

**ALEMBIC CLUB REPRINTS - NO. 5.
EXTRACTS FROM MICROGRAPHIA: OR
SOME PHYSIOLOGICAL DESCRIPTIONS OF
MINUTE BODIES MADE BY MAGNIFYING
GLASSES, WITH OBSERVATIONS AND
INQUIRIES THEREUPON**

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Alembic Club Reprints - No. 5. Extracts from Micrographia: Or Some Physiological Descriptions of Minute Bodies Made by magnifying glasses, with observations and inquiries thereupon by R. Hooke

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R. HOOKE

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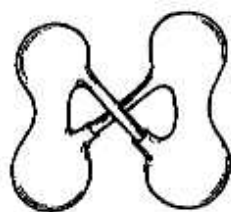
BY

R. HOOKE, FELLOW OF THE ROYAL SOCIETY

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P R E F A C E.

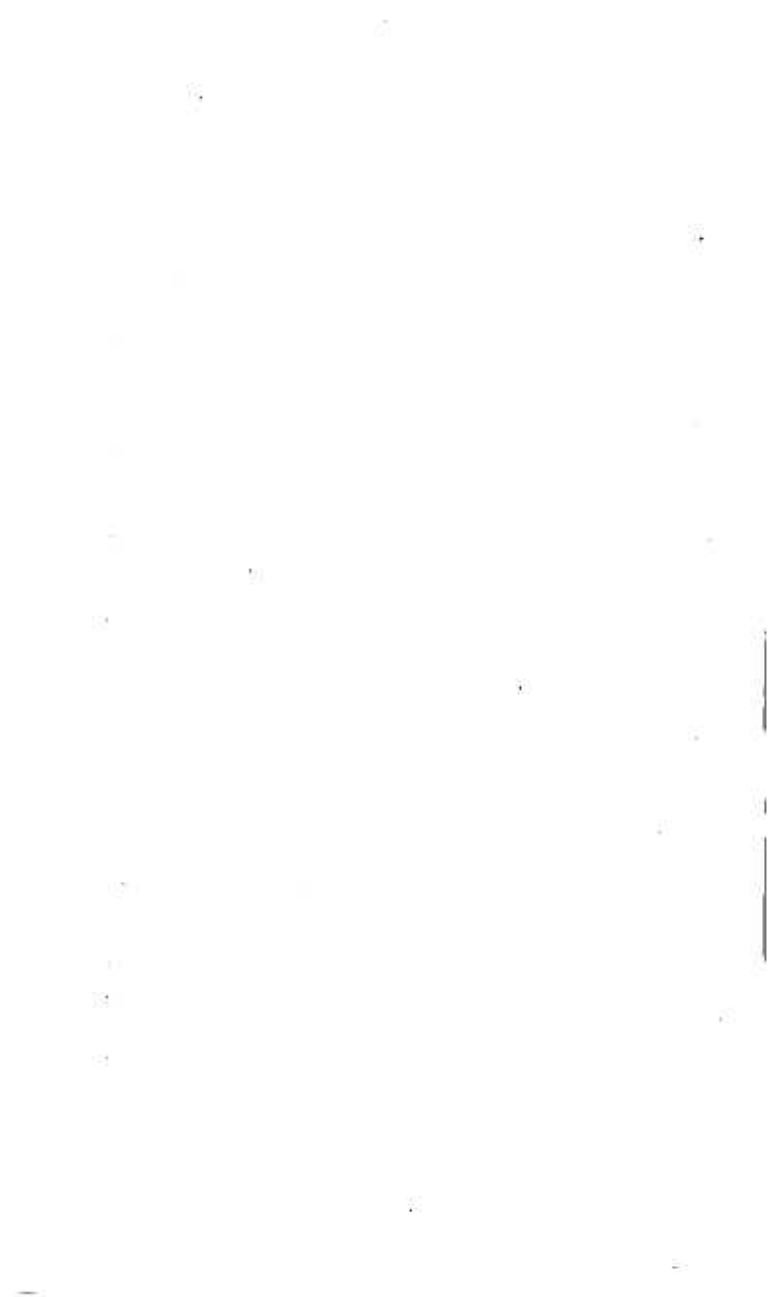
HOOKE'S "Micrographia" is a remarkable book in several respects, but in none more strikingly so than on account of the explanation which it contains of its author's clear views respecting the theory of combustion. This explanation occurs quite unexpectedly in Observation XVI., entitled "Of Charcoal, or Burnt Vegetables," and it forms by far the most important portion of the book from the chemical standpoint; although matters of minor chemical interest are mentioned in several of the other Observations. It is a matter for the greatest regret that Hooke did not detail in Observation XVI. the experiments from which his theoretical ideas concerning combustion were deduced; and also that he never carried out his expressed intention of dealing fully with the whole subject in a separate treatise.

A just appreciation of the author's individuality, as well as of his intentions in publishing his *Micrographia*, can scarcely be obtained without perusing his preface, which contains a number of shrewd and enlightened ideas.

The following pages contain the greater part of the preface to *Micrographia*, Observations VIII. and XVI. in full, and a few shorter extracts. The old-fashioned spelling of the original has been retained.

L. D.

162386



MICROGRAPHIA.

EXTRACTS FROM THE PREFACE.

IT is the great prerogative of Mankind above other Creatures, that we are not only able to *behold* the works of Nature, or barely to *sustain* our lives by them, but we have also the power of *considering, comparing, altering, assisting, and improving* them to various uses. And as this is the peculiar privilege of humane Nature in general, so is it capable of being so far advanced by the helps of Art, and Experience, as to make some Men excel others in their Observations, and Deductions, almost as much as they do Beasts. By the addition of such *artificial Instruments and methods*, there may be, in some manner, a reparation made for the mischiefs, and imperfection, mankind has drawn upon it self, by negligence, and intemperance, and a wilful and superstitious deserting the Prescripts and Rules of Nature, whereby every man, both from a deriv'd corruption, innate and born with him, and from his breeding and converse with men, is very subject to slip into all sorts of errors.

The only way which now remains for us to recover some degree of those former perfections, seems to be, by rectifying the operations of the *Sense, the Memory, and Reason*, since upon the evidence, the *strength, the integrity, and the right correspondence* of all these, all the light, by which our actions are to be guided, is to be renewed, and all our command over things is to be establisht.

It is therefore most worthy of our consideration, to recollect their several defects, that so we may the better understand how to supply them, and by what assistances we may *inlarge* their power, and *secure* them in performing their particular duties.

As for the actions of our *Senses*, we cannot but observe them to be in many particulars much outdone by those of other Creatures, and when at best, to be far short of the perfection they seem capable of: And these infirmities of the Senses arise from a double cause, either from the *disproportion of the Object to the Organ*, whereby an infinite number of things can never enter into them, or else from *error in the Perception*, that many things, which come within their reach, are not received in a right manner.

The like frailties are to be found in the *Memory*; we often let many things *slip away* from us, which deserve to be retain'd; and of those which we treasure up, a great part is either *frivolous* or *false*; and if good, and substantial, either in tract of time *obliterated*, or at best so *overwhelmed* and buried under more frothy notions, that when there is need of them, they are in vain sought for.

The two main foundations being so deceivable, it is no wonder, that all the succeeding works which we build upon them, of arguing, concluding, defining, judging, and all the other degrees of Reason, are lyable to the same imperfection, being, at best, either vain, or uncertain: So that the errors of the *understanding* are answerable to the two other, being defective both in the quantity and goodness of its knowledge; for the limits, to which our thoughts are confined, are small in respect of the vast extent of Nature it self; some parts of it are *too large* to be comprehended, and some *too little* to be perceived. And from thence it must follow, that not

having a full sensation of the Object, we must be very lame and imperfect in our conceptions about it, and in all the propositions which we build upon it; hence we often take the *shadow* of things for the *substance*, small *appearances* for good *similitudes*, *similitudes* for *definitions*; and even many of those, which we think to be the most solid definitions, are rather expressions of our own misguided apprehensions than of the true nature of the things themselves.

The effects of these imperfections are manifested in different ways, according to the temper and disposition of the several minds of men, some they incline to *gross ignorance* and stupidity, and others to a *presumptuous imposing* on other mens Opinions, and a *confident dogmatizing* on matters, whereof there is no assurance to be given.

Thus all the uncertainty, and mistakes of humane actions, proceed either from the narrowness and wandering of our *Senses*, from the slipperiness or delusion of our *Memory*, from the confinement or rashness of our *Understanding*, so that 'tis no wonder, that our power over natural causes and effects is so slowly improv'd, seeing we are not only to contend with the obscurity and *difficulty of the things* whereon we work and think, but even the *forces of our own minds* conspire to betray us.

These being the dangers in the process of humane Reason, the remedies of them all can only proceed from the *real*, the *mechanical*, the *experimental* Philosophy, which has this advantage over the Philosophy of *discourse* and *disputation*, that whereas that chiefly aims at the subtilty of its Deductions and Conclusions, without much regard to the first ground-work, which ought to be well laid on the Sense and Memory; so this intends the right ordering of them all, and the making them serviceable to each other.