

I described it as a "dog" violet simply because it bore leaves and flowers on the same stem, which in my simplicity I supposed was enough to settle its species. But though the subdivisions of *V. canina* be new to me, a word or two of remark and description may elucidate the required point to other eyes. I would add that the specimen, such as it is, is very much at Mr. Babbington's service should he care to see it. It is still recognisable, no doubt, though it suffered considerably from having no better protection for some hours than a fly-book.

In the first place it was not growing in a moist situation or one to account for luxuriance. Though near the river, it was many feet above the water, and was on the further side of a small high road. In this position it had, as I before mentioned, attained a height of two feet and a half, and the flower which first attracted my eye was almost on a level with my waist. The plant had climbed through the hedge like a vetch or a fumitory. On comparing it with the most robust specimens of *V. canina* which I can find this spring, the following points of resemblance and of divergence present themselves. The stem of mine is channelled in the ordinary way, and the leaves tolerably like in shape though rather more pointed. On the other hand, the leaf-stalks and peduncles are in mine much shorter, the upper leaves being almost senile. The position of the bracts is similar, but instead of the conspicuous stipules of *V. canina*, mine has those parts so small as almost to escape notice. Again, while the stem of *V. canina* does not in my experience branch, the stem of mine has, in two places, thrown off a small branch bearing leaves and flowers. Also there was not, as far as I remember, any trace of any shoot from the root except the one stem, while *V. canina*, as ordinarily found, sends up a greater and a lesser flowering stem and a bunch of leaves besides.

I hope that these particulars will shed more light on the subject than I can myself.

St. Asaph, May 10

J. G.

JOHN STUART MILL

BORN MAY 20, 1806; DIED MAY 8, 1873

THOUGH it has not been the custom among specialists to regard Mr. John Stuart Mill as a scientific man, yet we venture to say that he has not left behind him in this country any man who has done more for the general advancement of science. Before Mr. Mill's time men found their way to great discoveries, and succeeded in proving to each other that what they had discovered was scientific truth. But they could tell each other very little about the method of scientific investigation. Indeed Whately, the then greatest authority in logic, pronounced a theory of induction impossible. Mr. Mill, however, did formulate the canons of induction, and in so doing he lit a lamp which will for ever burn a steady guiding light in the path of the scientific inquirer. And the value of this light need be regarded as none the less even if we consider that its chief service lies in guiding us past the snares and pit-falls of error, and the entrances to those mazes and endless labyrinths of unreality in which so many powerful intellects have toiled and spent their strength for nought; nay, worse than in vain, for their brilliant struggles have fascinated thousands and drawn them from the sober highway of truth, which alone is the road to usefulness—to happiness. The vast and still growing influence that Mr. Mill has exerted in this direction is fully recognised by those who regret it most, because they believe that Truth may be reached by other and nobler paths. We are content to note the fact that among the great men of our day no one has done so much as he, to widen the domain of science and to subdue to its methods all subjects of human interest. Choosing for the field of his more serious labours several of the most difficult subjects of research, those that had most eluded the grasp of the understanding, he has enriched the world with works that will long remain monuments of science. His "Logic" is our text-book of the science of evidence. His "Political Economy" is our text-book of the science of wealth. And if there is a scientific work on politics it is Mr. Mill's "Repre-

sentative Government." One feature of Mr. Mill's character deserves special notice in this connection. He had the true scientific temper, a disinterested love of truth, in a degree not to be surpassed. If it could be shown that in any particular his teaching was unsound, and none were ever able to do this so well as his own disciples, the men whom he had trained to think, no one was more glad that error had been detected than was Mr. Mill himself. It will be enough to remind our readers of one notable example of this. When Mr. Thornton showed that the universally accepted doctrine of the wage-fund was a huge fallacy, Mr. Mill came forward with alacrity to acknowledge that he in common with all other political economists had fallen into a grave error, and that Mr. Thornton had made a most valuable contribution to economic science. If all scientific men could as completely subordinate their personal vanity to the pursuit of truth, progress would be more rapid than at present. The daily papers have already made the reader familiar with the many-sided richness and beauty of Mr. Mill's character. He was an object of loving admiration to all who had the happiness to enjoy his personal acquaintance. The world, while it mourns his loss, does not, cannot know how great and how good a man has been taken away; and still less does it know how ill it can afford to lose such a man.

MINERS' RULES IN THE SEVENTEENTH CENTURY

ON looking over a packet of old papers I have found some documents, of which I enclose copies, written by a German miner, named Brandshagen, who was employed by my ancestor, Sir Philip Egerton, to superintend the attempt to work copper in the New Red Sandstone strata of Cheshire in the year 1697. As the rules for miners of that age afford so strong a contrast to the *unruly* behaviour of that class at the present day, they may perhaps interest some of the readers of NATURE.

P. DE M. GREY-EGERTON

Worthy & most honourable Sir,—

Your worship give most humbly thanks for employment meself and my countrymen about your Worship mines, which I have enjoyed now above 4 weekes, & not to be att all further unacquainted unto your Worship, I could not forbear to give a true & plain account of what I have observed in this time about these mines, as good as my smal understanding in y^e English language would permit, & if it was in any way acceptable then my wishes & desires where fulfilled. I have this time also endeavored to blow up y^e rocks by guns powder, as the best way to kill them, butt in y^e first time I found y^e elements as aire & water where against my designe, y^e last I have conquered, & I hope I shall doe so y^e other next time when I have occasion for it. I found also some other smal things which would not so soon agree with my hands, for there are many years past, that I did work under ground with my owne hands, butt all these things are now diseased, onely that I was lately too covetous & would have more rocks blown up then my powder was able to; what other blasts for effect have done, your Worship can be informed of it by Mr. Smith. I shall endeavour all what is in my power to serve your Worship with that understanding I have about mines to which I have employed meself now above 15 year, in spending a great deal of money as well for learning as travelling in many places in Europe where good mines where, to come to any perfection in this art. I have received now my things for examination of y^e oare, which I will doe as soon as possibly I can come to it in this desolate place, where nothing in y^e world is to be had for any commodities what soever it may be, & whilst we are strangers here, & must buy all things for ready, it is impossible to life of what your Worship has allowed unto us & there-

fore I doubt not your Worship will make a distinction between workmen & workmen, with which I recommend me into your Worship' favour always remaining

Your Worship most humble Servant,

J. A. BRANDSHAGEN

Bickerton, Sept. y^e 24th, 1697

For the Right Honourable S^r Phillipp Egerton, Knt., these.

Rules for all Workmen in general

One of every Workmen he may be of what sort he will shall come half an hour before y^e duely time & give a certain number of strucks with a hammer on an Iron plate, erected to this purpose, to give a Signe to y^e other workmen to come att work, half an hour after he shall doe so att a second time by an other number of strucks & shall streike no more then y^e duely strucks by forfeiting 2*d.*, he has y^e same signes to give all day when y^e miners shall come out & goe under ground again, & this shall doe one workmen after an other from day to day, & he who has done y^e businesse this day shall remember to his follower that he has to doe y^e same next day, & he that wilfully neglected these remembrance shall be punished together with him that shall doe this businesse next day (if he neglect it) for he himself must be carefull about y^e time & day to doe this, & he that shall give y^e signs too late, has forfeited 6*d.*, & he that shall not doe it att all shall loose all his wages, due to him, & by consent of y^e mines Lords shall be turned of from y^e work.

In y^e morning before y^e last struck is done on y^e Iron plate every workman belonging to y^e mines must appeare to y^e appointed place near y^e work, or he has forfeited 2*d.*, & he that comes half-an-hour after, 2*d.* more, & so following for every half-an-hour 2*d.*, & this is understood of all times when y^e signe is given.

When they are together they may doe a short prayer that God may give his blessing to their work, that it may raise to y^e honour & glory of him, & to y^e benefit & blesnesse of y^e mines Lords & their whole familie.

After this every one must goe to his post, & diligently performe to what y^e steward shall order him, in doing y^e contrary he shall be duely punished, & he who shall leave y^e work within y^e duely hours & before y^e signe is given, shall loose 6*d.* or for every half-an-hour 2*d.* as y^e steward shall think fitt, & he that is found neglectfull shall every time have forfeited 2*d.*

When it is pay-day, every workmen before he gett money must shew to y^e steward his tools & other things what is trusted in his hand by y^e lost of all his wages, & if there should want any of such things, he must leave so much money of his wages as it is worthy in y^e stewards hand, till he restores y^e same.

He that hindered one another in his work it may be in what way it will, either by ill words, quarreling or in other ways, must duely be punished as y^e steward thinks fitt, because every one must be quiet with his work; have they any thing one against an other they may bring it before y^e steward, or cleare their things after y^e work is done att an other place.

No body shall be permitted without leave of y^e steward to take any oare away for a shewing piece, or under any other pretext, butt he may y^e same aske from y^e steward & be content with that he gives him, and if any should doe y^e contrary, he is so heigh to punish as y^e steward shall think sufficient.

No body shall bring any person or persons not belonging to y^e mines, either under ground or at any other place where y^e oares or other things are, without permission of y^e steward, & that by y^e penalty of one shilling.

Every man must be in a Christian-like behaviour, and he that speekes blasphemous, or gives scandales, or does other things near y^e mines with which God is offended, shall every time be punished with 4*d.* or more according to his crime.

When it is pay-day every one must be of a modest behaviour against ye steward, and must not murmer against him when his wages is decurted for punishment, butt must bring his complaints (if he has any against it) before y^e mines Lord, if neverthesse that he has gotten his wages, he must not goe from y^e steward away, till y^e whole payment is done, & can give witnessse that every one has received his due.

No workmen shall make more holy days in y^e year besides y^e Sunday, then y^e Lords of y^e mines shall allow them, or shall be punished as one that leaves y^e work for a whole day.

He that turned y^e hour glasse in a wrong way shall loose one shilling.

*SUPPRESSION OF SCENT IN PHEASANTS**

THE pheasant, from nesting on the ground, is peculiarly exposed to the attacks of four-footed or ground vermin, and the escape of any of the sitting birds and their eggs from foxes, polecats, hedgehogs, &c., appears at first sight almost impossible. This escape is attributed by many, possibly by the majority, of sportsmen to the alleged fact that in the birds when sitting the scent which is given out by the animal at other times is suppressed; in proof of this statement is adduced the fact that dogs, even those with the keenest powers of smell, will pass within a few feet, or even a less distance, of a sitting pheasant without evincing the slightest cognizance of her proximity, provided she is concealed from sight. By others this circumstance is denied, they reason *a priori* that it is impossible for an animal to suppress the secretions and exhalations natural to it—secretion not being a voluntary act. I believe, however, that the peculiar specific odour of the bird is suppressed during incubation, not, however, as a voluntary act, but in a manner which is capable of being accounted for physiologically. The suppression of the scent during incubation is necessary to the safety of the birds, and essential to the continuance of the species. I believe this suppression is due to what may be termed vicarious secretion. In other words, the odoriferous particles which are usually exhaled by the skin are, during such time as the bird is sitting, excreted into the intestinal canal, most probably into the cæcum or the cloaca. The proof of this is accessible to every one; the excreta of a common fowl or pheasant, when the bird is not sitting, have, when first discharged, no odour akin to the smell of the bird itself. On the other hand, the excreta of a sitting hen have a most remarkable odour of the fowl, but highly intensified. We are all acquainted with this smell as increased by heat during roasting; and practical poultry keepers must have remarked that the excreta discharged by a hen on leaving the nest have an odour totally unlike those discharged at any other time, involuntarily recalling the smell of a roasted fowl, highly and disagreeably intensified. I believe the explanation of the whole matter to be as follows: the suppression of the natural scent is essential to the safety of the bird during incubation; that at such time vicarious secretion of the odoriferous particles takes place into the intestinal canal, so that the bird becomes scentless, and in this manner her safety and that of her eggs is secured. This explanation would probably apply equally to partridges and other birds nesting on the ground.

The absence of scent in the sitting pheasant is most probably the explanation of the fact that foxes and pheasants are capable of being reared in the same preserves; at the same time the keepers are usually desirous of making assurance doubly sure, by scaring the foxes from the neighbourhood of the nests by some strong and offensive substance.

* From Mr. Tegetmeier's forthcoming work on "Pheasants for the Covert and the Aviary."