mechanical causes. In England the small dose advocated by Fraser appears to predominate, but in other European countries and in America the larger dose of four grains is generally given.

Exalgine has been used with favorable results in infantile troubles. Dr. Moncorvo[5] publishes his experience of its use in twenty-one cases of children ranging from one to twelve years of age, in which it was given for the relief of pain. He considers it a very useful agent. It was well borne in every case, no unfavorable symptoms being ever noticed. The dose commenced with was three-fourths of a grain, increased in some cases to five grains. In one case choreic symptoms were present and were improved.

Its use in chorea has been reported upon by Dr. Hugo Löwenthal.[6] Thirty-five cases were treated with doses of three grains, given usually three times a day and never exceeding fifteen grains in the twenty-four hours. The effects were very satisfactory. The mild cases were cured quickly, but the more severe ones were less influenced and required more time. The beneficial effects of the treatment were most marked in the cases in which it was given early in the course of the disease, in two cases a cure being effected in eight days. A favorable influence over the mental state was also noticed; the fear and nervousness were lessened and the intelligence brightened. In some of the cases in which it was administered for a prolonged period, nausea, vertigo, headache, and other distressing symptoms were noticed.

Unfortunately the occurrence of toxic symptoms is not infrequent. No fatal termination has yet been reported, but the condition of the patient sometimes becomes very alarming both to the friends and to the physician. The toxic disturbances, however, occur long before the fatal dose is reached. Experiments on animals have shown that the lethal quantity is seven and a half grains for each two pounds of the weight of the animal, and three grains, it has been found, will give rise to severe symptoms. The poisoning arises from the action of the drug on the nervous centres as well as from the alteration that occurs in the condition of the blood. The changes in the blood are the same as those which are produced by all aniline compounds; that is, the hæmoglobin is altered into methæmoglobin and the function of oxidation is interfered with. The patient is made aware of the approach of the toxic action by a sense of fulness in the head, a constriction and oppression of the chest, dyspnœa, vertigo, dizziness, numbness, and disturbances of vision. This is followed by a rapid pulse, shallow respiration, and all the sensations of death with symptoms of asphyxia and collapse. Unconsciousness is common in the severe cases of poisoning; convulsions do not so frequently occur.

Generally, very large quantities are given before any ill effects are noticed. It is very rarely that any disturbance of the skin takes place, but cases have been reported in which an erythematous rash has appeared on the skin, and in some instances the buccal mucous membrane is also affected.[7] In one instance[8] the drug was continued for seventeen days, in gradually increasing doses, and during the last seven days eighteen grains were administered daily. In another case[9] thirty-six grains were given within nine hours, and in still another[10] twenty-four grains within two hours. The ill effects of the drug generally follow its prolonged use or the administration of large doses, but in some instances quite small doses have produced very alarming effects. An instance[11] is reported in which two doses of three grains each caused all the serious symptoms of poisoning, and another instance is known in which two doses of five grains each were given with the same effect. A remarkable case[12] is reported in which, in an adult, two doses of one and two grains, respectively, produced most profound prostration. The symptoms came on about an hour after the administration of the last dose, while the patient was sitting at a table engaged in a game of cards. He first complained of a fulness in the head and suddenly fell prostrate, unable to speak or move, and gasping for breath. A second attack took place in about an hour, and the oppression and dyspnœa continued for several hours. In another instance a dose of eight grains produced alarming symptoms.[13]

Very different from these cases are those in which very large quantities have been given without evil consequences. Dr. Churton[14] reports two such cases. In the refilling of a bottle of medicine a mistake was made by which a solution was prepared of one grain to a drachm, instead of one grain to the ounce. The medicine was given as usual, four grains instead of half a grain being contained in each dose. This was continued for several days, and during the last twenty-four hours before the mistake was detected the patient was given forty grains. The pulse and respiration were rapid, and the patient complained of a burning sensation in the stomach, but no other effects were noticed. The second patient was given twenty-four grains from the same preparation, but it failed to produce any other effect than slight vertigo and a sense of being "dazed," which caused her to walk unsteadily. The quality of the drug is vouched for, as it was given to a number of patients with satisfactory results, and small doses were again given to the first patient, and its analgesic action was secured.

The quality of the drug undoubtedly affects its action, and in many instances explains the varying results that follow its use; but certain conditions of the system must exercise a decided influence, probably by promoting the decomposition of the drug and the formation of more toxic compounds. Mr. Bokenham[8] dwells upon this point in his remarks upon two cases of poisoning and suggests that some condition of the blood preceding menstruation may assist this reaction. The activity of the action is also influenced by the time of its ingestion. Professor Fraser and others, who find benefit in the small doses, always recommend that it should be given on an empty stomach, while those who use the larger doses advise it to be given after meals, and others still have remarked that the toxic symptoms arise when it has been given before meals. In the majority of cases the toxic symptoms pass away without requiring any assistance, but when the depression and dyspnœa are severe, stimulating remedies must be used. Alcohol has been resorted to, in most of the cases of poisoning, with apparent benefit, and hypodermic injections of ether have also been employed. In the cases reported by Dr. Jones[8] marked relief was secured by the use of strychnine in addition to the stimulants. Two minims of the liquor strychninæ were given hypodermically and ten minims of tincture of digitalis by the mouth. In these cases the inhalation of nitrite of amyl and the administration of nitroglycerin by the mouth, in doses of gr. $\frac{1}{100}$, increased the cyanosis, showing that the arterial as well as the venous blood was altered.

Upon the lower animals the hypodermic injection of exalgine produces violent epileptiform convulsions, salivation, fall of temperature, dyspnœa. The blood becomes dark in color and contains an abundance of methæmoglobin.

The following conclusions have been arrived at by Marandon de Montyel[15] from clinical observations on patients in whom the use of the drug had been pushed to its physiological limits: It has no influence on digestion. If the stomach is empty it causes an increased flow of saliva, a bitter taste, and a sense of tightness about the epigastrium. The pulse, respiration, and temperature are lessened in patients without convulsive tendencies. Vertigo, flashes of light, and ringing in the ears are frequent. A local or general cyanotic surface, sensations of cold, numbness, and formication, are prominent symptoms. The action of the drug is prompt and the effects are recovered from promptly, the brain being the first organ affected and the first to recover. When it is administered after meals its physiological action is less marked.

Beaumont Small.

[1] British Medical Journal, February 17th, 1890.
[2] *Ibid.*, July 19th, 1890.
[3] *Ibid.*, September 27th, 1890.

[4] *Ibid.*, October 18th, 1890.
[5] Bull. Gén. de Thérap., May 30th, 1891.
[6] Berlin. klin. Wochen., March, 1892.
[7] Squibb: Ephemeris, 1889.
[8] British Medical Journal, February 8th, 1892.
[9] Medical Press and Circular, March 16th, 1892.
[10] The Therapeutic Gazette, February, 1892.
[11] British Medical Journal, July 12th, 1890.
[12] *Ibid.*, May 3d, 1890.
[13] *Ibid.*, June 11th, 1898.
[14] The London Lancet, May 28th, 1892.
[15] La Tribune médicale, June, 1892.

EXAMINER, MEDICAL.—The State of Massachusetts, in common with other States of the Union, employed the coroner's inquest as the official mode of inquiry in cases of deaths from sudden, violent, or suspicious causes, from the early history of the colony until 1877.

In consequence of corrupt practices which had become of frequent occurrence, and also in consequence of the inefficiency of the existing system, and of the inherent incongruity of an office requiring expert knowledge both of law and of medicine, a persistent movement was made by the Massachusetts Medical Society,[1] ably assisted by T. H. Tyndale, Esq., and other members of the legal profession, having as its prime object a radical change in the coroner system. This movement was heartily endorsed by the Massachusetts Legislature of 1877, and resulted in the enactment, by that body, of the following statutes, which constitute in the main the law now in force in Massachusetts:

Acts of 1877.—[Chap. 200.] *An Act to abolish the office of Coroner and to provide for Medical Examinations and Inquests in cases of Death by Violence.* Be it enacted, etc., as follows:

"Section 1. The offices of coroner and special coroner are hereby abolished.

"Sec. 2 The governor shall nominate, and by and with the advice and consent of the council shall appoint, in the county of Suffolk not exceeding two, and in each other county not exceeding the number to be designated by the county commissioners as hereinafter provided, able and discreet men, learned in the science of medicine, to be medical examiners; and every such nomination shall be made at least seven days prior to such appointment.

"Sec. 3. In the county of Suffolk each medical examiner shall receive, in full for all services performed by him, an annual salary of three thousand dollars,* to be paid quarterly from the treasury of said county; and in other counties they shall receive for a view without an autopsy, four dollars; for a view and autopsy, thirty dollars; and travel at the rate of five cents per mile to and from the place of the view.

"Sec. 4. Medical examiners shall hold their offices for the term of seven years from the time of appointment, but shall be liable to removal from office at any time by the governor and council for cause shown.

"Sec. 5. Each medical examiner, before entering upon the duties of his office shall be sworn, and give bond, with sureties in the sum of five thousand dollars, to the treasurer of the county, conditioned for the faithful performance of the duties of his office. If a medical examiner neglects or refuses to give bond as herein required, for the period of thirty days after his appointment, the same shall be void and another shall be made instead thereof.

"Sec. 6. The county commissioners in each county shall, as soon as may be after the passage of this act, divide their several counties into suitable districts for the appointment of one medical examiner in each district under this act; and when such division is made, shall at once certify their action to the secretary of the Commonwealth, who shall lay such certificate before the governor and council; but nothing herein shall prevent any medical examiner from acting as such in any part of his county.

"Sec. 7. Medical examiners shall make examinations as hereinafter provided, upon the view of the dead bodies of such persons only as are supposed to have come to their death by violence.

* This sum was changed to four thousand dollars by an act of 1890.

"Sec. 8. Whenever a medical examiner has notice that there has been found, or is lying within his county, the dead body of a person who is supposed to have come to his death by violence, he shall forthwith repair to the place where such body lies and take charge of the same; and if on view thereof and personal inquiry into the cause and manner of the death he deems a further examination necessary, he shall, upon being thereto authorized in writing by the district attorney, mayor, or selectmen of the district, city, or town where such body lies, in the presence of two or more discreet persons, whose attendance he may compel by subpœna, if necessary, make an autopsy, and then and there carefully reduce or cause to be reduced to writing every fact and circumstance tending to show the condition of the body, and the cause and manner of death, together with the names and addresses of said witnesses, which record he shall subscribe. Before making such autopsy he shall call the attention of said witnesses to the position and appearance of the body.

"Sec. 9. If upon such view, personal inquiry, or autopsy he shall be of opinion that the death was caused by violence, he shall at once notify the district attorney and a justice of the district, police or municipal court for the district or city in which the body lies, or a trial justice, and shall file a duly attested copy of the record of his autopsy in such court, or with such justice, and a like copy with such district attorney; and shall in all cases certify to the clerk or registrar having the custody of the records of births, marriages, and deaths, in the city or town in which the person deceased came to his death, the name and residence of the person deceased, if known, or a description of his person, as full as may be for identification, when the name and residence cannot be ascertained, together with the cause and manner in and by which the person deceased came to his death.

"Sec. 10. The court or trial justice shall thereupon hold an inquest, which may be private, in which case any or all persons other than those required to be present by the provisions of this chapter may be excluded from the place where the same is held; and said court or trial justice may also direct the witnesses to be kept separate, so that they cannot converse with each other until they have been examined. The district attorney, or some person designated by him, may attend the inquest and may examine all witnesses. An inquest shall be held in all cases of death by accident upon any railroad; and the district attorney or the attorney-general may direct an inquest to be held in the case of any other casualty from which the death of any person results, if in his opinion such inquest is necessary or expedient.

"Sec. 11 The justice or district attorney may issue subpœnas for witnesses, returnable before such court or trial justice. The persons served with such process shall be allowed the same fees, and their attendance may be enforced in the same manner, and they shall be subject to the same penalties, as if served with a subpœna in behalf of the Commonwealth in a criminal prosecution pending in said court, or before said trial justice.

"Sec. 12. The presiding justice or trial justice shall, after hearing the testimony, draw up and sign a report in which he shall find and certify when, where, and by what means the person deceased came to his death, his name if known, and all material circumstances attending his death; and if it appears that his death resulted wholly or in part from the unlawful act of any other person, he shall further state, if known to him, the name of such person and of any person whose unlawful act contributed to such death, which report he shall file with the records of the superior court in the county wherein the inquest is held.

"Sec. 13. If the justice finds that murder, manslaughter, or an assault has been committed, he may bind over, as in criminal prosecutions, such witnesses as he deems necessary, or as the district attorney may designate, to appear and testify at the court in which an indictment for such offence may be found or presented.

"Sec. 14. If a person charged by the report with the

commission of any offence is not in custody, the justice shall forthwith issue process for his apprehension, and such process shall be made returnable before any court or magistrate having jurisdiction in the premises, who shall proceed therein in the manner required by law; but nothing herein shall prevent any justice from issuing such process before the finding of such report, if it be otherwise lawful to issue the same.

"SEC. 15. If the medical examiner reports that the death was not caused by violence, and the district attorney or the attorney-general shall be of a contrary opinion, either the district attorney or the attorney-general may direct an inquest to be held in accordance with the provisions of this act notwithstanding the report, at which inquest he, or some person designated by him, shall be present and examine all the witnesses.

"SEC. 16. The medical examiner may, if he deems it necessary, call a chemist to aid in the examination of the body, or of substances supposed to have caused or contributed to the death, and such chemist shall be entitled to such compensation for his services as the medical examiner certifies to be just and reasonable, the same being audited and allowed in the manner herein provided. The clerk or amanuensis, if any, employed to reduce to writing the results of the medical examination or autopsy shall be allowed for his services two dollars per day.

"SEC. 17. When a medical examiner views or makes an examination of the dead body of a stranger, he shall cause the body to be decently buried; and if he certifies that he has made careful inquiry, and that to the best of his knowledge and belief the person found dead is a stranger, having no settlement in any city or town of this Commonwealth, his fees, with the actual expense of burial, shall be paid from the treasury of the Commonwealth. In all other cases the expense of the burial shall be paid by the city or town, and all other expenses by the county, wherein the body is found.

"SEC. 18. When services are rendered in bringing to land the dead body of a person found in any of the harbors, rivers, or waters of the Commonwealth, the medical examiner may allow such compensation for said services as he deems reasonable, but this provision shall not entitle any person to compensation for services rendered in searching for such dead body.

"SEC. 19. In all cases arising under the provisions of this act, the medical examiner shall take charge of any money or other personal property of the deceased found upon or near the body, and deliver the same to the person or persons entitled to its custody or possession; but if not claimed by such person within sixty days, then to a public administrator, to be administered upon according to law.

"SEC. 20. Any medical examiner who shall fraudulently neglect or refuse to deliver such property to such person within three days after due demand upon him therefor shall be punished by imprisonment in the jail or house of correction not exceeding two years, or by a fine not exceeding five hundred dollars.

"Sec. 21. The medical examiner shall return an account of the expenses of each view or autopsy, including his fees, to the county commisioners having jurisdiction over the place where the examination or view is held, or in the county of Suffolk to the auditor of the city of Boston, and shall annex thereto the written authority under which the autopsy was made. Such commissioners or auditor shall audit such accounts and certify to the treasurer of the Commonwealth, or the treasury of the county, as the case may be, what items therein are deemed just and reasonable, which shall be paid by such treasurer to the person entitled to receive the same.

. . . . . .

"SEC. 25. For the purposes of the appointment and qualification of medical examiners and the action of the county commissioners herein provided for, this act shall take effect upon its passage, and shall take full effect on the first day of July next." [Approved May 9th, 1877.]

(Sections 22, 23, and 24, pertaining to the vicarious functions of the coroner, when acting as a sheriff, and also to certain verbal corrections in other statutes, are omitted.)

The principal features in the foregoing act, which constitute the chief difference between the medical examiner system of Massachusetts and the coroner system, are the following:

1. The separation of the medical from the legal duties involved in the investigation of the cause of death, the former being entrusted to medical officers ("able and discreet men, learned in the science of medicine") (Sections 2–9, 16–21, Acts of 1877, Chapter 200; and the latter to properly qualified legal magistrates, Sections 10–14).

2. The abolition of the coroner's office, and also of the jury (Sections 1 *et seq.*).

3. The limitation of the number of medical officers (Sections 2, 6).

This law is the result of a successful attempt to introduce into a New England commonwealth, imbued with a traditional adherence to old and firmly established customs, the plan of continental Europe modified and adapted to a republican form of government.

In Rhode Island a somewhat similar statute was enacted, providing for the appointment, by the governor, of medical examiners in twenty-four districts, for a term of six years.

The town councils also elect "suitable" persons as coroners for three years, and each coroner can appoint a deputy. The coroner may take ante-mortem statements. The expenses of the medical examiners are returnable to the State auditor and are paid by the State. The records of medical examiners are returnable to the State board of health and are published by the board.

In Connecticut the coroner and his jury still exist, but the coroner may appoint a medical examiner in each town. The medical examiner pays fifty cents to each person who first reports a death by violence. The medical examiner may hold an inquest in certain instances.

As may be seen by an examination of Section 8 of the present law of Massachusetts, the medical officer takes the initiative steps in the investigation of each case requiring the exercise of his duties. This method of procedure rests upon the assumption of a natural sequence in the investigation of all cases of death by violence. "The *inquest* is held by the court, and is the inquiry into the facts outside the body; the *examination* is made by the (medical) examiner, and it leads the way to the inquest."

"The purpose of the law is the detection of crime; its method, the division of functions among those properly qualified to perform them."[2]

Financially, the medical examiner system has also proved successful. Comparing the cost of coroner's inquests and views in Massachusetts for three years under the old law (1874, 1875, and 1876) with the cost of similar inquiries under the new law for a like period (1878, 1879, and 1880), as nearly as could be ascertained, the result was for the former period, $63,712.04; and for the latter, $54,509.31; leaving a difference of $9,202.73 in favor of the medical examiner system, notwithstanding an increase of population between the two periods of at least one hundred thousand, and a consequent increase in the amount of work done.[3]

The average expense of the medical examinations ranged from a maximum of $13.08 each in 1886 to a minimum of $11.68 each in 1890.

When considered as a per capita tax upon the population the expense of conducting the medical examiner system is shown to be far less than that of the coroner system.

The budget brought before the Board of Estimate of New York City in January, 1898, contained an item of $239,050 for coroners in the five boroughs, in an estimated population of about three and one-half millions or seven cents per capita of the population for the cost of the coroner system. In the same year in Massachusetts, under the Medical Examiner System, the cost was less than $40,000 in a population of about two and two-third millions, or less than one and one-half cents per capita, for conducting all examinations extending over

more than 8,000 square miles of territory. The court expenses were included in this sum.[5]

The chief causes of this diminution in expense are the abolition of the coroner's jury, and the decrease in the number of inquests. In the three years specified under the old law, there were held, in three counties in Massachusetts, one hundred and twenty-four inquests. In three years, under the new law, with a larger population the number of inquests held in the same counties was but seventy-five.

Under the old law the ratio of inquests to cases of all sorts examined throughout the whole State was about forty per cent. Under the medical examiner law the ratio has not been more than twenty-two per cent. "The reasons for this change may be found in the appointment, to fill the offices formerly held by coroners, of men whose education necessarily fits them for the work which they are expected to perform. Under the old law a man found dead, even without the least suspicion of violence, as in simple cases of heart disease or apoplexy, would in all probability be reported to the village coroner, provided the most common hypostatic marks of post-mortem discoloration were observed by a bystander, and interpreted by him as significant of a violent death. Hence the coroner sets in motion the cumbrous machinery of his office. In the first place he sends for a constable. The constable summons a jury. The witnesses come next; and last of all, the nearest physician is summoned, whose evidence finally shows that the man died a natural death. Under the working of the present law the order of procedure is reversed. The medical officer first views the body, and in a case like that just cited he simply reports it as a view. If, however, he believes there is reasonable suspicion of violence, as revealed by the evidence shown him from an external examination of the body, and a personal inquiry of the witnesses, and also by an autopsy, if that be requisite, the case is then reported to the proper authorities for inquest."[3]

After the medical examiner law had been in operation for a period of seven years and a half, the Legislature of 1885 carefully considered certain measures which were proposed for the further improvement of the existing law. These were: the reporting of cases to some central authority who should be entrusted with the compilation, classification, and publication of the returns of the medical examiners; the proper remuneration of medical witnesses at autopsies; and a provision for more definite authority for making autopsies on the bodies of persons found dead.

The first of these duties had been performed very efficiently for seven years by the Massachusetts Medico-Legal Society, an association having as its object "to elevate the official character of the medical examiner, and to assist him in the discharge of his duties; to collect and utilize such facts as have a medico-legal value; and to excite a general interest in the subject of forensic medicine, and to promote its successful cultivation."[4]

The transactions of this society form a valuable contribution to the literature of forensic medicine. It was desirable, however, that the State should have the supervision of the reports of its medical officers, since it could by statutory enactment require a complete report from each examiner, a measure which was clearly impossible in a voluntary association. The following is the substance of the amendments enacted in 1885:

[Chap. 379.] *An Act relating to Medical Examiners.*—Be it enacted, etc., as follows:

"SEC. 1. Section nine of chapter twenty-six of the Public Statutes is amended to read as follows: *Section* 9. In the county of Suffolk each medical examiner shall receive from the treasurer of the county, in full for all services performed by him, a salary of three thousand dollars a year, and the associate medical examiner a salary of five hundred dollars; but if the said associate medical examiner serves in any year more than two months, at the request of either medical examiner he shall, for such service in excess of two months, be paid at the same rate as such medical examiner, and such compensation shall be deducted from the salary of the medical examiner in whose stead he serves. The medical examiners in other counties shall receive fees as follows: For a view without an autopsy, five dollars; for a view and autopsy, thirty dollars; and for travel, at the rate of ten cents a mile to and from the place of view.

"SEC. 2. When a medical examiner deems it necessary to have a physician present at an autopsy as one of the witnesses, as provided in section eleven of chapter twenty-six of the Public Statutes, such physician shall be allowed five dollars for his services. Other witnesses required by law to be present at an autopsy shall be allowed two dollars each.

"SEC. 3. Medical examiners are to transmit copies of the records of all deaths investigated by them to the Secretary of the Commonwealth, annually, before March 1st

"SEC. 4. Fees for returning such copies, twenty cents each for first twenty entries and ten cents for each subsequent entry. Penalty for refusal or neglect ten to fifty dollars.

"SEC. 5. Secretary to provide blank book for records.

"SEC. 6. Secretary to collect returns and tabulate them and report to general court.

"SEC. 7. Medical examiners to report all autopsies to the district attorneys, and affirm their necessity."

The present number of medical examiners is seventy-three, being about one to each 38,000 of the population. Boston has two, with an associate who acts in the absence of either of the others. Each one of the larger cities has also one medical examiner, who also acts in the neighboring towns. The remainder are distributed with a fair degree of uniformity throughout the State.

By an act of 1898 provision was made for the appointment of one associate examiner in each district.

The following statistics relative to the operation of this law are quoted from the registration reports of Massachusetts, for the years 1885 to 1899 inclusive:

TOTAL DEATHS, AND DEATHS BY SEXES, INVESTIGATED UNDER THE MEDICAL EXAMINER LAWS IN MASSACHUSETTS, 1885–1899, TOGETHER WITH THE NUMBER OF AUTOPSIES MADE.

Years.	Males.	Per cent.	Females.	Per cent.	Unspecified.	Per cent.	Totals.	Autopsies.
1885.....	973	76.1	286	22.4	19	1.5	1,278	165
1886.....	1,027	74.5	319	23.2	32	2.3	1,378	262
1887.....	1,191	76.5	350	22.5	15	1.0	1,556	188
1888.....	1,261	76.4	373	22.6	17	1.0	1,651	219
1889.....	1,253	75.8	388	23.4	13	0.8	1,654	216
1890.....	1,093	73.5	449	25.3	21	1.2	1,773	206
1891.....	1,362	74.0	457	24.8	21	1.2	1,840	225
1892.....	1,642	74.3	560	25.3	8	0.4	2,210	272
1893.....	1,678	75.6	530	23.9	13	0.5	2,221	269
1894.....	1,649	76.4	505	23.4	5	0.2	2,159	272
1895.....	1,721	74.3	582	25.1	14	0.6	2,317	271
1896.....	1,773	73.3	638	26.4	5	0.3	2,416	213
1897.....	1,658	72.8	612	26.9	9	0.3	2 279	245
1898.....	1,961	74.0	683	25.8	4	0.2	2,648	230
1899.....	1,788	73.0	661	27.0			2,449	268
Total....	22,240	74.5	7,393	24.8	196	0.7	29,829	

In the following table the same deaths are classified by the modes of death:

SUMMARY OF CASES INVESTIGATED IN MASSACHUSETTS UNDER THE MEDICAL EXAMINER LAWS, BY METHODS OF DEATH.

Years.	Homicide.		Suicide.		Accident or Negligence.		Natural and Unknown Causes Including Alcoholism.		Totals.
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	
1885.....	45	3.5	181	14.2	567	44.4	485	37.9	1,278
1886.....	47	3.4	157	11.4	678	49.2	496	36.0	1,378
1887.....	52	3.3	173	11.1	748	48.1	583	37.5	1,556
1888.....	52	3.2	190	11.5	785	47.5	624	37.8	1,651

SUMMARY OF CASES INVESTIGATED IN MASSACHUSETTS UNDER THE MEDICAL EXAMINER LAWS, BY METHODS OF DEATH.—*Continued.*

Years.	Homicide.		Suicide.		Accident or Negligence.		Natural and Unknown Causes including Alcoholism.			
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.		Totals.
1889.....	51	3.1	199	12.0	792	47.9	612	37.0		1,654
1890.....	35	2.0	196	11.1	862	48.6	680	38.3	+	1,773
1891.....	60	3.2	187	10.2	866	47.1	727	39.5		1,840
1892.....	72	3.2	274	12.4	974	44.1	890	40.3		2,210
1893.....	76	3.4	290	13.1	976	43.9	879	39.6		2,221
1894.....	68	3.1	270	12.5	975	45.2	846	39.2		2,159
1895.....	74	3.2	281	12.1	1,019	44.0	943	40.7		2,317
1896.....	74	3.1	318	13.2	1,042	43.1	982	40.6		2,416
1897.....	70	3.1	285	12.5	961	42.2	963	42.2	+	2,279
1898.....	79	2.9	331	12.5	1,194	45.1	1,044	39.4		2,648
1899.....	57	2.3	319	13.0	1,001	48.7	1,072	36.0		2,449
Total ..	912	3.1	3,651	12.2	13,440	45.1	11,826	39.6		29,829

It is a sufficient comment upon this law that more than 40,000 cases of sudden, suspicious, and violent deaths have been investigated under its authority, and in a far more satisfactory, intelligent, and economical manner than could have been possible under the old *régime*.

Samuel W. Abbott.

REFERENCES.

[1] Transactions of the Massachusetts Medical Society. Proceedings of the Councillors, vol. xii., October 4th, 1876, p. 77.
[2] Concerning Coroners and the Theory and Practice of Inquests. By T. H. Tyndale, Esq. Transactions of Massachusetts Medico-Legal Society, 1878, vol. i., No. i., p. 33.
[3] Financial Aspects of the Medical Examiner System. Transactions of the Massachusetts Medico-Legal Society, 1881, No. 4, pp. 206, 207.
[4] Constitution of the Massachusetts Medico-Legal Society, Article 2.
[5] The Time and the Hour, Feb. 5, 1898.

EXAMINING AND LICENSING BOARDS.—There is no national authority in the United States that can prescribe standards for degrees or for license to practise the professions. Each State makes its own professional laws. As a result there are almost as many standards as there are political divisions. The desirability of uniform standards throughout the country for admission to professional practice is recognized generally, but varying conditions as to density of population, educational advantages, and general development make it impracticable to hope for the attainment of this end for some time to come. Conditions are such that some States cannot maintain the standards demanded elsewhere, others cannot afford to lower theirs, but needless multiplication is unfortunate. Instead of a separate standard for almost each political division, two or at most three should answer for all. In the first group should come the strongest States, and the standards maintained by these States would act as a stimulus to weaker political divisions.

Thirty years ago the public had little protection from incompetency in professional practice. The bar is said to have been at its lowest ebb. Medical laws were crude and largely inoperative. In several States only were there any acts designed to control the practice of pharmacy and dentistry. There was no law whatever restricting the practice of veterinary medicine. There has been extraordinary progress, specially in the last decade, in restrictive professional legislation, and in the admission and graduation requirements of professional schools throughout the United States. In medicine all political divisions except Alaska now have examining and licensing boards. In view of these facts the growth in professional students is remarkable. From 1888 to 1899 the increase was as follows: theology 24 per cent., law 224 per cent., medicine 84 per cent., dentistry 380 per cent., pharmacy 31 per cent., veterinary medicine 17 per cent.

Power to Confer Degrees.—Low standards in many professional schools are due to a failure to subject the degree-conferring power to strict state supervision. In New York and Pennsylvania the laws now prevent an abuse of the power to confer degrees. In Massachusetts and Vermont bodies formed under the general corporation acts are prohibited from conferring degrees. In Ohio and Nebraska the statutes require only the nominal endowment of $5,000 for a degree-conferring institution. In other States and Territories as a rule any body of men may form an educational corporation with power to confer degrees "without any guaranty whatever that the privilege will not be abused."

This matter has been under discussion recently in various educational bodies, and there is a strong sentiment in favor of a strict supervision by the State of the degree-conferring power.

Preliminary General Education for Degrees.—In New York, high standards in preliminary general education are demanded both for degrees and for licenses, and in each case the question of attainments is determined by a central authority, the University of the State of New York. As a rule in other States medical schools conduct their own entrance examinations, and the tests are often mere matters of form, even though the standards may appear satisfactory on paper. In 1898 21 per cent. of the students of medicine in the United States held either B.A. or B.S. degrees as compared with 53 per cent. of those in theology and 29 per cent. of those in law.

Preliminary General Education for Licenses.—In New York State a preliminary general education equivalent to graduation from a four years' high-school course after a completed eight years' elementary course is prescribed by statute as the minimum standard for license to practise medicine. This standard approximates that required in continental Europe. New Hampshire and Ohio have similar requirements, but they are not so rigidly enforced. California makes the requirements "in no particular less than those prescribed by the Association of American Medical Colleges." Wisconsin requires the elementary education necessary for admission to the junior year including one year of Latin. The statutes of Delaware, Maryland, New Jersey, and Pennsylvania prescribe a "common-school education." Louisiana demands a "fair primary education," Maine a standard of preliminary education approved by the medical board. The rules in Vermont prescribe a high-school course; in Maine a good English education; in Illinois and Iowa less than one year of high-school work; in Virginia "evidence of a preliminary education." In remaining political divisions laws and rules are either silent in this respect or so indefinite as to be of little value.

Length of Professional Courses.—The following table shows great progress, specially since 1885, in the adoption of higher standards for graduation.

	Four years.	Three years.	Two years.	One year.	Not stated.
Medical schools, 1875.....	0	3*	72	5	0
" " 1885.....	0	5	103	0	0
" " 1897.....	99	49	0	2	0
" " 1898.....	103	42	0	0	6†
" " 1899.....	141	10	2	2	1

*Distinction between medical schools with two- and three-year courses not certain. †Including three medical preparatory schools.

Influence of Medical Societies.—In 1839 the New York State Medical Society resolved that teaching and licensing ought to be separated as far as possible. In 1837 the same view had been advocated in Philadelphia. Further discussion led to a call for a convention of delegates from all medical schools and societies in the United States. The convention was held in New York in 1846, and from it sprang the American Medical Association.

Results of examinations show the importance of separating teaching and licensing. Under the New York laws, for example, 6,349 physicians have been examined, of whom 1,379 or 21.7 per cent., were rejected. In these statistics each candidate who fails is counted as often as examined, but nevertheless so large a per cent. of rejections is astonishing in view of the fact that admission to licensing examinations presupposes the preliminary education required by statute and also graduation with a degree from a registered medical school. Including those unable to meet the requirements for admission to licensing examinations, more than 30 per cent. of all applicants have failed to secure licenses.

The following societies have exercised an important influence in promoting higher standards: Association of American Medical Colleges (1890), American Institute of Homœopathy (1844), National Confederation of Eclectic Medical Colleges (1871), Southern Medical College Association (1892). The first and fourth of these societies prescribe for admission to medical schools a preliminary general education equivalent to one year in a high school; the second and third demand work equivalent to about two years in a high school. All prescribe four courses of lectures in different years as a condition for an M.D. degree, though they give an allowance of one year to graduates of reputable literary colleges and of other professional schools. All tend to improve facilities for teaching, dissection, and clinics. These societies registered in 1900 72, 71, 6, and 11 medical schools respectively.

The American Academy of Medicine (1876) and the National Confederation of State Medical Examining and Licensing Boards (1891) should also be mentioned. The former of these societies has emphasized since 1884 the importance of a proper preliminary education, a graded professional course, and a state licensing examination; the latter has recommended a four years' high-school course for admission to medical schools or an alternative examination representing somewhat less than three years of high-school work.

Medical Sects.—As commonly understood, regular physicians have no distinctive theory or practice; homœopaths treat diseases with drugs that excite in healthy persons symptoms similar to the morbid condition treated; eclectics make use of what they regard as specific remedies, chiefly botanical; physiomedicalists use only botanical remedies, discarding those which are poisonous. In practice these distinctions are not always observed.

In addition to the medical sects to which detailed reference is made, a number of *pathies* flourish in many States unmolested under such names as osteopath, vitapath, electropath, hydropath, divine healer, magnetic healer, Christian scientist, faith curist, mind curist, sun curist, etc. Men and women without preliminary or professional training treat diseases under these or similar systems to such an extent that the health of the people is endangered. These so-called systems are followed with impunity in many States in what seems to be open violation of laws restricting the practice of medicine. This is due largely to the fact that so many statutes lack specific definitions as to what constitutes the practice of medicine, and without these definitions the conviction of such practitioners cannot be secured through the courts.

Osteopathy was "discovered" in 1874. It is based on the theory that "a natural flow of blood is health" and that the bones may be "used as levers to relieve pressure on nerves, veins, and arteries." Oseteopathy is now recognized by law in California, Connecticut, Indiana, Kansas, Ohio, Iowa, Michigan, Missouri, Montana, Nebraska, North and South Dakota, Tennessee, Vermont, and Wisconsin. Practice of "the system, method, or science of osteopathy" is restricted to licensed physicians and to graduates of "a legally chartered and regularly conducted school of osteopathy." The use of drugs and operations in "major or operative surgery" are not permitted in the practice of osteopathy.

In Georgia, Kentucky, Nebraska, New Jersey, New Mexico, Montana, and West Virginia there are stringent laws against non-medical practitioners. In some other States, like Illinois, they receive such legal protection that any person may treat "the sick or suffering by mental or spiritual means, without the use of any drug or material remedy." Under these conditions any person in Connecticut, Maine, Massachusetts, and New Hampshire is free to practise "the sun cure, mind cure, hypnotism, magnetic healing, Christian science, etc." The greater part of New England seems to be on about the same footing in this respect with the Cherokee nation, Indian Territory, where entire liberty is given to "enchantments in any form." In striking contrast Hawaii inflicts heavy fines on any person convicted of an attempt to cure "another by practice of sorcery, witchcraft, anaana, hoopiopio, hoounauna, hoomanamana, etc."

There is much misunderstanding in this country regarding the duty of the state in relation to the health of the people. It does not consist in discriminating between schools or systems of medicine, but in requiring without prejudice or partiality of all who seek a license to practise for gain on the lives of fellow-beings a minimum preliminary and professional training.

Midwifery.—Special tests for certificates of registration as midwives are required in Arjzona, Connecticut, District of Columbia, Illinois, Indiana,* Iowa, Louisiana, Missouri, New Jersey, Ohio, Texas, Utah, Wyoming.

In the following political divisions the provisions of the medical practice acts do not apply to women engaged in the practice of midwifery: Alabama, Arkansas, Florida, Georgia, Idaho, Kentucky, Maine, Maryland, Mississippi, Montana, New Mexico, North Carolina, Rhode Island, South Carolina, Tennessee, Vermont,† Virginia, Washington, West Virginia.

In other political divisions, though there are some special provisions for certain localities, the general acts regulating the practice of medicine make no reference whatever to the practice of midwifery by women.‡ It would seem, therefore, that these laws restrict the practice of midwifery to licensed physicians. Nevertheless a large proportion of the children in these political divisions are brought into the world by ignorant midwives, and as stated by Dr. M. J. Lewi, of New York, many women are physical wrecks through their incompetence. Practically the conditions in political divisions where the laws seem to restrict the practice of midwifery to licensed physicians are little better than in political divisions where the practice of midwifery by women without a license is authorized by statute. There will probably be little change for the better till the midwife receives legal recognition and the practice of midwifery is regulated by definite statutory provisions.

Early Legislation.—The earliest law relating exclusively to physicians was passed by Virginia in 1639, but like the later act of 1736 it was designed mainly to regulate their fees. The act of 1736 made concessions to physicians who held university degrees. In only two of the thirteen colonies were well-considered laws enacted to define the qualifications of physicians. The General Assembly of New York in 1760 decreed that no person should practise as physician or surgeon in the city of New York till examined in physic and surgery and admitted by one of his majesty's council, the judges of the supreme court, the king's attorney-general and the mayor of the city of New York. Such candidates as were approved received certificates conferring the right to practise throughout the whole province, and a penalty of £5 was prescribed for all violations of this law. A similar act was passed by the General Assembly of New Jersey in 1772.

In 1840 laws had been enacted by the legislatures of nearly all the States to protect citizens from the imposition of quacks. Between 1840 and 1850, however, most of these laws were either repealed or not enforced as a result of the cry that restrictions against unlicensed practitioners were designed only to create a monopoly.

* Either examination or approval of diploma.
† Those practising midwifery without a certificate cannot enforce collection of fee, but this does not apply to the practice of midwifery by women in the town or locality in which they reside.
‡ In Nebraska, North and South Dakota the practice of "medicine, surgery, or obstetrics" without a license is prohibited.