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Contributors

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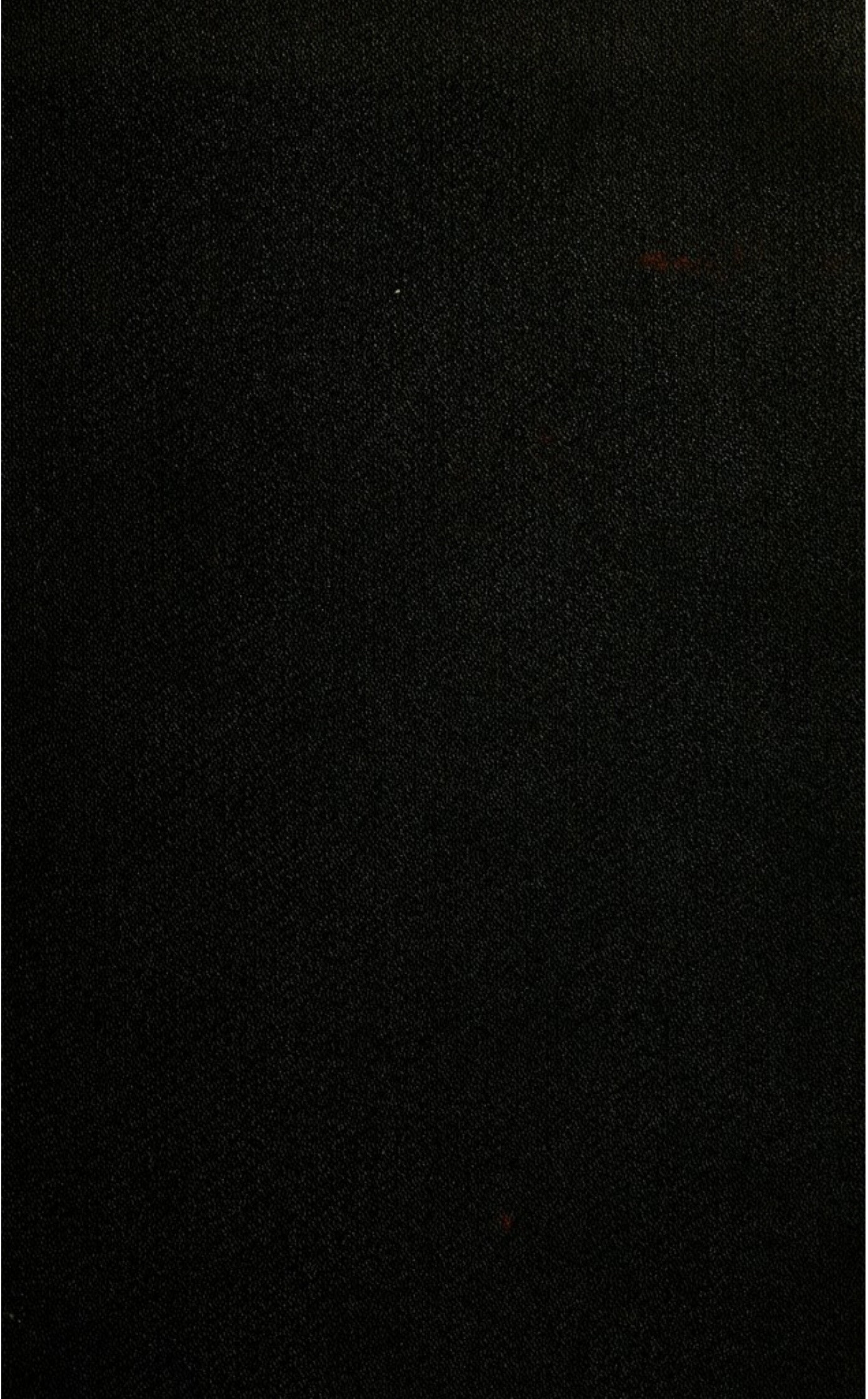
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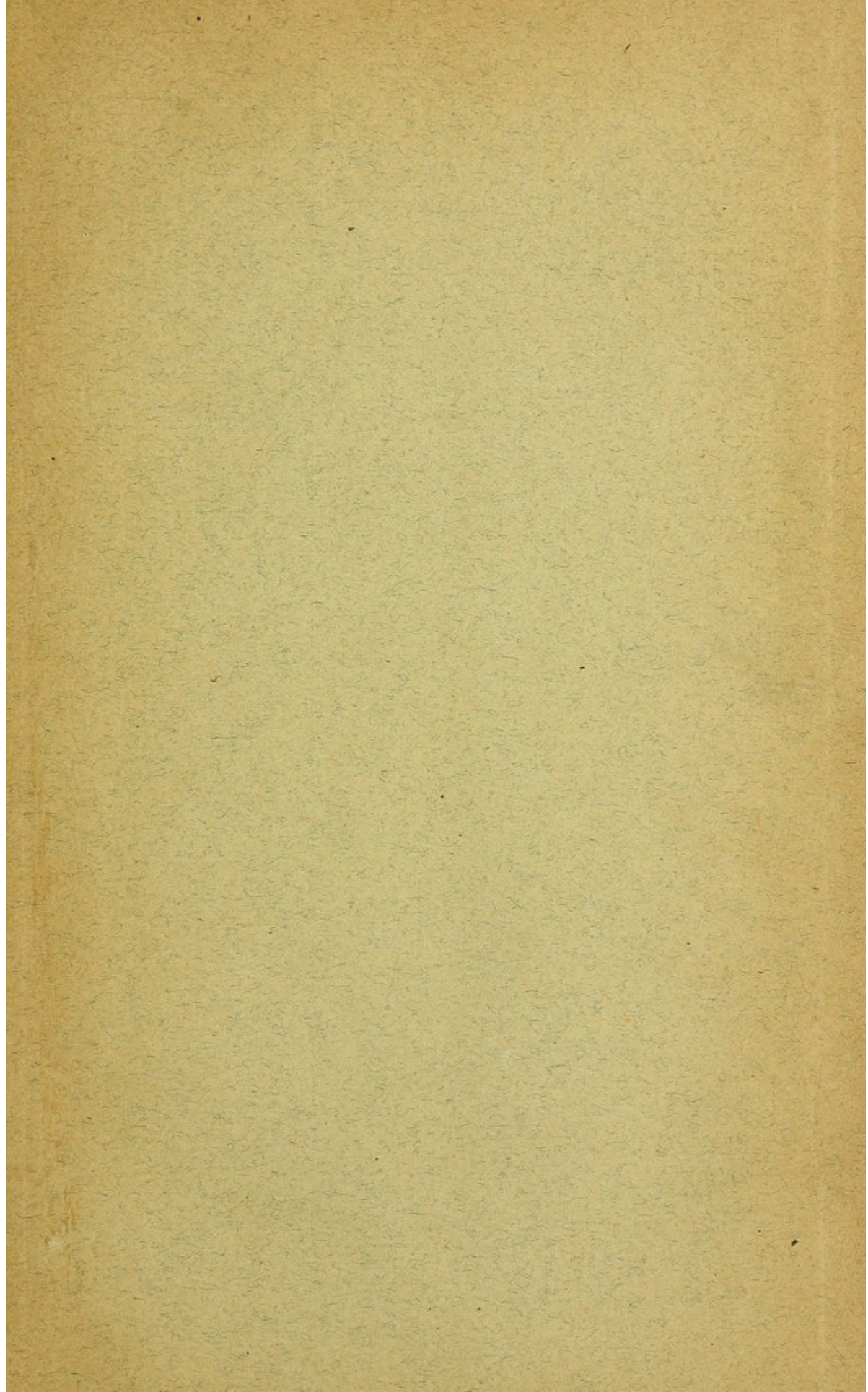
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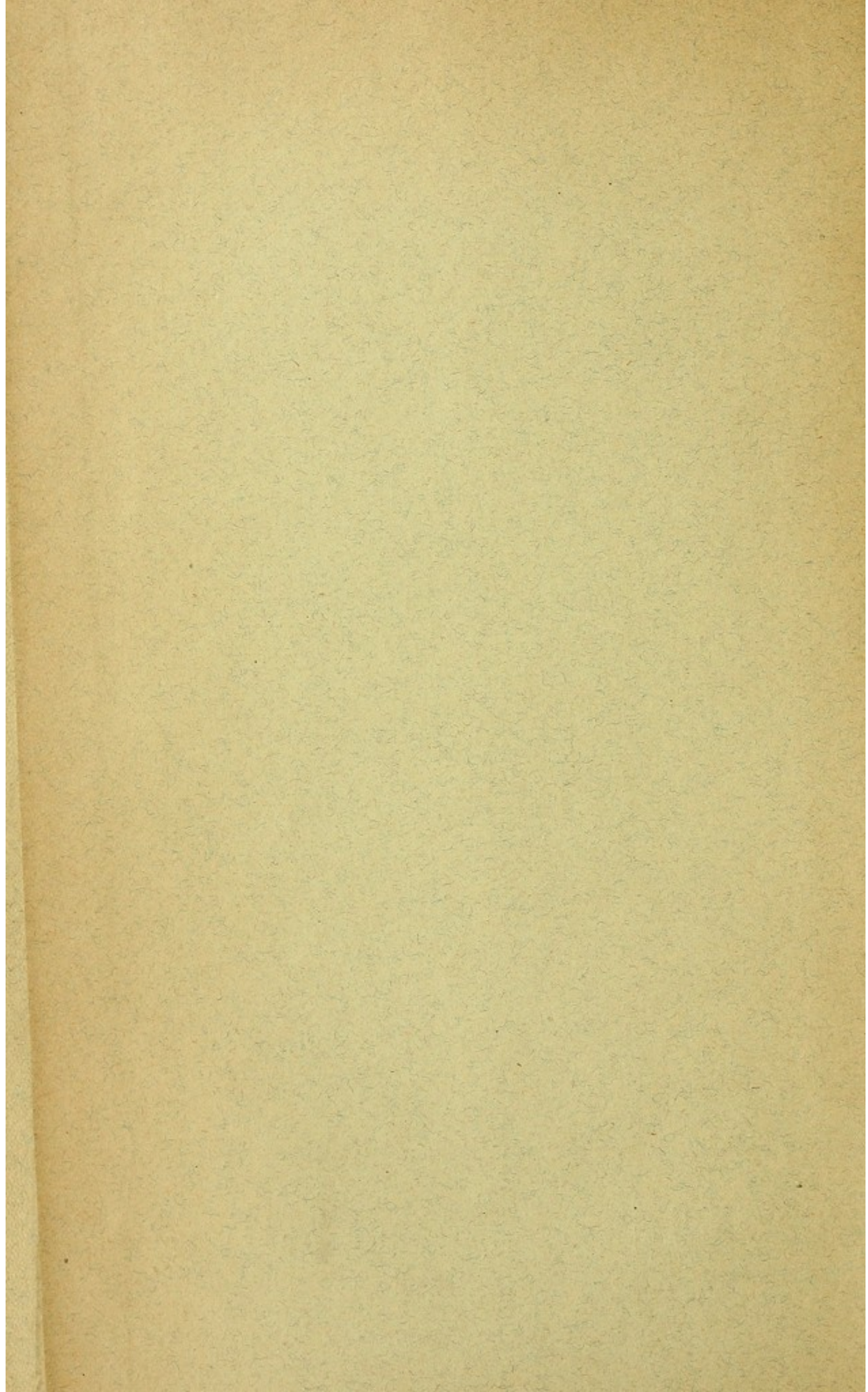
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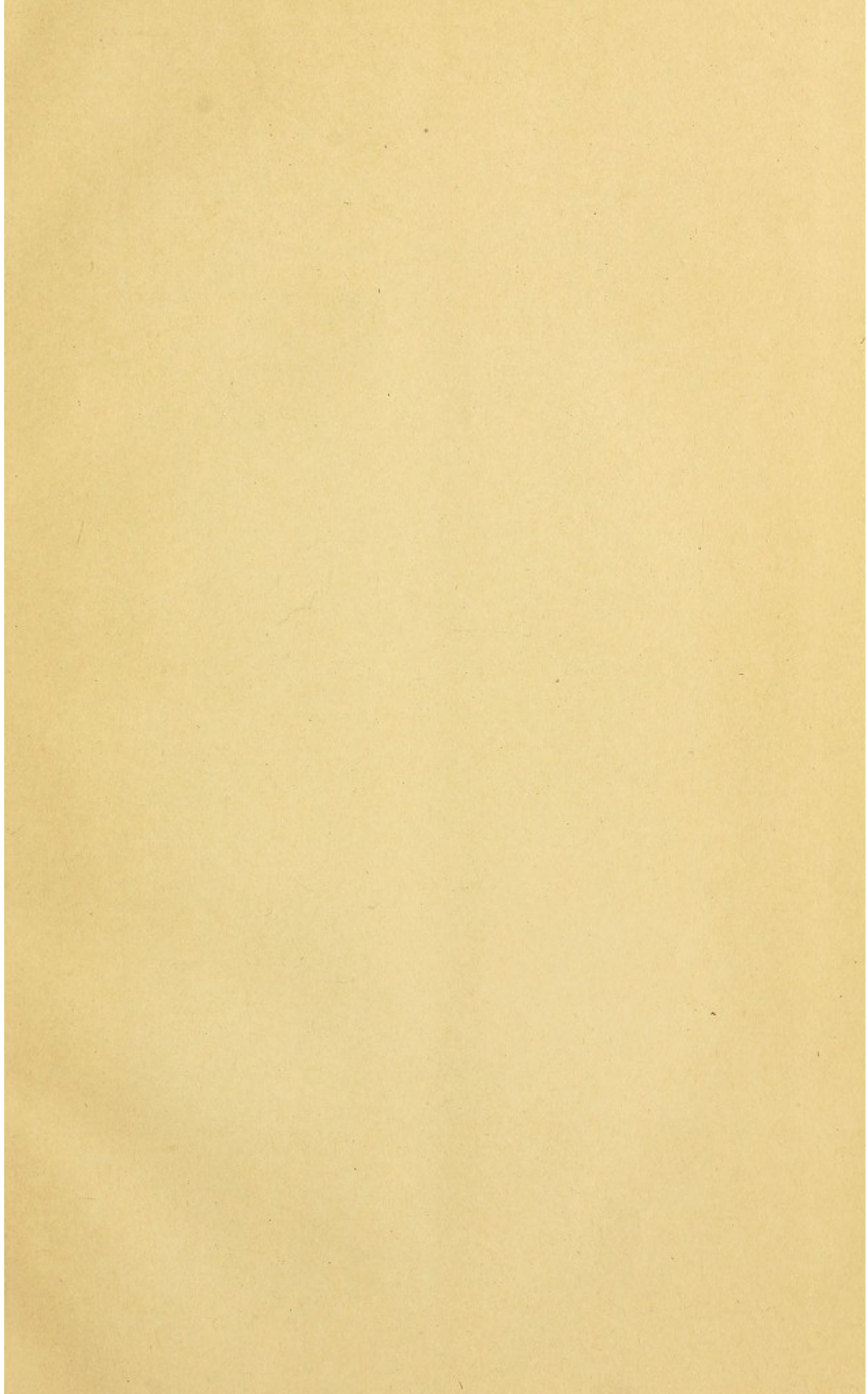
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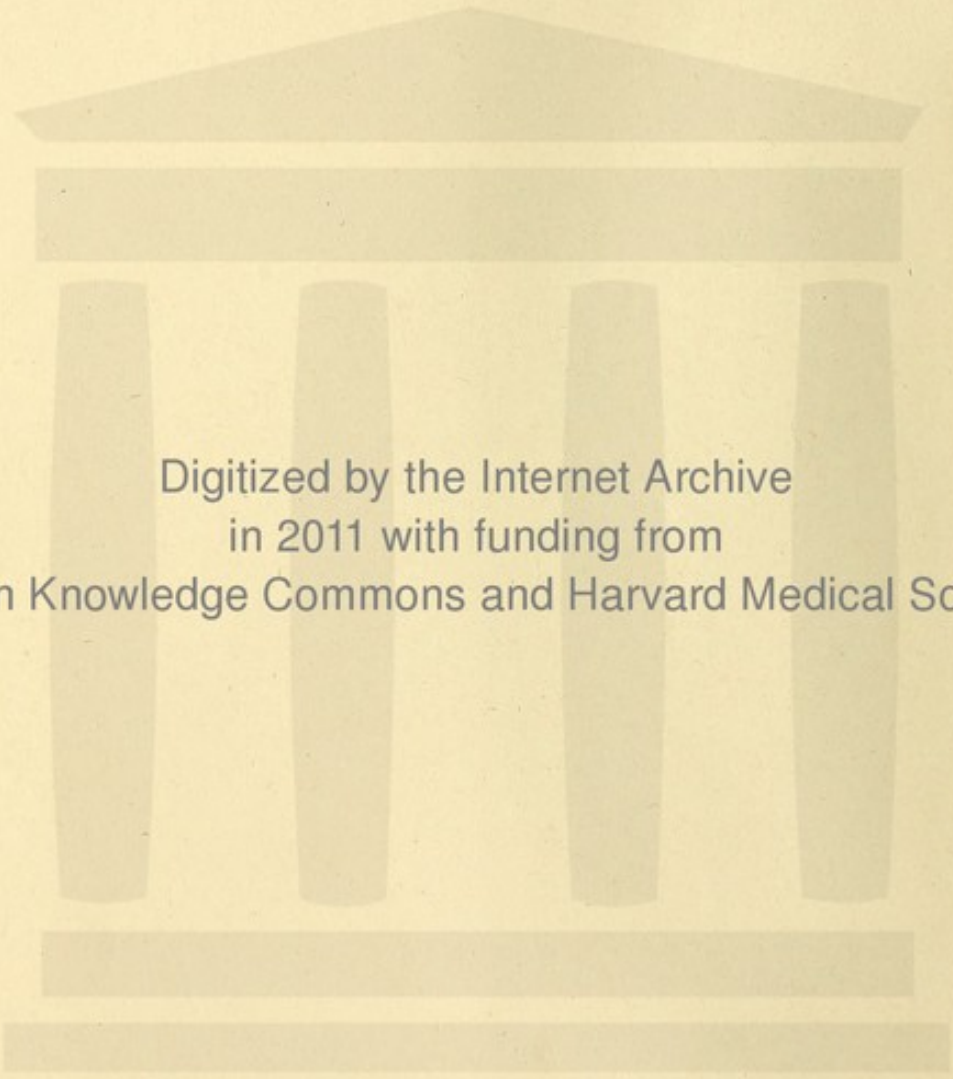
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State Board of Health of Massachusetts.

SUMMARY OF SEVEN YEARS' WORK

OF THE

STATE BOARD OF HEALTH

OF

MASSACHUSETTS.

PREPARED BY

W. L. RICHARDSON, M. D.,

OF BOSTON.



BOSTON:

WRIGHT & POTTER, STATE PRINTERS,

79 MILK STREET (CORNER OF FEDERAL).

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SUMMARY OF SEVEN YEARS' WORK OF THE STATE BOARD OF HEALTH OF MASSACHUSETTS.

The Act which established a State Board of Health in Massachusetts, was passed and went into effect June 21, 1869.* Soon afterwards His Excellency Governor Claflin, with the advice and consent of the council, appointed the following-named persons to constitute the Board, their commissions bearing date July 31, 1869 :—

HENRY I. BOWDITCH, M. D.,	for seven years.
GEORGE DERBY, M. D.,	for six years.
P. EMORY ALDRICH	for five years.
WILLIAM C. CHAPIN	for four years.
WARREN SAWYER	for three years.
RICHARD FROTHINGHAM	for two years.
ROBERT T. DAVIS, M. D.,	for one year.

Establishment
of the Board.

The constitution of the Board, composed as it is of gentlemen of various professions, has given a broad scope to its work, and has undoubtedly been most happy in its results. Of the present members, one is a lawyer, one a civil engineer and manufacturer, one is engaged in literary pursuits, one is a merchant, and three are physicians. Two of them have been mayors of the cities of their residence.

The first meeting was held at the State House, September 15, 1869, on which occasion the senior member, Dr. Bowditch, addressed the Board, explaining to them what, as he considered it, were the general nature of their duties, and the important bearing which a faithful discharge of

First meeting.

* See page 45.

them would have on the present and future health of the citizens of the State. It was for them to inaugurate State Medicine in Massachusetts; and he briefly alluded to the various methods by which the objects sought for in the establishment of the Board could best be accomplished. This address was published in the first annual report.

Organization.

At a subsequent meeting, held September 22, 1869, a set of by-laws* was adopted for the government of the Board, and the organization was completed by the choice of Dr. Bowditch as Chairman and Dr. Derby as Secretary.

Death of Dr. Derby.

Dr. Derby died June 20, 1874. At a meeting of the Board, held June 22, the following address was read by the Chairman, and ordered by unanimous vote to be printed for distribution. It was also published in the sixth annual report.

Gentlemen of the State Board of Health:

A few days since I warned you of the serious illness of our dear friend and honored Secretary, Dr. GEORGE DERBY. It is with great sorrow that I have summoned you again in consequence of his death.

Permit me to recall to your notice some of the more salient points in his history, with many of which you, who have been associated with him in this Board, are already partially or perchance fully acquainted.

Dr. Derby was born in Salem, in 1819; he was the son of John Derby, an eminent merchant of that city.

He took his degree from the Harvard Medical School in 1843. For many years he practised very quietly in Boston, but was little known by the public or to the profession, until the late war brought to light his latent energy, and his admirable character.

The first call of President Lincoln upon the patriotism of the country, at the commencement of the civil war, found our friend prompt, and determined to do his whole duty. He entered again

* 1. A Chairman and a Secretary for the Board shall be chosen by ballot.

2. Regular meetings of the Board shall be held at the State House, in Boston, on the first Wednesday of January, April, July and October, at eleven o'clock, A. M.

3. At the meeting in January the Chairman and Secretary shall be chosen, to hold their offices during the ensuing year.

4. Special meetings may be called at any time by the Chairman, or at the request of any two members.

5. Four members shall constitute a quorum for the transaction of business.

with praiseworthy zeal into all the work of student life. He took special lessons in practical surgery from our most eminent surgeons, and, with more than youthful enthusiasm, studied out the improvements in medicine and surgery that had been brought forward during the many years since his pupilage, from 1838 to 1843. This act marked two of those traits of character which we, his associates on the Board of Health, have seen and admired so much during our intercourse with him; viz., his conscientiousness, and his thoroughness in his dealings with any question. He was unwilling to undertake the care of our patriot soldiers without fitting himself in the most perfect manner for the task. He received from Governor Andrew the commission of surgeon of the 23d regiment of the Massachusetts Volunteers. He went through the whole war without a furlough, and was always ready to sacrifice himself for the good of the soldiers. He was fearless in the presence of danger, performing important operations on the field while under fire, with a perfect coolness and deliberation, when others, superior to him in authority, shrunk from the ordeal to which his sense of professional duty summoned him.

Having thus served, with a reputation for ability unsurpassed by any one, he left the army at the termination of the war, a man comparatively broken down in health, and with the prospect of commencing anew his professional life. For months, by most careful regimen, and the daily use of quinine, he had fought against the insidious encroachments of malarial disease.

When the war closed, the reaction took place in a corresponding depression of his health.

The government, fully appreciating his worth, and desirous of aiding him in his perfect recovery, appointed him to the charge of the National Soldiers' Home, at Augusta, Maine.

After several months' residence there, having partially, at least, regained his vigor, he resumed practice in Boston. He came back to us a man of noteworthy fame as a patriot, as an able and fully practised surgeon, and a most high-toned gentleman.

Soon after his return he published some papers relating to hygiene, and he was called to fill the post of surgeon at the City Hospital. He also was made Professor of Hygiene at Harvard College.

During the war he married Miss Parsons, grand-daughter of the celebrated Theophilus Parsons, formerly chief justice of the supreme court of this State. Dr. Derby left a widow and two children.

June 21, 1869, just five years ago, the legislature passed the Act establishing the State Board of Health.

For two years previously Dr. Derby edited the reports to the legislature relating to the births, marriages, and deaths in Massachusetts. In the preface to the report, in 1867, the Secretary of State had used the following language in reference to Dr. Derby, that "during the late war he was four years in active service, with the largest reputation as a surgeon."

His publications, as well as his acquired reputation at the State House and abroad, readily pointed him out as the person most fitted, on the score of his manliness, ability, and integrity, to be Secretary of the new Board. He, in fact, had no rival.

I need not remind you of all that he has done for us; of the great works he has inaugurated, and successfully carried forward. But none of us, I suspect, even now realize how devoted he has been. We all know how often and how perfectly we trusted him. We felt that the honor of our Board would be cautiously and firmly sustained. We remember his genial and commanding presence; his indefatigable zeal in everything that was ordered by the Board. We were sure of him, as the most reliable person we could have. How much the present position of the Board, as a motive-force in the community, depends on his really wonderful faculty of meeting and of moulding men, we shall never exactly know. For my own part, gentlemen, words would fail me to give you my idea of the debt we owe to him. He guarded our honor and safety with so jealous a care, that sometimes I was inclined to think him unduly cautious. I never had any forebodings in regard to the safety and ultimate success of the Board, for I believe that State, or Preventive Medicine, has taken so deep a root in the conscience of the English-speaking race, that hereafter, boards of health, or in other words, for the prevention of disease, must forever exist; and they will have more and more weight upon the policy of states and of nations, as well as upon the private habits of individuals.

And now, gentlemen, what is the lesson that comes to us from the life-work of our dear friend and co-laborer in a most noble cause?

Why, simply this: that we should one and all go on with renewed zeal and with an untiring devotion that shall be worthy of him. Let us make his course our example in our future career. If we do this, I have no fear; for the future of any cause must be bright, provided it be carried forward intelligently, and with the single endeavor to do honestly and justly the duty of the hour, as our friend Derby always did his.

God grant his grace to each one of us, and enable all of us to feel, during our future connection with the Board, the beauty of the example left to us by the life of our associate.

Dr. F. W. Draper was elected Secretary *pro tempore* June 22, 1874, for three months, and served until September 2, 1874, when he was succeeded by the present Secretary, Dr. C. F. Folsom.

Changes in the secretaryship.

During the absence of the Secretary in Europe (July, August, September, 1875), whither he had been sent on business for the Board, Dr. W. L. Richardson filled the office of Secretary *pro tempore*, having been elected to that position July 6, 1875.

The following gentlemen have served as members of the Board :—

Members of the Board.

HENRY I. BOWDITCH, M. D., of Boston,	Appointed July 31, 1869.
<i>George Derby, M. D., of Boston,</i>	{ Appointed July 31, 1869. Died June 20, 1874.
<i>P. Emory Aldrich, of Worcester,</i>	{ Appointed July 31, 1869. Resigned Sept. —, 1873.
<i>Wm. C. Chapin, of Lawrence,</i>	{ Appointed July 31, 1869. Resigned Oct. 5, 1871.
<i>Warren Sawyer, of Boston,</i>	{ Appointed July 31, 1869. Reappointed Aug. 13, 1872. Resigned Jan. 16, 1873.
RICHARD FROTHINGHAM, of Charlest'n,	{ Appointed July 31, 1869. Reappointed July 29, 1871.
ROBERT T. DAVIS, M. D., of Fall River,	{ Appointed July 31, 1869. Reappointed Aug. 30, 1870.
<i>Gustavus V. Fox, of Lowell,</i>	{ Appointed Nov. 3, 1871. Resigned Jan. 25, 1873.
DAVID L. WEBSTER, of Boston,	Appointed Feb. 25, 1873.
JOHN C. HOADLEY, of Lawrence,	{ Appointed Jan. 28, 1873. Reappointed July 31, 1873.
THOMAS B. NEWHALL, of Lynn,	{ Appointed Nov. 15, 1873. Reappointed July 14, 1874
CHARLES F. FOLSOM, M. D., of Boston,	{ Appointed July 14, 1874. Reappointed Aug. 4, 1875.

On entering upon their new duties, the Board voted, in October, 1869, to send the following circular to the mayor and board of health of every city, to the selectmen of every town, to every member of the legislature, and to every clergyman and physician in Massachusetts. The design

Circular relating to existing health laws.

of this circular was to call the attention of local boards of health to the powers which they possessed and the duties which devolved upon them under existing laws, and to urge upon all those in authority to insist upon an immediate enforcement of those laws and a faithful performance of those duties.

COMMONWEALTH OF MASSACHUSETTS.

STATE BOARD OF HEALTH, }
STATE HOUSE, BOSTON, October, 1869. }

To the Boards of Health of the several Cities and Towns of Massachusetts:

The undersigned have recently been appointed by the Governor and Council, to constitute the "State Board of Health," under an Act passed by the last legislature.

In entering upon our duties, which are rather advisory than executive, we desire to establish such communication with the local boards having this important subject in charge, that all may work together for the common advantage of the people, for the prevention of disease, and for the prolongation of life.

We believe that all citizens have an inherent right to the enjoyment of pure and uncontaminated air, and water, and soil; that this right should be regarded as belonging to the whole community; and that no one should be allowed to trespass upon it by his carelessness, or his avarice, or even by his ignorance. This right is in a great measure recognized by the State, as appears by the General Statutes.

If these were strictly and impartially enforced, we should have a condition of public cleanliness, and of public health, which would make Massachusetts a model for all other communities. That this has not been done, depends upon many causes, some of general, and others of purely local operation.

It has been doubted, whether the public mind is sufficiently aware of the dangerous elements around us; whether the connection between filth and disease is as yet proved to the public satisfaction; whether the people are convinced that undrained land is unwholesome to live upon.

All these doubts of the public intelligence have impeded the operation of our laws.

It is thought, also, that local and private interests have often been so strong as to paralyze the action of the health authorities.

But we hope and believe that a better time is coming; and we confidently look to you to put in force the powers which the laws have placed in your hands.

Among these laws, we would particularly call your attention to—

General Statutes, chapter 26, in which are comprised stringent provisions relative to the abatement of nuisances, to vaccination, to contagion, and to offensive trades.

Also to chapter 49, section 151, relative to the sale of milk produced from cows fed upon the refuse of breweries or distilleries, and to the sale of milk rendered unwholesome by any cause.

Also to chapter 166, in which the law is given relative to the sale of unwholesome provisions of all kinds, whether for meat or for drink; the corruption of springs, wells, reservoirs, or aqueducts; the sale of dangerous drugs, and the adulteration of drugs of every sort.

It will also be seen, on reference to chapter 211 of the Acts of the year 1866, that it is in the power of any person aggrieved by the neglect of the board of health of any city or town to abate a nuisance, to appeal to the county commissioners, who can in that case exercise all the powers of the board of health.

Chapter 253 of the Acts of 1866 authorizes boards of health to seize and destroy the meat of any calf killed when less than four weeks old.

Chapter 271 of the Acts of 1866 authorizes boards of health to appoint agents, to act for them, under certain restrictions.

The legislature of 1868 passed two Acts of great importance to the public health, to which we would respectfully and earnestly ask your attention. The first, chapter 281, 1868, applies only to the city of Boston, and relates to tenement and lodging houses, placing them under very strict regulations, for the public good.

The second, chapter 160, is of general application. It provides that in any city or town, lands which are wet, rotten, or spongy, or covered with stagnant water, so as to be offensive or injurious to health, shall be deemed a nuisance, to be abated by the board of health of such city or town. In case they refuse to act, appeal may be made, by persons aggrieved, to the superior court or any justice thereof, who may appoint three commissioners with powers equal to those possessed by boards of health.

We confidently look to you for the enforcement of these laws.

We believe that public opinion will fully support you in so doing.

We will give you all the help in our power.

There is a great work before us, which, if carried out in the

letter and spirit of the laws referred to, we cannot doubt will justify the wisdom which framed them.

In making this our first communication to the boards of health of the various cities and towns of the Commonwealth, we sincerely hope that it may serve as the opening of friendly and helpful relations between us, and that it will lead to reforms the effects of which will be evident in the improved condition of public health.

Communications addressed to our Secretary, Dr. GEORGE DERBY, State House, Boston, will be at once acknowledged, and will be laid before the State Board of Health at their next meeting.

Very respectfully, your obedient servants,

HENRY I. BOWDITCH,
 GEORGE DERBY,
 ROBERT T. DAVIS,
 RICHARD FROTHINGHAM,
 P. EMORY ALDRICH,
 WARREN SAWYER,
 WILLIAM C. CHAPIN,

State Board of Health.

Publication of
 weekly mortal-
 ity returns.

Arrangements were also made for the collection and publication, weekly, in the Boston Daily Journal, of the number of deaths, with their prevailing causes, in twenty of the leading cities and towns of the State. They were also published for a time in the Boston Medical and Surgical Journal.

Appointment of
 local corre-
 spondents.

Realizing the great advantages which would result from obtaining prompt and reliable information as to the sanitary condition of all sections of the Commonwealth, a circular was sent in January, 1870, to the selectmen or health officers of every town, asking that some trustworthy physician should be recommended for appointment by the Board as its medical correspondent for that town. This body of correspondents was soon found to be of great value to the Board. From their returns, the Secretary was able to ascertain at once the existence, and the nature and character, of any epidemic that might occur; and the Board was thus able to take the proper steps for its prompt suppression. In the annual reports of the Board, extracts from the

returns of these local correspondents have been published. From these gentlemen the Board has obtained much valuable information as to the existence and cause of local sanitary evils, and many thoughtful suggestions have been received, which, through the medium of the annual reports, have come to attract the general attention of those interested in all that pertains to public hygiene.

Toward the close of the year 1874, the Board selected one hundred and fifteen physicians, scattered throughout the State, who consented to make weekly reports to Frank W. Draper, M. D., as registrar, of the diseases which might be prevalent in their immediate localities. Arrangements were also made for the publication of the general results obtained from these reports, in connection with the weekly mortality-returns published by the Secretary in the Boston Daily Journal each Thursday. The returns were also published in the Boston Medical and Surgical Journal. The experiment was carried out for one year.

Weekly returns
of prevalent
diseases.

In the seventh annual report, a summary of these weekly tabulations, prepared by Dr. Draper, was published.

One of the first subjects which attracted the attention of the Board of Health was the methods employed in preparing meat for market, and for the disposal of the fat, bones, and other animal refuse.

Slaughtering for
Boston market.

In Brighton, annexed to Boston in 1874, there were in 1869 about fifty slaughter-houses in full operation, in which, during the year previous to the formation of the Board, there were slaughtered 53,000 beeves, 342,000 sheep, and 144,000 hogs. None of these establishments were of any great magnitude, but in each the business was carried on in an unsatisfactory, clumsy, and wasteful manner, without a proper regard being paid to cleanliness. Connected with each of these establishments was a pig-pen, in which the hogs wallowed in the decomposing, putrid animal matter which came from the adjacent slaughter-house. The result was the existence, within a few miles of the centre of a crowded city, of a serious nuisance, which might at any time become the source of very great danger to the inhabitants. In addition to all

Slaughter-
houses in
Brighton a
nuisance.

Boiling and rendering establishments.

these slaughter-houses, there existed in Boston proper, Cambridge, Charlestown, Brighton, Roxbury and other neighboring towns, a number of establishments in which the fat, tallow, and bones collected from the former places were carried to be melted and boiled. It was no wonder, therefore, that the air in the immediate neighborhood, and oftentimes for miles around, was contaminated with the foul odors and vapors escaping from the vats and improperly constructed chimneys.

Blood thrown away and allowed to putrefy.

The blood of animals slaughtered in Brighton was for the most part lost, being allowed to run off into the pig-pens, where that portion which was not consumed by the hogs was allowed to lie and putrefy in the sun, thus adding to the unwholesome character of the locality. A very small amount of the blood only was in any way utilized, and never more than a cent a gallon was realized from the sale of a small part of it to sugar refiners. The refuse portions of the animals slaughtered were used to feed hogs, which were thus fattened for the market.

Investigation by the Board.

Immediately after the organization of the Board, a careful investigation was made of the methods of slaughtering animals for food, and of bone-boiling and fat-melting, in the vicinity of Boston, by a committee consisting of the Secretary of the Board and Mr. Warren Sawyer. The result of this investigation was embodied in a special report by the Secretary, published in the first annual report of the Board, in which the urgent necessity for some immediate change, and the advantage to be derived from the erection of one or more abattoirs, were fully set forth.

The Board urged upon the legislature the propriety of at once undertaking the reforms proposed by the Secretary, and strongly advocated the erection of abattoirs, upon both sanitary and economical grounds.

Act incorporating Butchers' Slaughtering and Melting Association.

The plan proposed met, as was perhaps natural, with an almost unanimous opposition from the Brighton butchers, who regarded the whole scheme as visionary and impractical. In 1870, through the efforts of the citizens of Brighton, an Act* incorporating the Butchers' Slaugh-

* See page 46.

tering and Melting Association was passed by the legislature. By the terms of this Act, a corporation* was formed for the purpose of carrying on the business of buying and slaughtering cattle, sheep, and other animals, and of melting and rendering the refuse, fat, etc. The capital stock was to consist of two hundred thousand dollars, divided into shares of one hundred dollars each. The corporation was to obtain a lot of land and erect upon it buildings suitable for the business. Each member of the corporation was to have the right to slaughter on the premises, and the corporation itself was to be allowed to manufacture and sell any of the usual products of such business; or they could lease that privilege to others. The selection of the land, the erection of the buildings, and the general methods of carrying on the business, were all placed under the supervision of the State Board of Health. All plans of the works of the Association required the approval of the Board of Health before they could be used. The Act further provided that the Board could, under certain conditions, order any person engaged in the business of slaughtering within six miles of Faneuil Hall Market, in Boston, to transfer his business to the abattoir, in case it was carried on elsewhere in a manner "injurious to the public health."

The passage of this Act at once met with opposition from the butchers. The year passed, and not a dollar of the stock was subscribed for.

The next legislature passed, therefore, in 1871, an Act* concerning slaughter-houses and noxious and offensive trades. This Act prohibited the establishment or extension of any building for slaughtering or rendering, or for any noxious or offensive trade, in any city or town containing more than four thousand inhabitants, without first obtaining leave of the mayor and aldermen, or the selectmen of such city or town. It also gave the Board authority, after a hearing, to order any person engaged in such business to "cease and desist."

Act relating to
noxious and
offensive trades.

The legislature of 1874 so amended the law as to make it applicable to every city or town in the Commonwealth, irrespective of the number of its inhabitants.

* See page 49.

Inspection of slaughtering establishments, etc.

The Board at once made an inspection of the leading establishments of this character in the vicinity of Boston, and subsequently the leading butchers, fat-melters, and bone-boilers were invited to meet the Board for consultation. The meeting resulted in the appointment of a committee of five of the above-named gentlemen, who proceeded with the Secretary of the Board to New York. Two days were there spent in making a careful examination of everything in that city which related in any way to the business under discussion.

Visit to New York with committee of butchers, etc.

Proposed changes in methods.

The result of this visit was the reception by the Board of Health of a communication, signed by sixteen of the leading Brighton butchers, in which mention was made of numerous changes in the methods of carrying on the business which they proposed to make, if the Board would allow them to go on in the same buildings. These proposals were rejected, inasmuch as they would not wholly remedy the existing evils, and would therefore not prove in any way satisfactory to the general public.

Rejection of proposed changes.

Reception of complaints and public hearings.

Meanwhile formal complaints began to be made to the Board under the provisions of the Act of April 8, 1871. Public hearings were at once ordered, the result of which was that sixteen of the slaughter-houses were closed. Additional complaints against others were being constantly received.

Acceptance of the charter.

The butchers now began to realize that the Board of Health was in earnest, and also that the new plan, which was proposed in the bill, authorizing the erection of an abattoir, was not so objectionable as they had at first supposed. The result was that the butchers decided to accept the charter for the Butchers' Slaughtering and Melting Association.

Erection of the abattoir.

A large tract of land on Charles River was secured; over a hundred thousand dollars in cash were paid to the capital stock, and twelve directors were chosen by the members of the association. The plans for suitable buildings were at once procured, and the work of construction was pushed rapidly forward.

Appointment of an inspector.

The next step was to provide for the appointment of a suitable inspector of animals and meat. With a view of

obtaining a salary adequate to the position, the Board applied to the legislature for the passage of a bill authorizing the appointment of such an inspector, and providing for the payment of his salary. This request was repeated in three successive annual reports. In the session of 1876, the legislature passed an Act* giving to all cities and towns full authority to appoint inspectors of living animals or dressed meat prepared for human food, with ample power of seizing what should be found unfit.

The work of slaughtering in the new abattoir began June 17, 1873. A few butchers still continued the business outside, in the old and improperly constructed buildings, and with the same imperfect methods as before. Owing, however, to the limited accommodations within the abattoir, the Board deemed it advisable not to hasten the work of ordering such of them to cease and desist as were willing to join the association, but were prevented from so doing by lack of sufficient room within the buildings. Gradually new structures were erected, and the butchers, one after another, joined the association, either because they deemed it for their own advantage to do so, or because they were anxious to avoid the forthcoming action of the Board. A description of the abattoir is given in the fifth annual report, with a letter from Hon. Jackson S. Schultz, on methods of slaughtering in Europe.

Opening of the
abattoir.

Although the abattoir was demonstrated to be a great success, not only when viewed from a public point of view, but also as regarded by the men engaged in the business, there still remained several small establishments outside in which the business was carried on in an offensive manner.

Action against
offending parties.

In May, 1875, a petition was received against the eight slaughter-houses still in active operation in Brighton. A public hearing was held. Two of the defendants agreed to go into the abattoir. The complaint against one was withdrawn, and five were ordered to cease and desist from the business after July 1, 1875. One of the offenders refused to obey the order of the Board, and an injunction from the supreme court was served upon him. This he neglected to heed. He was accordingly brought before

Supreme court
sustains the
Board.

* See page 57.

the court for contempt. The case was heard, and he was obliged to discontinue the business.

Action of the
Boston Board
of Health.

Later he began business, in connection with another party, using for the purpose some old abandoned slaughterhouses, whereupon the board of health of the city of Boston ordered them to cease and desist. But as fast as such orders were issued, the business was removed to a new place. Accordingly the City Board of Health, November 8, 1875, passed a general order forbidding the carrying on of the business of slaughtering or rendering within the city limits, without the permission of the board being first obtained.

Success of the
Brighton
abattoir.

With the passage of this order, the task which, six years before, the State Board of Health had undertaken to accomplish, was ended, and a whole town was rendered "a salubrious and agreeable place of residence; while at the same time it had within its limits, though somewhat remote from the residences, an admirably conducted abattoir, which never need be a source of offence, and which is capable of supplying with meat all the inhabitants of the metropolitan district."

Mr. Taylor, president of the Butchers' Slaughtering and Melting Association, says, in his report to the Board in 1876: "I think we may safely say that no one can be found willing to exchange the convenient and comfortable quarters at the abattoir for the inconvenient, dilapidated places left behind. . . . We feel that we can say beyond a doubt that the Brighton abattoir is a success."

Transfer of the
abattoir from
the State to the
City Board of
Health.

The success of the abattoir was fully established, and the work of the State Board of Health, as regards the town of Brighton, was accomplished. In the seventh annual report a request was accordingly made to the legislature for the transfer of the care of the abattoir from the State to the City Board of Health. The request was complied with; and a bill* was at once passed giving that Board full power of inspection and seizure of animals or meat unsuitable for human food, and to adopt what regulations seemed to them best to attain that end.

These were the most prominent cases, but other nui-

* See page 56.

sances have been abated under the same law. The change in the law relating to noxious and offensive trades, which was made June 5, 1874, and which made the provisions of that law applicable to all the towns in the Commonwealth, was followed by the receipt of several petitions. One of these was directed against a slaughter-house in South Scituate, another against a rendering establishment in Reading. In the first case, the Board reserved judgment in order to allow the remonstrant time to so alter his methods of carrying on the business as to obviate the evils complained of; in the second case, the defendants were ordered to "cease and desist" from the bone-boiling part of the business, while the decision of the Board was reserved as to the tallow-rendering. A slaughter-house in Watertown and a rendering establishment in Tewksbury were both closed, early in 1876, as being incapable of being otherwise than nuisances.

Complaints from South Scituate and Reading.

Watertown and Tewksbury.

In the report on "Mill-dams and other Water Obstructions," written by Dr. George Derby, and published in the third annual report, the attention of the public was called to the serious nuisance then existing in that arm of the sea which, lying between East Cambridge and Somerville, was known as Miller's River. During the summer of 1871, a joint petition, signed by the boards of health of Cambridge and Somerville, was received by the State Board, asking that the nuisance created by the slaughtering establishments on the banks of that river might be abated. At the time appointed for the public hearing on the matter, however, the complaints were withdrawn.

Miller's River nuisance.

The legislature of 1872 passed an Act* creating a joint commission, consisting of the Board of Harbor Commissioners and the State Board of Health (chap. 353, Acts of 1872). The duty of this commission was to devise some plan for abating the above nuisance. A hearing was given to all the parties interested, and the locality in question was carefully examined. An engineer, Mr. Phineas Ball, C. E., of Worcester, was ordered to report a plan by which the nuisance should be forever abated. The recommendations of this gentleman were adopted Decem-

Appointment of joint commission.

Mr. Ball's plan.

ber 7, 1872, by the joint commission, and referred to the legislature for their action in the matter. The case is stated fully in the fourth report of the Board.

Non-acceptance of Mr. Ball's plan a cause of nuisance.

In the fifth annual report, the Board expressed regret that the legislature had not seen fit to build the new sewer, as recommended by the commission, in such a way as to discharge its contents into the Mystic estuary, but had chosen rather to have it discharge into the Charles River. In the sixth annual report, attention was called to the fact that the very evils which the commission had feared would result from this change in the direction of the sewer, had arisen, and that, in consequence, the discharge of the sewage upon the flats had been the cause of a very serious nuisance, which might have been avoided had the sewer been built so as to discharge into the Mystic instead of the Charles.

Proposed abattoir for the slaughtering of swine.

In addition to the nuisance created by the deposit of the liquid refuse resulting from the slaughtering of hundreds of thousands of hogs at all seasons of the year, there was a second cause of complaint from the nauseating odors arising from the rendering establishments in the Miller's River district. Realizing that very much the same difficulty existed in that locality as had existed previously in Brighton, the Board recommended to the legislature the passage of a general law, authorizing the incorporation of a company for the purpose of slaughtering swine, of rendering the fat of swine, and of packing pork, with authority to purchase or take land, subject to the approval of the Board, within five miles in an air line of Faneuil Hall market; the whole business to be carried on under the same general control of the Board of Health, and in the same way as was the abattoir at Brighton. This recommendation of the Board was received with favor, and a bill* to that effect passed the legislature; but no practical results have as yet followed its passage.

Passage of the bill.

Complaints against J. P. Squire & Co. and eight others.

Complaints were received against nine establishments situated in this district, and public hearings were held. Numerous visits of inspection were made by the Board to the places in question. Meanwhile, the work of filling in

* See page 52.

the basins and of constructing the sewers, as ordered by the legislature, was being pushed rapidly forward. The whole question was one requiring great delicacy of action. The hog-slaughtering establishments were ready to adopt any suggestions which the Board, from time to time, offered, with a view of rendering their methods of carrying on the business as inoffensive as possible. They can now, with proper supervision, conduct their business in a satisfactory manner. Formal hearings have been held only in the case of John P. Squire & Co., which case was taken up first in order by the wish of the petitioners. The Board reserved their decision, and the petitioners declined to proceed against the other parties. Taking all these facts into consideration, the Board were unable to take further action in the matter, and the decision was given January, 1876, in favor of the defendant, by allowing the petitioners "leave to withdraw." It is thought that the establishment is now so managed as not to be a source of serious offence. A full account of the proceedings in this case may be found in the fourth, fifth, and sixth annual reports of the State Board of Health, and in the stenographic report of the hearings, published by Messrs. J. P. Squire & Co.

Several rendering establishments in the region of the Miller's River basin are not yet in a satisfactory condition; but, until further complaints are received against them, the Board are powerless to take any steps looking to an improvement in that district.

Bad condition of other establishments.

Such excellent results followed the frequent visits of inspection to the large slaughtering establishments on the banks of the Miller's River, that the Board recommended to the legislature, in their sixth and seventh annual reports, that some provisions should be made by law providing for a regular inspection of all such works hereafter.*

Regular inspection of these establishments asked for.

One of the subjects which early attracted the attention of the Board, was the sanitary condition of the homes of the poor. An examination of the General Statutes of the Commonwealth showed that the subject was one which had not escaped the careful attention of the legislature, since there was evidently no lack of law for the proper

Homes of the poor.

* See page 57.

Health authorities of Boston notified of the present laws.

Homes of the poor in London.

Comparison of model lodging-house and common tenement-house.

Difficulties in the way of reform.

Boston Coöperative Building Company.

sanitary regulation of the subject. It was, however, clear that something was wrong. The unsatisfactory condition of the tenement and lodging houses in Boston was so apparent, and the danger of some serious outbreak of disease from their overcrowded condition so great, that the Board in July, 1870, addressed a letter to the board of aldermen, who, by law, were the health commissioners of the city, calling their attention to the statutes relating to the subject, which were being daily so flagrantly violated. Scarcely any attention was paid, however, to this communication. The next step, therefore, was to awaken public interest in the matter, and to demonstrate that any improvements in this direction, while adding to the health and physical well-being of the poor, would also greatly contribute to the material prosperity of the rich, by furnishing a sure return for the money which might be invested in the sanitary improvements so much needed. With this end in view, the Board in January, 1871, published a letter from the chairman, who had recently visited London, giving an account of the residences of the poor in that city, and the various operations of individual philanthropists and of corporations, whose sole object was sanitary improvement in the dwellings of the poor. As an additional argument in favor of some change, a careful comparison of the comparative values of a model lodging-house and a common tenement-building in Boston was also prepared and published.

Two difficulties were encountered in starting any reform in this direction. In the first place, there was found to exist an utter indifference to the subject in the public mind; and in the second place, all health matters were, according to the existing local laws, in the hands of politicians, whose tenure of office was so precarious that they were unwilling to inaugurate any movement which, owing to ignorance or prejudice, would naturally meet with more or less opposition.

Public attention was at length fully aroused by the publications of the Board just referred to, and the legislature, to whom the annual report of the Board containing these

communications had been made, granted a charter* to the Boston Coöperative Building Company, whose object should be the building and hiring of suitable tenements for the poor. This company at once went to work, and was able to present, before another year had passed, a most favorable and encouraging report of the work begun under their auspices.

Nor was Boston alone open to criticism in this matter. By order of the Board, a careful investigation was made by Dr. Frank W. Draper, of the home accommodations of the poor in eight of the most populous cities of the State. His paper on the subject, published in the fourth annual report, showed that an equally culpable neglect existed on the part of the municipal authorities of those places, so far as any attempt was made to carry out the provisions of the laws relating to the subject. Recognizing the fact that the first step towards any improvement must be the adoption of some change in the health officers of the cities and towns, the writer of the report urged, and the Board strongly seconded the recommendation, that independent boards of health should be appointed in all these cities.

Homes of the poor in other cities.

Appeal for the appointment of local boards of health.

The attention of the public was now fully aroused to the necessity of adopting some radical change in the management of the sanitary condition of affairs in Boston. A general petition was sent to the city council, signed by a very large number of influential citizens, together with one signed by nearly all the members of the Suffolk District Medical Society, asking for the passage of an ordinance creating an independent board of health. The movement was unsuccessful, except so far as contributing towards the final result was concerned. The city council refused to pass the ordinance. The petitioners at once turned from the authorities at the city hall to the citizens, and the subject was made a test question at the next municipal election. The popular movement was successful, and the city council passed the ordinance in December, 1872, establishing the City Board of Health.

Petition for the appointment of the Boston City Board of Health.

Encouraged by the result thus obtained in Boston, the

* See page 50.

Powers and duties of local boards of health.

Board in January, 1873, reiterated its often-expressed opinion of the advisability of local boards being established everywhere throughout the State. The great advantages to be derived from such action were set forth in the paper by Dr. Draper already alluded to; and in the fifth annual report the Board published a paper, prepared by Dr. Azel Ames, of Wakefield, in which the powers and duties of local boards of health were clearly defined. An urgent appeal was again made in 1874 for some action looking to the establishment of independent local boards of health throughout the State.

Use of intoxicating liquors as a beverage.

The Act which created a State Board of Health especially defined that one of the duties of the Board should be to make an examination into the effect of the use of intoxicating liquors as a beverage upon the industry, prosperity, happiness, health, and lives of the citizens of the State, and to advise what, if any, additional legislation was necessary in the premises.

Local and foreign correspondence.

With a view of ascertaining the effects of the use of intoxicating liquors as a beverage upon the public health, the Board first sought information on this point from their local correspondents throughout the State. At the same time, inquiries were made of the American ministers at foreign courts, and of our consuls at all the principal ports of the globe, with a view of finding out to what relative extent intoxicating liquors were used in foreign countries as compared with our own, and how far their use was productive of crime.

Reports on the subject.

Answers were received from one hundred and sixty-four towns in the State, and from fifty-two places abroad. The foreign correspondence, coming as it did from trustworthy authorities scattered in nearly every quarter of the civilized world, was found to present for analysis a mass of the most valuable information bearing on the subject under investigation. The result of these inquiries was the publication in successive annual reports of two papers written by two members of the Board. The first, which was an exhaustive analysis made by the Chairman, Dr. Bowditch, suggested the idea, for the first time proposed in connection with this subject, that intemperance was really governed

by a cosmic law. Stimulants were shown to be used everywhere, and the love of them was pronounced to be one of the strongest of human instincts. Their use was governed by climatic law, and intemperance, caused by their abuse, was modified by race. In his opinion, beer and native light grape-wines should not be classed together with ardent spirits. As a temperance measure, he advocated the encouragement of the use of beer and light wines, and the discouragement by every lawful and moral means of the use of ardent spirits and strong wines.

The second was by Hon. P. Emory Aldrich, who took exception to the reform measures suggested in the preceding paper, and gave in support of his views a careful analysis of two important public documents; viz., a report made in 1869 by the committee on intemperance for the lower house of convocation of the province of Canterbury, England, and a letter from the chief of the statistical office in the Department of Justice of Sweden. Added to these sources of information, were the replies received from district attorneys, city marshals, chiefs of police, city missionaries, judicial officers, and a number of physicians and others. As the result of a careful study of these communications, the writer maintained that the use of wines, malt liquors, and cider tended to create an appetite for stronger stimulants, and that therefore their use should not be encouraged as a temperance measure.

The Board, while heartily commending the perusal of these two papers, with their mass of appended evidence, to all interested in the solution of the vexed problem of how best to govern the use of intoxicating liquors, stated that, as a Board, they should express no opinion concerning the inferences made by either writer.

As perhaps a natural result of the thorough investigations made as to the use of alcoholic drinks, the Board became fully impressed with the necessity of the establishment of inebriate asylums in various parts of the Commonwealth under state guardianship. Accordingly, in 1871, an urgent appeal was made to the legislature for the immediate erection of one or more buildings for the relief and treatment of dipsomaniacs. No heed being paid to

Establishment
of inebriate
asylums.

Report on inebriate asylums or hospitals.

this appeal, which was again made in 1872 in another communication to the legislature, the Chairman of the Board, Dr. Bowditch, prepared a special paper in 1875 on the subject of inebriate asylums or hospitals, in which he showed the necessity that existed for the State to establish one or more such asylums for the cure of drunkards. The success which such institutions have met with elsewhere, had certainly demonstrated the feasibility of a similar effort being successfully made in Massachusetts. Realizing fully the necessity for some decisive action in this matter, the Board united with the Chairman in bringing the matter before the legislature, and adopted a vote earnestly and unanimously recommending, as a sanitary measure of the highest importance, the establishment or endowment of one or more inebriate asylums in the State.

Inebriate asylums recommended.

Provision for the insane.

In this connection, mention should be made of a paper prepared by Dr. Edward Jarvis, on the "Proper Provision for the Insane," which was published in the third annual report of the Board. In it the author took occasion to criticise the present plan of constructing hospitals, and showed the necessity of having various kinds of asylums for the different classes of patients.

Food in Massachusetts.

The quality of the food which was offered for sale in Massachusetts seemed to the Board a proper subject for investigation. Arrangements were accordingly made for the preparation of several carefully prepared reports on the subject, with a view to their publication, from time to time.

Canned fruits, vinegar, and coffee.

The first of the series was written by Mr. Henry B. Hill, and was published in the third annual report. His subject was the examination of canned fruits, vinegar, and coffee. The second, in the fourth annual report, by Dr. H. K. Oliver, related to the character of substances used for flavoring various articles of food and drink. The necessity for an investigation of this nature was suggested by the case of a family in Boston who were poisoned by eating *pistache* ice-cream. This report contained the somewhat startling fact that many articles in common use as delicacies were flavored with deleterious and even poisonous substances. The third paper of the series, written

Poisonous substances used for flavoring.

by Dr. A. H. Nichols on the adulteration of milk, was published in the fourth report of the Board. The chemical analyses of the specimens were made by Prof. James F. Babcock. After showing to how great an extent the adulteration of milk is carried at the present day, the writer made several valuable suggestions as to how best to remedy the evil. The matter seemed to call for some action on the part of the Board, and the attention of the legislature was called to the evils existing under the laws as then found in the statute-books. Recommendations were also made as to what changes, in the opinion of the Board, were necessary in order to accomplish the objects evidently intended by the terms of the Milk Act. The object of the fourth paper, which was written by the Secretary, Dr. George Derby, was to deal with the true methods of providing and cooking food. Recognizing the fact that the prevalence of dyspepsia in the community was, in a marked degree, owing to food which was either prepared badly or was improperly eaten, and that in too many cases these errors arose from ignorance, the writer took up successively the common articles of diet, and endeavored to show the deviations from the true method of preparation most commonly met with in the kitchens of all classes of society. Various errors of eating and drinking were also discussed, and the suggestion made of the great benefits likely to arise if the art of cooking could be publicly taught. The fifth paper of the series, written by Mr. Henry B. Hill, and published in the fourth report, dealt with confectionery and pickles.

Adulteration of milk.

Necessity of new milk laws.

Methods of providing and cooking food.

Confectionery and pickles.

The foot-and-mouth disease having been prevalent for some time among the cattle in New England, the Board felt anxious to ascertain what, if any, would be the effect on human beings of the use of milk from cows affected with the *aphtha epizootica*, or of eating the flesh of cattle thus diseased. Dr. A. H. Nichols was therefore requested to make a thorough investigation of the subject, and his paper was published in the second annual report. In it the writer took the ground that the disease could be communicated by milk, although it was probable that suspected milk might be rendered innocuous by being boiled.

Milk from cows affected with *aphtha epizootica*.

No ill-effects were found, however, to have followed the use of the flesh of these animals as food.

Trichiniasis.

In the early part of the year 1870, a family in Saxonville, and another in Lowell, were each attacked with trichiniasis. The Secretary of the Board at once made a careful investigation of the two outbreaks of the disease, and gave the results of his inquiries in a paper which was published in the second annual report. The necessity of the thorough cooking of pork was strongly urged, as the surest method of preventing the occurrence of this terrible disease.

The attention of the community was again called to the subject, in the fourth annual report, by the Secretary, who had had occasion to investigate another outbreak of this disease, which occurred in December, 1872, in a family in Framingham. In May, 1873, a family in Becket was attacked in the same way. In the sixth annual report the whole subject was treated of at length by the Secretary, Dr. C. F. Folsom, in a paper on "Our Meat-Supply and Public Health." In this paper the writer treated, in detail, of the various diseases and conditions which affect the quality of meat.

Meat-supply
and public
health.

Transportation
of live-stock.

The same report contained, also, an article by J. C. Hoadley, Esq., a member of the Board, in relation to the transportation of live-stock. The subject was treated by the writer, with the twofold end in view of lessening the amount of suffering endured by the animals in transportation, and at the same time of securing the best possible quality of meat for the use of the community. Copies of this paper have been sent for by the legislative committee on agriculture in Washington, with reference to the preparation of a general law regulating the carrying of live animals throughout the United States.

Lead-poisoning.

The frequent use of lead pipes for the conduction of water, attracted the attention of the Board. During the year 1870, the Secretary, Dr. George Derby, investigated the subject of lead-poisoning, and, with the assistance of Prof. W. R. Nichols, prepared a paper which was published in the second annual report of the Board. In this paper the community were warned as to the

danger of using lead pipes for the conduction of water, which was subsequently to be used either for drinking or culinary purposes. Attention was also called to the danger of using lead faucets, or faucets fastened with lead, in connection with cider or other acid drinks. Cosmetics, also, were alluded to as frequently containing salts of lead.

In 1873 the use of zinned or galvanized iron in the manufacture of water-pipes having given rise to a discussion as to the effect which such pipes would have on the health of the public, it was deemed advisable to examine into the subject. Accordingly, Dr. W. E. Boardman was requested to make a report on the use of such pipes. The results of his investigations were published in the fifth annual report, with the comments of the Board thereon.

Zinned or galvanized-iron water-pipes.

Many cases of accidental poisoning by arsenic having occurred in the State, it seemed advisable that some general knowledge should be disseminated in the community as to the danger arising from the careless use of many shades of green coloring matter. A paper on this subject was accordingly prepared, in 1872, by Dr. F. W. Draper, in which the evil effects resulting from the use of arsenic, as it was found in certain green colors, were described. Especial attention was called to its use in the manufacture of paper-hangings, artificial-flower ornaments, and various forms of ornamental confectionery. Cases of poisoning by arsenic in a box factory at Lowell were investigated, in 1875, by Dr. E. G. Cutler, of Boston; his paper was published under "Health of Towns," in the seventh report, "with a special view to legislation on the subject," as stated by the Board.

Arsenic poisoning.

Soon after the establishment of the Board of Health, it became evident that the question of the pollution of streams by industrial establishments and by the sewage of towns, was one which would soon attract the attention of the general public, as it had already done that of men engaged in the study of public hygiene. Immediately after its organization, therefore, the Board began to consider what were the first steps to be taken in the matter.

Pollution of streams.

A request having been received from a gentleman familiar with the locality for an examination into the condition

Examination of Mystic Pond.

of the streams and ponds in and about Woburn, the Board determined to make a careful investigation into the character of the water of Mystic Pond and its sources of supply for the second annual report. The work was undertaken by the Secretary, assisted by Prof. W. R. Nichols.

The result showed that the water was not as injurious, probably, as had been supposed, but that it was advisable to take steps by which it should be rendered purer, and especially that great care should be taken in the future to prevent any additional source of impurity from being allowed to still further pollute it.

Influence of water obstructions on public health.

In the third annual report the attention of the public was called, by an article written by the Secretary on "Mill-dams and Water Obstructions," to the bad hygienic effect which the erection of dams produced on the sanitary condition of the localities in the immediate neighborhood. A careful examination of the subject showed clearly that the building of a dam, which would create a reservoir either by the obstruction of the free motion of a stream or the hindering of the rapid outflow of tide water, was unquestionably prejudicial to the health of the dwellers on the banks in the vicinity. Epidemics, consumption, and malarious fevers were shown to be especially prevalent near such places.

Legislative order for investigation of the subject.

General attention was by this time fully awakened to the subject of the pollution of streams, and the legislature passed an order, April 10, 1872, by which the Board was directed to take into consideration the general subject of the disposition of sewage, with especial reference to its utilization as a fertilizer, and the danger which would arise from the joint use of water-courses as sewers and as sources of water-supply for domestic use.

Report to the legislature.

The work of preparing a reply to these interrogations was intrusted by the Board to the Secretary and Prof. W. R. Nichols. The results of their investigations were presented to the legislature in the fourth annual report.

Supplementary report.

A supplementary report was made by Prof. Nichols, and sent to the next legislature, a year later, with a view of showing the condition of some of the chief rivers of the

State, as revealed by extensive chemical examinations, and of being a valuable record for future reference.

Recognizing the importance of having some comprehensive scheme for the future sewerage of the larger cities and towns, and the necessity of avoiding, if possible, any clashing between the interests of adjacent townships, a recommendation was sent by the Board to the legislature in January, 1875, asking that steps be at once taken for a careful hydrographical survey of the State, and, furthermore, that such measures be adopted as would preserve in the future the purity of the water in the various ponds lying within the jurisdiction of the State.

Hydrographical
survey of the
State.

In this connection, mention should be made of a paper on "Drainage for Health," prepared by Hon. Henry F. French, and published in the fourth annual report. In it the writer dwelt upon the necessity of protecting the water in wells from becoming poisoned by badly constructed drains. The best methods of securing a perfect drainage of the cellars of country houses was also dwelt upon at considerable length.

Drainage for
health.

The legislature of 1875 passed an Act* providing for an investigation by the State Board of Health of the use of running streams as common sewers, in its relation to the public health. They also appropriated \$10,000 for carrying out the work.

Act as to the
use of running
streams as
common sewers.

For the purpose of facilitating this examination and rendering its accomplishment more systematic, the investigations thus ordered by the legislature were subdivided into three classes:—

The work of
investigation.

1. The work of making a systematic examination of certain of the river-basins of the State, was assigned to James P. Kirkwood, C. E., of Brooklyn. The five basins selected were the Blackstone, the Charles, the Neponset, the Chicopee, and the Taunton. In connection with this report, an appendix was presented by Prof. W. R. Nichols, containing the results obtained from a chemical analysis of a large number of specimens of river-water taken from the above-mentioned valleys.

Examination of
river-basins.

Examination of
river-water.

2. The sanitary bearings of the question were submitted

Sanitary aspect
of the question.

* See page 54.

to Dr. F. Winsor of Winchester, with directions to ascertain the actual amount of evil now existing in the State, owing to our present methods of disposing of filth.

Disposal of
sewage.

3. The investigation with regard to methods for the disposal of sewage was assigned to the Secretary, with a request that he should visit Europe, and thus be able personally to examine the subject under discussion. With this end in view, he visited many of the leading cities and towns in England, France, Germany, and Holland, during the summer of 1875, and his report contains a critical review of the various systems now in use or on trial.

Summary of
results obtained.

Finally, the results obtained by these three series of investigations were brought together in a general summary made by the Board, and to this were added recommendations as to the best way of meeting the evils which now exist, and preventing their increase in the future. The summary and conclusions were signed, not only by the Board, but also by Mr. Kirkwood, Dr. Winsor, and Prof. Nichols. The results thus obtained were submitted to the legislature in the seventh annual report.

Surface drain-
age of the met-
ropolitan dis-
trict.

In connection with the investigation just mentioned, two other papers appeared in the same report. The first, upon the "Surface Drainage of the Metropolitan District," by Charles W. Folsom, C. E., of Cambridge, gave the results of a careful examination of the soil found in the most important of the low-lying districts in and about the city. The second, by Edward S. Philbrick, C. E., of Brookline, dealt with the common defects found in house-drainage, and their remedies. Amongst the latter, the importance of licensing plumbers and builders, was especially dwelt upon.

Defects in
house-drainage,
and their reme-
dies.

Examination of
air in the soil.

During the year 1874, Prof. W. R. Nichols undertook, at the request of the Board, a series of careful experiments, made with a view of ascertaining the composition of the air in the soil at different localities in Boston, and how far that composition was affected by the varying conditions of temperature, season, etc. The results obtained by his investigations were published in the sixth annual report of the Board.

In accordance with instructions received from the legislature of 1870, the Board endeavored to ascertain how the amount and rate of mortality among the minors employed in the cotton, woolen, silk, flax and jute manufactories in the Commonwealth compared with those of other persons of the same age in the State, and also how far their particular employment seemed to affect the general health of such minors, as compared with the effect of other employments upon the general health of other persons of a similar age. With this end in view, a circular was addressed to all the manufacturers and manufacturing corporations, asking for information on these points. An analysis of the replies received was made by the Secretary, assisted by Dr. F. W. Draper, and published in the second annual report. The results showed that no apparent difference existed in the rate of mortality among this class of operatives from that which was to be found among other persons of the same age in the State.

Health of certain classes of minors.

Some of the most practical and therefore most valuable work which the Board of Health has performed, has been with the object of preventing the origination of disease. Not satisfied with devising methods for the relief of existing evils, anxiety has always been shown as to how best to prevent the occurrence of those evils. In his opening address, delivered at the first meeting of the Board, September 15, 1869, the Chairman, Dr. Bowditch, dwelt especially upon this important function of the Board. Later, in the fifth annual report, the subject was treated fully and carefully in a paper on "Preventive Medicine," by the same gentleman, in which he dwelt at length on the great advantages to be derived from the adoption of public sanitary measures, whose object should be to prevent, so far as possible, the occurrence of disease and the outbreaks of epidemics.

Preventative measures.

On several occasions, the Board has had occasion to take a prominent part in the adoption of measures for the prevention of disease. During the latter part of 1870, small-pox appeared in the town of Holyoke, and rapidly spread, until, at the close of the year, it infested every part of it. Up to the close of the year, 167 cases were

Small-pox—

in Holyoke.

reported, and of this number 36 proved fatal. The Secretary of the Board, Dr. Derby, at once visited the town, and, having had an interview with the selectmen and resident physicians, made the necessary arrangements for a thorough districting of the place, in order to have every inhabitant properly vaccinated. A few cases also occurred in the towns lying in the Connecticut Valley near Holyoke. The next year, 1871, the disease broke out in Lowell, in a family which had recently arrived from Europe. The presence of the disease was concealed from the authorities, until an epidemic was fairly under way. These facts, combined with the knowledge that small-pox was at that time appearing on the continent of Europe and in England, in an unusually virulent form, and that the foreign medical journals were full of notices of the increased susceptibility to its influence, induced the Board of Health to issue a circular, April 10, 1871, addressed to the mayors of the cities and selectmen of the towns in Massachusetts, in which particular stress was laid upon the necessity of having greater attention paid to securing protection for the people by vaccination. A circular was also sent, May 6, 1871, to the medical correspondents of the Board, asking whether, in their respective districts, the people were sufficiently protected by vaccination.

in Lowell.

Circular advising systematic vaccination.

Appeals to the legislature for change in laws relating to small-pox and vaccination.
1872.

An application was also made to the legislature in January, 1872, asking for such a change in the laws as would class small-pox among the diseases dangerous to public health, and thus enable local health authorities to secure all needed isolation, whenever a case occurred. It was also suggested to so change the requirements of the law as to render a primary vaccination necessary within the first six months after birth, instead of two years. The next year, 1873, a recommendation was made to the legislature to substitute three months for six, as had been recommended the previous year, as the time after birth within which a child must be vaccinated. The legislature having, at the request of the Board, so altered the law as to give local health officers the power to isolate persons affected with small-pox from their houses *only on certain conditions*, were again asked to still

1873.

further so change the law as to leave the question of isolation entirely to the judgment of the local health officers.

In accordance with an Order of the House of Representatives, passed January 21, 1873, the Board sent letters of inquiry to every city and town in the Commonwealth; and, as a result of these inquiries, reported that the whole number of cases of small-pox which had been reported as occurring in the State for the year 1872, and the first month of 1873, was 5,606. Accompanying the report, the probable source of infection was given in the case of each place, so far as could be ascertained.

Extent of the epidemic.

Owing to a mistake made by a member of the medical profession, the disease broke out in the town of Spencer, June, 1873. A special investigation of this epidemic was made by Dr. F. W. Draper, under directions received from the Board, and the results were published in the fifth annual report.

Small-pox in Spencer.

The result of all this action was a universal awakening of interest in the subject, and an increased vigilance on the part of the medical profession and the local sanitary officers. The epidemic in the State was soon under control, and in the fifth annual report, January, 1874, the Board of Health was enabled to report that not a single death from this disease had occurred from the 6th of September until the close of the year.

End of the epidemic.

In 1853 a disease, known as charbon, or malignant pustule, appeared in a factory at Walpole, one of the workmen falling a victim to it within forty-eight hours after the appearance of the first symptoms. During the next seventeen years, twenty-six cases were reported occurring in the same town. Of these cases fourteen died. At the request of the Board, Dr. A. H. Nichols prepared a paper, containing a *résumé* of the latest views held upon the subject. As prophylactic measures, the Board earnestly recommended the suggestions made by the writer, as to the necessity of the free use of disinfectants, the observance of absolute cleanliness, and the maintenance of free ventilation in all manufactories in which the employés are obliged to work on hair. This paper appeared in the second annual report.

Charbon.

Diseases arising
from vegetable
parasites.

The frequent occurrence in the community of the various forms of those contagious affections of the skin which owe their origin to the growth of vegetable parasites, suggested to the Board the advisability of preparing a report on the subject, which should not only be of value to the medical profession, but also suggestive to the general public. Accordingly, Dr. James C. White, Professor of Dermatology in Harvard University, prepared, at the request of the Board, an exhaustive report on vegetable parasites and the diseases caused by their growth upon the skin. The article was published in the third annual report.

Phthisis.

About one-fifth of all who die in Massachusetts fall victims to consumption. The Board early felt a desire to ascertain, if possible, whether this high rate of mortality could not in some way be reduced. The subject was intrusted to the Chairman, Dr. H. I. Bowditch, but so great is the field for investigation, that, although much has been done, still much yet remains to be accomplished. The first step was the issuing of a circular, July 6, 1871, to the local correspondents of the Board in the State, and to such other members of the medical profession in New England and elsewhere as were thought likely to be able to throw light upon the subject. The main object of the circular was to ascertain, so far as possible, the causes or antecedents of the disease. In the fourth annual report, the Board published a partial analysis, prepared by Dr. Bowditch, of the answers thus far received.

At present a careful tabulation is being made, under the direction of Dr. Bowditch, of the cases, several thousand in number, which have occurred in his own practice.

Infant mortality.

The mortality of infants was made the subject of an investigation by the Board during the year 1872. The report on the subject was prepared by Dr. Edward Jarvis, and appeared in the fourth annual report. The paper not only called attention to the causes of the mortality in question, but contained many valuable suggestions and recommendations by the adoption of which it was hoped that the rate of mortality would be materially lessened.

Information having reached the Board, from the health Cholera. officers of cities in the south-western part of the United States, that cholera was prevailing within their respective districts, an official letter was sent June 20, 1873, to the health officers throughout the State, calling their attention to the possible impending danger, and urging upon them the necessity of great vigilance on their part, in order to prevent, if possible, any outbreak of the disease within the limits of the State.

The great prevalence of cerebro-spinal meningitis through- Cerebro-spinal meningitis. out the State in 1873, attracted the attention of the Board to the subject. Dr. J. Baxter Upham, of Boston, was requested to make a thorough investigation of the subject, and his report was subsequently published in the fifth annual report.

During the summer of 1875, there broke out at Rye Local disorder from impure ice. Beach, N. H., a somewhat extensive, though comparatively mild, epidemic among the visitors at that popular summer resort. The disorder appeared as a general disturbance of the digestive system. Dr. A. H. Nichols, the resident physician at that place during the summer, at the request of the proprietors of the hotels, investigated the subject. His conclusion, based upon a careful examination of the circumstances attending the outbreak, attributed the occurrence of the disease to the contamination of drinking-water by the use of impure ice. The results of his investigation were published in the seventh annual report.

The large number of deaths annually reported as occur- Sale of poisons. ring from the intentional or accidental improper use of poisons, was one of the very first subjects which came before the attention of the Board after its organization. Although considerable time was spent, during the year 1869, in endeavoring to collect evidence bearing upon this point, and although it was clear that some change in the law regulating the sale of poisons was advisable, yet the way did not seem clear for any definite alteration of the statutes that would be at all permanent in its character. Accordingly, in the first annual report, the Board were contented with calling the attention of the public to the

matter, and with appealing to the apothecaries themselves for assistance in endeavors to raise the standard of education among those who dealt with the poisons in question. During the year 1874, however, several deaths occurred in the State owing to the improper use of chloroform. Accordingly, in the sixth annual report, the Board advised that some decided change should be made in the statute regulating the sale and use of poisons, so as to prevent, if possible, any poisonous drug from being sold without a written order either from a physician or the person requiring it.

Sanitary condition of State Prison at Charlestown.

In 1875, the question of the sanitary condition of the State Prison at Charlestown was brought to the attention of the Board by the legislative committee on prisons, with a request that they would make an investigation. The subject was referred to Messrs. Bowditch, Frothingham, and Folsom. They at once took the subject into consideration, and their report was sent to the committee by a vote of the Board, February 20. It subsequently appeared in the sixth annual report.

Ventilation of school-houses.

Attention was called in the second annual report to the necessity of a more careful attention being paid to the proper ventilation of school-houses. With a view of awakening a general interest in the subject, the Board published a scientific paper on the ventilation of school-houses, written by a practical architect, A. C. Martin, Esq., of Boston, and illustrated by a number of wood-cuts. The necessity for some energetic action in this direction, may be inferred from the fact, that, when the Board addressed a communication, July 25, 1873, to its local correspondents, asking for suggestions as to methods of securing an improvement in the physical condition of the schools, by far the largest number (77) out of the 160 replies received suggested amongst other remedies, "better ventilation."

School hygiene.

During the year 1873, Dr. Frederick Winsor, of Winchester, undertook, at the request of the Board, to investigate the whole subject of school hygiene. The result was the publication in the fifth annual report of a carefully prepared paper on the subject, in which the writer, after criticising the defects in the present system, made some

very important suggestions as to how those defects might be entirely remedied, or at least greatly improved.

In this connection, mention should be made of some experiments made by Mr. A. H. Pearson, of Haverhill, with a view of obtaining an analysis of the air in forty of the Boston school-houses. The results of these experiments were published in the second annual report of the Board, in connection with a paper written by the Secretary, Dr. Derby, on "Air and some of its Impurities."

Examination of air in school-houses.

Report on impurities in air.

Realizing the great extent to which typhoid fever prevailed in Massachusetts, and that the mortality was at least one in every ten of those attacked, the Board determined at an early day to ascertain, if possible, the probable causes of its occurrence in the State. Accordingly, a circular was sent out May 1, 1870, to the local correspondents of the Board in Massachusetts, asking for any facts which might bear upon the subject under investigation. The replies were embodied in a paper written by the Secretary, Dr. Derby, and published in the second annual report. In these replies the uniform opinion was expressed that the cause of the disease was the decomposition of organic matter in some form. The remedies to be applied were shown to be an abundant supply of "clean air and clean water."

Typhoid fever.

Early in the year 1870, the Board determined to investigate the truth or falsity of the report at that time widely circulated, that the use of sewing-machines, moved by foot-power, was slowly but surely undermining the health of the female operatives who were obliged to use them. After a most careful investigation of the subject, Dr. A. H. Nichols prepared a paper, which was published in the third annual report. Accompanying this was a strong recommendation of the Board that either steam-power or the use of electro-magnetism should be substituted for foot-power, or else that some improved foot-pedal should be used, by which the required movements of the feet and legs would be greatly reduced.

Sewing-machines.

In 1873, Dr. J. F. A. Adams, of Pittsfield, took up the subject of the health of the farmers throughout the State. The results obtained were made the basis of a special

Health of the farmers.

paper on the general condition of the health of the agricultural portion of the community, which was published in the fifth annual report.

Construction of hospitals.

The attention of the medical profession was called to numerous existing defects in hospital construction in an article written by the Secretary, Dr. Derby, and published in the fifth annual report. The great advantage to be derived from the erection of small, isolated, one-story buildings was especially dwelt upon. The paper was of unusual practical value, from the fact that the theories advanced were based upon the author's own practical experience during the late war.

Excavations in clay land.

The attention of the Board having been called in 1873 by the selectmen of Medford to the numerous excavations which had been made in the clay lands within that township during the process of the manufacture of bricks, a visit of inspection was made to the locality and the dangerous character of these excavations at once recognized. The pits were found to be so constructed as not to admit of being properly drained. The surfaces of many were covered with vegetation, thus giving rise to the formation of treacherous pit-falls, in which lives were annually being accidentally sacrificed. The attention of the legislature was called to them in the fifth annual report, and again in the sixth, and the advisability of the adoption of measures for the immediate abatement of the evil was strongly recommended.

Cremation.

The subject of cremation, as a substitute for burial of the dead, having been brought prominently into public notice by discussions and publications, both at home and abroad, the Board requested Dr. J. F. A. Adams, of Pittsfield, to investigate the subject, and to report on the comparative advantages which that method of disposing of the dead possesses in comparison with others. His paper was published in the sixth annual report.

Ventilation of railroad cars.

The necessity, to which the attention of all who travel has frequently been called, for some improvement in the methods employed for securing a proper ventilation of railroad cars gave rise to the publication, in the sixth annual report, of a paper especially prepared for the purpose by

Dr. T. W. Fisher on the ventilation of railroad cars. Accompanying it were the results of the chemical analyses of the air in cars made by Prof. Wm. Ripley Nichols.

With the view of obtaining, if possible, some additional light on the causes of disease, a report on the mortality of the city of Boston in 1870 was prepared by the Secretary, Dr. Derby, assisted by Dr. F. W. Draper. This paper was published in the second annual report, and was accompanied by a map showing the various health districts of the city. So valuable were the results obtained, that the Board strongly urged that a similar work should be undertaken by the local boards in all the various towns of the Commonwealth.

Mortality of
Boston—
1870.

The preparation of a similar analysis of the mortality of Boston in 1875, was proposed by the Board, and the work was intrusted to Dr. E. H. Bradford. His paper, although in itself valuable, was not published, as the records on which it was based were found to be inaccurate. A critical review of the "Health of Boston in 1875," was, however, prepared by Dr. F. E. Oliver, and appeared in the seventh annual report.

Mortality of
Boston—
1875.

The same report contained a paper by Dr. F. Nickerson, of Lowell, in which the present sanitary condition of that city was treated of at considerable length, and many valuable suggestions were made as to the great advantage to be derived from the establishment of local boards of health.

Sanitary con-
dition of Lowell.

A circular was sent April 8, 1870, to each of the local correspondents, asking as to the prevalence of any disease or diseases in their respective neighborhoods, and as to the probable causes of such diseases, whenever they could be discovered. Such of the replies received as contained matters of general interest, were published in the second annual report, with a general review of them all; and a similar summary of the sanitary condition of the towns and cities of the Commonwealth has been published in each succeeding annual report.

Health of
towns.

Many of these returns have been of great value, as, for example, the climatic peculiarities of Cape Ann and its prevalent diseases, which appeared in the second report;

the account of the cases of lead-poisoning which occurred among the operatives in the mills at Clinton (third report); the investigation made by Dr. A. H. Nichols, as to an epidemic of typhoid fever which broke out in Medford in August, 1873 (fifth report); the history of the same disease at Salem in 1874; the general sanitary condition of Woburn (sixth report); the special report on the state camp-ground at Framingham, by Dr. E. J. Forster, Surgeon Fifth Regiment, M. V. M., published by permission of the surgeon-general, to whom the report was made, and the account of the cases of poisoning by *cicuta maculata*, and also others by arsenic, which occurred in Lowell in 1875 (seventh report).

Value of the study of public hygiene.

When the Board of Health was established, a step forward in the right direction was taken by the State. Public hygiene, although recognized as a suitable study for those interested in the medical profession, had up to that time received no public support. It was a subject which it was generally considered was more suitable for theoretical than practical investigation, and although the passage through the legislature of the bill establishing the Board was received with a few expressions of satisfaction in the daily press, yet it was considered as a matter of no very great public interest. Slowly but surely the value of the Board of Health, as a powerful agent for public good, has been recognized, and the desirability of still further extending its field of usefulness has been admitted.

Political economy of health.

In the fifth annual report, the Board published an article by Dr. Edward Jarvis, of Boston, in which the writer gave a general review of matters illustrating the "Political Economy of Health." The sixth annual report contained a paper written by Dr. William E. Boardman, in which was clearly set forth the value of health to the State. These two contributions to the literature of State Medicine may be considered as fairly representing the advance of the public mind on a matter in which, until very recently, so little interest had been shown.

Paper on sanitary hints.

In connection with these two papers, mention should be made of an article on "Sanitary Hints," prepared by the

chairman, Dr. Bowditch, and published in the seventh annual report. In it the writer called the attention of the public to the importance of giving heed to general hygienic requirements, and dwelt particularly on the good which will inevitably result from a practical consideration of such subjects.

Such has been the written history of the State Board of Health of Massachusetts. Its unrecorded work can, of course, never be given to the public. Its influence has been felt in numberless ways, in which probably the source of the influence exerted could never be traced. It would be impossible to estimate the actual amount of public sanitary work which has, oftentimes unconsciously, owed its origin to this Board. During these seven years, a very large number of complaints have been received from citizens of different parts of the State in reference to the existence of local nuisances. These have all been carefully investigated. In many cases hotly disputed questions of local importance have been quietly settled, and oftentimes even a threatened litigation has been avoided by an appeal to the Board, whose unbiased opinion has always been freely given whenever asked for. Applications for advice on matters relating to local sanitary affairs have always received their careful consideration, and at no time has any hesitation been shown in offering advice, either as to the best methods of remedying existing or preventing threatening dangers. As an example of this method of the working of the Board may be mentioned their republication in this country, of an essay on "Filth Diseases and their Prevention," by Mr. J. Simon, F. R. S., chief medical officer of the Privy Council, and of the Local Government Board of England. The increased value of that part of the annual reports which relates to the health of towns, attests the growing interest taken in local sanitary matters by the various health officers of the different towns and villages. The general summary annually prepared by the Secretary, of their local reports, contains an ever-increasing amount of facts of great value to the profession; as, for example, the statements in the seventh

Past record of
the Board of
Health.

annual report relating to diphtheria, as it occurred throughout the State in 1875.

In 1875, special Acts of the legislature gave to the Board rooms at the State House, and permission to use the unexpended balance of their appropriation for the purchase of books, maps, etc. ; and with a wise liberality, 10,800 copies of the annual reports are now printed for distribution each year. The current expenses of the State Board of Health, excluding the Secretary's salary and the cost of publishing the reports, have been as follows :—

1869, \$1,168 98	1873, \$4,347 75
1870, 2,288 35	1874, 4,533 50
1871, 2,843 05	1875, 4,884 89
1872, 3,878 86	1875 (Pollution of Rivers), 8,480 37

APPENDIX.

[The following Acts are only those of a general character which have been passed by the legislature in regard to matters connected with the work of the State Board of Health.]

LEGISLATIVE ACTS.

AN ACT to establish a State Board of Health.

Be it enacted, etc., as follows:

SECTION 1. The governor, with the advice and consent of the council, shall appoint seven persons who shall constitute the Board of Health and Vital Statistics. The persons so appointed shall hold their offices for seven years: *provided*, that the terms of office of the seven first appointed shall be so arranged that the term of one shall expire each year, and the vacancies so created, as well as all vacancies occurring otherwise, shall be filled by the governor with the advice and consent of the council; but any one may be reappointed.

SECT. 2. The board shall take cognizance of the interests of health and life among the citizens of this Commonwealth. They shall make sanitary investigations and inquiries in respect to the people, the causes of disease, and especially of epidemics, and the sources of mortality and the effects of localities, employments, conditions and circumstances on the public health; and they shall gather such information in respect to those matters as they may deem proper, for diffusion among the people. They shall advise the government in regard to the location of any public institutions. They shall, in the month of January, make report to the legislature of their doings, investigations and discoveries during the year ending December thirty-first, with such suggestions as to legislative action as they may deem necessary.

SECT. 3. The board shall meet at the state house once in three months, and as much oftener as they may deem expedient. No member, except the secretary, shall receive any compensation, but the actual personal expenses of any member while engaged in the duties of the board shall be allowed and paid.

SECT. 4. It shall be the duty of the board, and they are hereby instructed, to examine into, and report what, in their

best judgment, is the effect of the use of intoxicating liquor as a beverage, upon the industry, prosperity, happiness, health and lives of the citizens of the state. Also what additional legislation, if any, is necessary in the premises.

SECT. 5. The board shall elect a secretary, either from their own number, or otherwise; but when elected he shall be a member of the board, and their executive officer. He shall perform and superintend the work prescribed in this law, and such other duties as the board may require. He shall receive from the treasury, in quarterly payments, an annual salary of twenty-five hundred dollars, and his necessary travelling expenses incurred in the performance of official duties, after they have been audited by the board and approved by the governor and council, and all other necessary expenses arising in his office shall be paid out of the treasury in the same manner as those of the different departments of the government.

SECT. 6. This act shall take effect upon its passage. [*Approved June 21, 1869.*]

AN ACT to incorporate the Butchers' Slaughtering and Melting Association in Brighton, and for other purposes.

Be it enacted, etc., as follows:

SECTION 1. Horace W. Baxter, Horace W. Jordan and B. Francis Ricker, their associates and successors, are hereby made a corporation, by the name of the Butchers' Slaughtering and Melting Association, to be located in the town of Brighton, for the purpose of carrying on the business of buying and slaughtering cattle, sheep and other animals, and of melting and "rendering" establishments, subject, however, to the provisions hereinafter contained, and to all general laws now or that may hereafter be in force applicable to such corporations.

SECT. 2. Said corporation may take and hold, by purchase or otherwise, such parcel of land not exceeding one hundred acres in extent, and situated in Brighton, within two miles of the Cattle Fair Hotel, as the state board of health shall by vote determine to be suitable for the carrying on of said business; and said corporation shall within sixty days from the time it shall take any land otherwise than by purchase, file in the office of the registry of deeds for the county wherein said lands lie, a description thereof, as certain as is required in a common con-

veyance of lands, together with a statement of the purpose for which the lands are taken, which description and statement shall be signed by the president of the corporation.

SECT. 3. The said corporation shall be liable to pay all damages that shall be sustained by any persons in their property by the taking of any land for the purposes of this act. Any person who shall sustain damages as aforesaid, and who shall not agree upon the damages to be paid therefor, may apply by petition for the assessment of his damages, at any time within one year from the taking of said land, to the superior court, in the county in which said land is situate. Such petition may be filed in the clerk's office of said court, in vacation or in term time, and the clerk shall thereupon issue a summons to said corporation, returnable if issued in vacation to the then next term of the said court, he'd fourteen days at least after the issuing of said summons, and if in term time returnable on such day as the court shall order, to appear and answer to the said petition; the said summons shall be served fourteen days at least before the return day thereof, by leaving a copy thereof with the clerk of said corporation, and upon the return of said summons duly served, the said petition shall stand as a cause in said court, and all questions of fact relating to the damages sustained by the petitioner shall be heard and determined, and the amount of such damages shall be assessed by a jury of said court, unless the parties shall in writing waive their right to a jury-trial and agree that the question of said damages shall be determined by the court; and the verdict of said jury, being accepted and recorded by said court, or the award of the court, if jury-trial shall be waived, shall be final and conclusive, and judgment shall be rendered and execution issued thereon, and costs shall be recovered by the petitioner if the amount of said judgment shall exceed the amount offered him for his damage by said corporation before the filing of said petition; otherwise said corporation shall recover its costs.

SECT. 4. Said corporation shall proceed to build upon said land suitable buildings for the slaughtering of cattle, sheep and other animals, and for melting and rendering purposes, and all necessary stables and outbuildings. But no building shall be erected until the plans thereof with all details of construction shall have been submitted to and approved by said state board of health, or some person designated by said board to examine said plans. All the business of said corporation shall be carried on in accordance with such regulations as said board shall from

time to time establish and furnish in writing to the clerk of said corporation, and for each violation of any one of said regulations, said corporation shall be liable to a fine of not less than twenty nor more than five hundred dollars, to be recovered by indictment against said corporation. Subject to the foregoing provisions, said corporation may manufacture and sell any of the usual products of said slaughtering and melting business, or may lease or permit other persons to use their buildings or parts thereof on such terms as may be agreed upon. And each member of said corporation shall have the right to slaughter on the said premises, subject to such regulations and such tariff of prices as said corporation may by vote at any regular meeting establish, and to the regulations of the said board of health as aforesaid. And any person engaged in slaughtering or other business on the premises of said corporation who shall violate any of the said regulations of said board shall be liable to the penalty herein before affixed to violation thereof by said corporation.

SECT. 5. The capital stock of said corporation shall consist of two hundred thousand dollars, to be divided into shares of one hundred dollars each, and said corporation shall not take any land, as herein before provided, or commence business, until the sum of one hundred thousand dollars at least shall be paid in in cash.

SECT. 6. The state board of health may, if in their judgment the public health shall require, order any person, at any time engaged in the business of slaughtering within six miles of the Faneuil Hall Market in Boston, and not upon any island in the harbor, to slaughter his cattle, sheep, or other animals, upon the premises of said corporation: *provided*, that thirty days' notice of an intention to pass such an order shall be given to such person by said board, and that after such notice is given such person shall have continued to conduct his business in such a manner as in the judgment of the board is injurious to the public health; and the supreme judicial court, or any justice thereof sitting in equity, shall have power to enforce any such order of said board by injunction. And whenever said board shall make such order as aforesaid, they shall also fix, in said order, the price per head which said party so served with said order shall pay to said corporation for the use of a place in its said building for slaughtering as aforesaid, but said price may be fixed as a certain sum of money, or as a certain portion of the animal, with its blood and offal, and said corporation shall be bound to permit said party to slaughter on its premises, on

the terms so fixed by the order of said board, unless said corporation and said party shall agree upon some different terms. Any person aggrieved by any order of the board of health, as in this section provided, shall have the right to appeal from said order in the same manner, and with the same effect, as such right is now given in chapter twenty-six of the General Statutes to a person aggrieved by an order of a town board of health, prohibiting the carrying on of offensive trades. In case of any appeal as herein provided, the application for a jury shall be made to the superior court in the county wherein the party prohibited transacts his business, if in session in said county, or in vacation to any justice of said court. [*Approved June 16, 1870.*]

AN ACT concerning Slaughter-Houses and Noxious and Offensive Trades.

Be it enacted, etc., as follows:

SECTION 1. Whoever in any city or town containing more than four thousand inhabitants, erects, occupies or uses any building for carrying on therein the business of slaughtering cattle, sheep or other animals, or for melting or rendering establishments, or for other noxious or offensive trades and occupations, or permits or allows said trades or occupations to be carried on upon premises owned or occupied by him or them, without first obtaining the written consent and permission of the mayor and aldermen or selectmen of such city or town, shall forfeit a sum not exceeding two hundred dollars for every month he or they so occupy or use such building or premises, and in like proportion for a longer or shorter time: *provided*, that the terms of this section shall not apply to any building or premises now occupied or used for the trades or occupations before described; but no person or persons or corporation now occupying or using any buildings or premises for the trades or occupations aforesaid, shall enlarge or extend the same without first obtaining the written consent and permission of the mayor and aldermen or selectmen of the city or town in which such building or premises are situated in the manner provided in this section.

SECT. 2. Whenever in any city or town containing more than four thousand inhabitants* any building or premises are

* Amended, chapter 308, Acts and Resolves, 1874, by striking out the words "containing more than four thousand inhabitants."

occupied or used by any person or persons or corporation for carrying on the business of slaughtering cattle, sheep or other animals or for melting or rendering establishments, or for other noxious or offensive trades, the state board of health may, if in their judgment the public health or the public comfort and convenience shall require, order any person or persons or corporation carrying on said trades or occupations to desist and cease from further carrying on said trades or occupations in such building or premises, and any person or persons or corporation continuing to occupy or use such building or premises for carrying on said trades or occupations after being ordered to desist and cease therefrom by said board, shall forfeit a sum not exceeding two hundred dollars for every month he or they continue to occupy and use such building or premises for carrying on said trades or occupations after being ordered to desist and cease therefrom by said board as aforesaid, and in like proportion for a longer or shorter time: *provided*, that on any application to said board to exercise the powers in this section conferred upon them, a time and place for hearing the parties shall be assigned by said board and due notice thereof given to the party against whom the application is made, and the order herein before provided shall only be issued after such notice and hearing.

SECT. 3. The supreme judicial court, or any one of the justices thereof, in term time or vacation, shall have power to issue an injunction to prevent the erection, occupancy, use, enlargement or extension of any building or premises occupied or used for the trades or occupations aforesaid, without the written consent and permission provided in section one of this act being first obtained; and also in like manner to enforce the orders of the state board of health issued under section two of this act. [*Approved April 8, 1871.*]

AN ACT to incorporate the Boston Coöperative Building Company.

Be it enacted, etc., as follows:

SECTION 1. William Gray, Abby W. May, Henry B. Rogers and Anna Cabot Lodge, their associates and successors, are hereby made a corporation by the name of the Boston Coöperative Building Company, in the city of Boston, to hold and improve real estate in said city, as homes for working people at moderate cost, with all the liabilities, duties and restrictions set forth in all general laws which now are or may hereafter be in force relating to such corporations.

SECT. 2. Said corporation shall have power to hold real and personal estate for the purposes aforesaid, not exceeding two hundred thousand dollars* in value.

SECT. 3. The stock of said corporation shall be divided into shares, each of the par value of twenty-five dollars, and the dividend on said shares shall not exceed seven per cent. per annum on the par value thereof.

SECT. 4. Said corporation shall make a return annually to the board of state charities, of the amount of capital assessed and paid in, of the amount invested in lands and buildings, and of all expenses incurred in the management thereof, and of all receipts from rents or other sources, and the dividend declared during the year.

SECT. 5. This act shall take effect upon its passage. [*Approved May 25, 1871.*]

AN ACT for the Abatement of a Nuisance in the Lower Basin of Miller's River, and for the Preservation of Health in the Cities of Cambridge and Somerville.

Be it enacted, etc., as follows:

SECTION 1. The harbor commissioners and the state board of health shall jointly constitute a board of commissioners for the purposes hereinafter named.

SECT. 2. The said commissioners shall, after due notice to and hearing of all parties interested, devise and report to the mayors and aldermen of the cities of Cambridge and Somerville, respectively, a plan for draining and abating a nuisance existing in and upon the district lying within the limits of the said cities, which is bounded north-easterly by the Boston and Lowell Railroad in Cambridge and Somerville, north-westerly by the Fitchburg Railroad in Somerville, northerly by Milk Street in Somerville, westerly by Prospect Street in Somerville, south-westerly by Webster Avenue in Somerville, southerly by the boundary line between Cambridge and Somerville and by Gore Street in Cambridge, easterly by Fifth Street in Cambridge, southerly by Winter Street in Cambridge, and easterly, in Cambridge by Fourth Street and the line of Fourth Street extended to the Boston and Lowell Railroad,—which plan shall provide, if practicable, for the preservation and improvement of so much of the channel and basins of Miller's River as is now flowed by the tide below

* Increased by subsequent Act to three hundred thousand dollars.

the point where the Grand Junction Railroad in Somerville crosses such river and basin.

SECT. 3. Said commissioners shall from time to time, and during the pendency of their report, devise and recommend to the mayors and aldermen of said cities, respectively, or to the boards of health thereof, such immediate or temporary measures for the abatement of said nuisance and the preservation of the health of the inhabitants as they shall deem expedient.

SECT. 4. Said commissioners in the discharge of their duties shall have power to cause to be made proper surveys of said district and estimates for carrying out the permanent and temporary measures by them recommended, the expenses of making said surveys and estimates, to be paid by the two cities as the commissioners shall determine.

SECT. 5. The cities of Cambridge and Somerville, respectively, may carry out the provisions of this act and the measures recommended by the commissioners, and for that purpose may purchase or take lands in said cities in the same manner and with the same rights of appeal as provided in the general laws in regard to taking land for highways, and the title of land so taken shall vest in the city taking the same.

SECT. 6. This act shall take effect on its passage. [*Approved May 6, 1872.*]

AN ACT concerning Swine-slaughtering Associations.

Be it enacted, etc., as follows :

SECTION 1. Three or more persons who shall have associated themselves together by an agreement in writing, such as is described in section seven of chapter two hundred and twenty-four of the acts of eighteen hundred and seventy, with a capital of not less than one hundred thousand nor more than five hundred thousand dollars, with the intention to constitute a corporation for the purpose of buying and slaughtering swine, and of melting and rendering and pork-packing, shall become a corporation upon complying with the provisions of the eleventh section of said act, with all the powers, rights and privileges, and subject to all the duties, limitations and restrictions conferred by said act upon corporations except as hereinafter provided, and subject to all general laws which now are or hereafter may be in force, applicable to such corporations.

SECT. 2. Such corporation may take and hold by purchase or otherwise such parcel of land, not exceeding one hundred

acres in extent, and situated in such place as the state board of health shall by vote approve or determine to be suitable for the carrying on of said business; and such corporation shall within sixty days from the time it takes any land otherwise than by purchase, file in the office of the registry of deeds for the county wherein said lands lie, a description thereof, as certain as is required in a common conveyance of lands, together with a statement of the purpose for which the lands are taken, which description and statement shall be signed by the president of the corporation: *provided, however*, that no land shall be taken under the provisions of this section, without the approval in writing of the mayor and aldermen of the city, or the selectmen of the town in which the land is taken.

SECT. 3. Such corporation shall be liable to pay all damages sustained by any persons in their property by the taking of any land for the purposes of this act. Any person sustaining damages as aforesaid, and not agreeing upon the damages to be paid therefor, may apply, by petition, for the assessment of his damages, at any time within one year from the taking of said land, to the superior court in the county in which said land is situate; such petition may be filed in the clerk's office of said court in vacation or in term time, and the clerk shall thereupon issue a summons to the corporation, returnable, if issued in vacation, to the then next term of the said court, held fourteen days at least after the issuing of said summons; and if in term time, returnable on such day as the court shall order, to appear and answer to the said petition; the said summons shall be served fourteen days at least before the return day thereof, by leaving a copy thereof with the clerk of the corporation, and upon the return of said summons duly served, the said petition shall stand as a cause in said court, and all questions of fact relating to the damages sustained by the petitioner shall be heard and determined, and the amount of such damages shall be assessed by a jury of said court, unless the parties in writing waive their right to a jury-trial and agree that the question of said damages shall be determined by the court; and the verdict of said jury, being accepted and recorded by said court, or the award of the court, if jury-trial is waived, shall be final and conclusive, and judgment shall be rendered, and execution issued thereon, and costs shall be recovered by the petitioner if the amount of said judgment exceeds the amount offered him for his damage by the corporation before the filing of said petition; otherwise the corporation shall receive its costs.

SECT. 4. Such corporation shall proceed to build upon said

land suitable buildings for the slaughtering of swine, and for melting and rendering purposes, and all necessary stables and out-buildings. But no buildings shall be erected until the plans thereof, with all details of construction, have been submitted to and approved by said state board of health, or some person designated by said board to examine said plans. All the business of the corporation shall be carried on in accordance with such regulations as said board shall, from time to time, establish and furnish in writing to the clerk of such corporation, and for each violation of any one of said regulations, the corporation shall be liable to a fine of not less than twenty nor more than five hundred dollars, to be recovered by indictment against said corporation.

Subject to the foregoing provisions, such corporation may manufacture and sell any of the usual products of said slaughtering, and melting and rendering business, or may lease, or permit other persons to use their buildings, or parts thereof, on such terms as may be agreed upon. And each member of the corporation shall have the right to slaughter on said premises, subject to such regulations and such tariff of prices as the corporation may by vote at any regular meeting establish, and to the regulations of the said board of health as aforesaid. And any person engaged in slaughtering or other business on the premises of such corporation, who shall violate any of the said regulations of said board, shall be liable to the penalty herein before affixed to violations thereof, by such corporation. [*Approved June 2, 1874.*]

AN ACT to provide for an investigation of the Question of the Use of Running Streams as Common Sewers in its relation to the Public Health.

Be it enacted, etc., as follows:

SECTION 1. The state board of health shall investigate by themselves or by agents employed by them, the subject of the correct method of drainage and sewerage of the cities and towns of the Commonwealth, especially with regard to the pollution of rivers, estuaries and ponds by such drainage or sewerage, and to devise and report a system or method by which said cities or towns may be properly drained, and said rivers, estuaries and ponds may be protected against pollution, so far as possible, all with the view to the preservation of the health of the inhabitants of this Commonwealth, and the securing to the several cities and towns thereof a proper system of drainage and sewer-

age, without injury to the rights and health of others; also, to report how far said sewage may be utilized and disposed of.

SECT. 2. Said state board of health, or agents employed by them, may enter upon and make surveys of lands, so far as may be required, and without unnecessary injury thereto, and said board may employ such assistants, with the consent of the governor, as from time to time may be expedient. They shall report to the next general court, not later than the first day of February, eighteen hundred and seventy-six.

SECT. 3. The compensation of the members of said state board of health or agents employed by them for services under this act, shall be fixed by the governor and council, which, with the expenses incurred by them, to be approved by the same authority, shall be paid by the treasurer of the Commonwealth on the warrant of the governor.

SECT. 4. This act shall take effect upon its passage. [*Approved May 8, 1875.*]

AN ACT to prevent the Recurrence and Spread of Spanish Fever, or Texas Cattle Disease, in this State.

Be it enacted, etc., as follows:

SECTION 1. Any person, company or corporation which shall drive or transport into this Commonwealth any Texas or Cherokee cattle, between the fifteenth day of May and the first day of November of any year, shall be punished for such offence by a fine of not less than twenty, nor more than one hundred dollars for each animal so transported or driven: *provided*, that if the person, company or corporation so driving or transporting such cattle shall prove that the same have been kept in some place north of the Ohio or Missouri rivers from the first day of December to the first day of May next preceding such driving or transportation, then such person, company or corporation shall not be liable to the above penalty.

SECT. 2. For the purposes of this act, the term Texas or Cherokee cattle shall be construed to mean the native-born and bred cattle of the states of Texas and Louisiana, or that class or variety of cattle known and designated by that name by traders and dealers in cattle.

SECT. 3. It shall be the duty of the board of cattle commissioners to carry out and enforce the provisions of this act, and they are authorized to make all necessary regulations therefor. [*Approved April 11, 1876.*]

AN ACT to amend an Act to incorporate the Butchers' Slaughtering and Melting Association, in Brighton.

Be it enacted, etc., as follows:

SECTION 1. Section six of chapter three hundred and sixty-five of the acts of the year eighteen hundred and seventy, is hereby repealed; and sections two and four of said act are hereby amended, by striking out the words "state board of health" where they occur in said sections, and substituting in place thereof, "board of health of the city of Boston."

SECT. 2. From and after the first day of June, eighteen hundred and seventy-six, the business of slaughtering shall not be conducted within the limits of the city of Boston, except upon the premises of the Butchers' Slaughtering and Melting Association, in said city.

SECT. 3. The said association shall, within a reasonable time, slaughter all cattle, sheep and calves which may be brought to their premises for that purpose by persons not occupying tenements therein, whenever the accommodations under their control on said premises will permit. They shall also prepare the meat and other products of such animals for the market. They may charge, in addition to the offal from said animals, such price per head as may be mutually agreed upon; and, in case of disagreement as to price, the same shall be fixed by the board of health of the city of Boston.

SECT. 4. Said board of health of the city of Boston is hereby authorized to appoint one or more inspectors to see that the rules and regulations for the conduct of the business of the association for the time being are fully obeyed by said association and their tenants, and also to see that none but healthy animals are slaughtered; the salary or salaries of said inspector or inspectors to be established by the city council of said city of Boston. The said inspector or inspectors shall at all times have access to the premises of said association and any building thereon, and also to the premises, yards or cars of any railroad company within the city of Boston for the purposes of examination, inspection and seizure of any meat or animals unfit for human food.

SECT. 5. Said board of health of the city of Boston is hereby authorized to make whatever regulations may seem to them fit in order to prevent the slaughter and sale of animals unfit for human food. [*Approved April 17, 1876.*]

AN ACT to provide for the appointment of Inspectors of Provisions and Animals intended for Slaughter, in Cities and Towns.

Be it enacted, etc., as follows :

SECTION 1. The mayor and aldermen of cities, and the selectmen of towns, may annually appoint one or more persons to be inspectors of provisions, and animals intended for slaughter; who shall be sworn to faithfully discharge the duties of their office, and who shall receive such compensation as the city councils of cities, or the selectmen of towns shall determine.

SECT. 2. Said inspectors shall have power to inspect all animals intended for slaughter, and all meats, fish, vegetables, produce, fruits and provisions of all kinds found in said cities or towns, or exposed for sale or kept with intent to sell therein; and may for this purpose enter into all buildings or inclosures where said animals, meats, fish, vegetables, produce, fruits or provisions are kept, stored or exposed for slaughter or sale. When such animals, meat, fish, vegetables, produce, fruit or provisions are found on such inspection to be tainted, diseased, corrupted, decayed or unwholesome from any cause, said inspectors shall seize the same and cause them or it to be destroyed or disposed of otherwise than for food: *provided, however,* that if the owner of the property seized shall, at the time of the seizure, notify said inspector, in writing, of his desire to appeal to the board of health, said inspector shall cause said animals, meat, fish, vegetables, produce, fruit or provisions to be inspected by said board of health, or by a committee thereof, consisting of not less than two members, and if said board or committee shall find the same to be tainted, diseased, corrupted or unwholesome, they shall order the same to be destroyed or disposed of otherwise than for food. If said board or committee shall not so find, they shall order said animals, meat, fish, vegetables, produce, fruit or provisions to be forthwith returned to the owner thereof. All moneys received by said inspector or board of health for property disposed of as aforesaid, shall, after deducting all expenses incurred, by reason of such seizure, be paid to the owner thereof.

SECT. 3. Said inspectors shall have the power to inspect all veal found in said cities or towns, or offered or exposed for sale or kept with intent to sell therein, and if said veal is in the judgment of the inspector, that of a calf killed under four weeks old, he shall seize the same and cause it to be destroyed or disposed of as provided in the preceding section; subject, however,

to the same provisions concerning appeal, and the disposal of moneys that are therein contained.

SECT. 4. When complaint is made, on oath, to any police, municipal, or district court, or magistrate authorized to issue warrants in criminal cases, that the complainant believes that any diseased animals, or any tainted, diseased, corrupted, decayed or unwholesome meat, fish, vegetables, produce, fruit or provisions of any kind, or veal of any calf killed under four weeks old, is kept or concealed in any particular house or place, with the intent to kill, sell, or offer the same for sale for food, the court or magistrate, if satisfied there is reasonable cause for such belief, shall issue a warrant to search for such animals or articles, and all such warrants shall be directed and executed as provided in the third section of chapter one hundred and seventy of the General Statutes. If, upon hearing, said court or magistrate shall determine that said animals or articles, or any of them, were kept or concealed for the purposes aforesaid, the same shall be destroyed or disposed of by the inspector, or by any officer designated by the court or magistrate, according to the provisions of the second section of this act; if the court or magistrate shall not so determine, said animals or articles shall be returned to the owner.

SECT. 5. Whoever knowingly sells, or offers, or exposes for sale, or has in his possession with intent to sell, for food, any diseased animal, or any tainted, diseased, corrupted, decayed or unwholesome meat, fish, vegetables, produce, fruit or provisions of any kind whatever, shall be punished by imprisonment in jail not exceeding sixty days, or by fine not exceeding one hundred dollars.

SECT. 6. The place where property condemned under this act shall be found, and the name of every person in whose possession it may be found and condemned, or who shall be convicted of an offence under section five of this act, shall be published in two newspapers published in the county.

SECT. 7. The foregoing sections of this act shall not be in force in any city or town, unless this act shall be adopted by the city council of such city, or by the inhabitants of such town.

SECT. 8. Chapter twenty-nine of the acts of the year eighteen hundred and seventy-five is hereby repealed: *provided*, that nothing herein contained shall affect any prosecution now pending, or any penalty or forfeiture already incurred. [*Approved April 26, 1876.*]

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