

Letter to The Times:

... Mr. Bright's view is that our power is founded on "ambition, crime, and conquest," which I take it means that ambition and conquest are crimes. We are to regulate our policy with a view to our departure from the country, and to try to win the praises of our sons by "trying to make amends for the original crime" of our fathers. The temper which dictated these expressions is seen in a string of sneers at all that has been and is being done in India, and at the men who have done and are doing it. England "passed through a great humiliation" at the Mutiny. Mr. Bright had tried for years to show that the praises awarded to the East India Company were undeserved, and he was right, for "when the Mutiny came there was nobody to say anything for the Company and that famous old institution tumbled over at once, having not a friend or a single element of power left in it." The present rulers of the country, at home and abroad, are, to judge from his speech, deserving of little or no respect. The Council of the Secretary of State is "cumbrous and burdensome". When a Governor-General is sent out he knows nothing whatever about the country and begins to read Mill, in order to get some elementary notions about it. He is not much better off when he gets to India. "Half-a-dozen gentlemen in Calcutta, and who spend, I believe, half the year at Simla" (a remark which if it has any meaning at all,

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means, so idle and self-indulgent are they) are utterly incompetent to perform their task, which is to govern "one-sixth of the population of the globe." "There never was anything in the world so monstrous." As for economy, every European in India is opposed to it, except the Governor-General; "they have all an interest in patronage, promotion, salaries, and ultimately pensions." The country is on the brink of bankruptcy. Those who direct the Government care nothing about any expenditure which has any other object than their own and their friends' advantage, or the military security. "Not one of these great personages" —i.e., the principal official persons in England and India — "steps forward resolutely with intelligence and force, and courage" to put a stop to famines. I do not know that I should do Mr. Bright much injustice by putting the result of all this, and more of the same sort, into a few words:—"Indian civilians, — Our fathers were robbers and we are receivers. Atone for their original crime as well as you can by bringing up the sons of the men whom our fathers plundered to replace you as soon as possible in the management of the property which our fathers stole."

It seems to me that Mr. Bright allows his philanthropy at times to make him cruelly unjust. Moreover, his hatred of military power, his fanaticism in favour of popular institutions, incapacitate him from doing justice to the Indian Empire or to the men who administer it. If our presence in the country at all is a continuation of a crime; if the systematic maintenance of that power by military

force is essentially wicked, it seems to me that nothing remains except the utterance of a mournful protest against the whole system and a declaration that all reform of it is hopeless. The process of reform implies some common ground with the institution which is to be reformed. This seemed to be Mr. Bright's own view when he refused to take the responsibility of being Secretary of State for India. He had a right to take that view, but then he ought in consistency to keep silence on the subject. It is difficult to feel respect for the conduct of a public man who utters strong opinions on great subjects, and will not act on them when he can. This consideration would destroy the value of the views of the fairest-minded man who held Mr. Bright's opinions; but I cannot truly say that Mr. Bright's speech is that of a fair-minded opponent to a great institution. It appears to me to be the speech of one who heaps on what he hates reproaches which he assumes to be true without any sufficient evidence, and which are, in fact, utterly false.

Knowledge of Indian matters is not too common in England. Mr. Bright's speech implies that the class from which the Governor-General is usually appointed is specially ignorant, and his audience cheered and laughed at his account of the newly-appointed Viceroy reading Mill. How many of them had read Mill? How many of them could answer such questions as these - Into how many Provinces is India divided, and in which of them is Delhi included? What is the difference between a division and a district? What is the relation to each other of Hindustani, Hindi, and Urdu?

What was the date and what the effect of the Treaty of Bassein? How many legislative bodies are there in India, how are they constituted, and what are their powers? What is the difference between the Indian Councils Act and the Act for the Better Government of India? I should like to cross-examine a few of the noisiest of Mr. Bright's audience, or, indeed, Mr. Bright himself, upon some topics of the sort. I believe that if no one had been admitted to the meeting who could not ~~point out~~ point out on a map the positions of Jubbulpore, Agra and Allahabad, the result would have given some sort of test of the real value as distinguished from the accidental force of English public opinion on Indian subjects. An ignorant laugh, or cheer, however, is a venial offence. I cannot say as much of grave mis-statements recklessly made by men of the highest public standing; and I must say that Mr. Bright's speech gives me the impression that if he had accepted the office of Secretary of State, he might have done well to read Mill, or some other common book on the subject. As it is, I fear that he (to use his own expression about the Governor-General) "knows no more than the majority of his own class of society on the question." I have marked no less than 17 passages in his speech which show either great ignorance or great inaccuracy of expression, and I will quote six by way of specimens. I referred to some in my last letter.

And now I wish to say a few words, if you will allow me, on the way in which I look at the immense problem to which Mr. Bright has turned our attention.

The differences between us are far too deep to be discussed in your columns, but I should like to indicate their nature. If I thought that our power in India had originated in crime and was maintained by brute force, it would have no interest for me. In that case I should turn my attention to other matters and leave a hopeless system to reach its natural end by its own road. I feel, however, that such a view is utterly false, and that we, the English nation, can hardly degrade ourselves more deeply than by repudiating the achievements of our ancestors, apologizing for acts of which we ought to feel as proud as the inheritors of great names and splendid titles must feel of the deeds by which they were won, and evading like cowards and sluggards the arduous responsibilities which have devolved upon us. I say, let us acknowledge them with pride. Let us grapple with them like men. That will enable our sons to praise us for something more manly than reviling our fathers. Let them praise us, not for atoning for the misdeeds, but for following the examples of Clive and Hastings, and the two Wellesleys, and Dalhousie, and Canning, and Henry Lawrence and Havelock, and others whom I do not mention because they still live and because I have the honour to call some of them my friends. I deny that ambition and conquest are crimes; I say that ambition is the great incentive to every manly virtue, and that conquest is the process by which every great State in the world (the United States not excepted) has been built up. North America would be a hunting-ground for savages if the Puritans had not carried guns as well as Bibles, and the United States would be a memory of the past if the North, 13 years ago, had not conquered the South.

I, for one, feel no shame when I think of that great competitive examination which lasted for just 100 years, end of which the first paper was set upon the field of Plassy, and the last (for the present) under the walls of Delhi and Lucknow.

Like Mr. Bright, I can speak of the East India Company as a "famous Institution;" but, whether I think of its history or of its end, I am conscious of no humiliation and I feel no disposition to sneer. It is true that 20 years ago that famous institution struck its colours. They had been displayed on many seas and on many fields of battle, and never more triumphantly than at the close of the Company's career. It is false that they were lowered under circumstances of humiliation, for the flag of England was hoisted in their place. It is false that "the Company tumbled over because it had no friend left," no life, no strength. It ceased to exist in the full pride of its strength, at the moment of its crowning triumph, by the hands, not of the mutineers who tried to throw it down, but of men who raised the Imperial Joint Stock Company to its proper place when they made it a permanent member of the Government of England. What difference is there between the institution over the fall of which Mr. Bright makes merry and the institution which has replaced it? Much the same sort of difference as there is between the Courts at Westminster as they were upto 1875 and the Supreme Court of Justice as it is now. Mr. Bright, no doubt, thought that he was pulling down a rotten institution. In fact, he was unconsciously building up an institution which had

burst the mould in which it was cast. The corporation has gone, but the corporators remain. The same men continue to do the same things as of old in precisely the same spirit and under slightly different names. Any one who will study the series of Charter Acts passed in 1773, 1793, 1813, 1833, and 1853, may see for himself that the legislation of 1858 and 1861 was in substance only an administrative change in the direction of unity and simplicity, towards which every successive step manifestly tended. The Statute Book has not a syllable which indicates shame or repentance. It breathes throughout of Empire and Conquest. It was once possible to groan over the sins of the East India Company and to represent their history as something other than a part of the history of England. This is no longer possible. The Government of India is now, at all events, in form as well as in substance, a distinct, avowed part of the doings of the English nation. The institution is just as ambitious, just as much based upon conquest as it ever was; but if there is any crime in the matter, it is the crime of the nation at large and not that of a private company of merchants.

But was not the Mutiny a humiliation? Is it not humiliating for a Government to have to fight its own army? That depends on the further question, What did they fight about? To me the wonder is not that there was one mutiny, but that there was only one. What can be expected when an enormous conquest has to be made, protected, and guarded by an army of mercenaries? If we are too delicate-minded to be conquerors, let us give up our conquest and

throw India back into interminable anarchy and bloodshed. If that seems at once cowardly and cruel, let us hold on to our conquest and accept and discharge its responsibilities; but we can no more be conquerors without the incidents of conquest (one of which is the possibility of insurrection and mutiny) than we can eat omelettes without breaking eggs.

But what, it will be said, is the prospect before us? Do you regard India simply as a Campus Martius in which Englishmen are to exercise the military virtues which are not called into activity at home? Are we to look forward to nothing but a series of aimless wars and a constant repression of popular disturbances, fighting still and still destroying? If that is all, it may be a melancholy duty to stay where we are in order to keep off something worse; but is not such a state of things very nearly as bad as had can be? Can any humane person look with greater pride or exultation on the machinery by which such a system is maintained than would be afforded by the view of an ingenious gallows or a well-contrived apparatus for flogging garroters? I should reply to such questions that I regard India and the task of the English in India in a very different light from this. The British Power in India is like a vast bridge over which an enormous multitude of human beings are passing, and will (I trust) for ages to come continue to pass, from a dreary land in which brute violence in its roughest form had worked its will for centuries - a land of cruel wars, ghastly superstitions, wasting plague and famine - on their way to a country of which, not being a prophet, I will not

try to draw a picture, but which is at least orderly, peaceful, and industrious, and which, for aught we can know to the contr^{ar}y, may be the cradle of changes comparable to those which have formed the imperishable legacy to mankind of the Roman Empire. The bridge was not built without desperate struggles and costly sacrifices. A mere handful of our countrymen guard the entrance to it and keep order among the crowd. If it should fall, woe to those who guard it, woe to those who are on it, woe to those who would lose with it all hopes of access to a better land. Strike away either of its piers and it will fall, and what are they? One of its piers is military power; the other is justice, by which I mean a firm and constant determination on the part of the English to promote, impartially and by all lawful means, what they (the English) regard as the lasting good of the natives of India. Neither force nor justice will suffice by itself. Force without justice is the old scourge of India, wielded by a stronger hand than of old. Justice without force is a weak aspiration after an unattainable end. But so long as the masterful will, the ^hot heart, the active brain, the calm nerves, and the strong body which make up military force are directed to the object which I have defined as constituting justice, I should have no fear, for even if we fail after doing our best we fail with honour, and if we succeed we shall have performed the greatest feat of strength, skill and courage in the whole history of the world. For my own part, I see no reason why we should fail. What remains to be done can hardly be more dangerous than what has been done already, though the difficulties and dangers

to be dealt with are more refined and less tangible. It was, perhaps, an easier matter to win the victories of 1846 and 1857 than to deal with the questions of our own day. Still we must recollect who we are and whose work we ^{inherit} ~~merit~~. The men are still living, and in the full force of their life, who did that which neither our sons nor our grandsons will care to forget; and bearing in mind their exploits, I shall not despair of dealing successfully with the great questions as to the employment of Natives, the uncertainty and unsatisfactory character of the opium revenue, the extension of trade with due regard to the principles of political economy, and the prevention or mitigation of famine and pestilence without pauperising the population.

As I see nothing chimerical in the end, so I see nothing monstrous in the means by which it is to be attained. It is easy to talk of "half-a-dozen officials" governing a sixth of the human race, under the direction of an ignorant Viceroy, subject to a not less ignorant Secretary of State, with his cumbrous and burdensome Council. It would be equally easy and about as ~~z~~ just to talk of England itself as being governed by a Sovereign who is a mere puppet, the strings of which are pulled first by a clumsy committee of politicians called the Cabinet, which has not even got any legal character or powers, and next by a popular assembly of 658 miscellaneous persons, who waste the greater part of whatever powers they may possess in squabbling among themselves. We all know that such a description of the Government of England would show nothing but ignorance and impudence on the part of the describer.

Mr. Bright's description of the Government of India and of the India Office in England is almost as unfair. The number of European officers is certainly small, but they are in as close contact with every class of the population in every part of the country as the agent of an Irish landlord is with his employer's tenants. Their knowledge is collected, digested, and accumulate in a way of which it is impossible to give an adequate notion to any one who has not seen it. Their zeal and interest in the discharge of their duties are such that it gives me real pain to find Mr. Bright insinuating that their minds are set on personal objects. What pay they have, says Mr. Bright, and above all what pensions! Was any service ever paid so well? Was any money ever earned so well? And, after all, what is it? How many men are at this day walking about the streets in honourable poverty and forced idleness, and who are elbowed on one side as being his inferiors by every schoolfellow moderately successful who stayed at home, and minded his own business, while they were risking life and health, and foregoing home and happiness, to earn the sneers of Mr. Bright! Bishop Milman once said to me, "I think upon the whole that the district officers are the very best men I ever knew in my life;" and Bishop Milman was not a bad judge of what constitutes a good man, and was less disposed to praise at random than almost any man I have ever known.

From various sources, of which this is the most important, an amount of knowledge upon every conceivable subject relating to India is collected and methodized at head-quarters, which enables any man fit to be a Viceroy

at all to inform himself upon the subjects with which he has to deal with surprising rapidity; and, arduous and multifarious as the duties are which devolve upon him and his Council, it must be remembered that they do not do the actual hard work of Government. Their function is to decide upon the questions which are proposed to them by their official subordinates who transact upon the spot, and in the vast majority of cases without appeal or complaint, the common routine of business. As for the manner in which the Viceroy and his Council do their share of work I will only say that there are things which it is much easier for seven men to do than for 700, and that the direction of the government of an Empire is one of them.

I have, I fear, occupied your space at almost intolerable length, but the subject is one on which I speak from the fulness of my heart. I have had the privilege of being a close spectator of one of the greatest sights in the world, and I cannot bear to see the work misrepresented or those who do it undervalued.

I am, Sir, your obedient servant,

J. F. STEPHEN

4, Paper-buildings, Temple, Dec. 31.

B.I.P.

* Sir James Stephen is determined that Mr. Bright shall not escape unpunished for his attack, some three weeks ago, on the English administration of India. In a second letter, which we publish this morning, he pursues his old enemy once more from point to point, trips him up half-a-dozen times, tramples him, and finally leaves him prostrate on the ground, an awful example to any would-be offenders like him. It is harsh treatment that Mr. Bright receives, but in strict justice not more than he has deserved. He probably sees by this time that, when he next feels impelled to give reins to his fancy and indulge his taste for hard hitting, he had better not choose India and Indian officials to disport himself with. But to have forced this conviction well into Mr. Bright is, after all, a very small success for Sir James Stephen — scarcely worth taking up his pen to secure. Mr. Bright's remarks, ill-advised as they were, and mischievous as they might have been in a wholly different state of the public temper, fell very harmlessly indeed at Manchester. No one is thinking just now how wise it would be for us to withdraw from India in favour of some as yet unformed native Government, or how much better we could manage India if it were divided into five or six independent Presidencies. The day may come when questions like these will be discussed as pressing, but it has certainly ^{not} come at present. We hold India without constantly vexing ourselves with scheming in what way we shall take our departure most gracefully and most advantageously. The method of administration we are

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* From the Editorial of "The Times, Friday, January 4, 1878"
(last para omitted)

satisfied meanwhile to leave in the hands of those who are practically conversant with the country; nor are we always searching into our title deeds to see what flaws we can make out from the mistakes of past administrators. But even if Mr. Bright must be judged to have sinned beyond all forgiveness and to have deserved the scourge as often as Sir James Stephen is pleased to lay it on, yet surely the guileless audience that listened to his remarks at Manchester need not receive the same severity of handling. These sheep, we would ask pityingly, what have they done? They have listened, replies Sir James Stephen, and they have been ready with their applause for a speech of which they were no fit judges. They must share the condemnation of the false prophet they have been silly enough to follow. They do not know where Jubbulpore is, or what was the date and what the effect of the Treaty of Bassein. But, we would ask in return, does not Sir James Stephen himself a little presume on English ignorance when he wishes us to accept his glowing version of the early history of English intercourse with India? That the natives of India have been the better for our dealings with them is what we may take as granted on all hands. But are we therefore to assume, as Sir James Stephen seems to do, that the merit of the unforeseen benefit is to be reckoned backwards in favour of our adventurous ancestors, and that they are to be credited with accidental consequences of which they could have known nothing, and for which they would have cared nothing if they had known of them? The real question for us is,

not how we came to be in India, but how we have to act finding ourselves there, weighted with the load of an empire. Nor can we admit that this is a question which concerns no one outside the narrow circle of Indian specialists. It is one on which Englishmen claim to have a voice and will insist on having one —wrongly, Sir James Stephen thinks, rightly, we think —whether they happen to know where Jubbulpore is or not. Our wish is that this interest could be developed, and that Englishmen could be made to care more than they do for Indian questions and to meddle with them more frequently. A knowledge about Jubbulpore and all the rest will follow in due course, but it would not be well that it should be insisted on as a condition precedent.

There is scarcely anything which an expert so much dislikes as the criticism of outsiders, and there is scarcely anything which is more necessary for him and more capable of being turned to good account. It is not in Indian matters alone that the rule holds good. Lawyers, politicians, men of science, and a dozen other classes besides, are always supplying instances of it. The show of victory in all these cases rests easily with the specialist. The reality of victory rests, in the long run, with the attack. There may be a thousand errors and absurdities committed while the debate is in progress, far worse, probably, than the very worst evil against which the attack is directed; but these neutralize one another, and pass off, leaving behind them a clear and valuable remainder of sound common sense. Mr. Bright's speech at Manchester and the applause that attended it

are thus to be looked upon as simply parts of a process, imperfect in themselves, but by no means useless. Sir James Stephen's letter is another part. The result will have to be looked for somewhere between the two, and it will bear traces of both factors, and of all others that have gone to make it what it is. Sir James Stephen's contribution would have been larger if he had been less mindful of Mr. Bright's mistakes, and had not needlessly warned us against doing what, warned or unwarned, there was not the least chance of our doing. But when he appeals to us to reverse our judgment about the past, and to pronounce honourable and praiseworthy that which we have fully determined is neither one nor the other, he will scarcely obtain a hearing. Ambition, says Sir James Stephen, is a good quality, and we agree with him; but ambition, he adds, must be tempered and kept within bounds by justice, and here we agree with him, too. A love of exercising power, together with a firm purpose that power shall be exercised in a regular way and for the good of its subjects, may go far to account between them for the existing facts of English rule in India. But do they therefore explain past facts? Have the two conjoined influences always thus gone hand in hand? Or should we hold ourselves justified in choosing the same career in another country which we once followed without any misgivings in India? What is Sir James Stephen pointing to with his remarks on the folly of disuniting justice and force, and with his half hints that it does not always do to be too scrupulous? We know, well enough, that

justice without force to support it can be nothing but a name, powerless for good. But the employment of force in restraint of wrong-doers or in self-defence is a wholly different matter from its employment against our neighbour simply because our neighbour is weak and cannot resist us. Sir James Stephen seems to confuse the two, and to transfer to the latter a tribute of praise which can belong of right only to the former.

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still farther above these, if man could only see it, hovers mysteriously the "summary law of nature," a kind of super-Einsteinian formula, neither wholly humanistic nor wholly naturalistic, by which God governs the created universe.⁷¹

It follows that none of the individual sciences can really be understood or perfected except in relation to all the others. This is Bacon's often repeated principle of the unity and interdependence of the sciences. Thus he believed that anyone developing a system of law within a given nation must take into account not merely other national systems, as we have noted, but also, obviously, the principles of psychology, ethics, and politics, and, less obviously, those of biology, chemistry, physics, and the rest. So, in dedicating his *Arguments of Law* (c. 1616) to his colleagues in Gray's Inn, Bacon was able to claim

these arguments which I have set forth (most of them) are upon subjects not vulgar, and therewithal, in regard of the commixture that the course of my life hath made of law with other studies, they may have the more variety, and perhaps the more depth of reason: for the reasons of municipal laws severed from the grounds of nature, manners, and policy are like wall flowers, which, though they grow high upon the crests of states, yet they have no deep roots.⁷²

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He means here not just that a court of law should know something about geology and engineering in a mining case, for example. He means that the more a barrister or judge knows about the principles of other sciences the better he will be able to generalize from them by induction to the yet broader principles of *Philosophia Prima*, and the better able then to apply the latter to the individual case before him by deduction. *Philosophia Prima* is to law in general what the legal maxim is to particular laws.⁷³ It is both a harmony of all the sciences and a standard by which each, or any part thereof, should be tested. It is a means of assuring that law will advance in consort with other fields of knowledge. Induction within the law itself is not enough. Law must seek the broadest possible base for its empirical processes, and ideally this base cannot be anything less than the whole of human experience.

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⁷¹ *Advancement of Learning*, Spedding, III, 265; *Wisdom of the Ancients*, Spedding, VI, 730.

⁷² Spedding, VII, 524. See also *ibid.*, 529, *Case of Impeachment of Waste*, and *Conference on Naturalization of Post-Nati*, Spedding, X, 328.

⁷³ *Valerius Terminus*, Spedding, III, 229: "... sciences distinguished have a dependence upon universal knowledge to be augmented and rectified by the superior light thereof, as well as the parts and members of a science have upon the Maxims of the same science, and the mutual light and consent which one part receiveth of another."

THE UNITY OF THE SCIENCES: BACON, DESCARTES, AND LEIBNIZ

BY ROBERT McRAE

The seventeenth and eighteenth centuries saw numerous schemes for the systematic organization of knowledge in dictionaries and encyclopaedias. It was a period in which the unity of the sciences acquired a special significance in relation to the ideals of the Enlightenment, for the unity of the sciences opened up the possibility of the universality of all knowledge. At the beginning of the seventeenth century the efforts of Bacon and Descartes to bring about a radical reform of the sciences had been accompanied in each case by an insistence on the unity of the sciences as an essential element in the reform. Their conceptions of the nature of this unity were, however, markedly different. Yet certain conceptions of both Bacon and Descartes were brought together by Leibniz, the third of the great philosophical contributors of that century to the idea of the unity of the sciences.

In one of the earliest of his projects for the regeneration of the sciences, Bacon gave expression to the ideal of a universal wisdom based on the unification of all science and learning. He noted that "the professors of wisdom in Greece did pretend to teach a universal *Sapience* And it is a matter of common discourse of the chain of the sciences how they are linked together, insomuch that the Grecians, who had terms at will, have fitted it of a name of *Circle Learning*." With one aspect of the Greek conception Bacon was in agreement: "the particular arts and sciences" must not be "disincorporated from general knowledge." But as to the mode of their integration he intended something new and much more profound than the "note and conceit of the Grecians."¹

The unity of science is conceived by Bacon at the cost of severe limitations and exclusions. The limits are not fixed, however, by theory of knowledge but by religion, which sharply separates itself from science and, having done so, declares what is to be reserved to its own jurisdiction. The absolute line of division laid down between the realm of the divine and the world of nature leaves to science only the world of nature or matter, and hence all sciences must be natural sciences. This has important consequences for metaphysics, logic, ethics, and politics.

To begin with metaphysics, it implies that a radical transformation of traditional conceptions of that science is required if it is to be retained as a science. As Bacon plainly puts it, metaphysics is to be

¹ *Valerius Terminus*, ch. I [*The Works of Francis Bacon*, edited by Spedding, Ellis, and Heath (New York, 1869), VI, 43].

regarded as "a part of Physic, or of the doctrine concerning Nature."² The separation means also the exclusion from science of all theory about man's rational soul, for the words of Scripture declare this soul to be divine. It is through Scripture that we know that man is made in the image of God, and that "He hath made man of the dust of the earth, and breathed into his nostrils the breath of life."³ Only that part of man which is the dust of the earth, i.e., material, can be the subject-matter of science, but knowledge of the breath of life or the rational soul "must be drawn from the same divine inspiration from which that substance first proceeded." This excludes many traditional questions which have had their place in philosophy, questions "whether [the rational soul] be native or adventive, separable or inseparable, mortal or immortal, how far it is tied to the laws of matter, how far exempted from them; and the like."⁴

The religious limitation determines also the scope of logic and ethics. Since the faculties of the rational soul, though not part of nature, have their employment in nature, science can inquire into "the use and objects" of these faculties and it is this which makes it possible for logic and ethics to have a legitimate, and, however important, nevertheless a restricted, place among the sciences. "Logic discourses of the Understanding and Reason; Ethic of the Will, Appetite, and Affections: the one produces determinations, the other actions."⁵ This permissible logic will, however, since it is limited to the use of the faculties of understanding and reason, be concerned only to direct and strengthen that use. The new organon is a technical device applied *ab extra* to the mind, so that "the business be done as if by machinery."⁶ This logic is not theory about the nature of logical thinking, nor is it theory of knowledge.

The case with ethics is somewhat similar. The severe limitations imposed by religion relegate it, in so far as it is science, to the status of a technique for controlling the appetites and the affections and suborning action. More ambitious claims for a science of ethics are just those claims which led originally to man's fall from grace. It was not the desire for the knowledge of nature which was the occasion of Adam's default. "It was the ambitious and proud desire of moral knowledge to judge of good and evil, to the end that man may revolt from God and give laws to himself, which was the form and manner of the temptation."⁷ Adam's supposition was that good and evil did

² *De Augmentis Scientiarum*, Bk. IV, ch. iii, *Works*, IX, 59.

³ *Ibid.*, *Works*, IX, 48.

⁵ *Ibid.*, Bk. V, ch. i, *Works*, IX, 61.

⁶ *Novum Organum*, Preface, *Works*, VIII, 61.

⁷ *The Great Instauration*, Preface, *Works*, VIII, 35f.

⁴ *Ibid.*, *Works*, IX, 49f.

not have their origin in the commands of God but had other foundations, and that if these could be discovered man could depend wholly on himself. The moral law belongs with the sacred mysteries to Sacred Theology. The greater part of it "is higher than the light of nature can aspire to."⁸ It has its source not in the dictates of reason but in divine will as revealed in Scripture. As for all questions about the *summum bonum*, over which the heathen philosophers infinitely disputed and speculated, they "are by the Christian faith removed."⁹

The more modest task which remains for a scientific ethics is that of determining "how to frame and subdue the will of man" to conform with the requirements of the moral law. This ethics as a "Georgics or Culture of the Mind" for subduing, applying and accommodating the will of man rests on a knowledge of characters and dispositions and on a science of the affections and passions. The material for such knowledge is derived from history. The particular utility of history for morals and politics is that it shows how the passions can be controlled by the use of one passion against another. This technical knowledge for controlling action is not derived from theory of the good or the right but from fact alone. Bacon conceives it to be the great merit of Machiavelli and other writers like him that they "openly and unfeignedly declare or describe what men do, and not what they ought to do."¹⁰ The strongest approbation is given by Bacon to Machiavelli's political discourses based directly on history. It is civil history which provides the inductive basis for this knowledge necessary in ethics or politics for the ruling of action.

The science of politics, although traditionally associated with ethics, suffers none of the restrictions imposed on ethics by religion, for Bacon simply dissociates politics altogether from ethics. Bacon's politics becomes that of *raison d'état*, the art or technique of exercising power, and therefore it appropriately comes within the sphere of natural inquiry. The state is not, as in earlier conceptions, related to the life of man to give politics an authoritative rôle in the ordering of all human pursuits. Its object is not "the good for man," for no science can legitimately claim to encompass that aspect of man which is outside the natural order and which belongs to the divine.

It is, then, religion which is responsible for the first limiting condition of the unity of the sciences. It determines that all rational knowledge shall be confined to nature, and that all sciences be natural sciences. But another condition of their unity derives from nature itself. Nature is a unity, self-sufficient and self-subsistent, and science is but a reflection or imaging of nature. In Bacon's interpretation of the fable of Pan, in the *Wisdom of the Ancients*, Pan is taken

⁸ *De Aug.*, Bk. IX, ch. i, *Works*, IX, 348. ⁹ *Ibid.*, Bk. VII, ch. i, *Works*, IX, 194.

to represent "the Universe or the All of Things." It is noted that in this fable no loves are attributed to Pan except his love with Echo. This is intended to signify that the world enjoys itself or is self-sufficient. It wants nothing outside itself, for love is a desire of something lacking. And that Pan, or the world, has no offspring is taken by Bacon as another allusion to its sufficiency or perfection. "Generation goes on among the parts of the world; but how can the whole generate, when no body exists out of itself?" The marriage of Pan with Echo was a marriage, not with something substantial, but with a voice, that voice being *discourse* or science. "But it is well devised that of all words and voices Echo alone should be chosen for the world's wife; for that is the true philosophy which echoes most faithfully the voices of the world itself, and is written as it were at the world's own dictation; being nothing else but the image and reflection thereof, to which it adds nothing of its own, but only iterates and gives it back."¹¹

Primary matter from which all things are derived is self-subsistent. There is nothing in nature more original than it. It belongs to no genus. "Wherefore," says Bacon, "whatsoever this matter and its power be, it is a thing positive and inexplicable, and must be taken absolutely as it is found, and not be judged by any previous conception."¹² It cannot be known by a cause, for as the cause of all natural phenomena it is itself without a cause. Though revelation informs us that God created the world, God himself lies completely outside nature, and there can be no argument within the chain of causes to God as First Cause. The knowledge of nature cannot supply the basis for the knowledge of anything else, nor does it depend on the knowledge of anything else.

Within this one self-sufficient nature all diversity is ultimately explicable by a single principle, which Bacon calls the Summary Law of Nature; it is "that impulse of desire originally impressed by God upon the primary particles of matter, which makes them come together, and which by repetition and multiplication produces all the variety of nature."¹³ This aspect of the unity of nature, the identity underlying all the diversity, is expressed in the *Wisdom of the Ancients* by Pan's horns. "Horns are attributed to the Universe, broad at the base and pointed at the top. For all nature rises to a point like a pyramid. Individuals, which lie at the base of nature, are infinite in

¹⁰ *Ibid.*, Bk. VII, ch. ii, *Works*, IX, 211. ¹¹ *Ibid.*, Bk. II, ch. xiii, *Works*, VIII, 456.

¹² *De Principiis atque Originibus*, *Works*, V, 291.

¹³ *De Sapientia Veterum*, XVII, *Works*, XIII, 123.

number; these are collected into Species, which are themselves manifold; the Species rise again into Genera; which also by continual gradations are contracted into more universal generalities, so that at last nature seems to end as it were in unity; as is signified by the pyramidal form of the horns of Pan."¹⁴ Science, again, is merely the imaging of this ordered ascent from the multiplicity and diversity of individuals to the unity of the Summary Law. Beginning with natural history, it aspires to reach through axioms of increasing generality that one law which includes all the rest.

All particular sciences are parts of one science of nature. Natural philosophy is designated by Bacon as "the great mother of all the sciences. For all arts and sciences, if torn from their root, though they be polished and shaped and made fit for use, yet they will hardly grow."¹⁵ The sciences have a common basis in "one universal science," which Bacon calls *Philosophia Prima*, and which is compared to the trunk-stem of a tree, of which the particular sciences are branches, "which stem grows for some distance entire and continuous before it divides itself into arms and boughs." This universal science is "a receptacle for all such axioms as are not peculiar to any of the particular sciences, but belong to several of them in common." It is also a doctrine of transcendentals like "Much, Little; Like, Unlike; Possible, Impossible; likewise Being and Not-Being and the like." These, however, must be treated physically "as they have efficacy in nature and not logically."¹⁶ The common axioms are not to be regarded as mere "similitudes"; they are "the same footsteps of nature, treading or printing upon several subjects or matters." The body of these axioms is described as "displaying the unity of nature" and it is the showing of this unity which is the true office of *Philosophia Prima*.

It is principally upon this *Philosophia Prima* that Bacon relies for restoring the ancient ideal of a universal wisdom. The unity of the sciences manifests itself, however, in other ways than that of their possession of a common basis in *Philosophia Prima*. In one very significant respect Bacon explicitly opposes himself to the divisive character of Aristotle's organization of the sciences. According to Aristotle each of the sciences marks off some genus with which it is concerned. It is impossible in demonstration to pass from one genus to another. It is furthermore impossible to prove the basic truths of the several sciences. Each science stands on its own indemonstrable

¹⁴ *De Aug.*, Bk. II, ch. xiii, *Works*, VIII, 449.

¹⁵ *Nov. Org.*, I, lxxix, *Works*, VIII, 110.

¹⁶ *De Aug.*, Bk. III, ch. i, *Works*, VIII, 471-475.

premises. There is no supreme or sovereign science from which its basic truths are derived.

A repudiation of this doctrine is already implicit in Bacon's conception of *Philosophia Prima*, for the importance to him of this universal science arises from the necessity of "intercourse" between the particular sciences, and from the fact that "the particulars and instances of one science" supply information for the "framing or correcting of the axioms of another science in their very truth and notion."¹⁷ But further, in commenting on the doctrine that the principles of each science must be taken from the science itself, and that they are indemonstrable, Bacon argues that "true logic ought to enter the several provinces of science armed with a higher authority than belongs to the principles of those sciences themselves, and ought to call those putative principles to account until they are fully established."¹⁸ This authority logic exercises by establishing all axioms by induction from the particulars of history, and by proceeding in unbroken ascent from less general axioms to higher and more general axioms. As a result knowledge is organized as a pyramid, and the sciences in this pyramid are related to one another in the order of their generality. At the base of the pyramid is Natural History. On that is built Physics, which has two parts, one less general and one more general. On Physics is built Metaphysics, which subsumes the axioms of Physics under axioms of still greater generality. At the vertical point, if it should ever be reached, there is the Summary Law of Nature, a single law of the maximum generality embracing everything.¹⁹ The distinction between these sciences is simply one between levels of generality in the knowledge of nature.

Another aspect of the unity of science arises in connection with the relation between theory and practice, speculation and action. All Baconian science is subordinated to action. The end of knowledge is "to establish and extend the power and dominion of the human race itself over the universe,"²⁰ or to produce "a line and race of inventions that may in some degree subdue and overcome the necessities and miseries of humanity."²¹ This goal, the conquest of nature, which Bacon sets before the sciences, is not determined by his materialism, nor is the humanitarian project for the relief of misery an aspect of the hedonism which has generally appeared in history as the

¹⁷ *Val. Term.*, ch. I, *Works*, VI, 43f.

¹⁸ *Great Instauration*, Plan, *Works*, VIII, 43.

¹⁹ *De Aug.*, Bk. III, ch. iv, *Works*, VIII, 507.

²⁰ *Nov. Org.*, I, cxxix, *Works*, VIII, 162.

²¹ *Great Instauration*, Plan, *Works*, VIII, 46.

moral counterpart of materialism or naturalism. The conquest of nature is dictated by religion, for all questions of moral ends belong to religion and the end of science is a moral one—the fulfilling of the Christian obligation of charity. "It is an excellent thing to speak with the tongues of men and angels, but . . . if it be severed from charity, and not referred to the good of men and mankind, it hath rather a sounding and unworthy glory than a meriting and substantial virtue."²²

The contemplative or theoretical life has reference "to private good and the pleasure or dignity of a man's self." It is therefore forbidden. The ultimate superiority of the contemplative life is not disputed by Bacon, "but men must know that in this theatre of man's life it is reserved only for God and angels to be lookers on." The obligation of charity prohibits in this world a "mere contemplation which should be finished in itself without casting beams of heat and light upon society."²³

The consequence of this requirement imposed upon science by religion is that all science is productive science. Bacon does indeed distinguish between a "Speculative" part of natural science and an "Operative" part. But they are not distinguished as two kinds of knowledge, but as two kinds of activity in a division of labor within a single project, the one activity being the acquisition of knowledge by an inquiry into causes, the other being the use of the same knowledge in the production of effects. What theoretical inquirer and active producer know is the same. Thus in making a division of natural philosophy into a speculative and an operative part Bacon does so on the basis of "two professions or occupations of natural philosophers," but not on the basis of the kind of knowledge possessed by each.²⁴

Even ethics and politics are absorbed by Bacon into productive science. A scientific ethics is not concerned with determining what the moral good is, for this is the prerogative of religion, but in accommodating men's wills and desires to the good. Bacon conceives of the science which shows how this may be effected to be analogous to the science of medicine, and the analogy is carefully elaborated. Both medicine and ethics are sciences for the control of nature, or of man in so far as he is a part of nature. Politics too presents itself in the same guise in Bacon's interpretation of the fable of the Sphinx. "Now of the Sphinx's riddles there are in all two kinds; one concern-

²² *Advancement of Learning*, Bk. I, *Works*, VI, 94.

²³ *De Aug.*, Bk. VII, ch. i, *Works*, IX, 198f.

²⁴ *Ibid.*, Bk. III, ch. iii, *Works*, VIII, 480f.

ing the nature of things, another concerning the nature of man; and in like manner there are two kingdoms offered as the reward of solving them; one over nature, and the other over man. For the command over things natural,—over bodies, medicine, mechanical powers, and infinite other of the kind—is the one proper and ultimate end of true natural philosophy But the riddle proposed to Oedipus . . . related to the nature of man; for whoever has a thorough insight into the nature of man may shape his fortune almost as he will, and is born for empire”²⁵ Ethics and politics are, then, productive sciences in the same sense as medicine, mechanics, and agriculture.

II

Bacon's conception of the unity of the sciences in a “universal Sapience” is presented in one of the earliest of his writings, the *Valerius Terminus* (circa 1603). Descartes also in one of the earliest of his works, the *Regulae* (1628), presents the ideal of a “universal Wisdom” identified with “the sciences taken all together.”²⁶ But the contrast between the two conceptions is striking. For Bacon the basis of this unity is nature, for Descartes it is the mind.

In the opening passage of the *Regulae* Descartes opposes himself immediately to the Aristotelian tradition which teaches that the sciences are distinguished from one another by the nature of their subject-matters, and which assigns to each science a method appropriate to its subject-matter. This teaching is based on a false analogy between the arts which depend upon “an exercise and disposition of the body” and the sciences “which entirely consist in the cognitive exercise of the mind.” The arts are always specialized skills and it is their dependence upon the body which compels them to be specialized. A training in one art not only does not help in the exercise of another art but can be a positive hindrance to it. A hand adapted to agriculture, for example, is rendered thereby so much the less adaptable to harp-playing. Consequently, all the arts cannot be acquired by the same man. It has been supposed that the same is the case with the sciences. “Whenever men notice some similarity between two things,” says Descartes, “they are wont to ascribe to each, even in those respects in which the two differ, what they have found to be true of the other.”²⁷ Science in contrast with the arts always remains identical, whatever the nature of its objects. It no more suffers differentiation from these than the sun does from the variety of things it illuminates. Hence the pursuit of one science is not an impediment to the

²⁵ *De Sap.*, XXVIII, *Works*, XIII, 161f.

²⁶ *Regulae*, I, *The Philosophical Works of Descartes*, tr. E. S. Haldane and G. R. T. Ross (Cambridge, I, 1931; II, 1934), I, 1f. ²⁷ *Ibid.*

pursuit of another but can be an aid to it, for it is exactly the same cognitive exercise of the mind which is required in both. For the mind to learn to exercise its cognitive powers upon one kind of object is to render itself all the more fit for other and different kinds of objects.

This conception of science as always the same, whatever its objects, determines the rôle which Descartes assigns to mathematics in the acquisition of right method. The mathematical sciences enjoy a special advantage from the simplicity of their subject-matter. They “alone deal with an object so pure and uncomplicated, that they need make no assumptions at all which experience renders uncertain.” This makes them “the easiest and clearest” of all the sciences.²⁸ Descartes himself has, he tells us, studied them with no other practical end in view but that his mind should become “accustomed to the nourishment of truth and would not content itself with false reasoning.”²⁹ Here Descartes is merely following the principle laid down in the first of the *Regulae*, that since it is the same cognitive exercise of the mind which is required in all science the pursuit of one science may be of aid in the pursuit of another. Skill is acquired by exercising it first in the simplest subjects. Once acquired there, it may be applied to more difficult subjects. Method resides in a habit or skill in directing the attention to what is capable of being known. Since it is, as Descartes puts it, “very dependent on custom,” its rules must be practised “for a long time on easy and simple questions such as those of mathematics.” In commenting to Burman on the passage in the *Discourse* in which it is said that “mathematics would accustom the mind to the nourishment of truth,” Descartes says, “Mathematics accustoms us to the recognition of truth, because in mathematics we discover correct reasoning such as cannot be found elsewhere. Consequently, anyone who has once accustomed his mind to mathematical reasoning will keep it apt for the inquiry into other truths, for *reasoning is everywhere identical.*”³⁰

While Descartes carefully distinguishes science from the mechanical arts, he makes no distinction between science as concerned with theoretical matters and science as applied to conduct. The productive arts involve the use of bodily skills, and therefore are differentiated according to the nature of their objects. But moral decisions are determined wholly in the natural light of reason—the same natural light which illuminates in theoretical matters. Error and moral evil are treated under an identical rubric by Descartes.³¹ In both theory

²⁸ *Reg.* II, H.R. I, 5.

²⁹ *Discourse on Method*, Part II, H.R. I, 93.

³⁰ *Entretien avec Burman*, *Oeuvres de Descartes*, ed. Adam and Tannery, V, 176 (italics not in text).

³¹ See *Meditation* IV.

and moral conduct the same components are involved: (a) a clear rational perception, and (b) a determination of the will in the light of this perception. In theoretical matters this determination of the will consists in an act of assent to what is seen to be true, for all judgment is an act of free will. In the case of conduct there is a similar free adherence of the will to what is seen to be good. Nor is it possible to distinguish a practical reason from a theoretical reason on the basis of their objects—the good in the one case, truth in the other, for the good belongs to the order of truth as much as mathematical or metaphysical matters.³² Because all knowledge exists for a determination of the will, no ultimate distinction is possible between theoretical and practical sciences. The aim of all science is the same, that the understanding may light the will to its proper choice in all the contingencies of life.³³

The first aspect of the unity of the sciences consists, then, in the unity of the human mind which is identical with itself whatever it knows. A second aspect of this unity, which Descartes relates to the first, concerns the logical connections between the sciences. "All the sciences are conjoined and interdependent," and for that reason should be studied together rather than in isolation from one another.³⁴

The model for the unity of the sciences taken as a whole is found in mathematics. "Those long chains of reasoning, simple and easy as they are, of which geometricians make use in order to arrive at the most difficult demonstrations, had caused me to imagine that all those things which fall under the cognizance of man might very likely be mutually related in the same fashion . . ." ³⁵ It is possible for Descartes to imagine this since he has asserted that the nature of science as revealed in any one of its subject-matters is the same universally. Hence he conceives of the totality of the sciences as comprising a single deductive system. This system must begin with principles to which two conditions attach: first, they must be so clear and evident that the attentive mind cannot doubt them; and secondly, since it is on them that knowledge of all other things depend, they must be known independently of all other things. "We must accordingly try to so deduce from these Principles the knowledge of things that depend on them, that there shall be nothing in the whole series of the deductions made from them which shall not be perfectly manifest." ³⁶

³² The reason for the goodness of things is that God wished to create them. "Nor is it worthwhile asking in what class of cause fall that goodness or those other truths, mathematical as well as metaphysical, which depend on God. . ." *Reply to Objections VI*, H.R. II, 250.

³³ *Reg. I*, H.R. I, 2.

³⁴ *Ibid.*

³⁵ *Discourse*, Part II, H.R. I, 92.

³⁶ *Principles of Philosophy*, Author's Letter, H.R. I, 204.

In presenting this conception of the total system of the sciences Descartes, like Bacon, employs the metaphor of the tree. "Thus philosophy as a whole is like a tree whose roots are metaphysics, whose trunk is physics, and whose branches, which issue from this trunk, are all the other sciences. They reduce themselves to three principal ones, viz. medicine, mechanics and morals—I mean the highest and most perfect moral science which, presupposing a complete knowledge of the other sciences, is the last degree of wisdom." ³⁷

Just as science is not differentiated by the nature of its objects, so also the ordered relation of the sciences to one another in that systematic whole which comprises philosophy is not determined by the nature of the objects of the sciences. Descartes' tree of knowledge in which one proceeds from metaphysics to physics has been considered to represent a very significant reversal of the Aristotelian and scholastic order in which an ascent is made from physics to metaphysics. But one can only significantly speak of a reversal here if Descartes, like Aristotle, were concerned with the nature and dignity of the *objects* of these two sciences when he ordered them in relation to one another. Descartes explicitly denies, however, that the nature of the objects has anything to do with the ordering of knowledge:

It is to be observed in everything I write that I do not follow the order of subject matters, but only that of reasons, that is to say, I do not undertake to say in one and the same place everything which belongs to a subject, because it would be impossible for me to prove it satisfactorily, there being some reasons which have to be drawn from much remoter sources than others; but in reasoning by order, *a facilioribus ad difficiliora*, I deduce thereby what I can, sometimes for one matter, sometimes for another, which is in my view the true way of finding and explaining the truth; and as for the ordering of subject matters, it is good only for those for whom all reasons are detached, and who can say as much about one difficulty as about another.³⁸

Order is described by Descartes as the chief secret of method. "Method consists entirely in the order and disposition of the objects towards which our mental vision must be directed if we would find out any truth . . ." We attain the right order "if we reduce involved and obscure propositions step by step to those that are simpler, and then starting with the intuitive apprehension of all those that are absolutely simple, attempt to ascend to the knowledge of all others by precisely similar steps." ³⁹ This order, Descartes insists several times, is not an order of things as they exist in nature, but as they exist relatively to our knowledge of them. "Relatively to our knowledge single things should be taken in an order different from that in which

³⁷ *Ibid.*, H.R. I, 211.

³⁸ Letter to Mersenne, 24 Dec., 1640.

we should regard them when considered in their more real nature; . . . We shall treat of things only in relation to our understanding's awareness of them."⁴⁰ Hence if the sciences form a unified system this unity does not derive from the nature of the subject-matter of the sciences but only from the relation which they have to our understanding. The Cartesian unity of the sciences is unaffected by the radical bifurcation of reality into spiritual and material substances, each of which can exist in entire independence of the other.

The true logic, the science of order, applicable indifferently to all subject-matters, is the basis of that universal wisdom which, Descartes maintains, should be the object of all our study in the sciences. The peculiar status attributed to it is best revealed in his account in *Rule IV* of his search for a universal mathematics. The different sciences, such as arithmetic, geometry, astronomy, music, optics, mechanics and several others were, he found, regarded as parts of mathematics because they all involved an investigation of order and measurement, and it made no difference whether these were sought in numbers, figures, stars, sounds or any other object. He concluded that "there must be some general science to explain that element as a whole which gives rise to problems about order and measurement, restricted as these are to no special subject matter. This, I perceived, was called 'Universal Mathematics' . . . because in this science is contained everything on account of which the others are called parts of Mathematics. We can see how much it excels in utility and simplicity the sciences subordinate to it, by the fact that it can deal with all the objects of which they have cognizance and many more besides . . ." ⁴¹

In continuing the discussion of universal mathematics in *Rule XIV* Descartes points out that "order" has reference particularly to numerical assemblages (*multitudines*) and "measure" to continuous magnitudes. Relations of continuous magnitudes can, however, be reduced, at least in part, to relations between numbers by means of an assumed or imputed unity. The assemblage of units can then be arranged "in such an order that the problem which was previously one requiring the solution of a question in measurement, is now a matter merely involving an inspection of order."⁴² This transformation of universal mathematics into a science of order with respect to numerical quantities and magnitudes has, Descartes says, been effected by the use of his method or logic. At the same time it serves to exhibit the character of his logic conceived as a completely universal science of order, not restricted to any subject matter, but having reference to all subjects. Thus universal mathematics becomes the

³⁹ *Reg. V*, H.R. I, 14.

⁴¹ *Reg. IV*, H.R. I, 13.

⁴⁰ *Reg. XII*, H.R. I, 40.

⁴² *Reg. XIV*, H.R. I, 64.

model of a science still more universal than itself; that is to say, logic is related to all the particular sciences in the same way that universal mathematics is related to arithmetic, geometry, astronomy, music, optics, mechanics, etc. Just as these are referred to mathematics in so far as in them order and measurement are investigated, so all particular sciences of any kind are referred to the logic of science as such in so far as in them order is investigated. And just as there is one general mathematical science to explain that element as a whole which gives rise to problems of order and measurement, restricted as these are to no particular mathematical subject-matters, so also there is one absolutely general science having a corresponding relation to all problems of order without restriction to special subject-matter of any kind. And finally, since universal mathematics contains everything on account of which arithmetic, geometry, astronomy, music, etc. are called parts of mathematics, so Descartes' method or logic is a universal science containing everything on account of which all particular sciences can be called parts of science.

This conception of logic as a general science, bearing the same relation to the particular sciences as universal mathematics to the particular mathematical sciences, and the conception of this logic as the foundation of the unity of the sciences, are taken up by Leibniz and worked out with a wealth of detail in his schemes for a demonstrative encyclopaedia of human knowledge, far surpassing anything attempted by Descartes.

III

Leibniz's schemes for his encyclopaedia, which was to be the great instrument for bringing civilization to its highest powers, occupied him through his whole life.⁴³ Lying behind the ideal of encyclopaedia is the conception of a wisdom identified with universality of knowledge. "Wisdom," says Leibniz, "is a perfect knowledge of the principles of all the sciences and of the art of applying them."⁴⁴ In some respects his conception of this universal wisdom is closer to Bacon's than to Descartes'. With Descartes it is not knowledge which is valued, but the capacity to form a sound judgment. The wise man is not the polymath, but one whose mind has been so formed that he can

⁴³ In his study of the logic of Leibniz Couturat has brought into view the decisive rôle of the encyclopaedic ideal throughout Leibniz's career. The encyclopaedia was to be his great philosophic and scientific work. After having worked tirelessly in the midst of innumerable distractions for fifty years of his life, seeking first to persuade the international community of the learned, "the republic of letters," to give him the collaboration which was required, and then finally turning to princes, Leibniz died without having realized his dream. His project was plainly what Couturat labels it, gigantic. *La logique de Leibniz* (Paris, 1901).

⁴⁴ *Leibniz, Selections*, ed. Philip P. Wiener (New York, 1951), 77.

judge correctly whatever the subject-matter with which he is confronted. It is in this that the universality characterizing his wisdom consists. The Cartesian wisdom directly opposes itself to the Renaissance ideal of a wisdom identified with learning. The learned man is replaced by the "man of good sense," applying his native reason to whatever is required in accordance with precepts of right method. If universality is sought it is as an attribute of the mind's powers, not of what is known by the mind. Indeed, the desire to achieve universal knowledge is condemned by Descartes as "folly."⁴⁵ It is a point of view closely resembling that of Montaigne and Charron. It is reflected again in the Port Royal logicians, and it is given the most emphatic expression of all by Malebranche. It underlies Locke's theory of education. To be universally knowing is not necessary to a gentleman.⁴⁶ Locke allows "a universal taste of the sciences" some place in the direction of the young, but he at once insists that its value is not in the *knowing* of things. "I do not propose it [universality] as a variety and stock of knowledge, but as a variety and freedom of thinking; as an increase in the powers and activities of the mind, not as an enlargement of its possessions."⁴⁷

⁴⁵ *The Search after Truth*, H.R. I, 309.

⁴⁶ John Locke, *Some Thoughts concerning Reading and Study*.

⁴⁷ Locke, *Conduct of the Understanding*, sec. 19. Montaigne identifies knowledge with erudition. It is something acquired or learned, a possession lodged in memory. It is by relegating knowledge to the faculty of memory that he can oppose it to understanding or judgment, and therefore to wisdom. "In truth," he says, "the care and expense which our fathers devote to our education have no other aim but to furnish our heads with knowledge; of judgment and virtue not a word! . . . We labour but to cram our memory and leave the understanding and the conscience empty." *The Essays of Montaigne*, tr. Trechmann (Oxford, n. d.) I, 133f. His disciple, Charron, likewise assimilating knowledge to memory, makes a sharp distinction between science and wisdom. "Science is a great heap, or accumulation and provision of the good of another; that is, a collection of all that a man hath seen, heard, and read in books . . .; now the garner or storehouse where this great provision remaineth and is kept . . . is the Memory. . . . wisdom is the rule of the soul; and that which manageth this rule is the judgment, which seeth, judgeth, esteemeth all things, rangeth them as they ought, giving to every thing that which belongs unto it." *Of Wisdom*, tr. Samson Lennard (London, 1670), 446. Descartes, the authors of the Port Royal logic, and Malebranche do not, of course, identify science with erudition, but in so far as science is taken as a mere possession of the mind, it is placed in the same inferior position in relation to judgment. "Thus, the main object of our attention should be," say the Port Royal logicians, "to form our judgment, and render it as exact as possible; and to this end, the greater part of our studies ought to tend. We apply reason as an instrument for acquiring the sciences; whereas, on the contrary, we ought to avail ourselves of the sciences, as an instrument for perfecting our reason—justness of mind being infinitely more important than all the speculative knowledges which we can obtain, by means of sciences the most solid and well-established. This ought to lead wise

Since the Cartesian wisdom dissociates itself from the accumulation of knowledge, it regards history as valueless and ignores it. Here Descartes can be viewed in contrast with Bacon, Pascal, and Leibniz, who have a marked sense of the temporal development of knowledge, not only as the promise of an indefinite advance into the future, but also as an accumulation out of the past.⁴⁸ For Leibniz civilization rests on a long history of scientific acquisitions. "The arts and sciences are the true treasure of mankind; they show the superiority of art over nature and distinguish civilized people from barbarians."⁴⁹ It has taken the whole history of the human race to attain them. Science did not spring up overnight as the Cartesians tend to think. "We have known how long it took for mankind to acquire an interest in learning to know nature and to establish the laws of space and mo-

men to engage in these only so far as they contribute to that end, and to make them the exercise only, and not the occupation, of their mental powers. If we have not this end in view, the study of the speculative sciences, such as geometry, astronomy, and physics, will be little less than a vain amusement, and scarcely better than the ignorance of these things. . . ." *Logic, or the Art of Thinking*, tr. Baynes (Edinburgh, 1850), 1f. "For when a man gets it into his head," says Malebranche, "to become learned, and the spirit of polymathy begins to agitate him, he scarcely considers what sciences are most necessary to him, either for conducting himself as a gentleman or for perfecting his reason." *Recherche de la vérité*, Bk. IV, c. vii. "It is true that the knowledge of all these things and similar ones is called science, erudition, doctrine, usage has so ordained; but there is a science which is only folly and stupidity, according to Scripture: *Doctrina stultorum fatuitas*." *Ibid.* The emphasis on judgment as opposed to knowledge leads to the elimination with these authors, as well as with Descartes, of any distinction between the spheres of the theoretical and the practical. The nature of judgment is the same whatever its objects may be, and universal wisdom consists of the perfecting of this judgment so that it can judge of all things.

⁴⁸ The emphasis on the historical development of science arises in the case of Bacon and Pascal from their conception of sensible experience as the basis of natural science. "The secrets of nature," says Pascal, "are hidden; although she is continually acting, her effects are not always discovered: time reveals them from age to age, and, although always equal in herself, nature is not always equally known. The experiences which give us intelligence of her multiply continually; and as they are the sole principles of physics, the consequences multiply proportionately." *Fragment d'un traité du vide*. " . . . not only does each man make an advance from day to day in the sciences, but all men taken together make a continual progress in them as the universe grows old, because the same thing takes place in the succession of men as in the different ages of an individual man. So that the whole continued series of men during the course of so many centuries ought to be considered as if it were the same man always subsisting and continually learning."

"Time," says Bacon, is "the author of authors, nay rather of all authority. For rightly is truth called the daughter of time," and time must not be denied her rights. *Nov. Org.* I. lxxxiv, *Works*, VIII, 117.

⁴⁹ Wiener, *op. cit.*, 596.

⁵⁰ *Ibid.*, 61.

⁵¹ *Ibid.*, 30.

tion through which our powers are enhanced."⁵⁰ If this accumulated knowledge were lost, or if men should become indifferent to it, there would be a reversion to barbarism. The very preservation of civilization, no less than its advancement, requires the organization of all our intellectual possessions into a unified system. If learning is allowed to accumulate in haphazard fashion "in the end the disorder will become nearly insurmountable; the indefinite multitude of authors will shortly expose them all to the danger of general oblivion; the hope of glory animating many people at work in studies will suddenly cease; it will perhaps be as disgraceful to be an author as it was formerly honorable."⁵¹ The possibility of the growth of indifference to learning, and with it of ignorance and the abandonment of the treasure of mankind continually haunted Leibniz. The unified system of the arts and sciences in an encyclopaedia would serve to preserve this treasure against such a possibility.⁵² But for Leibniz as for Bacon the encyclopaedic organization of knowledge was not merely the elaboration of an ordered inventory of man's intellectual possessions. It was absolutely essential for the radical reform and advancement of the sciences.⁵³

There were two ways in which, according to both Bacon and Leibniz, the unified ordering of the sciences would be productive of progress and would facilitate new discoveries. In the first place it would indicate at once where the gaps in human knowledge existed, and in what directions work remained to be done.⁵⁴ In the second place, the organization of the sciences in their hierarchic relations of logical dependence would generate discoveries by the deductions which were thus made possible. Here Bacon only suggested—"... after the distribution of particular arts and sciences, men have abandoned universality, or *philosophia prima*; which cannot but cease and stop all progression. For no perfect discovery can be made upon a flat or level: neither is it possible to discover the more remote and deeper parts of any science, if you stand but upon the level of the same science, and ascend not to a higher science"⁵⁵—but Leibniz worked out this principle with the utmost rigor.

⁵² See *Precepts for Advancing the Sciences and Arts, and Essay on a New Plan of a Certain Science* in Wiener.

⁵³ One of Leibniz's several projections of his encyclopaedia contained within its title the significantly Baconian phrase, "*de instauratione et augmentis scientiarum*." The full title is *Plus Ultra, sive initia et specimina Scientiae generalis, de instauratione et augmentis scientiarum, ac de perficienda mente, rerumque inventionibus ad publicam felicitatem*. Ger. VII, 49.

⁵⁴ Bacon, *Great Instauration, Plan, Works*, VIII, 38-40, 405; Leibniz, Ger. VII, 158, 58.

⁵⁵ *Advancement of Learning*, Bk. I, *Works*, VI, 131f.

The logically ordered system of the sciences would constitute a "demonstrative Encyclopaedia." Each science in the encyclopaedia having been reduced to its primary propositions and related appropriately to any other science to which it was subordinate, it would be possible then from its elements alone taken together with the rules of the "art of discovery" to extract at will the science in its entirety out of the encyclopaedia. "If this Encyclopaedia were made in the way I wish, we could furnish the means of finding always the consequences of fundamental truths or of given facts through a manner of calculation as exact and as simple as that of Arithmetic and Algebra." Given the primary propositions of any science, "they would suffice to recover the discovery if it were lost and to learn it without a teacher if one wished to apply himself enough, by combining those few propositions in the usual way with the precepts of a higher science, assumed to be already known, namely, either the general science or art of discovery, or another science to which the science is subordinate."⁵⁶

Thus it will be seen that for Leibniz logic (the art of discovery) and the encyclopaedia are two aspects of a single project for the instauration of the sciences. This had been the case with Bacon also. The first two parts of Bacon's plan for the Great Instauration were (1) the divisions of the sciences, and (2) the new organon, or the "doctrine concerning the better and more perfect use of human reason in the inquisition of things."⁵⁷ But for Bacon the employment of the new logic takes place *after* the completion of the organization of the sciences. With Leibniz, on the other hand, the connection be-

⁵⁶ Wiener, 40f. "For example, there are several sciences subordinate to Geometry in which it is enough to be a geometer and to be informed of a few leading facts or principles of discovery to which geometry may be applied, so that it is not necessary in addition to discover for one's self the principal laws of these sciences. For example, in the theory of perspective we have only to consider that an object may be outlined exactly on a given surface by marking the points of intersection of visual rays, that is to say, of straight lines going from the eye through the objective points and prolonged to meet or intersect the surface. That is why the position of the eye, the shape and location of the surface . . . and finally, the geometric properties of the object (that is, its position and shape) being given, a geometer can always determine the point of projection on the surface corresponding to the objective point projected. . . . The theory of the sun-dial is only a corollary of a combination of Astronomy and perspective. . . . Music is subordinate to Arithmetic and when we know a few fundamental experiments with harmonies and dissonances, all the remaining general precepts depend on numbers. . . . Besides, we can show a man who does not know anything about music, the way to compose without mistakes." Leibniz adds, however, that in order to compose beautiful music, a man would also require "practice as well as a genius and vivid imagination in things of the ear." *Ibid.*, 41f.

⁵⁷ *Great Instauration, Plan, Works*, VIII, 40.

tween his new logic and the organization of knowledge is, as Couturat has pointed out, such that they can only develop *pari passu*, for each implies the other.⁵⁸ The Universal Characteristic, which was Leibniz's new organon, required the elaboration of the encyclopaedia as the condition of its own development, and the encyclopaedia in its turn could only be developed in its structure as well as in its content by means of the new art of discovery. The Universal Characteristic required the analysis of all knowledge into its ultimate constituents, to those primitive concepts which for Leibniz comprised an "alphabet of human thoughts." It would give characters to these and devise signs for expressing their combinations and relations. But the attainment of the alphabet would by its very nature be the elaboration of an inventory or encyclopaedia of human knowledge, and, since it would consist in carrying all truths back to logically primary principles, it would moreover be a "demonstrative Encyclopaedia." At the same time, to reduce all knowledge to a system, placing the sciences in their appropriate relations of dependence, would be to devise even unwittingly the alphabet in question. "The Characteristic which I envision," says Leibniz, "requires only a new kind of Encyclopaedia. The *Encyclopaedia* is a body in which the most important of human knowledges are arranged in order. This Encyclopaedia being composed according to the order which I have in mind, the Characteristic would be as it were ready made, nevertheless those who were working at it would not know its design, believing themselves to be working only on an Encyclopaedia."⁵⁹

If the aims animating Leibniz's projects for the encyclopaedia have some resemblance to Bacon's, nevertheless his conception of the basis of the systematic unity of the sciences is a development of that of Descartes'. Things knowable are ordered, as with Descartes, in terms of their relation to the mind's awareness of them. If things are taken "in so far as they are objects of the understanding," then, says Descartes, from this point of view they are divisible into "those things whose nature is of the extremest simplicity and those which are complex and composite."⁶⁰ The simple elements, which are known *per se*—Descartes' simple natures, or Leibniz's simple concepts—can in their various combinations give rise to all knowledge. "No knowledge," says Descartes, "is at any time possible of anything beyond those simple natures and what may be called their intermixture or combination with each other."⁶¹ The art of discovering these

⁵⁸ Louis Couturat, *La Logique de Leibniz*, 79f.

⁵⁹ *Phil.*, VII, B III, 11, quoted by Couturat, *op. cit.*, 80 n.

⁶⁰ *Reg.* VIII, H.R. I, 27.

⁶¹ *Reg.* XII, H.R. I, 43.

simple components is the work of analysis, the art of combining them that of synthesis. "The fruit of several analyses of different particular matters," Leibniz says, "will be the catalogue of simple thoughts, or those which are not very far from being simple. Having the catalogue of simple thoughts, we shall be ready to begin again *a priori* to explain the origin of things starting from their source in a perfect order and from a combination or synthesis which is absolutely complete. And that is all our soul can do in its present state."⁶²

Leibniz now, however, takes an important step beyond Descartes. The "catalogue of simple thoughts" is to be transformed into an "alphabet of human thoughts" by substituting sensible signs for thoughts. When this is done all the sciences will enjoy the advantages which the mathematical sciences already enjoy through their use of symbols. Descartes had described the usefulness of symbols in mathematics in *Rule XVI*: "When we come across matters which do not require our present attention, it is better, even though they are necessary to our conclusion, to represent them by highly abbreviated symbols, rather than by complete figures. This guards against error due to defect of memory on the one hand, and, on the other, prevents that distraction of thought which an effort to keep those matters in mind while attending to other inferences would cause."⁶³ These advantages provided by symbols could, Leibniz maintained, be extended to such subjects as metaphysics and ethics, where the problem of fixing the attention is even more acute than it is in mathematics. "If we had [a Characteristic] such as I conceive it, we should be able to reason in metaphysics and ethics almost as we do in Geometry and Analysis, because the Characters would fix our thoughts which are too vague and too volatile in these matters, since imagination does not aid us here except by means of characters."⁶⁴

To this Cartesian advantage of symbolism Leibniz adds another, namely that a science will then carry its own test with it. This is an advantage already enjoyed by mathematics. In mathematics the falsehood of a theorem can always be determined by "an easy experiment, that is, by a calculation, costing no more than paper and ink, which will show the error no matter how small it is."⁶⁵ That is to say, in mathematics tests are made not on things themselves, but on the characters written on paper which we have substituted for these

⁶² Wiener, *op. cit.*, 80.

⁶³ *Reg.* XVI, H.R. I, 66.

⁶⁴ *Phil.* VII, 21; "The true method must furnish us with a *filum Ariadnes*, that is to say, a certain sensible and palpable means which will conduct the mind, as do the lines traced in Geometry and the forms of operations prescribed to those learning Arithmetic. Without it our mind cannot traverse a long route without going astray." *Ibid.*, 22.

things. In physics experiments are difficult and costly, in metaphysics they are impossible, but the obstacle can be surmounted by the use of characters.

. . . if we could find characters or signs appropriate for expressing all our thoughts as definitely and as exactly as arithmetic expresses numbers or geometric analysis expresses lines, we could in all subjects *in so far as they are amenable to reasoning* accomplish what is done in Arithmetic and Geometry.

For all inquiries which depend on reasoning would be performed by the transposition of characters and by a kind of calculus, which would immediately facilitate the discovery of beautiful results. For we should not have to break our heads as much as is necessary today, and yet we should be sure of accomplishing everything the given facts allow.

Moreover, we should be able to convince the world of what we should have found or concluded, since it would be easy to verify the calculation either by doing it over or by trying tests similar to that of casting out nines in arithmetic. And if someone would doubt my results, I should say to him: "Let us calculate, Sir," and thus by taking to pen and ink, we should settle the question.⁶⁵

A Universal Characteristic making such calculations possible in any sphere of science would, Leibniz says, be "the highest effort of the human mind, and when the project will be accomplished it will simply be up to men to be happy since they will have an instrument which will exalt reason no less than what the Telescope does to perfect our vision."⁶⁷

Descartes had conceived his logic as a universal science of order. Leibniz's logic is similarly a universal science of order, but it becomes, as Universal Characteristic, a science of "the connection and order of characters" or symbols.⁶⁸ This universal science is, as with Descartes, the basis of the unity of the sciences, that is to say, it bears the same relation to all the particular sciences that universal mathematics does to the particular mathematical sciences.⁶⁹ As with Descartes, this universal mathematics is for Leibniz merely the application of a still more general science. He finds that this general science has up until now been practised only in mathematics. Taken in its full generality it is "a thing hitherto quite unknown," and even in mathematics it has been very imperfectly applied.⁷⁰ Nevertheless in mathematics

⁶⁵ Wiener, *op. cit.*, 13.

⁶⁶ *Ibid.*, 15.

⁶⁷ *Ibid.*, 16.

⁶⁸ ". . . the firm foundation of truth consists precisely in the connection and order of characters. . . . You see that no matter how arbitrarily we choose characters, the results always agree provided we follow a definite order and rule in using the characters." *Ibid.*, 11. ⁶⁹ For the relation of universal mathematics to the particular mathematical sciences, see *On the Method of Universality*, *ibid.*, 3. ⁷⁰ *Ibid.*, 12.

we do have directly presented for our inspection an example of its application. "The best advantages of algebra," says Leibniz, "are only samples of the art of characters whose use is not limited to numbers or magnitudes."⁷¹ It is "as if God, when he bestowed these two sciences [arithmetic and algebra] on mankind, wanted us to realize that our understanding conceals a far deeper secret, foreshadowed by these two sciences."⁷² Hence an examination of the method of mathematics is capable of revealing the nature of the absolutely general science which will be applicable to all subject matters. The general science as thus extracted from the procedures of mathematics can then be applied to physics, metaphysics, ethics, politics, jurisprudence, and medicine. They will thereupon become sciences, as mathematics is science:⁷³

Now since all human knowledge can be expressed by the letters of the Alphabet, and since we may say that whoever understands the use of the alphabet knows everything, it follows that we can calculate the number of truths which men are able to express, and that we can determine the size of a work which would contain all possible human knowledge, in which there would be everything which could ever be known, written, or discovered; and even more than that, for it would contain not only the true but the false propositions which we can assert, and even expressions which signify nothing.

One of the most fundamental and also most persistent divisions in philosophy throughout its history is that made between theoretical science and practical science. A third science, logic, has frequently been placed beside these two. The division of philosophy into logic, physics, and ethics was one accepted in common by almost all schools in the ancient world. It was employed also, among Leibniz's contemporaries, by Locke, who declared each of these sciences to be "*toto coelo* different"—"they seemed to me to be the three great provinces of the intellectual world wholly separate and distinct from one another."⁷⁴ The rigor of Leibniz's conception of the unity of science requires, however, the complete identity of these three sciences, or, as Leibniz expresses it, "each part appears to absorb the whole."⁷⁵ All science is one, and any divisions made in it are entirely arbitrary. "The entire body of the sciences may be regarded as an ocean, continuous everywhere and without a break or division, though men conceive parts in it and give them names according to their convenience."⁷⁶ A single truth can be ordered in a number of different ways depending on the different relations it can have. Leibniz finds that

⁷¹ *Ibid.*, 74.

⁷² *Ibid.*, 18.

⁷³ *Ibid.*, 75.

⁷⁴ *Essay*, IV, xxi, 5. ⁷⁵ *New Essays*, tr. Langley, 3rd ed., 622. ⁷⁶ Wiener, *op. cit.*, 73.

there are two principal dispositions with which truths are approached, the one synthetic and theoretical and the other analytic and practical. The former leads to the ranking of truths "according to the order of proofs, as the mathematicians do, so that each proposition would come after those on which it depends." The second disposition begins with "the end of men, i.e. with the goods whose consummation is happiness" and seeks "in order the means available for acquiring these goods or avoiding the contrary evils." Both these approaches, the synthetic and the analytic, can, for example, be used in geometry. From the one point of view geometry can be regarded as a *science*, and its truths ordered synthetically as in Euclid; from the other point of view it can be regarded as an *art*, and the procedure will be analytic.

The difference between theoretical science and practical science arises, then, only from the difference of point of view from which one and the same set of truths are ordered with respect to one another. Logic, which with Leibniz is a doctrine of signs or Universal Characteristic, represents merely a third disposition in the ordering of these truths. It would be an "index" for the systematic arrangement of terms "according to certain predicaments which would be common to all the notions."⁷⁷ "Now this index would be necessary in order to find together all the propositions into which the term enters in a sufficiently remarkable manner; for according to the two preceding ways, where truths are arranged according to their origin or use, truths concerning one and the same thing cannot be found together." Logic is thus the ordering of knowledge in an encyclopaedia, facilitating invention in the sciences and relieving the memory and often sparing us the trouble of seeking again that which has already been found. "Now considering these three dispositions, I find it remarkable," says Leibniz, "that they correspond to the ancient division, which you [Locke] have renewed, which divides science or philosophy into theoretic, practical and discursive, or rather into Physics, Ethics, and Logic. For the synthetic disposition corresponds to the theoretic, the analytic to the practical, and that of the index according to terms to logic: so that this ancient division does very well, provided we understand these dispositions as I have just explained, i.e. not as distinct sciences, but as different arrangements of the same truths as far as we judge it advisable to repeat them."⁷⁸

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⁷⁷ N.E. 625.

⁷⁸ *Ibid.*

By E. W. STRONG

1. *Newton on Experiment and Mathematics*

Newton communicated his first paper, *The New Theory About Light and Colours*, to the Royal Society on February 6, 1672. Robert Hooke commented on the paper at the meeting of the Society on February 15:

I do most readily agree with it in every part thereof, and esteem it very subtle and ingenious, and capable of solving all the phenomena of colours; but I cannot think it to be the only hypothesis, nor so certain as mathematical demonstrations.

Newton took up the two criticisms in a letter to Oldenburg dated July 11, 1672. In replying to the second, he announced how he conceived optics in its constitution as a mathematical-physical science:

I said, indeed, that the science of colours was mathematical and as certain as any other part of optics; but who knows not that optics, and many other mathematical sciences, depend as well on mathematical demonstration? And the absolute certainty of a science cannot exceed the certainty of its principles. Now the evidence by which I asserted the propositions of colours is in the next words expressed to be from experiments, and so but physical, whence the propositions themselves can be esteemed no more than physical principles of a science.¹

Propositions in natural philosophy are "physical" in having their evidence from observation. "Experimental Philosophy" is that part of natural philosophy which yields evidence of experiments for general propositions about phenomena. Rule III of Newton's "Rules of Reasoning in Philosophy" announces that "qualities of bodies . . . which are found to belong to all bodies within the reach of our experiments are to be esteemed the universal qualities of all bodies whatsoever." In explication of this rule, Newton writes, "For since the qualities of bodies are known to us only by experiments, we are to hold for universal all such as agree universally with experiments, . . . We are certainly not to relinquish the evidence of experiments for the sake of dreams and vain fictions of our own devising; nor are we to recede from the analogy of Nature which is wont to be simple and always consonant to itself."

The second part of the admonition assumes uniformity of nature, indicating not merely that what we are wont to find we expect to find in the future, but that when we cleave to the evidence of experiments we are in accord with the system of nature. Yet qualities

¹ For Newton's answer to Hooke's first objection ("I cannot think it to be the only hypothesis"), see my "Hypotheses Non Fingo" in *Essays in the History of Science* (publication forthcoming).

Lord Canning: Miscellaneous Correspondence.

[NOT CATALOGUED]

(C.E. Trevelyan on Indian situation 1842)

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THE constitution of society in Affghanistan is very similar to that which prevailed in the Highlands of Scotland previously to the year 1745; but the clans (ooloos) in Affghanistan are more numerous, and instead of turning out 2,000 Campbells, and 1,500 Camerons, they are able to turn out 15,000 Ghilzies, 10,000 Dooraunees, nearly as many Yusoozyses, and so forth. They are all armed and trained to arms, and have always been famous for their bravery and national spirit.

When, therefore, they are united for the accomplishment of some particular object, the Affghans are a very formidable people; but they are not easily roused to make a common effort, and they are very liable to disunion. They are, of course, much more formidable in their own very strong country, than they are in the open plains of India or Persia, although, even there, they are by no means to be despised.

In the early part of the last century, they conquered Persia, and held it for some years, until they were overthrown and driven back to their own country by Nadir Shah.

Nadir Shah, when he was at the zenith of his power, was employed in person for five successive years in establishing his footing in Affghanistan, before he considered it safe to proceed on his expedition to India; and, after all, it was settled much more by compromise than by force of arms. He took a large body of Dooraunees, under their leader Ahmed Shah, (which was the origin of the Dooraunee Empire,) into his pay, and bought over the Khyberrees, and other tribes in possession of the passes, and promised to them all a share in the spoils of India. During three of the five years above mentioned, Nadir Shah was employed in besieging Candahar, which was at that time governed by a Ghilzye King.

After this, Ahmed Shah destroyed an army of 100,000 Mahrattas in a pitched battle at Paniput, and would have seized upon the Government of India, if he had not been recalled to his own country by the hostile factions which prevailed there.

At the end of the last century, Shah Zeman made several expeditions into India, but the distractions in Affghanistan prevented him from advancing much further than the Punjab. The danger, however, was considered at the time to be of a very serious character, and a large brigade was kept in readiness on the upper course of the Ganges to oppose him.

The Rohillas, or Patans, who are Affghan colonists, have always been considered as the bravest soldiers in India. On three different occasions, (viz., the Rohilla war in Warren Hastings' time, Ghulam Mahomed's insurrection, and Lord Lake's pursuit of Ameer Khan through the Doob), they put our cavalry to the rout, and at least on two of these occasions, they were with difficulty defeated by our infantry and guns.

The free spirit of the Affghans could never endure the arbitrary government of these Kings, and since the beginning of the present century, they have returned, in effect, to their old plan of deciding everything for themselves, in their respective tribes. Dost Mahomed had a limited authority in the neighbourhood of Cabool, but it was exercised in a manner which was quite in accordance with the prevailing spirit of the nation. He had no guards, for instance, and sat every day for some hours in the market place, to arbitrate the disputes of those who chose to refer them to him. He took no custom dues, except the 40th part prescribed by the Koran.

The Affghans thus lost the political organization which made them formidable to their neighbours, while, at the same time, the power of Runjeet Sing rose as a screen between us and them.

Now, however, they are once more roused. It is evident from

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OF THE EARL OF HAREWOOD.

Captain Grey's narrative, and from the whole course of the late events, that they are more completely of one mind than they have perhaps ever been at any period of their history. They have elected new leaders—they have given us a signal overthrow—and they are advancing with a full tide of success, and armed at least with 8000 muskets and 20 or 30 pieces of cannon taken from us, against the force stationed at Jellalabad. That force has gunpowder enough left only for two days' hard fighting. The force which has advanced to Peshawur to relieve them, is still hesitating about entering the defiles.* If it does enter them, it must suffer very severely, and it may be altogether cut off. At any rate, it cannot convey any effectual relief in provisions or ammunition to General Sale's brigade, and may only add to their difficulties in these respects by adding to their numbers. A very moderate train of camels for such a purpose would, when it is spread out in the defiles, present an unbroken line of march of six miles; and they cannot induce the camel drivers to move at any price. The Auxiliary Sikh force refused to advance, and threatened to shoot their officers. Even our own Sepoys have refused to obey orders until an accidental issue of "Indus batta" has been made general. I fear that we must calculate upon the force at Jellalabad being swept away, whether some reinforcements reach it or not.

In this case, the Affghans will undoubtedly make a rush to recover Peshawur, and to raise the Mahomedan population on both banks of the Indus, and it is possible that they may commence this even before Sale's brigade is subdued. I shall be surprised if the Mahomedan troops belonging to the Sikh Auxiliary force who are stationed at Peshawur, in accordance with the Treaty, to help to coerce their co-religionists in Affghanistan, do not make common cause with them.

The entire population of the country, between the Suleyman Mountains and the Indus, and much the largest portion of that between the Indus and the Chenab and Jhelum is Mahomedan, and the majority of them are Affghans. This extensive tract formed till lately an integral portion of the Affghan empire, but, being in the plains, Runjeet Sing was able to subdue it. Peshawur was subdued as late as 1835—36. The Affghans have made several desperate efforts to recover it; and it cannot be doubted that the first use they will make of their present success will be to raise the warlike population of this tract, and to make a desperate assault upon their ancient and inveterate enemies, the Sikhs, who, under Runjeet's unworthy successor, have fallen into a comparatively helpless state.

Even if this were all, the danger would be sufficiently formidable; but, unfortunately, the storm is about to break upon an atmosphere already overcharged with lightning.

The political feeling against us in India as foreigners and as the destroyers of the independance of so many different races and states, is very strong, and more than one crisis has already occurred which has called this feeling into active exercise. The last of these occasions was the siege of Bhurtpore. If we had failed in taking that famous fortress, (which the natives fully expected would be the case,) there cannot be a doubt that there would have been a very extensive, if not a general rising against us all over India.

The religious feeling against us, and particularly the religious feeling of the Mahomedans, is a still more dangerous element. We have succeeded, in some degree, in quieting the apprehensions of the Hindoos, but the religious animosity of the Mahomedans burns as fiercely as ever against us. It breaks out from time to time, even in times of profound peace, in the dependant native states, in our own provinces, in our own regiments; and any event which held out a prospect of success, or appeared to the natives so to do, might make it burst out in flames all over India.

The last occasion on which attention was particularly called to this subject was in the years between 1824 and 1829. An Indian Mussulman

* Runjeet Sing could never be persuaded to allow his troops to penetrate beyond Peshawur. He was repeatedly urged to do so, particularly by his French officers, and projects were from time to time submitted to him for that purpose; but the reply he invariably made was, that he did not wish to lose his army.

named Syyid Ahmed, went on a pilgrimage to Mecca, and returned deeply infected with the opinions of the Wahabees or Mahomedan Puritans, who, at that time, had possession of the Holy Cities. On his return to India he preached a crusade against the infidels; and he selected that portion of the Affghan country which has been conquered by the Sikhs, as the most promising field to commence his operations. The Yusoofzyes and other tribes inhabiting that tract, flocked to him in thousands, and he made several campaigns against Runjeet Sing, and fought several pitched battles with him, retiring to the mountains when he was hard pressed, and reappearing when he had gathered sufficient strength to take the field again. This enterprise was regarded with extraordinary interest by the Mahomedans all over India. The holy war (Hujj) was preached in all the great towns in our provinces; hundreds of crusaders (Ghazees) hoisted the green flag, and proceeded to join him from Benares, Patna, and even from Calcutta and Madras; and those whose circumstances prevented them from assisting in person, sent supplies of money. The women collected subscriptions; artisans set aside a portion of their gains; numerous individuals resigned situations in our civil and military service to go and join him; and the King of Delhi, who was living under our protection on a pension received from us, did not hesitate to receive the obeisance of the Ghazees as they passed through Delhi, and to give them his blessing.

The only insurrection which took place in our own territories, in connexion with this enterprise, was in a quarter where it was least expected. The Ryots of a number of villages within five miles of Calcutta, who before were not even known to be Mahomedans, rose in a body, hoisted the green flag, and proclaimed a religious war, and they were not put down till numbers of them had been killed, and upwards of 300 had been lodged in the gaol at Calcutta. About the same time, Colonel Blair, Commandant of the Nizam's horse, was put to death by his own men on parade, owing to his having attempted some insignificant alteration in their dress which offended their Mahomedan prejudices; and a Mr. Macdonald (a grandson of Flora Macdonald) was killed by a Mahomedan mob at Cudanna, in the Madras Presidency, owing to a pig having been thrown at night into a mosque at that place.

If Syyid Ahmed had succeeded in breaking down Runjeet's power, he would at once have advanced upon our territories, and his advance would have been supported by a general rising of the Mahomedans all over India. Runjeet being so sensible of this, that whenever he gained a victory over Syyid Ahmed, he wrote to Sir C. Metcalfe, who was the Resident at Delhi, to congratulate him, because he said we were embarked in the same boat together; and Sir C. Metcalfe took exactly the same view of the subject, and reported his opinion to the Governor-General, that in case any such event were to occur as would be likely to give free scope to the Mahomedan feeling against us, it would be necessary for us to put forth our whole strength to resist it. Fortunately Syyid Ahmed was killed by a cannon ball, and the danger was averted for that time.

But it has now re-appeared in a far more formidable shape. We have met with a reverse of so unusual a kind, that we can with difficulty bring our minds to apprehend the real nature and extent of it. I see by the despatches that the war has taken a decidedly religious turn. Akbar Khan, in the proclamation which he has sent to the chiefs of tribes, boasts of the murder of Sir W. Macnaughten, of the breach of the treaty, and the wholesale slaughter of our people as meritorious religious acts in prosecution of the principle of exterminating infidels. He calls upon all good Mahomedans to rise in vindication of the faith; and those who know what Mahomedanism is, and who have watched events in India for the last fifteen years, cannot fail to entertain serious apprehensions for the result.

The first shock will fall on the Punjab; and if Shere Sing's weak Government be not strongly supported by us, it will yield before it. But what we have to fear far more than the physical efforts of the Affghans, is the moral effect of their success and of the cause in which that success has been obtained, upon the minds of the Mahomedan population of India. If they once begin to declare themselves Ghazees, and to make a

sweep of our civil stations, many of which are always in a very unprotected state, it is difficult to say where it will stop. The Mahomedans are predominant in Rohilkund, in Delhi, Agra, and a large proportion of the great towns throughout India, and they are all more or less armed, and accustomed to the use of arms. There is a very large body of very fanatical Mahomedans in the Nizam's country, composed principally of Arabs, whom we have great difficulty in keeping in order, even in time of peace. Only very lately we have been obliged to adopt coercive measures against a portion of them; and lastly, the great majority of the native officers and men composing our cavalry regiments are Mahomedans.

I therefore submit that the crisis, the possible occurrence of which was contemplated by Sir Charles Metcalfe in his despatch to the Supreme Government of India, dated 28th May, 1837, has actually occurred, and that it behoves us promptly to put forth our strength to meet that crisis as recommended by him. I do not see how it is possible to come to any other conclusion, if that despatch be read in connection with Mr. Clerk's recent despatch on the affairs of the Punjab, and with the late events in Affghanistan.

The particular measure which the occasion appears to me to require is to send forthwith, direct to the scene of operations on the north-west frontier of India, an European army sufficiently large to overthrow the Affghans, in case they should have advanced into the plains, and to furnish a large detachment to relieve Candahar, Kelat-i-Ghilzee, and Ghuznee, should these two last-mentioned posts not have been cut up.

The army to be so sent must be an European army, because none but Europeans can be depended upon to fight the Affghans, particularly now that the Affghans are in a state of exultation, and our Sepoy regiments in a state of depression, and perhaps also of dissatisfaction with us, owing to our having led so large a number of their comrades to indiscriminate slaughter.

It is also of the utmost importance, that a qualified officer should be selected to command this force, and a qualified second in command to take his place, in case he should fall, or be disabled by disease or wounds.

This force ought to be sent direct to the mouth of the Indus.

To send our reinforcements to Calcutta in the present state of affairs, would be as unreasonable as if, having operations to carry on in Belgium, we were to send our troops to the mouth of the Tagus, instead of the Scheldt. By sending them to Calcutta, the time which it would take them to reach the scene of operations would be increased by six months, and the distance would be increased by 700 or 800 miles, and, in the case of the detachment for the relief of Candahar, by 1,200 miles. In one case there is a good river navigation the whole way; in the other, there is no navigation at all for the last 500 miles, viz., from the Jumna to the scene of operations on the Indus.

The Indus and its tributary stream are not only perfectly navigable, but have actually, for several years past, been navigated by our steamers. The Bombay division of the original expedition against Affghanistan was sent by the Indus. All the supplies for the army in Sinde, Beloochistan, and Candahar, have been regularly sent by the same route. The whole line of the river is in our full military, and partly also, in our civil occupation, and it leads directly along the base of our future operations. Our two ablest political officers, Major Outram and Mr. Clerk, still exercise a predominant influence,—the former over the lower, the latter over the upper course of the river. The country is throughout very rich, and can furnish abundant supplies.

Moreover, in order to relieve the force at Candahar, we must send prompt succours; and the only way of sending prompt succours is by the Indus.

The mere rumour of the intended arrival of an European force, direct from England and the colonies, at the mouth of the Indus, will have a great moral effect. Its actual arrival will have a still greater, particularly if it arrives without unnecessary delay.

If the reinforcements were sent to Calcutta, this effect would be entirely lost. In that case, the force sent out would not be distinguishable by the natives from ordinary reinforcements, and there would be no

appearance of direct and energetic action on the part of the rest of the Empire, in order to put down our enemies in India.

It must not be forgotten that it is a question of time, as well as of strength. A torrent has to be stemmed—a downward progress has to be arrested. A prompt display of our force may save millions of money and thousands of lives. When our Mahomedan subjects and soldiers once recover from the state of astonishment into which they have been thrown, in common with ourselves, by the late events, and begin to sweep our civil stations and to assassinate their officers, it will be difficult to say where they will stop: religious fanaticism is the blindest of all calculators.

It is a minor but not an unimportant consideration, that the Indus will convey our troops, by a direct and easy navigation, to a latitude comparatively congenial to the European constitution. And the great loss of life, and money, and strength, which must be the consequence of sending a large European force, by a long and most tedious route, through Bengal, the Upper Provinces, the protected Seikh States, and the Punjaub, will be avoided. Our European force on that frontier may pass the first hot weather, during which their services will not be required, in the field, in Cashmere, which I have long been of opinion ought to be converted into an English fortress.

By sending our reinforcements direct to the quarter where they are most required, on the north-west frontier, we shall be able to draw off, for service in China, any troops which can be spared in Bengal.

If this view be adopted, immediate intimation of the intention of the Home Government should be sent to Bombay, by an extraordinary overland despatch, which had better be sent in duplicate,—one by way of Vienna, Constantinople, Bagdad, and Bassora, and the other by Constantinople and Persia. The Bombay Government should, at the same time, be directed to assemble as large a steam flotilla as possible upon the Indus, and to collect the necessary supplies. Some iron steam-boats, of the kind of which several have been already sent to the Indus, ought to be sent in pieces round the Cape, and sufficient crews ought to be dispatched to the two steamers which have for some time past been so uselessly lying in the Euphrates, to convey them without delay to the Indus.

If Lord Aberdeen is not aware of any sufficient objection, I am still of opinion that we should endeavour to obtain the permission of the Pasha of Egypt to send two regiments from Malta and Corfu, and perhaps also a third from Gibraltar, across the Isthmus of Suez; the Bombay Government being directed to send tonnage to Suez to convey them to the mouth of the Indus.

If these measures be adopted, I feel confident that, so far from suffering in reputation from our late disasters, and from those which may still be expected, we shall, like Warren Hastings, and Frederick of Prussia, gain a still higher reputation from the energy and courage with which we shall retrieve them.

I have papers by me which will explain the line of policy which Lord William Bentinck had in view in opening the navigation of the Indus. This policy has been completely altered and overlaid by the measures which led to the late disastrous results; but it may not be without advantage to recur to it in the turn which events have now taken.

C. E. TREVELYAN.

Treasury, 14th March, 1842.

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Bengal were read ; and moving the Court, it was Resolved, that in future a List of Advices received from India be laid before the Court as hitherto; that the several Advices be referred, under the direction of the Chairs, to the respective Committees, whose duty it will be to consider of replies to be made thereto; that a List of such Advices and the Committees to which they stand referred be laid before the Court by the Secretary so soon as the said List shall have been prepared by the Examiner; and, that an Abstract of the several Advices be furnished by the proper Departments to the Clerk of each of the Committees for the purpose of its being laid upon the Table for the information of the Members; it was then on another motion, Ordered, that the Political Letter from Bengal, No. 7, dated 8th May, 1834, and the letter from Sir Charles T. Metcalfe, dated 11th June, 1834, which were read in Court, and ordered to lie on the table on the 10th instant, be now referred to the consideration of the Revenue Judicial and Legislative Committee.

APPENDIX No. 9.

OFFICIAL CORRESPONDENCE during the Year 1857.

Department.	INDIAN CORRESPONDENCE.		Despatches to India.	HOME CORRESPONDENCE.
	No. of Letters.	No. of Collections		
Public	431	5,907	296	The Number of Drafts of Letters approved by the Court of Directors, or adopted in consequence of the Court's Resolutions during the year 1857, was 7,927.
Financial	314	912	163	
Railway	181	563	168	
Electric Telegraph	11	50	51	
Public Works	210	2,180	67	
Military	677	1,960	624	
Marine	170	481	176	
Political	177	1,497	97	
Eccelesiastical	59	179	42	
Revenue	162	1,453	43	
Judicial	124	1,768	100	
Legislative	—	—	4	
Statistical	—	—	2	
Total	2,516	16,950	1,833	

The discrepancy between 1,833 Despatches to India and 1,621 Drafts, which passed the Court in 1857, is explained by many Drafts of the previous year not having been signed as Despatches until after the commencement of the year.

APPENDIX No. 10.

DRAFT DESPATCHES approved by the COURT OF DIRECTORS during the Year 1857.

No. of Drafts.	Approved on the Day on which they were laid before the Court.	Ordered to lie for Consideration.		Altered by the Board.	Approved by the Board without Alteration.
		No.	Average No. of Days during which a Draft was under Consideration.		
1,621	1,157	464*	Between 7 and 8 Days.	140†	1,481

* Many of these despatches not only took into consideration very important questions, but embraced a variety of matter and were periodical reviews of the proceedings of particular departments of the Government in India, extending over from three to six months.

† Many of these alterations are simply verbal.

APPENDIX, No. 11.

EAST INDIA (CADETSHIPS.)

RETURN of the Number of CADETSHIPS, and different Classes of Individuals on whose Sons all CADETSHIPS for India have been conferred by the Directors of the East India Company and President of the Board of Control, in the several Years from 1840 to 1857, both inclusive.

	1840.	1841.	1842.	1843.	1844.	1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.	1855.	1856.	1857.	Grand Total.
Sons of Military, Medical, and Marine Officers, and Chaplains in the East India Company's Service	83	99	85	57	36	93	83	68	66	68	65	53	65	86	103	94	100	160	5,477
Sons of Civil Servants in the Company's Service	30	19	21	18	10	19	20	21	23	18	26	18	18	21	25	24	35	33	
Sons of Military, Naval, and Medical Officers in Her Majesty's Service	113	118	106	75	46	112	103	89	89	86	92	71	83	107	128	119	135	193	
Sons of Clergymen	41	47	42	27	20	33	34	31	21	23	28	21	26	29	34	19	35	69	
Sons of Professional Men and others	187	206	177	148	106	165	162	119	95	95	109	94	73	77	110	102	92	153	
	2,315																		

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APPENDIX, No. 12.

EAST INDIA (BISHOPS AND CATHEDRAL ESTABLISHMENTS, &c.)

RETURN of the ANNUAL EXPENDITURE for ECCLESIASTICAL OBJECTS in India, at the different PRESIDENCIES, from 1836-37 to the latest Period, under the several Heads of Bishops and Cathedral Establishments; Number of Regular Chaplains; Number of Uncovenanted Auxiliary Chaplains; Cost of Building Churches; Cost of Grants in Aid of Church Building; Allowances to Roman Catholic Chaplains; and Miscellaneous Expenditure.

YEARS.	BISHOPS.			CHAPLAINS.					Allowances to Roman Catholic Priests.	ECCLESIASTICAL BUILDINGS.	Miscellaneous.	REMARKS.			
	No.	Salaries.	Visitation Allowances.	Church of England.		Church of Scotland.		Church Establishments.					Uncovenanted.		
				No.	Salaries.	Travelling Allowances.	No.							Salaries.	
BENGAL:															
1836-37	1	4,598	104	3,002	39	38,537	564	2	2,310	3,420	2	425	485	186	
1837-38	1	4,598	492	3,064	51	39,031	228	2	2,310	3,397	2	425	480	383	
1838-39	1	4,598	..	2,274	51	39,031	326	2	2,310	3,517	2	480	426	287	
1839-40	1	4,598	823	2,238	51	39,031	186	2	2,310	3,523	2	420	427	135	
1840-41	1	4,598	2,879	1,691	53	40,231	305	2	2,310	4,771	2	420	448	459	
1841-42	1	4,598	316	1,127	53	40,231	99	2	2,310	4,935	2	420	502	738	
1842-43	1	4,598	914	2,451	53	40,231	208	2	2,310	4,861	2	420	420	410	
1843-44	1	4,598	1,073	2,638	53	40,231	367	2	2,310	5,080	2	420	520	788	
1844-45	1	4,598	2,931	1,702	53	40,231	647	2	2,310	5,148	2	420	480	950	
1845-46	1	4,598	1,433	1,200	53	40,231	597	2	2,310	5,218	2	420	630	912	
1846-47	1	4,598	1,454	2,258	53	40,231	1,188	2	2,310	4,478	2	390	431	182	
1847-48	1	4,598	300	1,121	53	40,231	988	2	2,310	6,204	2	420	575	371	
1848-49	1	4,598	442	1,236	59	43,831	1,073	2	2,310	5,695	2	420	822	608	
1849-50	1	4,598	778	1,206	59	43,831	1,208	2	2,310	5,612	2	420	1,012	393	
1850-51	1	4,598	977	1,307	63	46,950	980	2	2,310	5,759	2	420	2,184	437	
1851-52	1	4,598	269	1,033	63	46,950	1,187	2	2,310	6,077	2	420	2,035	4,650	
1852-53	1	4,598	438	1,120	63	46,950	1,495	2	2,310	6,750	2	420	2,031	1,012	17 churches and chapels have been erected, or in course of construction, in the Punjab alone during this period.
1853-54	1	4,598	131	1,120	63	46,950	881	2	2,310	6,553	2	420	2,235	1,940	
1854-55	1	4,598	363	1,375	68	51,031	1,596	2	2,310	6,286	2	540	2,887	740	
1855-56	1	4,598	752	1,120	68	51,031	1,510	2	2,310	6,467	2	540	2,725	1,218	

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MADRAS:															
1836-37	1	2,560	..	940	23	19,153	425	2	1,963	1,938	804		
1837-38	1	2,560	..	940	29	20,976	450	2	1,963	1,992	778		
1838-39	1	2,560	..	966	29	20,976	438	2	1,963	1,964	..	..	625		
1839-40	1	2,560	..	966	29	20,976	389	2	1,963	2,011	..	..	785		
1840-41	1	2,960	..	966	29	20,976	413	2	1,963	2,008	..	..	769		
1841-42	1	2,560	1,575	966	29	20,976	435	2	1,963	2,528	..	..	773		
1842-43	1	2,560	794	966	29	20,976	313	2	1,963	2,706	..	..	1,273		* These accounts include, in some instances, a portion, and in others the whole of the travelling allowances to chaplains, from which they cannot be separated.
1843-44	1	2,560	932	901	29	20,976	209	2	1,963	2,893	..	..	984		
1844-45	1	2,560	1,656	880	29	20,976	137	2	1,963	2,908	..	..	1,192		
1845-46	1	2,560	1,452	880	29	20,976	68	2	1,963	2,800	..	..	913		
1846-47	1	2,560	1,306	880	29	20,976	68	2	1,963	2,980	..	..	983		
1847-48	1	2,560	1,508	880	29	20,976	68	2	1,963	2,761	..	..	955		
1848-49	1	2,560	1,500	880	29	20,976	68	2	1,963	2,740	..	..	1,052		
1849-50	1	2,560	1,373	878	29	20,976	..	2	1,963	2,718	..	..	1,050		
1850-51	1	2,560	1,614	878	29	20,976	..	2	1,963	2,628	..	..	1,032		
1851-52	1	2,560	1,601	878	29	20,976	..	2	1,963	2,618	..	..	1,064		
1852-53	1	2,560	..	878	29	20,976	..	2	1,963	2,090	..	..	1,362		
1853-54	1	2,560	..	936	29	20,976	..	2	1,963	2,152	..	..	1,326		
1854-55	1	2,560	..	960	29	20,976	..	2	1,963	2,222	..	..	1,386		
1855-56	1	2,560	..	1,010	35	25,056	..	2	1,963	2,636	..	..	2,380		
													2,053		
													2,377		
													1,194		
													30,875		
BOMBAY:															
1836-37	1	2,560	..	733	15	13,005	793	2	2,038	1,741	..	..	552		
1837-38	1	2,560	..	1,053	17	12,636	1,140	2	2,038	1,921	..	..	588		
1838-39	1	2,560	..	1,053	17	12,636	1,367	2	2,038	1,875	..	..	468		
1839-40	1	2,560	..	1,119	17	12,636	656	2	2,038	1,687	..	..	588		
1840-41	1	2,560	..	1,179	23	15,276	653	2	2,038	1,698	..	..	528		
1841-42	1	2,560	..	1,059	23	15,276	399	2	1,896	1,793	..	..	708		
1842-43	1	2,560	..	1,231	23	15,276	393	2	1,896	1,616	..	..	441		
1843-44	1	2,560	103	1,267	23	15,276	590	2	1,896	2,044	..	..	681		
1844-45	1	2,560	975	1,287	23	15,276	336	2	1,896	1,938	..	..	1,050		
1845-46	1	2,560	295	1,267	23	15,276	397	2	1,896	2,126	..	..	2,243		
1846-47	1	2,560	108	1,267	23	15,276	333	2	1,896	2,022	..	..	1,756		
1847-48	1	2,560	734	1,267	23	15,276	448	2	1,896	2,167	..	..	1,959		
1848-49	1	2,560	503	1,267	23	16,416	406	2	1,899	1,744	..	..	1,989		
1849-50	1	2,560	113	1,267	23	16,416	364	2	1,896	2,090	..	..	2,521		
1850-51	1	2,560	120	1,267	23	16,416	360	2	2,016	1,783	..	..	2,280		
1851-52	1	2,560	..	1,279	23	16,896	370	2	2,016	2,210	..	..	3,574		
1852-53	1	2,560	..	1,327	23	16,896	326	2	2,016	2,210	..	..	3,065		
1853-54	1	2,560	..	1,328	23	16,896	389	2	2,016	2,313	..	..	2,680		
1854-55	1	2,560	..	1,316	23	16,896	371	2	2,016	2,411	..	..	2,903		
1855-56	1	2,560	..	1,335	26	18,936	371	2	2,016	2,021	..	..	3,147		
													582		
													3,427		
													4,600		
													..		
													..		
													24,164		

67

BS 147
82
entered for
Exportation
to the West
Indies.

Time to Time be for that Purpose provided, at the Charge of the Importer, Proprietor, or Consignee of such Herrings, and approved of by the Commissioners of His Majesty's Customs in London, or by the Collector and Comptroller, or Principal Officers of the Customs at any Out Port of Great Britain, and shall remain in such Warehouses under the Locks of the Crown and such Importer, Proprietor, or Consignee, for the Purpose of being exported, on due Entry being first made, to any of His Majesty's Colonies or Plantations in the West Indies, and for no other Purpose whatsoever; and the said Duty shall be paid in such and the like Manner, and under such and the like Rules, Regulations and Restrictions, as any Duty on any Goods, Wares, or Merchandize, is by the Laws in force paid; and that all the Pains, Penalties, and Forfeitures applicable thereto by any Act or Acts of Parliament, shall be extended to the Purposes of this Act, as fully and effectually, to all Intents and Purposes, as if the same were repeated and re-enacted in the Body of this present Act, and made Part thereof.

RTMS

LONDON: Printed by GEORGE EYRE and ANDREW STRAHAN, Printers to the King's most Excellent Majesty. 1807.



ANNO QUADRAGESIMO SEPTIMO

GEORGII III. REGIS.

Sess. 2.

C A P. LXVIII.

An Act for the better Government of the Settlements of Fort Saint George and Bombay; for the Regulation of Public Banks; and for amending so much of an Act, passed in the Thirty-third Year of His present Majesty, as relates to the Periods at which the Civil Servants of the East India Company may be employed in their Service Abroad.

[13th August 1807.]

WHEREAS it is expedient that the Governor in Council of Fort Saint George, and the Governor in Council of Bombay, respectively, in the East Indies, should have the same Powers for the Government of the Towns of Madras and Bombay respectively, and the Countries within the Order and Management of the said Governors in Council respectively, as are now vested in the Governor General in Council of Fort William in Bengal, for the Government of the Settlement of Fort William, and the Countries immediately subordinate to the said Presidency of Fort William; and that such Provisions as are hereinafter contained, should be made in respect of Students educated at the College established in England, by the East India Company, for the Education of Persons intended for their Civil Service abroad; and also, that Provision should be made to prevent any Doubts arising as to the legal Establishment of Banks, with Corporate Rights, in the East Indies; and that all the Servants of the said United Company should be empowered to subscribe to, and become Members of such Banks; may it therefore please Your Majesty, that it may be enacted; and be it enacted by the King's

Governors in Council at Madras and Bombay, to make Regulations for the good Order of those Towns and Dependencies;

King's most Excellent Majesty, by and with the Advice and Consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the Authority of the same, That it shall and may be lawful to and for the said Governor in Council of Fort Saint George, and the said Governor in Council of Bombay, from Time to Time, respecting Ordinances, to make, frame, and issue such Rules and Regulations for the good Order and Civil Government of the Towns of Madras and Bombay respectively, and of the said Company's Settlements at Fort Saint George and Bombay, and other Factories and Places subordinate or to be subordinate thereto respectively, and to set, impose, inflict, and levy such reasonable Fines and Forfeitures, and to order and appoint such moderate and reasonable Corporal Punishment for the Breach or Non-observance of any such Rules, Ordinances, or Regulations, as the Governor General in Council of Fort William in Bengal may now lawfully make, frame, and issue, for the good Order and Civil Government of the said Company's Settlement at Fort William aforesaid, and other Factories and Places subordinate or to be subordinate thereto; but, nevertheless, such Rules, Ordinances, and Regulations, to be made by the said Governor in Council of Fort Saint George shall not be valid, or of any Force or Effect until the same shall be duly registered and published in the Supreme Court of Judicature of Fort Saint George aforesaid, in like Manner, and within such Time as the Rules, Ordinances, and Regulations to be made by the said Governor General in Council of Fort William aforesaid, are, by any Act or Acts now in force, required to be registered in the Supreme Court of Judicature at Fort William aforesaid; nor shall the Rules, Ordinances, or Regulations, to be made by the Governor in Council of Bombay, be valid, or of any Force or Effect, until the same shall be duly registered and published in the Court of the Recorder of Bombay, in like Manner, and within such Time as aforesaid.

Subject to Appeal.

II. And be it further enacted, That all such Rules, Ordinances, and Regulations, so to be made as aforesaid, shall be subject, in all respects, to the like Power of Appeal, and to all the like Regulations and Provisions as are mentioned and contained in an Act, made in the Thirteenth Year of the Reign of His present Majesty, intituled, *An Act for establishing certain Regulations for the better Management of the Affairs of the East India Company, as well in India as in Europe*; and in an Act, made in the Thirty-ninth and Fortieth Year of the Reign of His present Majesty, intituled, *An Act for establishing further Regulations for the Government of the British Territories in India, and the better Administration of Justice within the same*, as to the Rules, Ordinances, and Regulations therein respectively authorized to be made by the said Governor General in Council, as aforesaid.

Governor in Council at Bombay, to frame Regulations for Provincial Courts.

III. And be it further enacted, That it shall and may be lawful to and for the Governor in Council at Bombay aforesaid, to frame Regulations, from Time to Time, for the Provincial Courts and Councils within the Territories and Provinces which now are, or shall at any Time hereafter be (and while the same shall so be) annexed to or made subject to the said Presidency, in like Manner, and subject to all the Regulations, Provisions, and Confirmations, touching the same, as the Governor General in Council at Fort William aforesaid are, by any Act now in force, authorized and empowered to do for the better Administration of Justice among

the native Inhabitants, and others, being within the Provinces of Bengal, Bahar, and Orissa.

IV. And be it further enacted, That the Governor and Members of the Council for the Time being of Fort Saint George, and the Governor and Members of the Council for the Time being of Bombay, respectively, shall and may, and they are hereby respectively declared to be, and to have full Power and Authority to act as Justices of the Peace for the said Towns of Madras and Bombay respectively, and for the several Settlements and Factories subordinate thereto respectively, and to do and transact all Matters and Things which to the Office of a Justice or Justices of the Peace do belong and appertain; and for that Purpose the said Governor and Council of Fort Saint George, and the said Governor and Council of Bombay, are hereby respectively authorized and empowered to hold Quarter Sessions within the said Settlements of Fort Saint George and Bombay aforesaid respectively, Four Times in every Year, and the same shall respectively be, at all Times, Courts of Record.

Governors and Members of the Council at Madras and Bombay may act as Justices of the Peace for the said Towns:

V. And be it further enacted, That it shall and may be lawful to and for the Governor in Council of Fort Saint George, and the Governor in Council of Bombay respectively, for the Time being, by Commissions to be from Time to Time issued under the Seals of the Supreme Court of Judicature of Fort Saint George, and the Court of the Recorder of Bombay respectively, in the Name of the King's Majesty, His Heirs and Successors, such Commissions as shall be issued under the Seal of the Supreme Court of Judicature of Fort Saint George, to be tested in the Name of the Chief Justice of the said Court, and such Commissions as shall be issued under the Seal of the Court of the Recorder of Bombay, to be tested in the Name of the Recorder of the said Court (which said Commissions the said Supreme Court of Judicature of Fort Saint George, and the said Court of the Recorder of Bombay, are hereby respectively authorized and required from Time to Time, by any Order or Warrant from the said Governor in Council of Fort Saint George and Bombay respectively, to issue accordingly) to nominate and appoint such and so many of the covenanted Servants of the said Company, or other British Inhabitants, as the said Governor in Council of Fort Saint George, and the said Governor in Council of Bombay respectively, shall think properly qualified to act as Justices of the Peace within and for the said Provinces and Presidencies, and Places thereto subordinate respectively; and such Persons shall, according to the Tenor of the respective Commissions wherein they shall be so nominated and appointed, and by virtue thereof, and of this Act, have full Power and Authority to act as Justices of the Peace, according to the Tenor of the same Commissions wherein they shall be respectively named, in and for the Provinces and Presidencies aforesaid, and Places subordinate thereto respectively; and the said Supreme Court of Judicature of Fort Saint George, and the Court of the Recorder of Bombay respectively, upon any Requisition in Writing from the said Governor in Council of Fort Saint George, and Governor in Council of Bombay respectively, shall and may from Time to Time supersede such Commissions, and upon like Requisitions issue new Commissions for the Purposes aforesaid, unto the same or such other of the covenanted Servants of the said Company, or other British Inhabitants, as shall from Time to Time be so nominated by the said Governor in Council of Fort Saint George, and Governor in Council of Bombay respectively, in that Behalf, all which Commissions shall be filed of Record in the respective

And issue Commissions for appointing Justices in the Places subordinate thereto.

five Courts of Oyer and Terminer of the Province, Presidency, or Place, wherein for which the same shall be issued as aforesaid; and all such Justices of the Peace and their Proceedings, shall be subject and liable to such Rules, Regulations, and Restrictions, as under and by virtue of any Act or Acts of Parliament now in force the Justices of the Peace to be appointed by the Governor General in Council of Fort William aforesaid, and their Proceedings, are or may be subject or liable to.

Repeal of Provision in 33 G. 3. c. 52. for enabling the Governor General in Council at Fort William to appoint Justices for the Presidencies at Madras and Bombay.

VI. And be it further enacted, That from and after the First Day of March One thousand eight hundred and eight, so much of the Act, passed in the Thirty-third Year of the Reign of His present Majesty, intituled, *An Act for continuing in the East India Company for a further Term, the Possession of the British Territories in India, together with their exclusive Trade, under certain Limitations; for establishing further Regulations for the Government of the said Territories, and the better Administration of Justice within the same; for appropriating to certain Uses the Revenues and Profits of the said Company, and for making Provision for the good Order and Government of the Towns of Calcutta, Madras, and Bombay*, as authorizes the Governor General in Council of Fort William, in Bengal, to nominate and appoint any Person or Persons to be or act as Justices of the Peace within and for any of the Provinces, Presidencies, or Places, subordinate to the said Governor in Council of Fort Saint George, and Governor in Council of Bombay respectively, or to supersede any Commissions of the Peace, shall be and is hereby repealed: Provided always, that such Repeal shall in nowise prejudice or affect the Authority of any Person or Persons theretofore appointed by the said Governor General in Council of Fort William, to be and act as Justices of the Peace within and for any of the Provinces, Presidencies, or Places, subordinate to the said Governor in Council of Fort Saint George, and Governor in Council of Bombay respectively, until the Commissions to such Persons shall be superseded by the Governor in Council of Fort Saint George, or the Governor in Council of Bombay respectively.

Periods of Residence necessary to fill Vacancies under 33 G. 3. c. 52. recited.

VII. And whereas by the said Act, made in the Thirty-third Year of His present Majesty's Reign, it is, amongst other Things, enacted, That all Vacancies happening in any of the Offices, Places, or Employments, in the Civil Line of the Company's Service in India (being under the Degree of Counsellor) shall be from Time to Time filled up, and supplied from among the Civil Servants of the said Company belonging to the Presidency wherein such Vacancies shall respectively happen, subject only to the Restrictions in that Act contained, and no otherwise; (that is to say) that in the filling up and supplying such Vacancies, no Office, Place, or Employment, the Salary, Perquisites, and Emoluments whereof shall exceed five hundred Pounds per Annum, shall be conferred upon or granted to any of the said Servants who shall not have been actually resident in India as a covenanted Servant of the said Company for the Space of Three Years at the least in the whole, antecedent to such Vacancy; and if the Salary, Perquisites, and Emoluments of any Office, Place, or Employment, shall exceed One thousand five hundred Pounds per Annum, the same shall not be granted to, or conferred upon, any of the said Servants who shall not have been actually resident in India in the said Service for the Space of Six Years at the least in the whole, antecedent to such Vacancies; and if the Salary, Perquisites, and Emoluments of any Office, Place, or Employment,

shall exceed Three thousand Pounds per Annum, the same shall not be granted to, or conferred upon, any of the said Servants who shall not have been actually resident in India in the said Company's Service for the Space of Nine Years at the least in the whole; and if the Salary, Perquisites, and Emoluments of any Office, Place, or Employment, shall exceed Four thousand Pounds per Annum, the same shall not be granted to, or conferred upon, any of the said Servants who shall not have been actually resident in India in the Company's Service for the Space of Twelve Years at the least in the whole, antecedent to such Vacancy; and that all Appointments, Advancements, and Promotions, which shall be made for supplying any such Vacancies other than as aforesaid, shall be null and void: And whereas the said Company have lately established a College in England for the appropriate Education of young Men designed for their Civil Service in India, and it will therefore be expedient that, under certain Circumstances, the Time spent by such young Men in the said College, after they shall have attained the Age of Seventeen Years, should entitle them to the same Privileges as they would have been entitled to if they had been resident during such Time in India; be it therefore enacted, That from and immediately after the passing of this Act all such Time, not exceeding Two Years, as shall be bona fide spent in the said College in the regular Course of such Education as aforesaid by any Persons after they shall respectively have attained the Age of Seventeen Years, provided they shall bona fide spend, either before or after Seventeen Years of Age, Two Years at the least in the said College, in the regular Course of such Education, and shall afterwards go to India in the Civil Service of the said Company, shall be accounted, as to the Offices, Places, and Employments, which such Persons are entitled to be appointed to and to hold, as so much Time actually spent in India; the said Act, or any other Law or Usage to the contrary thereof in anywise notwithstanding.

Time, not exceeding Two Years, spent in the College established in England, shall be deemed Time spent in India.

VIII. And whereas it may be expedient that Public Banks for the Deposit and Loan of Money, and the Negotiation of Securities, and other Purposes, should be established in the East Indies, and that the Individuals who may become Members thereof, should be incorporated under and by the Authority of the respective Governments in the East Indies; but Doubts have been entertained, whether the Powers of those Governments are competent to the Establishment of such Banks within the local Limits of the Jurisdictions of the several Courts of Justice in India, which have been established by His Majesty's Charters; and it is expedient that such Doubts should be removed; be it therefore enacted, and it is hereby enacted and declared, That it shall and may be lawful to and for the several Governments in the East Indies to establish such Public Banks, with perpetual Succession, and such Rights, Privileges, Franchises, and Immunities, as are incidental or are usually granted to Corporations legally erected in that Part of the United Kingdom of Great Britain and Ireland called England, and under and subject to such Terms and Conditions as they shall see fit; and that the several Persons who shall be so incorporated, and their Heirs, Executors, Administrators, and Assigns, shall have, hold, enjoy, and be entitled to all such Rights, Privileges, Franchises, and Immunities, as well within as beyond the local Limits of the Jurisdiction of the several Courts of Justice so established as aforesaid, according to the true Intent and Meaning of the several Orders or Acts, by virtue of which any such Banks or Corporations shall be so established: Provided always, that the Establishment of any such Banks

The Governments in India may establish Public Banks there.

Banks or Corporations shall not be valid or effectual, until they shall have received the Approbation of the Court of Directors of the said Company, subject to the Controul of the Board of Commissioners for the Affairs of India for the Time being.

All Persons in the Service of the Company may subscribe to them.

IX. And be it enacted, That it shall and may be lawful to and for all Persons whomsoever, in the Service of the said Company, and for all the Judges of the several Courts of Justice in India, to subscribe to and become Members of any such Bank or Corporation as aforesaid, and that it shall be lawful to and for any Person or Persons in the Service of the said Company, to be elected or appointed, or to become Directors or Managers thereof; any Thing contained in the said Act of the Thirty-third Year of His present Majesty's Reign, or any other Act of Parliament, to the contrary thereof in anywise notwithstanding.

No Judge to be a Director.

X. Provided always, and be it further enacted, That no Judge of any of the said Courts of Justice in India, established by His Majesty's Charter, shall be capable of being appointed to, or holding the Office of the Director or Manager of any such Bank or Corporation.

Public Act.

XI. And be it further enacted, That this Act shall be deemed and taken to be a Publick Act, and shall be judicially taken Notice of as such, by all Judges, Justices, and others, without being specially pleaded.

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