

The concentration of industries and commerce along the Atlantic seaboard and of agriculture in the Mississippi Valley and western states has already proceeded to a point where some of its baleful influences in the development of sectional feeling and prejudices are beginning to become apparent. One can not read the newspapers of the different parts of the country or discuss public matters with the residents of different sections through which he may travel without being struck with the almost complete lack of understanding and sympathy of the residents of one part of the country with the problems and views of those of other localities. Students of history can not help but note the similarity of the public controversies and lack of general sympathetic understanding of the people of the different sections of the country to the conditions which preceded our Civil war. Whatever we may think of the necessity for and glory of the other wars in which this country has participated, we can not think of the bloody Civil war between brother Americans as anything but a horrible blot upon our fair history and an event which set back the development of the southern parts of our country for a half a century.

To contemplate the possibility of sectional development of interests and prejudices to the point of another Civil war is unthinkable. Yet there are sinister possibilities in the present situation. It is clear that not only would a successful agriculture be promoted by bringing the food-producing and food-consuming populations nearer together in physical habitation and working environment; but that the intermingling of mental and social environment of workers in different vocations is a factor of solidarity and union in national life whose importance ought not to be overlooked at times such as these.

It is for these reasons that I have ventured to digress from the main thesis of this address to suggest that a national program for agricultural development should include in it a constant effort to keep both agriculture and industry and commerce as widely distributed and as closely intermingled one with the other as it is physically and economically possible to do. Such a plan will not only facilitate adjustments of labor, transportation difficulties, market distribution problems and all the other economic phases of our national welfare; but will also tend to avoid the growth of sectional differences and strifes such as are the most threatening specters of all free governments. I therefore close with a fervent repetition of the old-time New Year's prayer, "May peace prevail, and prosperity attend our ways as a united people."

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SHOULD WE HAVE FACULTIES OF PUBLIC HEALTH?

Is public health a subject of enough individuality and importance to warrant its establishment as a faculty of a university? This is, in substance, the question asked by those who have the matter of advanced public health education brought to their attention for the first time. In the University of Western Ontario this question was answered in the affirmative nine years ago. The existence of a faculty of public health here (the only *faculty* of public health in America and probably in the world) is a situation so unusual that an explanation is often requested. Here is a case when an explanation constitutes a defense; and should produce conviction, leading to the establishment of similar faculties in all institutions devoted to higher education.

The questions involved are these: First, at what stage in its own development and in the development of its relationships should a given subject of human thought be recognized by separation as a faculty rather than as a department or sub-department of some other faculty? And, second, is public health now at such a stage? The answers, both in the affirmative, require some elucidation of what public health is and what its relations to higher education are.

To begin at the beginning, education, the great aim of the university, has been very variously defined, but its ultimate object is to make men not only to *feel* at home in the universe, but also to *be*, in fact, at home here. Education, since it relates to man, necessarily has the two phases, sensory and motor, which all things coming into relation with man necessarily present. The sensory phase of education is that which results in reproducing in the mind as complete a picture of the universe as possible—a working model, if you like, preferably in three—or four!—dimensions. The more nearly this ideal picture or working model within the mind corresponds with the true universe without, the more complete is the sensory education, the more *well-in-formed* is the student. The motor phase of education is that which induces the sensorially well-informed mind to study, to change, to improve, to make more perfect and more extensive the *relationships* of man to the universe. But the process of educating the individual does not consist, as, alas, it is often assumed to do, in giving first a complete sensory education leading to a B.A., and then a motor education in postgraduate courses! Such a sequence in education is a cramp upon the human race. Sensory and motor education should be reciprocal, not sequential; and should be reciprocal,

should go hand in hand, from the kindergarten up. It is not the good fortune of every educator to see true education thus as a whole. Many a specialist, of perfect education in his own field, is like a microscope in sacrificing to intensity of penetration all breadth of view; or like a telescope in revealing the far-off stars but missing the intimate bacteria completely. We have also those educators to whom education is chiefly sensory, and those to whom it is chiefly motor. But all real educators must grant that in the end the goal of a really good education is to *appreciate* fully and to *act* wisely on the main facts of life. Now the central fact of all human life is this—that man is part of nature, not something different from it; that man is a true product of the planetary soil and air, not an afterthought or an accident. This central if very elementary conception, when taken together with all that necessarily flows from it, constitutes the nucleus of true education in its best sense.

Sensory education, then, is receptive, pictorial, contemplative, analytic; it deals with and records things as they are, the status in which man finds himself. Motor education is aggressive, constructive, progressive, synthetic; it deals with the relationships of man to the universe; *i.e.*, with his relations to that status in which he finds himself. Relationships, where life is concerned, are always dynamic, not static; motor, not sensory. While sensory and motor represent contrasting types of education, they are not in any sense antagonistic. On the contrary, they are correlatives of, and complementary to, each other. Some day, when the purpose and methods of educations are better understood, these two phases of training will be treated always as one, as much so as any two halves of an apple.

The relationships of man to the universe fall by general consent into four groups, roughly outlined and overlapping, yet more or less useful in grasping the situation; these are the physical, the mental, the moral and the spiritual. Oldest of these, it appears, and most developed in the mind of man, most influential so far in shaping his conceptions are those relationships usually grouped as spiritual. No primitive people is too primitive for the development of this group. Theology, the subject that deals with the relationships of man to his spirit world (if we include in it conceptions and studies of all spiritual imaginings, of man's relationships to gods and devils, to spirits of all kinds), is the oldest subject of human thought; and in institutions of higher education constitutes the oldest established faculty—indeed theology is academically the father and mother of all other faculties. Next, but a long way after, and far more concrete and definite, come moral relationships, the relationships of man to other men, ethics. Far down the line, in quite recent centuries, mental development,

still more concrete, still nearer man himself, formulated the great idea of science; that man might through his own mind achieve invaluable improvements in his understanding of and his relationships with the universe as a whole, not merely with spirits or with other men. Yet even in science is illustrated man's reluctance to study the things under his nose, his tendency to wander afar in his researches; for human science began concrete studies of nature with astronomy, the most remote of all physical relationships! Sociology, being the study of intimate social relations with other men, and including physical relations, not merely moral, is of very recent development. But it has been reserved for the twentieth century to get down to real "brass tacks," to conceive of the study of man's own individual physical abilities, his own individual physical relationships, as of the first importance; and this is what is known as public health.

It was anthropomorphism in its primeval form that dictated the old spiritistic attitude and minimized the physical or rather ignored it. Like most such primitive conceptions, anthropomorphism is a mirror picture of the truth; and, like a mirror picture, requires inversion to make it agree with the facts. Anthropomorphism is well enough, but only if we invert it, *i.e.*, only if we appreciate that the universe is not modelled on man, but man on the universe; that he is indeed an outgrowth of it, bearing its pattern, a subject of its laws in every feature.

To this anthropomorphic, illogical and inverted order of man's consideration of his relationships to the universe is due the lateness of his recognition of public health, a twentieth century matter. Beginning with the random imaginings of his scarcely opened mind, man produced a vast variety of beliefs supposed to indicate his relationships to spirits; he sacrificed all to these internally-derived mental images, and went gladly to the stake for conceptions that he could not check up with external realities, did not think of as having any relationships to anything outside his own mind. So far as externals were considered at all, they were made to fit with and into his scheme of internally-derived mental images rather than the reverse. Next, morals gave man something more tangible, more mundane, nearer home, more concrete, more easy to demonstrate, yet still very largely debatable, still a matter of going to the stake for his beliefs rather than of calm demonstrations of certain realities as parts of the universe. Then, still more definite, still more concrete, still less debatable, still more demonstrable, mental education appeared. Last of all has come the study of physical relationships, which we now see has grown out of the preceding development of education; and which since probably all the others depend upon it, is *the* fundamental study.

Had it developed in proper sequence, it would have preceded the others. We must now begin all over again, to rearrange the existing sequence in proper order; for the modern recognition of man's own part in the universe, as developed by education, has completely inverted the old order of the different phases, spiritual, moral, mental, physical; they may now be placed in the natural order in which they properly stand to each other. Instead of building from the roof down, the twentieth century would build from the ground up; placing the physical first, the spiritual last, instead of the converse; in this, at least, agreeing with St. Paul!

But have not the ultimate physical relationships of man been heretofore studied? True, medicine deals with the physical relationships of man and as a department of human thought it has been accepted as of sufficient importance to constitute a university faculty for hundreds of years. But medicine, a very crude conception in its earlier days, dealt then and deals now only with a part of the physical adjustment of man to the universe; that is, with that partial phase which seeks to readjust only those who are already so out of proper relationship physically that actual pain and disability develop. Since this very partial view of physical relationships is worthy of a separate faculty and has been so considered even while it existed only in the crudest, most elementary forms, surely public health which deals with *all* physical relationships, for *every* human being, to *prevent* such maladjustments, is still more so entitled.

It is difficult, for laymen, and sometimes even for otherwise well-informed professional students of medical science, to see public health and medicine in perspective. The former is historically an outgrowth of the latter, but yet it includes the latter and also a great deal more. Public health seeks now to place a knowledge of medicine in its proper relation to public needs. It undertakes to ascertain the remoter causes of disease and to *prevent* these "ills that flesh is heir to," instead of merely to institute curative treatment after disease has already become established. Medicine is quite invaluable to the sick, but public health is invaluable to the well also.

The reasons for separating out any subject or group of subjects to constitute a separate faculty would appear, on study of existing faculties to be: First, academic, *i.e.*, based on obvious relationships of the subject or subjects to the various university curricula; second, administrative, *i.e.*, based on university staff and student affiliations; and third, practical, *i.e.*, based on the requirements of the outside world, and the preparation of students for its service. Thus, a faculty of law exists for academic reasons, because many of its subjects are apart from those of other courses; for administrative reasons, because its

staff and its students are necessarily distinct from other groups; and for practical reasons, because it prepares its students for a special service in the world. A faculty of science exists for similar, yet in some cases converse reasons; academically, because it enters into several other courses and can not be assigned to any one course; administratively, because, while its staff is a unit, it serves several groups of students and can not be assigned to any one group; and practically, because it prepares in itself students for many special sorts of service in the world, of a character dissimilar from that provided by other faculties. These reasons have resulted in the formation of a variety of faculties in various universities, each usually distinguished by a special form of degree or other qualification conferred upon its own particular graduates.

The outstanding reasons for the formation of a faculty, then, are to simplify the system and facilities of the internal operation of the university, and to preserve useful relationships with the outside world. In all these, public health qualifies, as will now be shown.

That the recognition of public health as a group-study independent of medicine has been granted elsewhere than at the University of Western Ontario although not so far as a faculty is too well known for detailed recapitulation. The University of Pennsylvania first, many years ago, established an Institute of Public Health. Now Johns Hopkins and Harvard, under Welch and Rosenau, respectively, have independent schools of public health, fostered by large gifts from the Rockefeller Institute, which latter has with large vision and practical foresight promoted public health in these academic as well as in great practical enterprises. This year, old London, under Rockefeller stimulation, has opened or is about to open, an independent school of public health. The courses offered vary from one year, for postgraduates in medicine offered by many universities in Great Britain, to four years for non-medical candidates, offered by many universities in the United States. The University of Western Ontario has merely gone one step further; has already made that which is the next logical step for all; has constituted public health a faculty, on the same basis as any other faculty, and has thus given to public health full twentieth century recognition of its proper position.

There are certain specific subjects, peculiar to public health and not taught in medical curricula because they are not of practical interest to medical men. These at most are merely referred to incidentally in medical courses except in the special short public health course which is included in most medical courses. Notably these subjects are, first, the reac-

tions of the healthy body as distinguished from the diseased. True, incidentally to the teaching of disease, the normal is mentioned in purely medical courses—but that is all. Again, epidemiology, dealing with the causes of disease outside the body, with those remoter causes which must be studied and appreciated in every detail to attain the prevention of disease, is all but ignored in medical curricula, for the medical interest lies in the cause *after*, not before, it enters the body; and then only when it gives therein appreciable symptoms. Again, vital statistics are almost wholly untouched in medical curricula, again because the interest is in disease, not in health; in the disease of the already sick individual, seeking relief, not in his social, economic, or other public health relationships to disease. Almost the only interest of public health closely allied with the medical curriculum is that of diagnosis; and even here the high emphasis of the medical course lies in diagnosis for treatment, not in diagnosis as part of sociology. In physics, geology, chemistry, in bacteriology, parasitology, in every one of the subjects of a full public health course, not only is each subject given time almost as great, sometimes greater than the whole time given in the ordinary medical public health course to the public health applications of all these subjects put together, but again, the material and the emphasis given for professional public health purposes differ from the material and the emphasis given in the same subjects when taught as a brief part of the medical course proper.

Academically then public health has a place in education peculiarly its own, with an individual curriculum composed of special certain phases of all other sciences and many arts; administratively, its staff and its students constitute a separate unit, requiring certain of these sciences as taught by other faculties but also having certain subjects of its own not dealt with by the others; and serving other faculties with these. Practically, public health prepares its special students for a special field of services which is in continually growing demand—a profession as distinct in its services to mankind as are the professions of theology, agriculture, medicine, law, engineering, dentistry, mining or any other. That public health should continue to be merely a 45 hour course in a medical curriculum, as it is to-day in many universities, is as unreasonable to-day as it would be to place mathematics as a department of engineering or of physics; to make law a division of ethics; or to make chemistry a detail of agriculture. Such classifications might be made—might even be ably defended—but classifications to be of highest value must correspond with the greatest number of relationships, and it is a broad useful form of classification which makes public health, on academic, administrative and prac-

tical grounds, an independent faculty, manned and equipped for its peculiar researches, teachings and applications to the progress of the whole race.

Summary: *Public health is the science and art of conscious physical adjustment between man and his surroundings in the universe.* The modern conception of man as a product of and a part of nature brings the subject of man's individual physical adjustments with his immediate surroundings into its proper place as *the* fundamental study—the basis of every form of education. Hence, public health is not only eligible for a position as an independent faculty in any university but is as definitely entitled to such a place as any of those now recognized. It is futile to consider the ordinary 45 hour course in public health, furnished as an incident in the ordinary 4000 to 5000 hour medical course, as more than a smattering, offered to medical students alone, of the 900 to 4500 hour courses in public health offered to professional public health students.

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SCIENTIFIC EVENTS

THE EQUADOR-COLOMBIA EARTHQUAKE

THE following letter to the Secretary of State, Washington, has been forwarded by the Department of State to the Smithsonian Institution:

Referring to my telegram No. 30, of December 20, 12 noon (1923), I have the honor to report more fully concerning the earthquakes which have occurred during December in this Republic.

The seat of the first and most severe shocks was along the Equadorean-Colombian frontier, the damage in this country being principally confined to a relatively small area in the Department of Narino situated near the town of Ipiales and Tulcan. The first earthquake was felt on December 13, and was followed almost daily up to December 20 by other severe earth tremors. As a result the villages of Cumbal, Carlosama, Aldana and Chiles appear to have been totally destroyed and considerable damage done in the towns of Tuquerres and Ipiales. Nevertheless, it is a most inexplicable circumstance that even to-day no exact data concerning the loss of life and property is available in Bogota. Neither the government nor the Colombian Red Cross is in possession of reliable statistics. As nearly as I can ascertain, however, the more conservative estimates place the dead at two, or possibly three hundred, and the homeless in the neighborhood of 20,000 persons. The property loss, from a monetary standpoint, is probably very small as the inhabitants of the district are of humble mode of existence. Aid, though slow in reaching the stricken area, in part due to bad means of communication, at length reached the population, who are said to have been suffering greatly from cold on account of the high altitude. As a