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EDUCATION

IN THE MARISCHAL COLLEGE

AND

UNIVERSITY OF ABERDEEN,

WITH THE REASONS OF IT.

Drawn up by Order of the FACULTY.

*ABERDEEN:*

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Dec 21, 1934

*J. A. Keller*

MARISCHAL COLLEGE, AUG. 28. 1755:

The Faculty, having heard read the Account of the Plan of Education prosecuted in this College, which Mr. ALEXANDER GERARD, Professor of Philosophy, had, by their order, drawn up, appointed it to be printed.

Signed,

T. BLACKWELL Principal,

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**T**HE PRINCIPAL and PROFESSORS of the MARISCHAL COLLEGE of ABERDEEN, having lately made a very material alteration in the order of teaching Philosophy, they think it incumbent upon them to lay before the public, which is interested in every thing that relates to education, the reasons which determined them to deviate from the hitherto received method,

THE order formerly observed in this College, was that followed by most of the antient Philosophers, which was afterwards espoused by the Scholastics, and generally adopted by all the Universities in Europe : they began with Logic, then proceeded to Ontology, Pneumatic, Morals, Politics ; and, last of all, taught Natural Philosophy. The Peripatetic Philosophy, at least as far as it was espoused by the commentators and followers of Aristotle, was in great  
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measure made up of verbal subtleties, and theories ill grounded, tho' ingeniously devised. These were supported by arguments moulded into an artificial form ; the mechanism of which must first of all be understood ; and it was laid open by the Logic then in use. The chief business of that Philosophy, was, to express opinions in hard and unintelligible terms ; the student needed a dictionary or nomenclature of the technical words and authorised distinctions ; experiment was quite neglected, science was to be reasoned out from general principles, either taken for granted, or deduced by comparison of general ideas, or founded on very narrow and inadequate observation : Ontology, which explained these terms and distinctions, and laid down these principles, was therefore introduced immediately after Logic. By these two, the student was sufficiently prepared for the verbal, or at best, ideal inquiries of the other parts.

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BUT Philosophy has been since that time happily reformed, and is become an image, not of human phantasies and conceits, but of the reality of nature, and truth of things. The only basis of Philosophy is now acknowledged to be an accurate and extensive history of nature, exhibiting an exact view of the various phenomena for which Philosophy is to account, and on which it is to found its reasonings. This being the reformed state of Philosophy, great inconveniencies must be found in prosecuting the scholastic order of the sciences. The student must make a transition at once from words and languages to Philosophy, without being previously introduced to the knowledge of facts, the sole foundation of, and preparation for it ; he must be hurried, at the first, into the most abstruse, difficult and subtle parts of it ; he must be put upon examining the nature, foundation and different kinds of evidence  
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and reasoning, before he is acquainted with any specimens of these kinds, by which they may be illustrated. And in proportion as Philosophy is more improved, and more thoroughly reformed, these inconveniencies must become more sensible.

THE view of these induced the Masters of the Marischal College to think of altering the hitherto received order ; and, after the most mature deliberation, made them at last resolve, that their students should, after being instructed in languages and classical learning, be made acquainted with the Elements of History, Natural and Civil, of Geography and Chronology, accompanied with the Elements of Mathematics ; that they should then proceed to Natural Philosophy, and, last of all, to Morals, Politics, Logic and Metaphysics. And if, by adopting this order, they avoid the inconveniencies above-mentioned, and make the sciences to follow one another, according  
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to the natural connexion of their subjects, and the gradual openings of the human mind, may they not expect the approbation of the public, and better fruits of their labours, in forming the minds of youth, so as they may be possessed of more real knowledge, and that more useful for the various purposes of human life ? That this is the case, the following pages are intended to evince.

THAT Logic should be taught first, appears to be supported by an argument, specious enough on a transient view, viz.  
 “ That as it professes to teach the method  
 “ and rules of reasoning, it is natural to  
 “ begin with learning these rules, and then  
 “ to apply them in the several sciences.”  
 But however plausible this argument may at first sight seem, it will, on closer attention, be found not at all solid or conclusive.

THE world is now pretty well satisfied  
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that the understanding cannot be aided in the discovery of truth, by a Logic like the Scholastic, founded on an arbitrary disposition of all things under certain general names, and consisting only of fine-spun observations concerning the combination of words in propositions, and of propositions in artificial syllogisms. This may assist one in disputing readily and artfully in defence of either truth or error : but it can never contribute to promote knowledge, and guard us against mistakes. The Logic that can answer this end, must accurately examine and carefully ascertain the various kinds of evidence, their foundations, their laws, the subjects to which they belong, the degree and species of assent which they produce ; it must lay open the sources of error, the causes of false judgment, and the conduct of the understanding by which it may be prevented ; it must explain the different methods of invention, at once suited to the constitution of the mind, and to the varieties

varieties of the objects it is conversant with.

THIS is one of the most abstruse and difficult branches of Philosophy, and therefore quite improper to begin with. It has a strict dependence on many parts of knowledge ; these must of consequence be premised, before it can be rightly apprehended. The natural history of the human understanding must be known, and its phœnomena discovered ; for without this, the exertions of the intellectual faculties, and their application to the various subjects of science will be unintelligible. These phœnomena must be not only *narrated*, but likewise, as far as possible, *explained* ; for without investigating their general laws, no certain and general conclusions concerning their exercise can be deduced.

NAY, all sciences, all branches of knowledge whatever, must be premised as a ground-work to genuine Logic. History

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has one kind of evidence ; Mathematics, another ; Natural Philosophy, one still different ; the Philosophy of human nature, another, distinct from all these : the subordinate branches of these several parts, have still minuter peculiarities in the evidence appropriated to them. An unprejudiced mind will in each of these be convinced by that species of argument which is peculiar to it, tho' it does not reflect how it comes to be convinced. By being conversant in *them*, one is prepared for the study of *Logic* ; for *they* supply them with a fund of materials ; in *them*, the different kinds of evidence and argument are exemplified ; from *them* only, those illustrations can be taken, without which, *its* rules and precepts must be unintelligible.

ALL just conclusions, concerning the works of nature, must be founded on an induction of particulars. And as in *Natural Philosophy*, these particulars are supplied  
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by observations and experiments on *Natural Bodies*, so in *Logic* the particulars, of which an induction must be made, are to be learned only from the body of *Arts and Sciences*. These are the subjects on which observations must be made, in order to lay down rules for investigating and proving the truths of which they are made up ; just as the genuine performances of any art are what must be considered and observed, in laying down the rules of that art. No solid precept can be formed in *Logic*, except by examining arts and sciences, and attending to the method of reasoning used in them, and to the evidence that accompanies it. In proportion as they are cultivated, and no farther, *Logic* may be improved.\* And what is true of the invention of *Logic*, is true likewise of the study of it.

\* *Artem inveniendi cum invento adollescere statuat.*

*Verulam de interpret. natura Aphorism.*

It can be understood no farther than the several sciences, which it reviews and criticises, are previously understood. Accordingly we find, that all the systems of Logic which have not been compiled from a careful review and examination of the several sciences, consist more of ingenious subtleties, than of useful precepts assisting to the mind in the various parts of knowledge. And when Logic has been learned before the other sciences, the substantial parts of it have been scarce attended to, or made any use of, in the prosecution of *them* ; nor so much as understood, but in as far as the mind was gradually opened, and brought to recollect them in its progress thro' the sciences. Let us illustrate this by a parallel case.

Logic is precisely the same to *Philosophy*, that works of criticism are to *Poetry*. The rules of criticism are formed by an accurate scrutiny and examination of the best  
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works of poetry. To one who had never read a poem, these rules would be obscure and useless ; he could not comprehend them, far less would he be able to form a judgment of their justness, and of the reasons on which they are founded. If one peruses the best poetical performances, he will acquire some degree of taste, tho' he has never professedly studied the rules of criticism ; and he will, at the same time, lay in materials, and obtain a stock of examples, which may render these rules intelligible to him, and enable him to judge whether they are just or not. And by afterwards studying these rules, he improves, refines and corrects his taste, perceives the principles on which he has founded all his judgments, tho' he did not in the mean time, think of them, and gains additional security against his judging wrong. This may illustrate what has been said of the place which Logic ought to hold among the sciences. The observations made in  
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it, both concerning the methods of invention, and of probation, are founded on, and deduced from, the several sciences in which these methods are used. Neither the observations themselves, nor the reasons on which they are built, can be fully comprehended by one absolutely ignorant of these sciences. In studying the particular sciences, reason will spontaneously exert itself : if the proper and natural method of reasoning is used, the mind will by the native force of its faculties perceive the evidence and be convinced by it, tho' it does not reflect how this comes to pass, nor explicitly consider according to what general rules the understanding is exerted. By afterwards studying these rules, one will be farther fitted for prosecuting the several sciences ; the knowledge of the grounds and laws of evidence will give him the security of *reflection*, against employing wrong methods of proof and improper kinds of evidence, additional to that of *instinct* and *natural*

*tural genius.* And thus Logic will great'y contribute to improvement in knowledge ; and more so, when it is used as a *review* of the method taken in the prosecution of science, of the foundations gone upon, and of the general rules that have been observed, than when it is applied as an *introduction* to the elements of science : for in the former case, its rules can be perfectly understood, sufficiently illustrated, and put in practice as they are learned, which in the latter is quite impossible.

THERE is one objection that may still remain to what has been said, viz.  
 “ That the elements of the other sciences  
 “ must be taught with disadvantage, when  
 “ the student is wholly unacquainted with  
 “ the rules of reasoning observed in them.”  
 But we have seen that Logic can scarce be taught at all till these elements are learned, at least not so as to produce any considerable advantage in the study of Philosophy ;  
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its rules being but ill understood, thro' ignorance of the examples by which they are to be illustrated, and of the particulars on which they are founded, will be forgot before there is occasion to apply them, or, if they are remembred, the student having but an indistinct conception of them, is incapable of applying them. Besides, there will not be found so great inconvenience as is apprehended, in studying the elements of science, without a previous knowledge of the precepts of Logic. Man is naturally possessed of reason and genius, and capable of exerting it with tolerable justness on a variety of subjects, before he is formally instructed in the rules of reasoning ; of himself, he conforms to them, as it were by instinct, without reflecting or explicitly knowing what they are. Lay before a man of ordinary understanding a piece of just reasoning in any of the sciences, and he shall be convinced by it, tho' he never heard of the artificial rules of reasoning, or reflected

reflected on the nature and foundation of the evidence that attends it. It is in fact only by observing the natural reasonings of mankind, that just *rules* of reasoning can be discovered, or an useful theory of evidence established. But if the natural force of reason and genius is thought insufficient to conduct the student thro' the elements of science, it is easy in teaching them, to make such occasional observations on the evidence used, as will be of much greater benefit than a system of Logic previously learned, or rather conned by rote. Thus if one were instructing a pupil to read Poetry with something of taste, who were not as yet sufficiently qualified for a formal treatise of Criticism, he would in going thro' some regular performance, point out its beauties and faults, and make scattered observations on the rules of composition, which would be of much greater service than if he had put into his hands a didactic treatise of precepts, before he had been

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sufficiently prepared by a perusal of the works of Poets. We have already observed that the several sciences considered with respect to their evidence form, as it were, the *sylva*, the natural history of the human intellect and its operations on which Logic is built : and as the natural histories on which the other sciences are founded, need not confine themselves to bare narration, but ought to intersperse occasionally general observations upon the history, which will promote and prepare for the philosophical interpretation of them \* ; so in teaching the several sciences, such observations may be introduced on

\* *Supersunt additamenta quædam historiæ naturalis utilia, quæ eam magis commode inflectere et aptare possint ad opus interpretis, quod succedit.---Non abs re fuerit observationes quandoque aspergere.---Etiam canones (qui nil aliud sunt quam observationes generales et catholicæ) optime ascribuntur.*  
*Verulam. Parasceu. ad Hist. nat et Exper. Aph. 9.*

the arguments used in them and the evidence attending them, as will in a great measure make the learner see, as he proceeds, the foundations on which he reasons, and the laws which he observes, and will at the same time prove an excellent preparation to the study of Logic.

LET it be further observed upon this head, That, by the regulations now established in the Marischal College, all the students being obliged to apply themselves to the study of Mathematics, how soon they enter upon the second year of their course, they are not only prepared by that study, for understanding natural Philosophy, or the science of bodies ; but are gradually, and as it were necessarily, led both into an habit of close attention of mind, and likewise of just and accurate reasoning, by having the most perfect examples of just reasoning laid before them. \*

\* In Geometria partem fatentur esse uti-

WHAT has been said will 'tis hoped abundantly shew that genuine Logic may with greater propriety and success be taught as a critical review of the sciences, than as an introduction to them, and that, instead of being the first, it ought naturally to be the last.

It will not however be improper farther to take notice of the prejudice that may arise against the place assigned to Logic, from the contrary practice of the greatest part of the ancient Philosophers. This will appear to be of small weight, if we consider what was the nature and design of the Logic adopted by them. It is well known that the ancient Greeks were above all nations talkative, and fond of extemporary disputes on either side of any

*Iam teneris ætatibus : agitari namque animos, atque acui ingenia, et celeritatem percipiendi venire inde concedunt. Quint. Instit. Lib. 1.*  
See also Mr. Locke on the conduct of the underst. Sect. 7.

question.

question. Logic was introduced by Zeno the disciple of Parmenides, as is believed, \* as a help in managing readily and copiously these disputations, and not as a mean of discovering truth ; accordingly it regarded not things but words, and consisted of a collection of observations made on human conversations, and reduced to general rules the heads of argument and discourse on any subject. When this was the nature, and this the design of Logic, it had no such dependence on the other parts of science, as to require a previous knowledge of them, and came in naturally enough among the arts of kin to it, which likewise regarded language. That this is a just account of the ancient Logic, can scarce be disputed. It was seldom applied by the best of the ancients to the making of discoveries in the other sciences ; and when it was, it only served to vitiate and fetter their inventions : its chief use was to serve as a

\* Diog. Laert. præf.

foundation

foundation for rhetorical invention and subtlety, and in this view we find it is always considered by Cicero and the other writers of institutions. Since then the Logic commonly in use among the ancients regarded only words, but that now introduced (of which some of the ancients, especially SOCRATES and his disciples, gave some hints, and which has since been greatly cultivated by LORD VERULAM, Mr. LOCKE, and others) regards things and real knowledge, no argument can be drawn from the place assigned to that, for the place which ought to be assigned to this. But whatever has been the opinion of Philosophers, it can have very little weight, in opposition to reason, when men are solicitous, not about the philosophy of this or that particular man, but about the philosophy of nature. The place of Logic being once determined, it will be easy to ascertain the order of the other sciences, natural Philosophy, Pneumatics, Ethics, and Politics.

ETHICS,

ETHICS, or moral Philosophy is founded as well as Logic on Pneumatics, and must therefore come after it. The constitution of man, and his several active powers must be explained, before his business, his duty, and his happiness can be discovered. Jurisprudence and Politics, taking a more complex view of man than Morals, by considering his various states, as well as his nature and powers, cannot with any propriety be introduced till Morals have first been studied.

It only remains then to determine whether natural Philosophy or Pneumatology, ought in the order of teaching to have the preference. And many considerations seem to require that the former should be studied first. If it were not, Pneumatology should be too far disjoined from the practical sciences founded on it, one of which, Logic, ought, as we have seen, to be taught last of all. Besides, we ought always

ways to begin with the easiest and most obvious subjects, and to proceed gradually to the most difficult ; and in order to this we ought to comply as much as possible, with the natural openings and progress of the human mind. Now it is evident that the mind receives first of all impressions and ideas of those sensible things with which it is surrounded. It is not till after it has exercised its faculties about them that it reflects on its own operations or acquires perceptions of them. We are from our earliest infancy accustomed to observe external things, tho' often transiently and inattentively ; they lie always in our view, they force themselves upon us, and we cannot avoid regarding them more or less. But we seldom attend to the operations of our minds in our earlier years ; it is late before we acquire distinct notions of them, or can easily and readily make them the objects of our contemplation. Farther, external sensation, by which bodies are perceived,

ceived, is a more palpable kind of evidence, than internal, from which all our knowledge of spirits is derived ; it strikes and affects us more. The Philosophy of spirits, as well as that of bodies, is founded solely on experiments and observations ; but in the latter it is much easier to make these than in the former : we can put *bodies* in any situation that we please, and observe at leisure their effects on one another ; but the phenomena of the *mind* are of a less constant nature ; we must catch them in an instant, and be content to glean them up by observing their effects, as they accidentally discover themselves in the several circumstances of life. The reasonings also by which conclusions are deduced concerning mind are of a more abstruse and difficult nature than those employed in the science of bodies ; the ideas about which they are conversant are apter to be confounded with one another, and are with greater difficulty kept distinct. On all

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these accounts, natural Philosophy must be to young minds easier than Pneumatology, and consequently should be taught first.

THERE remains one part of the scholastic Philosophy not yet taken notice of, viz. that part of their Metaphysic which is termed Ontology. The end it answered in their system was mentioned already ; and since Philosophy has been set upon another footing, it is become less necessary than formerly. Any real knowledge which it contains may be delivered after all the other sciences. Or rather, in its place may be substituted a more useful science,—including the First Philosophy of Lord Verulam ;—at the same time tracing up the particular causes of things, as far as possible, to the most general and simple principles, not by abstract reasonings, or the comparison of general ideas, but by a legitimate and careful induction ; and vindicating the constitution of nature by pointing out the final causes  
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of the general laws to which beings are subjected ;—and likewise giving an account of the reasonings of learned men on various subjects considered in an abstract view, and their opinions and enquiries concerning questions of an abstruse nature, such as the existence of matter, space, duration, &c.

THESE observations will, 'tis hoped, be sufficient to show that the Masters of the Marischal College have consulted the natural connexion of things, in altering the usual order of teaching Philosophy. On these principles it is, that they have now established the following general Plan of Education.

I. THE FIRST year is spent as formerly in Classical Learning under the *Professor of Greek* ; whose business it is, not only to teach that elegant language in which the sciences were first delivered, and which,

by retaining their original terms, and by being used by those great masters whose works are still acknowledged standards in them, must always be regarded as the foundation of knowledge, but to open the minds of youth, by explaining antiquity, by acquainting them with the lives and characters of the chief classic authors, and by pointing out the uses of Literature, or the various purposes it serves in life.

II. IN the NEXT Class, as much of the student's time as the Professor thinks proper, is spent in reading the Greek and Latin classics, both that they may still improve in these languages, the great conduits thro' which ancient learning is communicated to us, and that by being conversant with the best authors, they may early acquire a taste for works of genius. 2. They are to be instructed in *History*, both *Natural* and *Civil*, along with the Elements of *Geography* and *Chronology*, on which Ci-  
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vil History depends. The study of these is judged to be a just intermediate step between the study of languages and general reasonings concerning things. History conveys to a young mind instructions adapted to its faculties, which at the same time open and prepare it gradually for apprehending the conclusions of Philosophy. Farther, on the facts that History, especially natural, relates, Philosophy, which is but a picture of the real constitutions and laws of things, must be entirely founded. In the prosecution of it there must be a perpetual intercourse between the mind and nature. Philosophy can never be further improved than in proportion as History is perfected; our knowledge in the one and the other must keep pace, for History relates the phenomena, and Philosophy explains and accounts for them. The study of History, particularly Natural History, must therefore be proper to precede that of Philosophy, not only as it opens the mind, but also

so as it furnishes it with the requisite materials. These are parts of knowledge, entirely omitted in the former method of university education, tho' of the greatest utility and moment in life. And it is, they apprehend, a considerable advantage in their new plan of teaching, that by it these useful branches of study are introduced into the scheme of Education. Natural history, besides its advantages already mentioned, is the immediate foundation of almost all the arts of life, agriculture, gardening, manufactures, medicines, &c. The professor to whose share it falls, does not confine it to mere descriptions of natural bodies, their various classes, characters, principles and parts ; but gives an account also of the various uses of these natural bodies, and of the principles of the several arts in life which depend upon, and are employed about them. Nor is Civil History restricted to a narration of Epochs and facts, tho' in that the foundation is laid,  
but

but it extends to an explication of the causes of the rise and fall of states, and of the great revolutions that have happen'd in the world, and to reflections on characters, manners, customs, &c. which constitutes its usefulness in general, and must render it peculiarly advantageous to young persons, by conveying moral instruction by example ; by forming a habit of attention to the great transactions of men ; by supplying their want of experience by that of others, and by making them in a great measure acquainted with the world, before they come to act a part in it. 3. At the same time the students in this Class attend the Professor of Mathematics for the Elementary parts, as the knowledge of the mathematical sciences is an absolutely necessary key to the Philosophy of bodies.

III. As material Objects are the most familiar to young minds, and experiments and reasonings concerning them are most level

level to their capacities, the students in the THIRD year of their course, enter on the study of *Natural* and *Experimental* Philosophy, and are instructed in its several branches, Mechanics, Hydrostatics, Pneumatics, Optics, Astronomy, Magnetism, Electricity, and any others which farther discoveries may add to the parts already cultivated. 2. They are, as far as time will allow, instructed in the principles of Criticism and the *Belles Lettres*. 3. They at the same time continue their mathematical studies, so as they may go hand in hand with their studies in the different parts of Natural Philosophy.\*

\* THE professor of mathematics, the first year the students are under his care, explains to them the true principles of Arithmetic, teaches Euclid's Elements of Geometry, plain Trigonometry, Practical Geometry, Geography, and the first principles of Algebra. The second year of their Course with him, he teaches Spherical Trigonometry, Spherical Geometry, Conic Sections, and Astronomy ; and carries his pupils for-

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IV. IN the LAST year of the Philosophic course, are taught, 1. Pneumatology, or the Natural Philosophy of Spirits, including the doctrine of the nature, faculties, and states of the human mind,—and Natural Theology. 2. Moral Philosophy, containing Ethics, Jurisprudence and Politics, the study of these being accompanied with the perusal of some of the best of the ancient Moralists. 3. Logic, or the laws and rules of inventing, proving, retaining, and communicating knowledge; along with 4. Metaphysics.

THE three Professors of Philosophy, and the Professor of Greek attend their students, three hours a day as formerly, during the whole of the session of College,

ward to the higher parts of Algebra. The third year he teaches the highest parts of Algebra, the Doctrine of the Quadrature of Curves, and Fluxions, and some parts of Sir I. NEWTON's Principles of Philosophy.

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which commences on the first day of November, and ends in April.

THE order of the sciences now established was pretty much observed by some of the ancient Stoics, particularly PANÆTIUS and POSSIDONIUS. EPICTE-TUS also in one particular instance insinuates that he look'd on it as the proper method.\* It in the main agrees with the partitions of science laid down by LORD VERULAM, and perfectly suits the genius of his Philosophy. It appears to be that in which the sciences will afford most light to one another, and in which they will have the most useful influence on life. It is adapted to the natures and genuine order of things, and tends to promote the real knowledge of them. This the Masters of the Marischal College have aimed at in the alteration they have made.

\* Enchirid. cap. 76.

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They have already begun to experience the public approbation, by the increase of the number of their students. They have now published the reasons which determined them to it, and leave mankind to judge of their solidity and strength.

T H E E N D.

1830

The first of the year was a  
very dry one, and the crops  
were much injured by the  
drought. The weather was  
very hot, and the crops  
were much injured by the  
drought.

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