You may depend on the Truth of this Account, and I hope it will be acceptable; the Hurry I am in, being Phyſician to the Army now on its March to the Aſſiſtance of the Allies, and to ſet out from this Place To-morrow, with the Commander in chief, who has been ſome time here indiſpoſed, and under my Care, prevents me from adding any more at preſent; but you ſhall be ſure to hear from me, when we are advanced into *Germany*. In the mean while, believe me to be ſincerely,

Dear Sir,

Riga, Feb. 24. 1748.

Your moſt humble Servant,

James Mounſey.

V. *An Abſtract of Mr.* Bonnet, *F. R. S. his Memoir concerning* Caterpillars; *drawn up in* French *by Mr.* Abraham Trembley, *F. R. S. here tranſlated into* Engliſh.

Read April 27. 1748.

THE Paper lately communicated by the *Preſident* from Monſieur *Bonnet* of *Geneva*, contains various Experiments he has made relating to the Reſpiration of Caterpillars.

Malpighi firſt diſcover'd, that thoſe 18 Openings or Orifices, which are placed 9 on each Side of the Caterpillar, and which are called by the Name of *Stigmata*, ſerve to give Reſpiration to this Claſs of Animals.

Monſieur

Monſieur *de Reaumur* has repeated the Experiments of *Malpighi*, and made ſeveral new ones upon this Subject. And he has been of Opinion, that theſe Apertures ſerved only for the Inſpiration of the Air, which the Caterpillar afterwards expired, through the whole Superficies of its Body. What he has wrote upon this Subject is in the firſt Tome of his Memoirs, at the 131st and the following Pages.

Mr. *Bonnet* has had Reaſon to think theſe Caterpillars do both inſpire and expire the Air by their *Stigmata*; and that they did not expire any of it through the Pores of their Body. This Paper here ſhewn gives an Account of 36 ſeveral Experiments, made chiefly with Deſign to diſcover this Fact, whether indeed theſe Inſects did both inſpire and expire the Air by their *Stigmata*, or only inſpire it. Theſe Experiments, like Mr. *de Reaumur*, conſiſt moſtly in the plunging of Caterpillars either into Water, or ſome other Liquor; ſome alſo they daubed or anointed over with fat and greaſy Subſtances, ſome quite over, and others only in ſome Places.

Mr. *Bonnet* is inclined to think, that the ſmall Bubbles of Air obſerved all over their Bodies, when they are immerged in Water, do not come from the Air included within them, and which they expired by the Pores; but that they are formed by the Air only lodged near the Surface of the Skin of the Caterpillar, as it is about the Superficies of all other Bodies: He has endeavoured to contrive it ſo, as that no Air might remain thus ſticking to the Skin of thoſe Inſects upon which he has made

theſe Experiments. And for this Purpoſe, before he plunged them in the Water, he firſt waſhed them all over with a Hair-Pencil or Bruſh; and theſe being afterwards immerged in the Water, but very few Bubbles of Air have been diſcovered on the Outſide of their Bodies; and fewer as it appeared than Mr. *de Reaumur* had found upon thoſe, upon which he made his Experiments; neither was this laſt of Opinion that all thoſe Bubbles which he took notice of were formed by the Air ruſhing out through the Pores, but that ſome of them were alſo formed by the Air ſticking about the exterior Part of the Skin.

When a Caterpillar is plunged in Water, one Bubble of Air is almoſt conſtantly obſerved upon each of the *Stigmata*. Mr. *de Reaumur* concluded, that the Air was not expired by theſe *Stigmata*, becauſe he could never obſerve that any Bubbles of Air were ever driven out of theſe *Stigmata*, as one would think there muſt have been, if the Air was really expired by theſe Apertures. Mr. *Bonnet*, on the contrary, has ſeen ſome Bubbles of Air come out from theſe *Stigmata*, and that has contributed to make him rather think that the Air inſpired was alſo diſcharged at theſe ſame Orifices. But as theſe Experiments are not deciſive, he is unwilling abſolutely to determine, but propoſes the making more new Experiments.

A Caterpillar can remain ſeveral Hours under Water without periſhing; it only falls into a State of Numbneſs; but if again taken out of the Water, it is not long before it again ſhews Signs of Life, and recovers. Mr. *Bonnet* has ſought by ſome Experiments,

Experiments, to know, if ſome only of theſe 18 *Stigmata* of a Caterpillar might not be ſufficient for the Purpoſes of Reſpiration: He has plunged ſome of them only partially in Water, ſometimes by the Tail, and others by the Head foremoſt; but always ſo that either 2 or more *Stigmata* might be out of the Water; and in theſe Caſes the Caterpillar has not fallen into the torpid State abovementioned, as it conſtantly did when intirely immerſed. He has lifted out of the Water ſome of the *Stigmata* of Caterpillars that had been quite immerſed, and that were ſo become torpid and motionleſs; and theſe have alſo ſoon after ſhewn Signs of Life and Motion. One of the Caterpillars, upon which Mr. *Bonnet* made Experiments, lived 8 Days, ſuſpended in the Water, and only expoſing to the Air its poſterior *Stigmata*; that is to ſay, that only the 2 laſt *Stigmata* were out of the Water.

He during this time carefully obſerved his Caterpillar; and he remarked, from time to time, when the Inſect moved itſelf, that little Streams of Bubbles came out of the anterior *Stigma* on the left Side. It appeared to him, by this and ſome other Experiments, that amongſt all the 18 *Stigmata*, the two anterior and the two poſterior ones are of a greater Uſe for the Reſpiration of the Caterpillars than any of the others. He alſo found, that, upon the choaking up theſe *Stigmata* with Butter, the Animal ſeemed to ſuffer much more ſenſibly, than when he ſo choaked up all the intermediate ones.

All theſe Experiments of Mr. *Bonnet*, and which are very particularly detailed in his Paper, were made

with great Attention, Patience, and Sagacity. And it is to be wiſhed that he may continue thus diligently to apply himſelf to the Study of Natural Hiſtory.

VI. *Divers Means for preſerving from Corruption* dead Birds, *intended to be ſent to remote Countries, ſo that they may arrive there in a good Condition. Some of the ſame Means may be employed for preſerving* Quadrupeds, Reptiles, Fiſhes, *and* Inſects, *by M.* de Reaumur, *F. R. S. and Memb. Royal. Acad. Sc. Paris. tranſlated from the* French *by* Phil. Hen. Zollman, *Eſq; F.R.S.*

Read from March 10. 1747-8. *to* April 27, 1748.

PERSONS who have at Heart the Progreſs of Natural Hiſtory, and intend to facilitate the Study of it, muſt needs be deſirous to ſee the Collections of divers Sorts of Productions, which form the Objects of it, multiplied and enlarged, and therefore will be diſpoſed to contribute towards it with all their Ability. Thoſe Collections preſent together in one Place more different Sorts of Bodies of the Mineral, Vegetable, and Animal Kingdoms, there to be at Leiſure compared and examined one againſt the other, than one could hope to find ſucceſſively in the longeſt and moſt laborious Voyages and Travels. In order to render thoſe Collections

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