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THE AMERICAN PHILOSOPHICAL SOCIETY.

THE PRESIDENT'S ADDRESS.

THE American Philosophical Society has conferred upon me the duty and pleasure of offering to you a hearty welcome to this General Meeting of the Society, and of expressing the gratification felt by all its resident members at the success which has rewarded their effort to assemble in this historic hall as many as possible of our non-resident members and friends from other parts of our country. Though widely separated as regards residence, and in the character of our labors, we are all of us as members warmly interested in the success and renown of our ancient Society. We who happen to live here know, and have always known, that our non-resident but fellow members, however distant they may be, constitute nevertheless as learned and accomplished a body of scholars as could be assembled anywhere. We know this partly from our limited opportunities of personal acquaintance, which we ardently hope may be more frequent hereafter, and we also know it as the world knows it, from their high distinction in science, from their published contributions to the world's knowledge, and as we gratefully acknowledge—from the abundant fruits of their labors sometimes contributed here, and which we take pleasure and pride in considering and discussing and giving to the

public in our printed *Transactions* and *Proceedings*.

As is doubtless well known to all here present, our Society is not, and never has been limited to one place of activity, or to the promotion of any particular branch of knowledge in preference to another. Its full corporate title, 'The American Philosophical Society held at Philadelphia for promoting useful knowledge,' has remained unchanged since the merger with it of the American Society in 1768, the last four words having been added on that occasion. Franklin's original circular urging its establishment was dated May 14, 1743 (old style), and was entitled 'A proposal for promoting useful knowledge among the British Plantations in America.' After suggesting the need for such a Society and proposing the name of 'The American Philosophical Society,' simply, it proceeded to recommend Philadelphia as the 'center of the Society,' because it was 'the city nearest to the center of the continent colonies, communicating with all of them northward and southward by post, and with all the islands by sea, and having the advantage of a good growing library.' That circular of 1743 now suggests some curious reflections. Though the adjective *continental* was apparently not yet coined, the text seems to intimate that of all the British possessions in America at that day, the 'islands,' that is the British West India Islands, were of equal or greater importance to Englishmen at home and abroad, than what it called 'the continent colonies,' meaning of course those continental settlements which had then received political charters of partial autonomy, but which have since grown out of comparison with any 'islands,' and by mutual association and union have expanded to a great nation, second to none in the ancient or modern world.

The reasons originally assigned for placing the Society's 'center' at Philadelphia, though then eminently and perhaps exclusively true of that place, seem extremely quaint to us moderns, who have become accustomed to seeing throughout our vast territory hundreds of libraries of greater dimensions and richer endowments than the 'good growing library' of 1743, and from whom the center of population has removed itself a thousand miles or more to what was then the heart of an unpopulated, unvisited and wholly unknown wilderness.

And yet, although the mighty changes of a hundred and sixty years have rendered no longer applicable Franklin's reasons for locating the seat, or as he called it the 'center' of the Society, it is nevertheless from those changes that we derive our chiefest compensation. It is true that we no longer find it necessary to enact as our earliest predecessors recommended, that there 'shall always be at Philadelphia at least seven members, viz., a physician, a botanist, a mathematician, a chemist, a mechanician, a geographer and a general natural philosopher, besides a president, treasurer and secretary.' During its long existence the Society has hitherto been able to enjoy such advantages without the constraint of law. It has been enabled to provide itself with officers—sometimes from an embarrassment of riches, and if our resident scholars should in any future emergency prove unequal to its necessities, we are happy in the assurance that our numerous non-resident members, dwelling in, and illuminating many parts of the world, might be relied on to come to its relief with an aggregate of wisdom and authority not inferior to the resources of the still more venerable Royal Society itself. Though our city remains in the same place and continues to appreciate and maintain the libraries, museums and institutions of our predecessors, it is no longer

'central' as regards any of these things, and has long ceased to be the only, or perhaps even the chief, seat of American learning. But if through the gratifying growth of other places it has sustained a relative decline, in scientific or any other eminence, it is because its methods, models and example have repeated themselves throughout the continent, until there is now scarcely a city that does not contain a center of intelligence and attainment radiating a fructifying influence far beyond its immediate vicinity.

We cannot keep the fact too plainly before us, that the work and influence of our Society were never meant to be local or confined to any one place, whether central or not. It aimed from its first act, to be continental in its influences, to encourage research everywhere as well as in its own vicinity. And if its originally avowed object—'the promotion of knowledge'—has been so successfully prosecuted as to plant younger and fresher centers of learning in every quarter of our country, what more glorious consummation could there be of the designs of our departed founders, and what more magnificent compensation to their successors who still prosecute their studies almost within the shadow of this ancient hall?

The Society desires to give the highest practical expression to its absolutely national character, and to adopt all methods which experience has shown to be most conducive to promoting the objects for which it was founded, and will gladly welcome at this meeting suggestions to that end. It has believed that an important step in that direction will be the holding annually a general meeting of its members from all parts of the country, of which the present meeting is the first. It is probable that such annual general meetings, supplemented by the facilities afforded by our ordinary semi-monthly meetings, will fulfil many requirements of the intellectual activity of our members, while our *Transactions* and *Proceedings*, widely circulated among the scientific societies and workers of the world offer speedy and unexcelled avenues for publication.

During the hundred and sixty years of our existence vast changes have occurred in the population and economic conditions of our country. Besides the radical political changes of 1776—which indeed were accomplished within sound of my voice—there has occurred an increase of population and industry which is quite unique in modern times. A scanty littoral population which for want of adequate land communication, had long clung closely to the seacoast and its estuaries, becoming almost suddenly independent of the highways provided by nature, has expanded itself over a great continent with results undreamed of by the wisest of our ancestors who lived before the age of steam. Already this population has become the largest homogeneous people speaking a single language which now exists as a separate power, and there is no reason to doubt its continued future increase both in numbers and in homogeneity. Nor for that matter need we doubt that before life departs from our planet with the waning sun, but in a remote future, new ethnologists and archeologists and perhaps even anatomists, will arise to dispute our homogeneity and will carefully study our origin, character and social structure, our language, civilization and religion, and the atrophy, exhaustion or catastrophe from which we shall perhaps have perished as a nation.

But it is not my purpose to occupy your time with speculations on past or present material affairs, except so far as they are inseparable from our intellectual history, because all such affairs are subordinate to and dependent upon the progress of mind and knowledge. Of all human agencies it

is these alone which have governed—and must always govern human affairs and human progress.

When I remind you that the life and labors of our Society have covered five generations as these are usually estimated, it is pertinent to remark that mere non-comparative figures convey but little definite apprehension to the mind unaccustomed to dealing with large numbers. When one of our justly distinguished astronomical members tells us that a given star is distant so many hundred millions of miles, the figures carry little real information to those of us who are not accustomed like him to consider such enormous numerals. But when he measures to us their equivalent in diameters of the earth's orbit, or proves that its light at known rates of motion must require some centuries to reach us, then we can get some notion of the results that he has reached in traversing the laborious march from hypothesis to demonstration. So, when we reflect that more than one of the sciences now best known had their first crude beginnings and earliest struggles in this hall, we get a more definite idea of the venerable age of our Society and the work that has been done here. If, for example, we turn to human anatomy, where our researches have so remarkably advanced our knowledge, it is true that dissections had been made, and the leading facts of structure, and even of function, ascertained before our Society was born. One might therefore suppose that human osteology at least—the knowledge of those essential and durable organs most prominent in all dissections—was then well known. And yet this Society had been in existence for more than half a century, when new bones and new parts and functions of bones were first discovered and described by one of our members in this room, which excited the interest and induced the correspondence of such famous anatomists as Cuvier, Sömmering and others.

Taking a glance at geology, it is probable that one of the most epochal books ever written prior to the vaster generalizations of Darwin, was that of Sir Charles Lyell. And yet even before the birth of Lyell, when Hutton and the early English geologists were first beginning to be dissatisfied with the Noachian deluge as the only available explanation of the phenomena they noted, fossil remains were examined and described in this hall, and the work of our members had no trivial share in guiding the world to the real solution. Our early geologists—like theirs—found that problematic deluge entirely inadequate to explain even such primitive facts as the existence of marine remains hundreds of miles from any then known ancient or modern seacoast, or the massive deposits of calcareous rocks containing marine shells and crustacea high up on mountain sides remote from the sea, or of the ripple marks, foot tracks and actual remains found embedded deeply in solid sandstone strata. Such early doubts and difficulties found appropriate and congenial place in the *Proceedings* of this Society, and Mr. Curtis in his recent life of Jefferson tells an amusing story in that connection.

The great statesman was at the same time president of the United States and of this Society, and sometimes professed to doubt which of those honors he valued most. He had covered the floor of a large room in the White House with miscellaneous fossil bones sent to him from Virginia, and had formed theories concerning them which were so unsatisfactory to himself that he begged one of his friends—a distinguished paleontologist of this Society—to come to Washington and examine them. A carriage journey from Philadelphia to Washington before the days of steam was no trifling

ordeal for a middle-aged philosopher, yet a room full of new fossils proved irresistible, the journey was performed, and the remains at once identified as those of *Elephas* and *Mastodon,* much to the disadvantage of Mr. Jefferson's theories.

The important science of electricity, of which during the past century we have but entered the threshold, as is well known, had its birth in this Society, and one might say in this room. It was here that Franklin first contrived his experiments, and by artificial means drew electricity from the clouds. It was here that he designed and constructed the first machine for obtaining it from terrestrial objects. It was here that it was constantly exhibited, studied and discussed, and since that day the Society has never lacked the presence and labors of a competent and distinguished body of its students and investigators. It is no fault of theirs that this great science, though studied by all the world for a century, has not yet been mastered. Notwithstanding our actual production or segregation of electricity on an enormous scale, and the astonishing practical uses to which it has been harnessed, we still know but little of its nature and origin, and almost nothing of the character and extent of its practical usefulness in the grand scheme of Nature. We have reason to believe that it pervades the cosmic universe, and suspect it of performing necessary functions not yet understood both in microscopic and cosmical economy.

And now after this brief glance at our far-reaching past and still briefer mention of some of the branches of knowledge which had here their birth or infancy, what can be said of the future? Here we may at once admit that the mysterious realms of ignorance still remain far more extensive than those to which the light of knowledge has been brought. Even the work that has been done invariably reveals unexpected new work remaining to be done. We have catalogued hundreds of sciences whose names were unknown but a generation since. But though we have named and neatly labelled them and readily perceive their intimate relationship with their cousins both new and old, how much do we positively know of any of them? If we recur again to human anatomy—one of the oldest and best known of all, we find the world has been pondering it since the time of Aristotle, but all that it had learned of the prominent organs, their morphology, relations and functions, has been reduced to minimum relative importance, by the revelations through the microscope of the innumerable secrets yet to be learned. We now find how little we really know of tissues, cells, corpuscles, and above all of the still mysterious nervous system, the seat of all intelligence. Of the numerous cerebral nervous centers we have localized a few, but know little of the vast majority. We scarcely know what office or power to attribute to the 'convolutions' or what to withhold from them, and although we suspect much, yet in fact we know so little about them that their principal use to anatomists at the present time seems to be as receivers of hypothetical attributes of function which could not safely be loaded on anything else. Even if we confine our researches to the entire organ, can the anatomist tell us with certainty the structure and proportions of a normal brain, or can he define brainal normality itself, and inform us what it is and how it may be known?

In fact after so many centuries of study, we may go even farther and enquire whether we are yet able to find any precise and intelligible definition for life itself. We describe it as 'conscious,' and 'reproductive.' But we now know that animal life exists which is apparently not conscious and is certainly not reproductive. And yet

though such life is neither conscious nor intelligent, it is seen to possess some quality, unknown and as yet incomprehensible to us, which is a fair equivalent for intelligence. In short it may even yet be safely said that if hundreds of volumes are required to contain our knowledge thousands would be necessary to catalogue our ignorances.

There remains then plenty of work to be done. No one who loves knowledge and is willing to work need ever want object or occupation. Nature's own operations have no more predominant characteristic than their extreme slowness, and it is not surprising that our most fruitful researches have in that respect imitated her deliberate and tentative evolutions. But it is encouraging to remember that whatever moves ceaselessly onward, losing no forward step and accumulating all its gains, must in time reach the goal. Though the masses of ignorance are still large and dark before us, knowledge does steadily accumulate on all our traversed paths. Time is long, and if we cultivate the same untiring patience which Nature has uniformly practiced in her gradual development of all things organic and inorganic, it is but a mathematical axiom that a day must come when we shall overtake her at her work—catch her, as it were, bare armed in her secret workshops, and claim undisputed heirship in all her works.

The grand results of that full and perfect knowledge which, though not for us as individuals, must come to our posterity, no mind now living can grasp or estimate. Recurring for illustration to the oft-quoted and somewhat ill-treated science of anatomy, when that day of complete and perfect knowledge shall arrive, when, for instance, our successors shall have traced out all its mysteries, localized every function, and identified every brain center and working cell, why should the future training of the individual be limited to the tedious imitative methods to which we are now confined? When with perfect knowledge we shall know how to treat all the centers of thought and will with wise discrimination, stimulating the good and repressing the bad, why should it not be possible to cultivate by unerring means intellect and even morals, to produce a great general or an honest statesman when he is most needed, to constitute a new society as superior to ours as we are to our humblest ancestors of primeval seas?

Let us not too hastily pronounce the sentence of extravagance against such hopes and speculations. To the generations of Galileo and Newton, of Laplace and Darwin, the first glimmerings of truth reached by those great leaders were equally startling. Yet in the lapse of time they have become established facts, on which the world of science plants itself with confidence as it moves forward to new conquests. Rather let us by every individual and associate effort preserve in full flower and fruit the vigor of our ancient Society as a center of continued labor. Let us encourage and stimulate each other in pressing on toward the attainment of complete knowledge. Because it is that, and that alone, which we cannot but observe, is destined to move onward and upward the world of life, and to maintain our human race in the primacy which it by no means always possessed, but is now claiming with no empty boasts.

Isaac J. Wistar.

THE GENERAL MEETING.

The first general meeting of the American Philosophical Society was held in Philadelphia on April 3, 4 and 5, 1902. Founded by Benjamin Franklin in 1743 the Society is the oldest scientific organization in America devoted to the advancement of general knowledge; and although