9·261
Total, ...	1000·000

Compare now the following analysis of the urine in Bright's disease (Simon[1]).

	I.	II.
Specific gravity, ...	1014	1022
Solid constituents, ...	33·90	66·50
Water, ...	966·10	933·50
Urea, ...	4·77	10·10
Uric acid, ...	0·40	0·60
Fixed salts, ...	8·04	10·00
Extractive matters, ...	2·40	—
Albumen, ...	18·00	33·60

It will be seen that in the first of these the *Urea* is only a third of its normal quantity, *Uric acid* and *Salts* nearly natural, while there is morbidly present four and a half times the amount of *Urea*, of *Albumen*. In the second, the *Albumen* is in the ratio of three to one of *Urea*.

From these statements it will be seen that in Bright's disease the *Albumen* morbidly excreted in the Urine, and the *Urea*, are correlative and vicarious principles. That in the *Blood*, while the *Albumen* is diminished, *Urea* is morbidly retained; and in the *Urine*, while *Urea* is greatly deficient, *Albumen* is morbidly present.

Might we not then reasonably expect that COLCHICUM (acting, as has been stated) would sometimes act as a favourable auxiliary in the treatment of this disease? The cases I have recorded of its use in the dropsy succeeding to scarlatina, would seem to corroborate

[1] Simon's Chemistry (Syd. Soc. Pub.)

this view. At all events, when *Ascites* or *Anasarca* are present in Bright's disease as intercurrent affections, the use of Colchicum, both as a cathartic and diuretic, seems to me to be indicated; and in those cases where *Coma* supervenes, from accumulation of urea in the blood, I am confident that it will prove of eminent service.

In the observations contained in the foregoing paper, I have endeavoured to give a correct account of the growth of the COLCHICUM plant; and have offered a suggestion as to the probable cause of the appearance of the abnormal or *adventitious* bulbs which are occasionally observed. From a careful consideration of the growth, chiefly with reference to the medicinal qualities of the bulb at different seasons, I am led to believe that the fittest time for gathering for pharmaceutical purposes is the middle of *July*. In the section devoted to the chemical history of the drug, considerable doubt has been expressed concerning the *crystalline* nature of the alkaloid COLCHICIA; that it differs, however, in many respects from VERATRIA, has been abundantly proved by the experiments of Geiger and Hesse. Considerable space has been occupied by the statement of the physiological effects of Colchicum: and particular attention is directed to the powers which it has, as a sedative, diuretic, diaphoretic, and emetico-cathartic, and to the remarkable property which it possesses of altering the renal secretion. The remainder of the paper is devoted to the therapeutic actions of the drug, particularly as a diuretic in Dropsy, a sedative in Inflammatory diseases, and as possessing a powerful control over the paroxysms of Gout and Rheumatism. An attempt has been made to refer its action in the two latter diseases, in great part at least, to the property it possesses of altering the chemical qualities of the *blood* and *urine;* and to prove, by statistics, that in Rheumatism (and it is believed in Gout also) its beneficial effects are seldom apparent until some of its ordinary physiological actions, such as diuresis, purging, or vomiting, manifest themselves. The use of Colchicum in the Dropsy succeeding to Scarlatina has been mentioned, and a suggestion offered, that its employment might be extended to some cases of Bright's disease, and for the relief of comatose symptoms consequent upon *suppression of urine.*[1]

I take this opportunity of returning my best thanks to Professors Christison and Balfour for the kind assistance which I received from them, while engaged in the foregoing investigations.

---

[1] An outline of this paper was read before the Royal Medical Society in December 1849.

MURRAY AND GIBB, PRINTERS, EDINBURGH.