members. The committee on convocation week presented the report published in the issue of this journal for December 27, showing that both our institutions of learning and our societies are unanimously cooperating in setting aside for the meetings of learned and scientific societies the week in which the first day of January falls. A committee was appointed to consider the question of the duty imposed on scientific apparatus imported for educational institutions, a resolution was passed advocating a national health service, and other business was transacted. The most interesting feature of the meeting was perhaps the representation of Section K, Physiology and Experimental Medicine, by its first officers, Professors Welch and Lee. It was decided that the first meeting of the Section should be held in Washington a year hence, and that all scientific papers must be presented through one of the national societies devoted to the sciences falling within the scope of the Section.

While the affiliated scientific societies devoted to the biological sciences were meeting in Chicago, the other scientific societies that hold winter meetings were in session in different cities. The American Geological Society met in Rochester, the American Chemical Society in Philadelphia, the Astronomical and Astrophysical Society of America in Washington, the American Mathematical and Physical Societies and the eastern branch of the Society for Plant Morphology and Physiology in New York. So far as can be judged from the preliminary programs and from accounts that have reached us, the meetings were in all cases successful, and this will doubtless be fully proved by the reports that will be published in this journal. It will, however, be a gain to the separate societies and especially to science as a whole when all our men of science gather in one congress as will be the case next year.

Only those who have attended the meetings of our scientific societies in recent years can fully appreciate the improvement that has taken place in the conduct of the meetings, the increase in the volume and value of scientific work, and the friendly and cordial relations almost universal among scientific men. We are entitled to enjoy great satisfaction in the advances made by the Denver and Chicago meetings, and to look forward with sure anticipation of a further advance in the great meeting to be held during convocation week next winter at Washington.

THE MODERN SUBJECTION OF SCIENCE AND EDUCATION TO PROPAGANDA.

One of the sad pages in the history of science and education is that which relates how, on the death of Alexander the Great, the teacher of his youth, the much greater Aristotle, rightly regarded by the Middle Age as the 'master of those who know' when more than sixty years old was driven from Athens into exile by a patriotic propaganda of the anti-Macedonians. A darker and a bloody page tells how Hypatia of Alexandria, the beautiful and learned daughter of Theon, was cruelly and brutally murdered in a Christian church in the year 415 of our era as a victim of a fanatical propaganda against paganism, condoned, if not conducted, by the Christian Archbishop Cyril, Patriarch of Alexandria. Copernicus hesitated long before publish-

ing his splendid discoveries on the movements of the heavenly bodies and the heliocentric theory, for fear of ecclesiastical interference, and when soon after Galileo, more bold, promulgated the truth that Copernicus had hesitated to pronounce, both he and his discoveries fell under the severest ecclesiastical condemnation ever visited upon any man of science for the truth alone.

In our own time we have too often heard of sects which place the propaganda of a special faith before either science or education, and inquire more carefully into the orthodoxy of professors and pupils than into their scientific or educational attainments. However much we may regret such action we cannot legitimately complain so long as the sectarians in question confine their actions to sectarian schools, colleges and universities, supported exclusively by private means, for the right to regulate education within the home, the family, the private school or the private college or university, is a fundamental and inalienable right of a well-regulated democracy.

The century just closed has witnessed a remarkable liberation of natural science and education from dogma. Geology was first set free by Lyell and his school, and then biology, by the discoveries of fossil man, and the splendid inductions of Darwin. Slowly but surely the teaching of natural science, which, like all teaching, follows closely in the footsteps of discovery, has also cast off its chains and freed itself from the subjection of theology. But as the church has declined in temporal power the state has become supreme, and with the recognition of its power has come the belief in its sufficiency,—even its sufficiency to remedy all ills, real or imaginary,—and scarcely had science and education freed themselves from the bonds of the church before they began to be threatened with subjection by the state, a subjection sought for not by theologians but by philanthropists and philozoists.

The first in the field were the philozoists, commonly known as anti-vivisectionists. In former times charges of cruelty brought against scientific men would have been referred to an inquisition when such an institution existed but now, the church being powerless in such matters, appeal must be had to the state. Accordingly, a propaganda was started, first, so far as I am aware, in England but afterwards spreading to this country, which by 1875 had succeeded in bringing into complete subjection in Great Britain animal physiology, then the principal experimental biological science. Since that time a new biological science, bacteriology, has sprung up and found itself hampered also in some of its most important and most humane investigations by the same British statute, enacted on demand of the philozoic propaganda.

Anyone may read in the 29th chapter of the admirable Life and Letters of Professor Huxley, edited by his son, how, in 1870, when president of the British Association, Huxley had been violently attacked for speaking in defence of Brown-Séquard, the French physiologist, and how in the same year a committee had been appointed by the British Association, and reported upon the conditions under which they considered experiments on living animals justifiable. When legislation seemed imminent Huxley, in concert with other men of science, interested himself in drawing up a petition to Parliament to direct opinion on the subject and provide a fair basis for future legislation. A Royal Commission was finally appointed, with Huxley as one of its members. Early in 1876 the Commission reported and a few months later Lord Carnarvon introduced a bill entitled 'An Act to amend the Law relating to Cruelty to Animals.' "It was," says Mr. Leonard

Huxley, "a more drastic measure than was demanded. As a writer in *Nature* (1876, page 248) puts it, 'The evidence on the strength of which legislation was recommended went beyond the facts, the report went beyond the evidence, the recommendation beyond the report, and the bill can hardly be said to have gone beyond the recommendations, but rather to have contradicted them.'"

As to the early working of this law Huxley remarked in the following year in his address on 'Elementary Instruction in Physiology' as follows ('Coll. Essays,' III, 310):

"So it comes about that, in this year of grace, 1877, two persons may be charged with cruelty to animals. One [a fisherman] has impaled a frog, and suffered the creature to writhe about in that condition for hours; the other [a teacher] has pained the animal no more than one of us would be pained by tying strings round his fingers, and keeping him in the position of a hydropathic patient. The first offender says, 'I did it because I find fishing very amusing,' and the magistrate bids him depart in peace—nay, probably wishes him good sport. The second pleads, 'I wanted to impress a scientific truth with a distinctness attainable in no other way on the minds of my scholars,' and the magistrate fines him five pounds. I cannot but think that this is an anomalous and not wholly creditable state of things."

Looking back over more than twenty-five years of the practical working of this law we can affirm without hesitation that under its operation both physiological science and physiological education have been kept by the State, or rather by the propaganda which secured the passage of the statute, under a needless and injurious subjection.

As early as 1865, and apparently before the scientific men of Great Britain had seriously begun to oppose the anti-vivisection propaganda, Dr. John C. Dalton, Professor of physiology in the College of Physicians and Surgeons in New York City, delivered an address before the New York Academy of Medicine, which, for lucidity of statement, dignity of tone, wisdom and high seriousness, seems to me superior to any treatment of the subject with which I am familiar ('Vivisection: What it is, and What it has Accomplished.' Address before the New York Academy of Medicine, December 13, 1866). Many of Dr. Dalton's definitions and illustrations are worthy of quotation, *e. g.*:

"The subject of discussion is not vivisection in its narrowest sense, but the entire method of experiment upon living animals as a means of study in physiology and the kindred sciences" (p. 5).

"Experimental vivisection is no more open to the charge of cruelty * * * than the dissection of human bodies for the study of anatomy is open to the charge of sacrilege and impiety. * * * (P. 2.)

"We might as well expect to learn the phenomena of magnetism by experimenting with subjects not magnetic, as to study the phenomena of life anywhere but in the actions of the living body." (P. 7.)

Dr. Dalton published further in 1875 'Experimentation on Animals as a means of Knowledge in Physiology, Pathology and Practical Medicine,' and I cannot help feeling that it was largely his calm, fair and yet firm, attitude that caused the failure of the anti-vivisection propaganda in the State of New York in 1867 and again in 1874.

In Massachusetts repeated attempts have been made to secure legislation 'regulating' vivisection. An anti-vivisection propaganda is constantly maintained in Boston, and for several successive years bills aiming at the 'restriction' or 'regulation' of vivisection have been introduced into the

legislature by the propagandists, but, having been vigorously opposed by medical and scientific men powerfully aided by such public-spirited citizens as the president of Harvard University, the president of the Massachusetts Institute of Technology and the Bishop of Massachusetts, they have hitherto failed ignominiously. All sorts of restrictions have been suggested, and in the latest bill it was proposed to endow the agents of any society for the prevention of cruelty to animals with powers of entrance and search, so that they might visit any laboratory at any time, taking names and otherwise interfering with the freedom of research and instruction, as well as infringing upon the individual liberty of persons engaged in experimentation upon animals. If such a law had been passed, the subjection of science to propaganda in Massachusetts would to-day be even more complete and more intolerable than it has been in England since 1875.

I need not recount the recent attempt of those engaged in this propaganda to secure restrictive legislation for the District of Columbia. Suffice it to say that the attempt was one of the boldest and most dangerous attacks upon the freedom of research which has ever been made in America.

Nor is this all. Some of those engaged in the anti-vivisection propaganda seek, at the same time that they would abolish vivisection, to do away with all dissection of whatever sort in public schools of whatever grade. No one in his senses desires vivisection in the public schools except, perhaps, in normal schools devoted to the education of teachers. But dissection of clams, oysters, lobsters, starfish, sea-urchins, worms, snails and possibly fishes and frogs, are not only not necessarily out of place but may even be very useful and desirable in high schools and normal schools. My own feeling is that in grammar schools and all schools lower than high schools instruction should be confined almost wholly to the external structure of plants and animals, with their occurrence, habits, habitats and the like; but I see no good reason why in high schools and normal schools the elements, at least, of the internal structure of invertebrates and even of certain vertebrates may not well be taught. I have taken some pains to secure upon this point the opinion of a number of teachers of natural science in normal schools, most of whom have also been teachers in schools of lower grade, and with one or two exceptions I find that they are strongly of the opinion that a moderate amount of dissection is not only desirable but almost indispensable.

Yet in 1895 the American Humane Association published in Chicago a report on vivisection and dissection in public schools, in which various excellent persons unhesitatingly affirmed that dissection in public schools is superfluous, and that physiology can be well enough taught by means of manikins, pictures and the like. In particular, several bishops, apparently regarding themselves as qualified to give evidence on this subject, stated without hesitation that all that is necessary in the practical teaching of physiology is illustrated books, manikins, etc., some even going further and saying that dissection must inevitably blunt the sensibilities and corrupt the character of the young. Cardinal Gibbons, of Baltimore, however, was more cautious when he said: "I am inclined to think that sufficient instruction can be imparted by the use of illustrations and manikins. I think it advisable to give children the knowledge, as Scripture does, of the God-given power of man over the lower forms of life; but they should be warned that this power is not absolute, arbitrary or cruel." In reading the pronouncements of the American bishops referred to, one is reminded of the occasions for Huxley's frequent and contemptuous sneers at the

bishops of his own land with whom he so often did battle with delight.

As a specific illustration of the need of watchfulness concerning the privilege of dissection in the public schools I may cite what took place in Boston a few years ago. Those who happened at the time to be living in that city awoke one morning in January, 1894, to find that on the previous evening a member of the Boston School Committee had offered the following order and that it had been unanimously passed.

"Ordered: That the dissection of animals be prohibited in the public school buildings of the city of Boston."

Realizing how damaging a rule of this sort must inevitably be to the best interests of science in the public schools, I hastily drew up the following petition to the School Committee and secured for it the signatures of President Eliot, General Walker, Professor Agassiz and a few other leaders in science or education in or near Boston:

"To the School Committee of the city of Boston:

"We have learned with surprise and regret of the prohibition which you have placed upon the dissection of animals in the public school buildings of Boston. We earnestly protest against this action and urge its immediate reversal, believing that such a prohibition will seriously weaken the efficiency of science-teaching in the schools and completely cripple the courses in zoology and physiology. As the order stands, no one, not even a head-master, is allowed to dissect, in any of the school buildings, so much as a fish or an oyster."

(Signed) Charles W. Eliot, Francis A. Walker, A. Agassiz, Mrs. Louis Agassiz, Josiah P. Cooke, Augustus Lowell, Alice Freeman Palmer, Samuel Eliot, Mary Hemenway, Mrs. W. B. Rogers, H. P. Bowditch.

I also took pains to make the matter known through the press, and the result was that at the next meeting of the School Committee the order was reconsidered, amended and finally passed in a less objectionable form, as follows:

"Ordered: That dissection of red-blooded animals be confined to normal and high schools when approved by the superintendent and masters."

This perhaps is as good a place as any in which to urge upon all those within sound of my voice, or before whom this subject may come upon the printed page, and who desire to keep intact the freedom of science and education, the necessity of watching, in season and out of season, to repel the attacks of that propaganda which would not only compel all practical instruction in physiology to be based upon pictures and manikins, but would also prohibit altogether all experimentation upon animals, whether in physiology, bacteriology or experimental medicine. Science in Great Britain, as has already been stated, has been brought under an almost intolerable subjection by the anti-vivisection propaganda. In America, though long threatened, this has not yet come to pass; but unless naturalists everywhere are on their guard they will some day be taken by surprise, very much as the English naturalists seem to have been, and be brought under a similar subjection to the same hostile propaganda.

But if in America we can rejoice that we have thus far resisted the onslaughts of philozoists upon experimental science, we must confess with sorrow that we have been less fortunate in dealing with philanthropists, in an important department of elementary education. When, in 1842, Horace Mann published his still excellent essay on 'The Study of Physiology in Schools,' he seems, judged by recent school statutes of the several United States, to have made one serious omission, for he nowhere mentions or even foreshadows that remarkable creation of our

own times, 'temperance physiology,' and very likely, with some old-fashioned people of to-day, he regarded 'temperance' as chiefly a moral question.

The discovery of this new and entirely modern branch of 'science' and 'education' seems to have been the joint work of Dr. (afterwards Sir) Benjamin W. Richardson of England, an able but erratic physician, and Mrs. Mary H. Hunt, formerly of Hyde Park, Massachusetts, and now of Boston. At any rate, Mrs. Hunt refers to Dr. Richardson as the author from whom she drew some of her original inspiration, but her own achievements, in organizing and directing the propaganda now associated with her name, have so far outrun anything done for it at the outset by Dr. Richardson that we must regard her, and not him, as the true creator of this astonishing movement. Mrs. Hunt says that her mind was turned to the subject in the early seventies and that she soon found in Dr. Richardson's 'Cantor Lectures on Alcohol in its relation to Man,' the exact data she had been groping for. These lectures seemed to her to prove 'the dangerous difference between the demonstrated fact that it is the nature of a little alcohol to create an uncontrollable appetite for more, and the popular idea of the harmlessness of using alcohol in small quantities,' and the corollary seemed to her to be 'that intemperance could never be prevented until the people were taught to really know the effects of alcoholic drinks, and that this must be done through the schools.' From 1880 until the present time this really remarkable woman has given her life with intense devotion and extraordinary success to a national, and even world-wide, propaganda of her faith.

The movement is variously called 'scientific temperance instruction,' 'temperance physiology' or 'physiological temperance,' and it has now grown to such proportions and has gained such power as to dominate, almost absolutely, all instruction in elementary physiology and hygiene in America. It is of course right and proper that pupils in all grades of the public schools should be taught the dangers of alcoholic beverages as fully and as earnestly as other dangers lurking in food or drink. We may even grant that more stress should be laid upon this subject than upon some others. But an examination of the present status of elementary education in physiology and hygiene in the United States shows that in many cases the instruction demanded by this propaganda, and given according to law, in reference to alcohol goes much further. It even appears that all instruction in physiology and hygiene in the public schools has passed to a great and unjustifiable extent into the virtual control and under the subjection of the 'temperance physiology' propaganda. Mrs. Hunt, as early as 1888, boldly announced: "We are the recruiting officers, and the teachers the drill-masters, for training the coming total-abstinence army that is to banish alcohol from human beverages."

Authoritative sources of information for testing these statements are easily accessible to all. They consist of the statutes of the several States requiring instruction, often of prescribed and peculiar kinds, regarding alcohol; of the text-books on elementary physiology and hygiene actually in the hands of the pupils; of the teachers,—many of whom groan in spirit even when they do not dare to complain openly; and last, but not least, of the boastful 'histories' of the propaganda prepared by Mrs. Hunt herself and published, one in 1891 (or earlier) and the other in 1897.*

*1. 'A History of the First Decade of the Department of Scientific Instruction in Schools and Colleges of the Woman's Christian Temperance Union.' By Mary H. Hunt, Superintendent for the United States and the World's W. C. T. U. Second Edition. Boston, 1891.

From these latter it appears that largely through her personal efforts statutes now exist in nearly every one of the United States requiring instruction in physiology and hygiene with special reference to the nature and effects of alcoholic drinks; that in some states a penalty clause is attached for non-enforcement; that in some the amount of space to be given in text-books is prescribed, and in the same or in others, the time to be devoted to the subject. In some States it is also required that the subject shall not be treated in an appendix, or in a separate chapter at the end of the book.

In 1897 Mrs. Hunt stated that 'a combination of the Illinois law with the penalty [clause] of the New York law would be an ideal statute.' It is therefore easy to see at what she aims, for the Illinois law requires that all pupils 'below the second year of the high school and above the third year of school work' counting from the lowest primary, 'shall be taught and shall study this subject every year, from suitable text-books in the hands of all pupils, for not less than four lessons a week, for ten or more weeks of each year.' For students below the high school 'such text-books shall give at least one fifth their space,' and for high-school students "not less than twenty pages, to the nature and effects of alcoholic drinks and other narcotics. The pages on this subject in a separate chapter at the end of the book shall not be counted in determining the minimum." The New York law of 1896 is very lengthy and likewise contains an important provision that 'this subject must be treated in the text-books in connection with the various divisions of physiology and hygiene, and pages on this subject in a separate chapter at the end of the book shall not be counted in determining the minimum.'

2. 'An Epoch of the Nineteenth Century. An Outline of the Work for Scientific Temperance Education in the Public Schools of the United States.' By Mary H. Hunt, National and International Superintendent of the Department of Scientific Temperance Instruction, and Life Director of the National Educational Association. Boston, 1897.

The effect of these peculiar laws closely defining instruction in physiology and hygiene has been to create a correspondingly peculiar class of text-books. Some of these have been prepared by competent writers, but most of them are inferior and some are distinctly bad. One chapter in Mrs. Hunt's 'History' is entitled 'The Text-Book War.' It is not agreeable reading, either for scientific men or for educators. In a so-called 'Great Petition to Publishers,' which reads more like a threat than a petition, it is stated: "This is not a physiological, but a temperance, movement. In all grades below the high school this instruction should contain only physiology enough to make the hygiene of temperance and other laws of health intelligible. Temperance should be the chief and not the subordinate topic, and should occupy at least one fourth the space in text-books for these grades." In the same 'Great Petition to Publishers' we find it also stated that "Those text-books that are largely physiology with a minimum of temperance matter * * * do not meet the requirements of the law, and do not satisfy those who secured its enactment, and *are determined to secure its enforcement.*" Further on, publishers are told exactly what is wanted, in great detail and in no uncertain tones.

Text-books conforming with these requirements of the propaganda may be officially 'indorsed' by a 'Committee of the Advisory Board' sitting in council for the purpose. In another chapter, entitled the 'Text-book War Over,' it is stated that 'in response to the Great Petition most of the publishers have expressed the desire to have their books revised, on condition that the National Superintendent of the Scien-

tific Department of the Woman's Christian Temperance Union would revise them or supervise their proposed revision.' That is to say many publishers were naturally eager to have their books 'indorsed' by Mrs. Hunt, doubtless hoping thereby to increase their sale. On August 10, 1888, Mrs. Hunt 'with secretaries and helpers returned to Hyde Park, Massachusetts and opened again 'Hope Cottage' which became the local base of operations for text-book revision.' "That these revised books might be distinguished at a glance from the unrevised and unworthy books a committee was chosen * * * to indicate upon each its character. * * * The position of the chairman (Mrs. Hunt) of this committee chosen to extend the indorsement to school textbooks of this kind in behalf of the signers of the Great Petition to Publishers and of the Woman's Christian Temperance Union has proved a very trying one and a most severe test of loyalty to principle."

I may remark in passing that one is frequently reminded in Mrs. Hunt's 'histories' that the United States Commissioner of Education is, or was, a member of the Advisory Board which has conducted this remarkable propaganda. As to the propriety of the Commissioner's connection with this movement I make no comment.

It would be tedious, though not uninstructive, to give many more quotations from the extraordinary documents which recount the history of the 'scientific' temperance movement. Those who desire to inform themselves more fully should not fail to consult the original authorities referred to above. As an illustration of the almost hysterical scenes accompanying the work of securing favorable legislation by this particular propaganda, I cannot forbear quoting the 'Report of an Eyewitness' describing the passage of the Pennsylvania law: "As the work of widening the temperance sentiment goes on we come now and then, would that it were more frequently, to the place where the only thing to do seems to be to raise an Ebenezer, and the only thing to say is 'Hitherto hath the Lord helped us.' * * * Upon a great tide of womanly support that buoyed her up on wave after wave of prayer and of faith in her powers, has the leader of this work (Mrs. Hunt) been borne from city to city like a brave ship, laden with the treasure of knowledge and blessing to be spread out before the listening people. * * *" Then follows a description of the State Capitol, and of the gathering legislators, of their good-natured reception of Mrs. Hunt, of her address and its effect, after which the writer passes on to the opening of a following session: "Almost before the amen of the opening prayer had been uttered, a dozen members were on their feet offering the petitions sent in from their various districts in behalf of the bill for 'scientific temperance education'; the dozens swelled to scores, and the scores multiplied all in a moment, until so many boy-messengers were flying down the aisles with the papers, and so many arms were waving in the air, that from every seat there seemed suddenly to have sprung a great, fluttering, white blossom of petition. * * * I make no mistake when I call Mrs. Hunt the mother of the bill. * * * Behind this mother of the bill stood some of those who have borne it so closely upon their hearts that they may properly be called its godmothers, its sisters, its cousins and its aunts." The bill was passed and signed by the Governor and the writer remarks, 'It was a God-given victory and to Him be all the praise.'

One of the humors of the passage of a national law requiring 'scientific' temperance instruction at West Point, at Annapolis, in the District of Columbia and for all schools under Federal control, was a debate in the Senate in which "A certain senator declared that 'rum-sellers or patrons

of rum-sellers have as good a right to have their views on temperance education printed by the National Government as any woman.' * * * The following extract,'' says Mrs. Hunt, ''from a letter a lady from his own State wrote that senator is a fair illustration of the reception his ideas received among his constituency: 'When I knew you, sir, in our state, you were a chivalric Southern gentleman. Imagine my indignation at the audacity of the reporter who dares to report you as saying that ''liquor men have as good a right to be heard in the Congress of the United States on the education of the children as any lady. * * * I am sure you must be misrepresented, for no man who would say such a thing in the national Senate could represent a white man's government from this State.''' 'Many such letters,' adds Mrs. Hunt, 'reached that senator, and thus his opposition died.'

No wise educator who has given any attention to the subject can deny that the influence of this powerful propaganda has been in most respects injurious to the proper teaching of physiology and hygiene in the lower schools. Teachers, principals, superintendents, and even school committees, are seldom able to speak with perfect frankness on the subject, from fear of the influences which may be brought to bear against them or of the intemperate criticism to which they may be exposed; and in my opinion it is time for a body of scientific men like the American Society of Naturalists or the American Association for the Advancement of Science to put on record its opinion that the subjection under which science and education are to-day suffering from the 'temperance physiology' propaganda has become intolerable.

I lately examined with some care a good text-book of elementary physiology and was shocked on opening it to find at the very beginning, and in a most prominent place, an entire page devoted to an 'indorsement' of the book by the self-constituted oligarchy which has the assurance to 'approve' or not, as it sees fit, text-books on physiology and hygiene for use in secondary and lower schools. In the case I mention this committee did not even confine their 'approval' to the alcoholic and narcotic portions of the book but 'indorsed' also its 'amount of matter on general hygiene,' as well as the 'presentation of matter with regard to its adaptability to the class of students for which it is designed'; or, in other words, passed upon its scientific and pedagogical merit, as well as upon its alcoholic value. If, as would sometimes seem to be the case, it has actually come to pass, at the beginning of this twentieth century, that a writer who desires to publish an elementary text-book on physiology and hygiene, before he can obtain a publisher or a market, may have to secure the 'indorsement' of 'Mrs. Mary H. Hunt, World's and National Superintendent of Scientific Temperance Instruction of the Woman's Christian Temperance Union,' of 'the Rev. Daniel Dorchester, D.D., Vice-President of the Massachusetts Total Abstinence Society,' and the rest of this self-constituted committee, it is high time that cognizance should be taken of the fact by scientific men and educators and a protest entered.

On further examining the book to which I have just referred, I was even more disturbed to find that this author, like some other recent writers on elementary physiology and hygiene, doubtless with the New York law before his eyes (which requires that 'this subject must be treated in the text-books in connection with the *various divisions* of physiology and hygiene, and pages on this subject in a separate chapter at the end of the book shall not be counted') had actually felt bound to

weave in a lesson on alcohol with his discussion of the physiology of muscle, of nerve, of digestion, of vision, and each of several other sections of the subject, so that all his work seemed literally tainted with alcohol.

It is a notorious and a disgraceful fact, that, apparently with a view of pleasing this self-constituted oligarchy, some writers have even made alcoholic instruction the beginning, the middle, and the end, of their text-books. Of such books it may truly be said that they have no permanency of their own, and are only with difficulty preserved by alcohol.

What I have said thus far of this subject applies mainly to elementary education; but those who have witnessed the virulent attacks upon a conscientious chemist and physiologist, who has recently made important physiological experiments upon the oxidation of alcohol within the human body, because his experiments have seemed to confirm the earlier statements that alcohol in minute quantities is more like a food than a poison, do not need to be told that this same propaganda is quite as eager to bring science, as it has already brought education, under its powerful dominion. Signs are not wanting, however, which indicate that its control has already reached its climax, and even begun to decline.

An attempt in 1899 on the part of Mrs. Hunt and others to make the Massachusetts law conform more closely to the ideas of those interested in 'scientific temperance' was stoutly resisted by the Massachusetts Medical Society, as well as by various scientific men and educators, with the result that the statute of 1885 remains unchanged. This prescribes that 'physiology and hygiene, which in both divisions of the subject shall include special instruction as to the effect of alcoholic drinks, stimulants and narcotics on the human system, shall be taught as a regular branch of study to all pupils in all schools supported wholly or in part by public money, except special schools maintained solely for instruction in particular branches, such as drawing, mechanics, art and like studies.' With the exception of the clause 'to all pupils' this statute is not unreasonable, for, as I have said above, it is right and proper that the youth of the land should be taught, plainly and thoroughly, the dangers which lurk in alcoholic drinks, in narcotics, etc. What is unnecessary and objectionable is that the exact amount of such teaching should be prescribed by law; and that the method of teaching (by text-books in the hands of the pupils), the space devoted to it, and its treatment, in text-books, should be legally regulated. That, in addition, the particular text-books used should be largely determined by a self-constituted and unofficial oligarchy, leaders of a propaganda, which, in any right use of the terms, is neither educational nor scientific, is both odious and intolerable.

In Connecticut, in 1901, a statute of the objectionable sort referred to above was repealed, and one to which but little exception can be taken was enacted in its place. It is gratifying to note, also, that the Department of Superintendence of the National Educational Association, at a meeting in Chicago in the early part of the same year, adopted a report containing the following significant, if guarded, paragraphs:

"The questions of highest importance for teachers and superintendents of schools to consider [concerning 'temperance physiology'] are those which relate to the methods by which temperance instruction shall be imparted, the extent to which it shall be carried, and the subject-matter to be presented.

"The educational side of this question is vitally important, and demands thor-

ough and systematic study.'' This action is timely and welcome in view of the existence of an opinion like the following, expressed in a letter to me by a representative of a prominent publishing house: ''I feel that we can not be too emphatic in expressing sympathy with your movement and in denouncing the intimidation of teachers and other educators which has gone on for some years. The whole so-called temperance physiology movement of the W. C. T. U. seems to have fallen into the hands of blackmailers and schemers, who pull the wool over the eyes of the rank and file of the organization, and work both schools and publishers for their own financial benefit. You are quite right in saying that the school teachers are 'bullied'; they are, and they do not dare resent such action as it should be resented.''

Time fails to deal, as I would be glad to do, with other forms of propaganda which seek to bring under their special subjection various departments of science or education. One of these is that known as the anti-vaccination movement, which is widely supported not only in England, but of late also in America, and has already succeeded in both countries in modifying very materially those requirements of compulsory vaccination indicated by science, experience and common sense. It is true that compulsory vaccination should be undertaken only after the most careful consideration, for it constitutes a serious trespass upon the fundamental right of personal and individual liberty. But I have no idea that this movement will ever seriously subvert the cause of vaccination, for the reason that a lively epidemic of smallpox will generally bring the majority of the people to their senses, and such epidemics are tolerably sure to come if anti-vaccinationists become too numerous or too active. I must, however, enter a protest against those medical practitioners who after merely prescribing powders for children give them certificates of 'vaccination' which will enable them to attend the public schools. Such lying and deceit merit only the condemnation and contempt of all lovers of science and truth.

Naturalists should also be on their guard against the influence of that new but rapidly growing sect, known as Christian Scientists, which virtually denies the existence of disease and accordingly, logically enough, disapproves of all teaching of physiology and hygiene. It has recently come within my own knowledge that a Christian Scientist refused to attend a lecture on domestic economy by an expert because the latter happened to be at the time attending a meeting of the American Public Health Association, alleging that no one could be worth hearing on the subject appointed who had anything to do with an Association devoted to a purpose so useless.

With propagandists besieging more or less successfully our halls of legislation, the time has come when bodies like the American Society of Naturalists and the American Association for the Advancement of Science should have standing committees on legislation, to take care, as far as possible, that unwise, extravagant or fanatical ideas regarding science and education shall not be given the force of law by the several States or by the Federal Congress.

If to-day we have little to fear from dogma or theology we may still have much to dread from foolish or needless legislation; and I desire to urge upon all those to whom these words may come, the duty, alike of individual watchfulness and of united effort, to resist everywhere and always the statutory subjection of science and education to propaganda.

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