

ADDRESS
BY
HENRY W. ACLAND, F.R.S.

PRESS
SHELF
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ADDRESS

TO THE

BRITISH MEDICAL ASSOCIATION

DELIVERED IN

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BY

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AND

PRESIDENT OF THE ASSOCIATION

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THE MEDICINE OF MODERN TIMES.

THE meeting which was held last year by your Association in Dublin was attended by circumstances never to be forgotten. The great interest of that delightful metropolis, the fervent hospitality of our hosts, the pre-eminence of our President, bequeathed to his successor a task from which any man, however fortunately placed, might reasonably shrink.

Two motives only have induced me to accept the honour most graciously offered, of following him as your President: the one, the strong desire to help in carrying on his and your work of last year; the other, the conviction (more than justified by the great kindness already shown to me) that you will only require such hearty service as it is in my power to render. To all, whether to your distinguished Officers, to my valued co-adjutors in this place, to those

present from this or other countries, I look for a continuance of that kindness and support. Confident of this, I anticipate a useful and happy meeting, though we are shorn of some of the splendours of Dublin, and remote from the exhilarating buoyancy of Irish life.

It has been said that one chief art in a President's Address is to advance no serious opinions, and to provoke no criticism. A speaker cannot, however, speak with advantage unless he express thoughts which awaken a response in the head and the heart of his hearers. The test of the success or failure of his attempt must be their approval or condemnation.

Pleasant and bright as I hope our meeting will be, full as it should be of the double objects of such a gathering,—the advance of our common pursuits and the calling forth the kindly feelings of a common profession,—I much mistake your wishes if you do not desire that something more than an agreeable retrospect, more also than words of hearty welcome, should occupy us for a brief space to-night.

We are living in a critical period of our country's history; in a new era in the history of Man. Every part of our social fabric is now undergoing scrutiny, revision, and reform.

Government, trade, institutions, laws, the artificial usages of society, the character to be given to our children by the method of their early training, are not only being criticised, but are most of them being changed—changed with unexampled rapidity; and the change is, some think, a tendency to absolute perfection, or, according to one philosopher, a last plunge down the Falls of Niagara. The facility with which ideas are communicated through the whole human family, distinguishes our age from all that precede it. Our own profession is not exempt from these influences: even if it were, we are part of the body politic, and as wise men we might do well to look forth from the fretted shelter of this ancient Hall, itself a memorial of the ferment of the Reformation, and, scanning the clouds as they drift along, take the bearing of our own course in the stream of time.

The accomplished authors of the special addresses which you will hear at your general meetings, Professor Rolleston, Professor Haughton, and Dr. Gull, will bring before you abundant illustrations of the present state of three great departments of the science and the art we profess. While waiting for these addresses and for the other more technical

communications which you will hear, I propose to take a general survey of the position occupied by our professional knowledge in relation to other branches of knowledge, and to consider the objects which ought to be held in view when we discuss the temper required of us by our times, and the training proper for the formation of that character and temper.

No better illustration of what is meant by Medical character and temper can perhaps be found than in the words deep graven in the hearts of true Physicians for a hundred generations:—

ὁ καιρὸς ὄξυς ἢ δὲ πείρα σφαλέρη ἢ δὲ κρίσις χαλεπή.

How may every age—some more than others, but yet every age—for itself exclaim, ‘Yes! opportunity fleets by and is lost. Old experience is a quicksand. Sound judgment is hard, above all things.’

The traditions of our present resting-place may well induce us to ask, in the language of this grey old aphorism:—

Are we losing opportunities now?

Is our experience fallacious?

Is not judgment in science and in art still hard?

Are we attempting what cannot be done? or spurning what can even now be accomplished?

What will our children’s children say of us and of our day?

Will they bless us for the training we gave them, and the example we set? Or will they say that our conclusions were baseless or rash, the tasks we bequeathed to them unnecessarily difficult?

Now, in judging of the Medical character, we set aside of course all reference to individuals. We form an ideal character. And yet the ideal cannot be considered wholly in an abstract way. We have to judge of it in its relations,—first, to the condition of SCIENCE, and secondly, to the constant properties and the variable accidents of HUMANITY.

In the present age SCIENCE is advancing, and the means of its progress are increasing with altogether unexampled rapidity. No bounds can be set to its possible conquests. A profession dependent on Science must vary with that on which it depends; and if it does not advance with the advance of Science, that fact proves it to be in error.

HUMANITY has its constant properties and its variable accidents; its constants of need of food, of warmth, and of clothing; its constants of sickness and disease; its constants of relative poverty and relative wealth; its constants of yearning after good, and exposure to misery and guilt. But Humanity has also its variable accidents of climate, of fashion, of ease, of luxury, of degradation; not like death unavoidable and irremediable, but accidents, terrible accidents—such as, however formidable and perilous, to a certain extent may be avoided or can be remedied.

Reflection will show to what a vast range of subjects Medicine is linked, by these two circumstances,—the progress of Science and the fluctuations of Humanity. How numerous are the points of Science which touch us more or less closely! How intimately are we bound up with the sufferings and the sorrows, physical and mental, of mankind!

It is this necessary law of connection with Science as a whole, and with Man as a whole, which makes both the difficulty and the glory of our work in the body politic; and it is this connection which pre-eminently now, at this period of the history of our country and of

human knowledge, makes a revision of our present state desirable and indeed unavoidable.

Let us then consider, first, the relation of Modern Medicine to Modern Science.

It was just now said that Medicine is necessarily linked to the existing condition of Science. This statement must be examined more closely. Medicine is at once in advance of the exact Sciences so called, and behind them. It is in advance of them, inasmuch as it clinically observes as facts some things which Science has not yet fully explained; and it believes with strong conviction what can at present be neither demonstrated nor ignored. It is behind them, inasmuch as they claim for every fact of Science an exactness to which Medicine cannot always pretend.

But Medicine too long consented to regard itself as an Art as distinguished from Science. It cannot wholly fulfil its function till it asserts, and has entirely substantiated, its claim as one of the band of Sciences that precisely interpret the phænomena of Nature.

Now the existing relations of pure Science and Medicine are both direct and indirect. In the *direct* relations it follows the lead of Science

without hesitation; in the *indirect* relations it cannot afford always to wait for positive instructions. Let us look for a moment at each of these relations.

The relations are *direct* in the case of all those means of modern invention and research which are applied daily, in ways of which half a century ago there was no conception, to the discovery and the explanation of physiological and pathological phenomena. To the interpretation of sounds heard within the body, Laennec and a host of subsequent observers brought precise acoustical observation and experiment, and showed us how to map out the condition of internal parts, the action of which we hear but cannot see: so that though we are not always able to say absolutely what is the nature of an abnormality, producing an abnormal phenomenon, we can at least say what it is not. By applications of optical instruments Czermak and Cruise have laid open to us many organs of the body before inscrutable—the pharynx, the vocal chords, the trachæa, the vagina, the uterus, the bladder; so that the actual but hidden causes of many phenomena are no longer matter of argument, but of sight and demonstration. The secrets of the eye, I

need not say, are now disclosed by means of the physical contrivances of Helmholtz and others, assisted by the many elucidations contributed by our own countrymen. Ogle and Allbutt in this country, and others on the Continent, are working out the further proposition that some states of the eye are not only important in themselves as local abnormalities, but as being pathognomic of other suspected conditions in other and distant organs. The sense of *touch* is so supplemented by the skilful apparatus of Marey that the wave phenomena of the pulse and heart are registered; and thereby, through indirect but clear induction, we can fathom the secrets not only of the circulatory apparatus, but of nerve action and nerve lesion behind and beyond. And am I to add in this company that the very romance of zoölogical evolution is brought to enlarge our knowledge of the parasites that infest our bodies, modifying sanitary regulations in a remarkable manner, or that in every practitioner's hand the microscope and the test tube answer in a moment questions once unanswerable, though on them hang issues of life and of death?

It were tedious to you, and unbecoming in me, to tell of these things in detail—for they

are of the alphabet of Modern Medicine in its every-day work. They are named only to recall in the argument a few out of many instances of the *direct* application of scientific appliance and method to the progress of medical knowledge by means of light, sound, and direct touch. The exploration of the nervous system by electrical agencies, by manometers and the like, through the recent labours of many, but of late especially of M. Duchenne de Boulogne, and the registration of changes of temperature in evidence of chemical alterations and in proof of corresponding alterations in the organism, should be cited as among the less developed but equally certain advances of physical enquiry as applied to disease.

The indirect relations of Medicine to the other branches of Physical Science are more remarkable still, but being also more remote are less familiar.

Foremost it should be remembered what is the effect of the *temper* of Modern Science on Modern Medicine. Now it must at once be granted that opinion and authority in Medicine have ceased to have any value as such, except where the authority is derived from high moral and intellectual qualities combined with large experience. But this is a personal question, like the

personal equation of astronomical observers, and does not affect the *framework* of the Art. The framework of Medicine simply considered as an Art now depends on accurate data, on experiment, on observation, and direct induction therefrom. But though this be true, yet Medicine as an Art cannot always go hand in hand with Medicine as a Science. The physician, with emergencies constantly before him, cannot wait to act till Science has established her conclusions with absolute certainty. In so far as Medicine is purely scientific it is not in harmony with the average mind of mankind; in so far as it is empirical it is at variance with pure Science. Science being organised knowledge, and admitting no uncertain element, objects to the probabilities which guide the master of the Art to his conclusions, and lead him to act with a promptitude incomprehensible and appalling to the uninitiated. Just as the scientific navigator, who is furnished (as every navigator ought to be) with the instincts of the empirical seaman, trusts those instincts in a gale as readily as his accurate observations in clear weather; so the true clinical physician decides first, and afterwards puts together in logical arrangement the reasons for his decision.

In so far as he does this he abandons the order observed in pure Science. Still he must do so in many cases if he is to act at all. If he cannot do so, he is apt to become first sceptical, then indifferent.

That such scepticism and such indifference may be a real danger in the practice of Medicine, and is some counterpoise to the many advantages which Modern Medicine may derive from her scientific character, is hardly to be doubted.

This subject of Medical Scepticism is too grave to be here passed over without some consideration. Healthy criticism of existing belief is one thing. Mere destructive criticism with no honest purpose of getting at the truth is another. The former is a necessary quality in a man of full power. The latter is the frequent sign of idleness in youth, and of carelessness in advanced years. What is certain in respect of Medicine critically considered as a Science and as an Art may be thus stated. There is a true Medicine and a false Medicine. Like the wheat and the tares, they now stand together. The true is that which is based on unalterable laws of Nature; the false that which is the result of ignorance, unconscious misinterpretation, or wilful error,—ignorance of Nature, unintentional

misunderstanding of her laws, wilful falsification of facts to subserve some temporary purpose. From these two, the true and the false, come all the traditions of our Art. To winnow the one from the other, to extrude the uncertain from the proved, to add to what is known, regardless of the effect on previous beliefs, is the special duty of the time in which we are now placed. If this duty were completely done we should possess the real history of an Art three thousand years old. It is a history not without parallel in other departments of human thought. There was a time when the priest and the physician were one, and when the art of healing was looked on as a supernatural gift. It is so esteemed even now among savages. Cures wrought by a higher intelligence, being above the conception of the 'rude untutored mind,' seem emanations from the attributes 'of the Unknown God.' The impostor priest could be also impostor physician. Trading on the weaknesses of his fellow-men, he would dogmatise on the ailments of the body and their cure, as well as on the diseases of the mind and their remedies.

The destruction of such dogmas, groundless though they may be, is a slow and dangerous

process, as all students of history can tell. But the time is come when every opinion and conclusion has to be sifted ; and another danger has come rapidly upon us—that of reckless negation of the accumulated experience of our race. What are our fathers to us ? Are we not better than they ? This is with some the modern version of the well-known lamentation :—

‘Ætas parentum pejor avis tulit
Nos nequiores, mox daturos
Progeniem vitiosiore.’

But still in the traditions of the past there is a mass of practical wisdom. Nothing is more admirable than the caution and care—the generally scientific spirit, and often the truly scientific method, with which the best men, such as Morgagni, Sydenham, and Hunter, observed and reasoned. It is conceivable that this caution was due in great measure to the uncertainty of the ground they trod, and the want of precision in the means they possessed. We are superior to our fathers in the means at our disposal, and in the positiveness with which we can up to certain points enunciate our results. But we ought not to overlook the fact, that with these positive gains we are subject to contingent losses, and that in an epoch of details and comparatively

facile methods of enquiry the great qualities of patience and reserve may be lost to those who are not themselves original investigators.

With the exception implied by the above remarks, the temper of Modern Science indirectly rules the progress of the Healing Art. It is of consequence to appreciate what that temper is.

It would be difficult more aptly to describe it than by the words of Newton :—‘The main business of natural philosophy is to argue from phænomena without feigning hypotheses, and to deduce causes from effects, till we come to the very First Cause, which certainly is not mechanical.’ To discuss this simple phrase, and to expand it into its full significance, would be to recapitulate the history of a great portion of Modern Science. There probably is no part of it to which some modern thinkers would not take exception. But it cannot fail to raise in every mind a splendid and affecting image of the boundless field of Physical Philosophy. It will suggest to one a countless host of loving worshippers ; to another it reveals a crowd of stern enquirers ardently groping in dim cold twilight. Each in his own sphere, each tinged with the special hue of his own nature, in Physics and Biology, all alike are searching for a True Cause.

From the causes of twining in the delicate tendril to the causes of variation in the human species, from the causes and local conditions of atmospheric changes to the causes and physical consequences of the combustion of a fixed star, the biologists and physicists of the day are seeking a True Cause: and, each in his way appreciated by hundreds of fellow-workers and ten thousands of more or less intelligent followers, is making a step towards the First Cause which, Newton says, 'is certainly not mechanical.' And what have they reached? First, the conviction, clearly expressed many years ago, of the exquisite interdependence between our entire Fauna and Flora in the chemical circulation of matter on our globe; and next, the generalisation at once so simple, so overwhelming, that all action of which we are immediately cognisant is but the result of the operation of solar heat upon and through interdependent and correlative existences; that all things in this system are capable only of interchange; that there is no destruction of what exists; no creation of new energy.

The theorem of the Conservation of Energy has not, as may be supposed, brought direct

fruit to Medicine, but indirectly it has already told in more ways than one.

It makes more and more doubtful the existence of a 'Vital Principle,' controlling the ordinary laws and affinities of matter.

It tends to bring the phænomena of living bodies more and more within the domain of pure physical necessity.

It helps to lessen the improbability of the hypothesis of Darwin, by showing how deeply mutual correlations run into the very structure of the universe; and it increases the probability that living beings placed in similar conditions will move in similar lines, and conversely.

But it explains nothing whatever of the origin of things: nothing of the nature of Will. However true it may be that the solar energy was stored up myriads of ages ago in the coal-fields, however true it may be that, in the processes of vegetable life and decay, the sun's energy is constantly being first captured and then liberated for further use in other organisms, yet nothing of this emits the smallest spark of information on the *true cause* of organisation or of the working of a single organic cell.

It is clear (however careful we may be not to

idolise new words) that the idea of Conservation of Energy must now find an entrance into every conception of organic change. Even in Medicine we are thus more and more drawn to the conviction that the same result follows the same cause in similar organic conditions; and that while health consists in the regular performance of an elaborate series of physical changes, diseases properly called chemical (as opposed to mechanical or surgical diseases) follow a definite course, which we should be able to estimate if we could know all the conditions; a supposition (it may be added) which is impossible because of the factor of Will which has to be taken into account.

These fundamental ideas seem at first sight to belong so little to the work of every-day life or to the practice of an Art, as hardly to have any relation to them. Yet very little reflection shows how the profession which has always assiduously pursued, indeed has been the chief promoter of, natural knowledge, cannot separate itself from the indirect, any more than from the direct influence of Science; and so has to follow these apparently remote speculations. Who would suppose that the question of spontaneous generation so keenly debated from a very early

period to our own year and day, need have any immediate bearing on practice? Yet see how the observations of Pasteur are connected with the questions of infection, nay more, of suppuration, and (as shown to be probable by Professor Lister) of surgical treatment. It would indeed be a great point if we could prove that no germs, carriers of disease, spontaneously originate, but must always immediately come from a progenitor cell. If so, there would be just a hope that some diseases might be effectually and finally stamped out. What we do know of zymotic diseases does not favour this expectation. At the same time it has to be borne in mind that both the success and the failure of vaccination disclose the existence of properties which it would have been fantastic to expect, but which experiments proved to exist.

What the powers of 'Nature' are in producing and regulating morbid products, and what the powers of man may be, is becoming every day more apparent in such enquiries as those on the relations of vaccination to syphilis, which are now being discussed by Ballard and Seaton. If we take them into consideration together with the researches into the origin of tubercle by Villemin, Sanderson, and Wilson Fox, the

enquiries into the origin of the Cattle Plague and the whole state of our knowledge of the nature of what is called infection, we have presented to us certainly one of the most remarkable series of biological and pathological investigations that has been ever recorded, and to an intelligent and cultivated person unacquainted with the state of human knowledge in respect of biology, one which must, at first, seem almost incredible.

Yet any one, however little informed upon such subjects, reflecting on these few general illustrations, cannot fail to see the vastness of the subjects now comprised under the head of Modern Medicine; the firmness of the Scientific basis on which it is placed; and the peculiar difficulty which it encounters as being a Science complicated by an Art, and that Art one which is not only entangled with all the disturbing elements of progressive human society, but also an Art operating on the most complicated of chemical processes, namely, the so-called vital actions.

Further, he would probably say, 'There are here intricate processes affecting human health, depending on actions partly physical and involuntary, partly mental and voluntary—

what really are the powers by which Medicine can influence them?' If such a question were proposed, the answer would be, 'There are two methods by which the art must work; first, the method of Pure Science, with no other object but the attainment of knowledge and truth, the method which works by observation and experiment, in physics, chemistry, anatomy, and physiology, by the study of agents and, where necessary, by vivisections; and secondly, the Empirical method, or the method which attempts to cure by rules derived from tradition, probability, and tentative experiment.'

Now, by the first of these methods we are able to ascertain the law or course of action of the most complicated vital processes, as appears from the researches into tubercle and syphilis to which I but now alluded. But this method is unable to explain all the relations of phenomena in any, even the simplest organism, for it cannot be said that we at present understand the simplest vital process. This is put with much force by a great French chemist: 'Car nous n'en connaissons aucun d'une manière complète, puisque la connaissance parfaite de chacun d'eux exigerait celle de toutes les lois, de toutes les forces qui concourent à le produire, c'est-à-dire la con-

naissance parfaite de l'univers.' — *Berthelot, Chimie Organique*, ii. 810.

Still it is a great thing to see the laws or course of action of living bodies being gradually developed and laid down. We know, for instance, that a certain disease will run a certain course in a certain family. What is this but the law that living matter acts in a definite manner under definite conditions, and that when we can predicate the conditions we can predict some at least of the results? This law is of course the scientific basis of all curative medicine in individual instances, and of all preventive or state medicine in communities.

The application of this law to vital as well as to inorganic phenomena strikes a blow at many ancient prejudices which assumed and sometimes fostered the notion of exceptional and erratic procedures, that is to say, of procedures for which no reason could be given. Viewed calmly, it is the ground for all hope of future progress in Therapeutics; and for the following reason among others. In the present state of knowledge we are always on the verge of the most amazing results, and we do not know when or where the outcome will be. As in a siege, we advance by a series of zigzags

and parallels; and these must be begun at a great distance from the fortress. While we are ignorant of the nature of some of the commonest chemical changes that we know to be going on every second of our lives in our own bodies, some enquirers are quietly but minutely discussing the chemical actions by which acid and alkaline magmas modified the constitution of the earth's crust, and gradually produced the chemical conditions which made the evolution of organisms, as at present constituted, possible in our planet. And slowly but surely the siege of the fortress of knowledge advances. Latterly it has shown sign of progress in a new and unexpected direction. Chemistry which used to be chiefly analytical has now become enthusiastically synthetic. There are virtually no limits to the substances which can be made. Berthelot makes a calculation of the number of combinations with acids of certain alcohols. He says if you gave each a name, allowing a line for the name, then printed 100 lines in a page, and made volumes of 1,000 pages, and placed a million volumes in a library, you would need 14,000 libraries for your catalogue. He therefore properly calls such bodies infinite, instancing the synthetic construction

of the alcohol and aldehyde series, of the organic acids, of the amides, of urea, and the millions of possible bodies which loom in the future,— certain to be made, waiting to be made, the possessors of qualities suspected but unknown.

I almost hesitate to observe that bodies of this kind have important relations to the properties of the nervous system in man. Chloroform and the various amides employed by Richardson have made this familiar to all. The beautiful experiments by Bernard upon amygdalin show the question to be still more intricate and vast than Berthelot puts it in the passage already cited.

It is manifest, therefore, that the possible agents for affecting the human body are infinite, and the instances which I have partially touched on of the mutual relations of glanders, tubercle, and irritation, of syphilis and vaccination, show what might antecedently have been expected—the equally infinite problems which may be experimentally discussed and solved in the higher animal organism, problems equally affecting the classifications of Pathology and Therapeutics. Science is indebted to this Association for the example it sets in the appreciation of this vast question; and especially to Professor Bennett

for the able and patient manner in which he is now conducting for it difficult researches on the action of an important remedy, the first, I hope, of a long series of such detailed and rigorous enquiries. A more useful expenditure of money can hardly be conceived.

Of the second, or the Empirical method, to which I but now alluded, it is not to the present purpose to speak.

Having said thus much on the relations of Modern Medicine and Modern Science, in the hope of vindicating our profession from one-sided attacks founded on the notion that it is wanting in scientific precision, I leave this slight sketch of a vast subject, in order to consider the present relations of Modern Medicine to HUMANITY; in other words, its relations to the wants of Man in the complex state of modern society.

If the philosophic basis of Medicine has been changed during this century by its relations to Science, its object or aim has been as much modified by its relations to Man as he is, and as he is becoming, under the exigencies of fast-growing population and the agency of a fast-improving social organisation.

It would not be true to say that till modern times no great crowds of men have been densely congregated into unhealthy masses, nor to say that attention had never been given to their sanitary state. There were great armies before the Christian era; there must have been great crowding in ancient Rome; a careful and detailed sanitary code was imposed on the Jewish people at the time of the Exodus; Rome paid no small attention to sanitary works. But neither permanent populous cities nor sanitary codes were the rule. In our times, on the contrary, one of the peculiarities of modern life is shown from statistics to be the tendency to increase of population in great towns: so that in England between 1841 and 1851* there was an increase in the population of towns of over 100,000 inhabitants, of 23 per cent.; and in the following decennial period, 1851 to 1861, there was, in France, in towns of similar magnitude, taken collectively, an increase of 50 per cent.

In our day Preventive and Public Medicine has become a great branch of Medical Science. Imperfectly as yet carried out in this country, it is more fully developed in several Conti-

* Quetelet, Bulletin de Comm. centrale de Statistique. tom. x. 1866.

mental countries, and, of late, in a noble manner in the United States. It is here and there carried to great perfection, as in various departments of armies; it has made great progress also in navies, and in almost every part of civil life. Still we cannot say that the evils incident to modern civilisation have been as yet met by that clear-sighted and systematic superintendence by which alone they can be subdued.

It would far exceed the limits which are necessarily imposed upon me to attempt even the slightest sketch of the exact position of Sanitary Science in this kingdom. Its literature has become voluminous. Its general principles are recognised. Its need is felt. Nay, its value is by some injuriously exaggerated. What it requires now is proper administrative organisation. The admirable paper of Dr. Rumsey read last year in Dublin has been followed by not unimportant results, which will be the subject of a special Report by Dr. Stewart, and therefore need not be here discussed. It will suffice to say that we have reason to hope that we may shortly see the relations which ought to subsist between this department of the Science of Medicine, and the community at large, investigated systematically by a Royal Commission.

To anticipate the conclusions of such a Commission would be no becoming occupation. But this may be confidently expected, that one result would be the elevation of the duties of an Officer in State Medicine to that of a recognised profession, as in several special instances it has already become. At present it is not uncommon for a young man to be charged with wasting his powers if he devotes himself to improve the public health. Hereafter, charge of the public health must be made as much a matter of honourable ambition in the body politic, and must become as much an object of special education and training, as the business of any other recognised branch of the civil service. The Government will have to define the duties to be discharged by Public Health Officers or other Officers of Public Medicine, and the General Council of Medical Education will be able to direct the education of those who aspire to the performance of the duties so defined.

What those duties and what that education shall be, it is not our province to-day to consider. It is enough to say, that without a sound general education and without intelligent interest in the great problems that wait on dense population, viz. a fluctuating labour-

market, the rights of capital and of labour, the duties of property, the principles of morality, and the nature and aims of physical, moral and intellectual education, in other words, for what purposes the bodies of the people are to be trained, no man can discuss with safety the large questions which must be answered by State or Preventive Medicine. If he be not so prepared, he will be liable to take part unwittingly with dogmas dictated by ignorant selfishness, or unintentionally to support oppressive enactments suggested by imaginative philanthropy, in ignorance of the amount of the burdens which can in the long run be borne by the toil of a people, for the purpose of civil administration.

I have not here touched on the problems arising from the condition of great towns. They are become part of the literature—I had almost said the sensational literature—of the day. The admirable Reports of Mr. Simon, under the sanction of the Privy Council, the graphic sketches by Dr. Farr in the Registrar-General's Returns, the papers by the Metropolitan Officers of Health, the Returns from Ireland by Dr. Burke, from Scotland by Dr. Stark, Professor Gairdner, and others, and the paper by

Dr. Morgan, have filled the public mind first with amazement, then with alarm. Long familiar with poverty, and the sorrows and penalties and crimes which hang about it, as well as the brightness and patience which called forth the words 'Blessed be ye poor,' I had not learnt the intricacy of these problems till in the work of the Cubic Space Committee (wherein I joined the able President of your Council) I found myself set face to face with them, and had to consider what was the significance to the State of a child born in a workhouse of a prostitute, brought up during childhood in the workhouse, cast forth into the purlieus of the city, becoming pregnant and returning poisoned with syphilitic sores, at an immature age to bear a syphilitic infant: nor did I see the magnitude of the problems till I found that, not in one instance but in thousands, not in one district but in many, is this process being carried on. Where and how these frightful evils can be stopped is known only to Him who can tell the causes which laid desolate whole kingdoms of Asia, and left us to wonder at the ruins of cities whose very names are unknown. But it rests upon us, more perhaps than on any other class in the community, to see to it that no remedy

which can be applied, however partially, is neglected, and that no means by which the comfortable and indifferent public can be roused to appreciate the task before them shall be left unused.

Still less do I presume to handle now the relation of Physiological and Medical knowledge to the habits of some among the higher classes—to the conditions of modern society which over-stimulate nervous action, the late hours, the exhausting effort, the wholly unhealthy existence. This is a subject which needs much tenderness and skill, and longer time than you can spare. But it is a subject on which the advancing knowledge and culture of Modern Medicine will have not a little to say; and which, it may be hoped, will be so said as to be heard.

There is one other relation of Modern Medicine which it would be improper to pass by, although it is one which an over-prudent man would instinctively avoid—its relation to spiritual beliefs.

The reason why an over-prudent man would avoid all allusion to such beliefs, is that he dreads to entangle himself in the maze of angry

controversy which not only surrounds but almost fills the ecclesiastical world ; controversy, not between creeds permanently opposed, as the creeds of Buddhism, of Islam, and of Christendom, but feuds in the bosom of each separate religious system.

The reason why we cannot, if we would, avoid considering our own relation to spiritual beliefs, lies in the two fundamental facts, that we are ourselves men like other men, and that we stand in a closer and more real relation to man, as man, than does any other class of the commonwealth.

It has indeed been said, 'Ubi tres medici, ibi duo Athei.' The recent attacks by the Cardinals in the French Senate on the Faculty of Medicine show that the charge conveyed in this aphorism is not forgotten in France. Signs of the same notion are not wanting in this country. What is the fact? The fact seems to be that the members of the Medical Profession are in their lives not less religious than the average of the society in which they live. As a body they are calm, earnest men, who mingle little, perhaps too little, in the questions of the day, and seldom with violence. Religious enthusiasm is rare with them ; fanaticism is generally absent ; and on the whole

it may be said that as a Profession they stand aloof from religious discussion. Self-interest operates in some degree ; usage operates to some extent ; but there is a deeper reason for their standing aloof, which religious teachers would do well to lay to heart. There are none who know so much of the reality of man's nature, its phænomena, its conditions, its pains, its privileges. To the Physician the bodily nature is bared in its beauty and in its hideousness, in its formation and growth, and in its decay and dissolution. Man's relation to other living forms, his likeness or his unlikeness to irresponsible, unreasoning, or half-reasoning brutes, are vital questions to those whose minds are filled with ideas of anatomical homologies, of the relations of functions to organs, of the laws of hereditary transmission, and of the evolution of mental attributes as well as of corporeal organisation in the animal series. The Physician sees in the body of man the material structure by which alone the known operations of the mind of man are possible in this world, the organs by which alone he can work his earthly work, whether it be the work which he shares in common with the beasts of the field, or the work through which he can enter into conscious

relation to his unapproachable Creator: the frame by which, while bound down in an earthly charnel-house, he lifts his eyes and strains his heart with yearning ineffable towards a higher nature, and obeys the upward-tending impulses of affections strong unto death, affections so pure and so divine, as to lose in the love of others even the consciousness of self.

All this, and much more, our profession sees as phænomena. It knows that 'the child is the father of the man;' that 'the sins of the fathers are visited upon the children to the third and fourth generation;' that man, though in one sense 'lower than the beasts which perish,' is yet 'the paragon of animals, in apprehension how like a God, in action how like an angel.' These, and all the contrasts which poets and preachers paint, are present to us under all phases, in every circumstance of race and creed, of temptation caused either by want or by luxury and power, or temperament engendered by any of these conditions, modifying, as you all know, both disease and the remedies it requires.

I forbear from enlarging on this difficult and perilous topic here. But I shall have to recur to it briefly under the last head of my address.

It need only now be said that the connexion which Medical Men must have with the future culture of the country, is becoming more and more intimate. The general public, heretofore indifferent to Physical Science, are becoming daily more alive to its importance, inasmuch as they are in many instances themselves scientific, and judges of those who are so.

If these then be the relations of Medicine to Science, and to the bodily wants and the mental condition of man, and such the character of the Physician, what is to be the preparation for his duties? There is no better answer than this of Strabo: 'Ἡ δὲ [ἀρετὴ] ποιητοῦ συνέζευκται τῇ τοῦ ἀνθρώπου· καὶ οὐχ οἶον τε ἀγαθὸν γενέσθαι ποιητὴν μὴ πρότερον γενηθέντα ἄνδρα ἀγαθόν.' 'The value of a poet is bound up with that of the man. He cannot be a good poet who is not a good man.' On which Joseph Henry Green, who quotes the passage, says: 'I anticipate no objection when I state that the process for attaining or approximating to this great moral result constitutes in its scope or end *a liberal education*.' What that is, and how to be attained, is held by all thinking men to be one of the problems which our age has to solve, in and for the interests of our

country. May not grave mistake arise herein? At all events, in the present transitional condition of this and other questions of social economy, it were a waste of time for an association such as ours to undertake the investigation of this difficult subject. But so far may be said, that the object of academical education for *our* profession is *from early life to discipline all the faculties*. It is obvious that the Physician should be many-sided—he should be capable of sympathy with every form of good; he should have all his senses, eye, touch, hearing, disciplined to nice precision and exactness, both in perception and thought.

When a man says there is in the present age of the world only one education worth possessing, the education provided by 'the Scientific Method,' he seems to have forgotten the more genial parts of our nature, the relations of man to man; and the more tender parts of our nature, sympathy with goodness, imagination, generosity, devotion. Are not these essential to the highest success in our profession, quite as much as the intellectual efforts of the more specially scientific observer? We may take one instance: the bearing of the so-called Fine Arts on the development of certain

qualities of mind. It is not on account of the accuracy which is required for their successful cultivation, for that belongs more or less to all scientific work. No youth can be a draughtsman or a musician to any good purpose without this; but music and drawing not only discipline the sense of sight, touch, and ear in an eminent degree, but have a peculiar effect on the imagination and intellect. There is a refinement of observation and a tact acquired by the study of masters of music, architecture, painting, and sculpture, which add a charm to the life and character of a man, whatever be his profession, such as is hardly attainable in any other way. Not, of course, that I would wish all men to be so educated as if they were to be artists or musicians. Mathematics are valuable to train the mind to habits of accurate thought. The mathematics may be forgotten, may vanish in all their details, but the accuracy and precision given by their study may remain. So the practical dexterity of the eye and hand and ear in drawing and in music may be lost, but the delicate perception of form and colour and the relations of colour, of sound and the relations of sound, and the effect produced upon the mind by the study and cultivation

of the Arts therewith connected, may remain and tinge with a higher character the whole nature of the man. The development in excess of one part of our nature distorts the harmony of that nature. Many properties, which in excess are noxious, are, when held in subordination, ennobling. It would be out of place, I repeat, to attempt a full analysis of this educational question. It is indeed here entered upon simply by way of protest against the view that accurate Science can do all that is needed for training the Medical Student. Of all men, allow me to repeat, he most needs the harmonious development of all the good qualities of his nature, with 'scientific accuracy' and method at the root. In the present period of our history, I might say in the history of the human family, the principles which should regulate the training of our children have to be discussed with largeness of view, and carried out with extreme caution. There is no part of a statesman's duty just now for which he is more gravely responsible than that of preparing the children of the nation for the struggle, intellectual, religious, and material, which is certainly in store for them; there is no greater political treachery than that a statesman should pander to popular clamour by joining

any temporary educational cry which he does not believe to be founded on permanent truths of morality.

It would be trespassing too much on your good-nature to ask you to listen to the proofs that an acquaintance with the mental constitution of man, with the ways of ennobling its impulses, and with that mixed knowledge and discipline which are called religion, is more especially necessary for our profession. I, therefore, assume that you generally consider every scheme of preliminary education faulty which does not admit this, and will only state briefly what present circumstances seem to require of caution under that admission. Granted that for the intellectual training of a medical man, religious discipline and psychological knowledge are required, how are they to be imparted? and of what kind should they be?

If those who have investigated the subject were agreed as to the nature and origin of human families; if the unity of our race were conceded; if there were no variations in character dependent on family and inheritance; if there were no questions as to the future state, nor disputes concerning our relation to the Infinite; if no questions had arisen within

the pale of Christendom as to the scheme of redemption, nor outside that pale as to the evidence of that Christian Faith; then indeed the student preparing for Medicine would find some definite course of mental philosophy and religious instruction established in all colleges from San Francisco to Calcutta. Till that day of united conviction arrive we must be content to take some general position that all can accept. Nor is this difficult. All will agree that we must, 1st, Study the phænomena of human nature as now known to us without regard to the origin of man; and 2ndly, Study the principles of laws which ought to regulate the will and affections of man for the good of himself and society—in other words, the principles of universal morality.

Nothing less than this is necessary for the youth who are to follow our profession, nothing more can we now enforce. We have in England to educate for the empire, that is to say, for persons of every creed. Our education as Physicians cannot in this respect be limited by any one form of religious belief; and however much I may deplore, in the pathetic words of Faraday, 'The people will go astray when they have this blessed book to guide them,' we cannot deny

that under existing circumstances the results of mental science, deduced from every source, must be to some extent made part of the higher education of our profession without any regard to the bearing they are supposed to have upon generally accepted religious opinion.

The reason is a practical one and plain. It is our business to deal with the characters of men, to observe the action and reaction respectively of body and mind, to trace out how character is affected by physical alterations in the brain; how this may be modified by physical means, by discipline, by food, by the physiological agents called drugs. And our youth must and will follow the researches which are made in these several directions. It will be useless to denounce the enquiries which tend to explain the relations between thought and material organisation. That bundle (as it were) of qualities, good and evil, which we call Mind, does, as far as we know, require for its manifestation the continuity and integrity of a complex organisation. That organisation varies with the qualities which are exhibited. The mental organisation of animals inferior to man is as various as their bodily structure. In truth,

we have as good right to call the bodily organisation the material part made for the action of mind, as the mind the consequence of the bodily organisation. The distinctive properties of the mind of man furnish the most notable illustration of the origin of Force. The absence of any one of these powers, and especially of the Will, shows the greatness of their presence. There are phænomena such as those of aphasia, such as the innumerable facts of pathological analysis observed in the insane, such as the remarkable results obtained by the researches of Claude Bernard, which become part of the common stock of knowledge, and must find their place in any theory of humanity which is to claim an acknowledgment from the intelligent physiologist of the future.

This deep, this profoundly interesting subject might be pursued to great length; it is commended to your serious attention with these words of Bacon:—

‘All depends on keeping the eye steadily fixed upon the facts of nature, and so seeing their images simply as they are. For God forbid that we should give out a dream of our own imagination for a pattern of the world.

‘Rather may He graciously grant us a true vision of the footsteps of the Creator imprinted on His creatures.’—*Nov. Org.* pr. 1.

‘Very meet it is, therefore, that we be sober-minded, and give to faith that only which is faith’s.—*Nov. Org.* 65.

It is not to be desired that we should part to-night without some interchange of thought on the relation of this University as a place of national education to the topics we have been considering.

The functions of an University have lately been clearly stated by Mr. Mill in his Address at St. Andrews. His statements coincide with those repeatedly expressed in this place by the best thinkers on the subject. His opinion is of special value, as no one will suspect him of too great leaning towards ancient studies, or the gentler parts of human culture. He says:—

‘The proper function of an University in national education is tolerably well understood. At least there is a tolerably general agreement about what an University is not. It is not a place of professional education. Universities are not intended to teach the knowledge required to fit men for some special mode of gaining their livelihood. Their object is not to make skilful lawyers, or physicians, or engineers, but capable and cultivated human beings. . . . What professional men should carry away with them from an University, is not professional knowledge, but that which would direct the use of their professional knowledge, and bring the light of general culture to illuminate the technicalities of a special pursuit.’

He reviews the several parts of human knowledge by which this function is to be performed. For my own part, I know nothing apparently so damaging to the reputation of the study of classics as a means of forming completeness of character, as its active antipathy in former years to the cultivation of Science, and its passive indifference to the promotion of Art.

As long as this temper existed it implied an ignorance of both, and as respects Art a narrow appreciation of the true domain of Literature.

The causes of this temper need not be discussed by us: we are not the persons to do it in this place. The causes do not lie entirely in the effect of classical training, but in the narrowing tendency of exclusive devotion to one class of pursuits in a limited society. It was addition to the old studies, not substitution, that was needed. The addition is in the course of being made. May the substitution be averted. Your assembly in this Hall is a proof of the fact of the addition. This meeting is a testimony, if any were needed, that these ancient foundations are opened to the Professions, opened on conviction and with hearty good-will: the union of the ancient thought with modern method will be effected in this place.

Yet we may ask, why the Professions should be welcomed by the University? why this union should be desired by them? The answer is plain. Not through the guidance of the people by a few superior minds, not through the laying down rules of fashion by concurrence, not through the dogmas of authority by compulsion, but by the culture of practical life, by the moral elevation of the working people of every class, are the great traditions of this country to be maintained.

Not by Peers, nor Commons, not by Employers, nor Artisans as such, nor by all combined,—but by love of knowledge, of truth, and of uprightness; by a wide view of the needs of man, religious, moral, material; by a small estimate of our own powers, but a large one of our duties; by a just sense of the narrow field to which our own vision is limited, and of the shortness of the time during which to each of us that vision shall last;—by all these qualities uniformly diffused according to the capacity each may have, are Peers, Commons, Employers, Artisans, to keep alive the force of their common country.

And if these thoughts seem to belong to the arena of the political world, and not to the

quiet recesses of a Scientific Assembly, remember that if your young men who are to be engaged in professional life, if the sons of your commercial men come hither, you will find their characters tempered through life by the processes to which they have been submitted. If they find here the traditions and the practice of general culture, of love of good, of pursuit of all knowledge, pure or applied; if they learn precision when precision is needed, method when method; if they are taught to indulge imagination where only imagination avails, fancy where only fancy; if they see us here resisting authority when there should be enquiry, but bowing humbly before that which is not for man to know, not ashamed of reverence and hope, nor afraid of faith; if here they may learn to be industrious and contented, of manly yet of tender heart,—then the Professions may send their youth to a place the country has reason warmly to cherish, if not wholly to approve.

I know nothing more hopeful than the prospect before us. Those who control the fate of this city of a thousand years can still say that the religious basis of the place is not yet undermined by levity, nor suffering from the

dry-rot of unfounded assertions; that Science is daily enlarging its borders by the addition of new institutions and new men, and that Art is asserting its just claims: so that those who desire to see the youth of England possessed of great opportunities may yet find them here.

One word more and I have done. The picture I have drawn is not intended to describe what is to be sought, or what is to be had in this or the other place of education, but what is to be sought in all. What we may aim at here we wish others to attain. If they be first, then we will follow; if they be last, we hope that our speed may quicken with their advancing tread.

You will perceive, I doubt not, that I address you not as an Oxford man, but as President of your Association when it visits Oxford. While you are here I hardly have the functions of host. As your representative I have asked freely for the aid you seemed to desire, and in your name I thank all who have granted it. In the name also of your Oxford friends, and as official head of the ancient and honourable Faculty of Medicine in her University, I heartily

welcome you to whatever in the lotus-growing stagnant depth of the Long Vacation you may find still living here. You bring your own life; from England, Scotland, Ireland, from the United States of America, from France and Germany. Live it among us. And in exchange for our welcome to the banks of Isis give us your thoughts and your counsels, to the end that we may all return refreshed and strengthened to our common and happy toil.



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