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# XLV.—On the strength of the vital principle in intestinal worms

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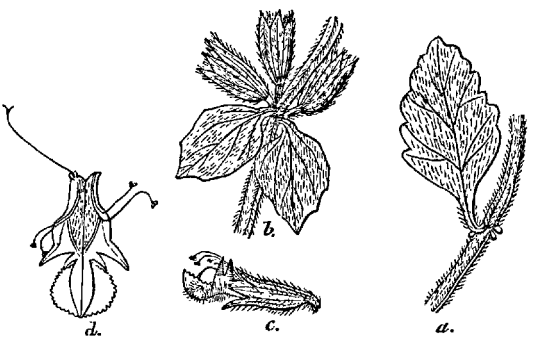
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each verticillastrum, rather larger than those of *T. chamædrys*, shortly stalked; calyx between tubular and bell-shaped, about as long as the floral leaves, the teeth lanceolate, nearly equal, slightly spreading, slightly tinged with purple; corolla yellow with a darker reddish tip, bearded below, and with a broad

*Teucrium regium.*




band of hairs pointing downwards on the under side within the tube.

This plant is distinguished from *T. chamædrys* by the distinct line of separation between the floral and other leaves, the rhomboidal form of the former, and by the latter being ovate-crenate, not ovate-oblong and incised, the much longer internodes, and nearly simple branches.

*Hab.* Spain, *Schreber*; Italy, *Morison*; Smyrna, *Fleischer*; near Abergavenny, England, *Mr. E. Y. Steele.*

St. John's College, Cambridge, June 6, 1840.

EXPLANATION OF THE FIGURES.

*a.* Represents a lower leaf.
*b.* Floral leaves and verticillastrum.
*c.* A flower.
*d.* A flower expanded so as to show the form and interior.

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XLV.—*On the Strength of the Vital Principle in Intestinal Worms.* By Dr. C. E. Miram, Teacher of Zoology and Comparative Anatomy in the Academy of Wilna*.

Of the cold-blooded Vertebrate Animals, and especially of the Amphibia, it is well known that they can pass years in a state

* From Wiegmann's Archiv, Part I. 1840.

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resembling death; toads inclosed in blocks of granite, where they neither receive air or nutriment*, have lain torpid for an indefinite time, but again become animated as soon as they were exposed to the atmosphere. This death-like state might be termed torpidity, as it were a prolonged winter sleep, for life has not totally quitted the body, and even this has remained unaltered or at furthest only somewhat shrunk up.

The Evertebrate animals appear, with respect to the strength of the vital principle, to stand on a far higher scale. If they are deprived of water, which is necessary to their life, they shrivel up and become perfectly dry, but may again be restored to life when after a shorter or longer period they are exposed to favourable influences. Who has not been struck by the remarkable experiments of Spallanzani on this subject? From him we know that *Furcularia rediviva*, a species of *Vibrio*, and the of late much spoken-of *Macrobiotus Hufelandii*† belonging to the Crustacea, after having passed years in a perfectly dry state, might be restored to life by a drop of water,—a slight moistening is sufficient to call them again into existence.

Some intestinal worms are also remarkable from having a similar peculiar tenacity of life. Rudolphi‡ mentions a remarkable example of *Ascaris spiculigera*. He received from M. Peterson of Kiel three sea crows (*Pelecanus Carbo*) which were shot there on the third of May and immediately placed in alcohol and forwarded to Berlin. On the 14th of May, therefore after 11 days, Rudolphi opened the alimentary canal and the stomach of one of these birds, which was highly impregnated with alcohol, and found some specimens of the above-mentioned worm, which however seemed to have been killed by this treatment, and had become already hard and brittle in the spirits. In order to soften and restore them to

* We should not consider the degree of assurance upon this subject to be at all so strong as that which the writer seems to entertain, especially as regards granite.—Ed.

† This microscopic crab is not, as stated by Schulze (*Macrobiotus Hufelandii*, animal e crustaceorum classe novum, reviviscendi post diuturnam asphyxiam et ariditatem potens, descriptus a Aug. Sigismundo Schulze, Berolini, 1834), a new animal, but Spallanzani's Tardigrade, Müller's *Acarus ursellus*, Schrank's *Arctiscon tardigradum*, and Ehrenberg's *Trionychium ursinum*.—Wiegmann.

‡ Entozoorum Synopsis, Berolini, 1819, p. 290.

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their natural form he placed them in warm water, and, behold! they began to move, and were soon perfectly restored to life.

To this interesting fact I can now add the remarkable observation of a restoration to life of *Ascaris Acus*, Blochii, which I happened to make in the month of April of this year (1839), and which is certainly quite as astonishing as the case related by Rudolphi.

I received the intestines of a very large pike, which was to be stuffed for the museum of this town, and found a considerable number of *Ascaris Acus*, partly among the intestines and in part on the edge of the plate; and as they were placed on it without any moisture, several which were not in contact with the moisture of the intestines were already perfectly dry and dead; many were dried so firmly to the plate that they could not be removed without destroying them. In order to obtain as many good specimens of this worm as possible, I filled the vessel with cold water and picked out the living individuals, but was astonished to find so many alive. I had soon collected all the *Ascarides* that moved, and placed therefore the intestines in another vessel, and left the plate to stand with the water, but came accidentally after some minutes to the table where it stood, and was not a little surprised to find the water again all alive with these little worms. I observed minutely the dead and dried *Entozoa*, and convinced myself that these actually, when they had imbibed moisture and thus reacquired their previous volume, moved about with the greatest ease in the fluid; nay, I even saw that some worms which were not wholly touched by the water exhibited life in that portion only which had imbibed some. Thus, some moved the anterior part of the body, while the hinder portion adhered dried on the plate; others moved the posterior portion, while the anterior shrivelled portion was fixed to the vessel.

Wilna, October 2, 1839.

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