First year	908
Second year	946
Third year	1154
Fourth year	1192

4200

Physics	40
Chemistry	312
Anatomy	558
Histology and embryology	209
Physiology	275
Materia medica, pharmacology and therapeutics	196
Bacteriology	150
Pathology	256
Clinical microscopy	62
Morbid anatomy and medical zoology	90
Physical diagnosis	72
Medicine	540
Surgery	514
Orthop. surgery	48

562

Obstetrics	160
Gynecology	168
Pediatrics	90
Dermatology and syphilis	36
Genito-urinary diseases	36
Laryng. and rhinology	72
Ophthalmology and otology	90
Neurology	72
Mental diseases	60
Electro-therapeutics	24
Hygiene and dietetics	40
State medicine	30

4200

PROPOSED STANDARD OF A 4,000 HOURS' MEDICAL COURSE.

	Lectures and Recitations.	Laboratory Work.	Total.
First Year—			
Physics	20	20	40
Chemistry	72	72	144
Osteology	24		24
Anatomy	120	172	292
Histology	24	100	124
Embryology	35	50	85
Physiology	105	40	145
Materia medica	34	12	46
	434	466	900
Second Year—			
Anatomy	106	78	184
Physiology	90	40	130
Chemistry	72	96	168
Bacteriology	50	100	150
Pathology	62	140	202
Pharmacology	45	15	60
Minor surgery	12	12	24
	437	481	918
Third Year—			
Pathology (morbid anatomy and medical zoology)	38	42	80
Physical diagnosis	36	36	72
Medicine	90	180	270
Surgery	120	125	245
Orthopedic surgery	12	12	24
Obstetrics	50	30	80
Pediatrics	15	30	45
Gynecology	24	60	84
Neurology	18	18	36
Mental diseases	15	15	30
Therapeutics	90		90
Hygiene and dietetics	36		36
	544	448	1,092
Fourth Year—			
Medicine	90	180	270
Surgery	120	125	245
Orthopedic surgery	12	12	24
Obstetrics	50	30	80
Pediatrics	15	30	45
Gynecology	24	50	74
Neurology	18	18	36
Mental Diseases	15	15	30
Electrotherapeutics	12	12	24
Laryngology and rhinology	24	48	72
Ophthalmology and otology	30	60	90
Dermatology and Syphilis	15	25	40
Genito-urinary diseases	15	15	30
State medicine	30		30
	470	620	1,090
First year			900
Second year			918
Third year			1,092
Fourth year			1,090
			4,000

CONCLUSION.

In conclusion let me reiterate that I represent a small, struggling medical school, and if I differ from the views expressed by others, I do so with great hesitation. Apart from the ethical aspect and the imperative

demands for reform throughout the medical profession. I consider it in the highest degree good business policy to advocate a plan which will improve the quality of the product and equalize the number of students, a result which can not fail to be acceptable to the larger schools and extremely profitable to the smaller schools, and I therefore beg to offer the following resolution:

Resolved. That a Committee on National Uniformity of Curricula be appointed, to co-operate with a similar committee appointed by the National Confederation of State Medical Examining and Licensing Boards, for the purpose of presenting a minimum standard of medical education, together with such recommendations as the committee may deem proper as to the division of the subjects in a four-year graded course. Said report to be presented at the next annual meeting, and to be printed and distributed at least one month before said meeting.

COMPARATIVE STANDARDS OF MEDICAL EDUCATION.

SUBJECTS.	Proposed Standard.			Average 43 Colleges.	Michigan.	Georgetown. Present Standard.	State Medical Exam. Standard.
	Lecture.	Laboratory.	Total.				
Physics	20	20	40				
Chemistry and Toxicology	144	168	312	375	350	352	340
Anatomy	250	250	500	549	400	558	500
Histology and Embryology	59	150	209	219	200	209	200
Physiology	195	80	275	276	260	275	250
Materia Medica, Pharmacology and Therapeutics	169	27	196	118	234	196	110
Bacteriology	50	100	150	131	230	150	115
Pathology	100	182	282	295	220	256	260
Morbid Anatomy and Medical Zoology							
Physical Diagnosis	36	36	72	61	120	72	55
Medicine	180	360	540	544	540	540	500
Surgery and Orthop. Surgery	276	286	562	596	510	562	540
Obstetrics	100	60	160	177	100	160	150
Gynecology	48	110	158	145	220	168	130
Pediatrics	30	60	90	72	140	90	60
Dermatology and Syphilis	15	25	40	64	60	36	50
Genito Urinary Diseases	15	15	30		90	36	
Laryngology and Rhinology	24	48	72	67	260	72	55
Ophthalmology and Otology	30	60	90	106	90	90	95
Neurology	36	36	72	82	120	72	75
Mental Diseases	30	30	60	27		60	25
Electro Therapeutics	12	12	24		30	24	
State Medicine	30		30		30	30	
Hygiene and Dietetics	36		36	33	54	40	30
Clinical Microscopy				72	62		
	1885	2115	4000	3937	4240	4200	3540

CASE OF TETANUS SUCCESSFULLY TREATED BY ASPIRATION OF THE CEREBROSPINAL FLUID AND INJECTION OF MORPHIN- EUCAIN AND SALT SOLUTION.

JOHN B. MURPHY, A.M., M.D.
CHICAGO.

History.—Alex. S., aged 8 years, was admitted to Mercy Hospital July 10, 1904. He is one of eight healthy children and has had no previous illness. Seven days preceding admission, while crossing a dirty street, he stepped on a piece of glass, cutting his foot in two places. He received no medical treatment, except that the foot was washed by his father and applications made of a lotion and of antiphlogistin. This was prescribed by a physician without seeing the case. Five days later (six days after the accident) stiffness of the jaw began and he was seen for the first time by a physician. At this time he had had for twenty-four hours pronounced trismus, and spasm of the muscles of the neck, with occasionally contraction of the muscles of the back, but not severe. There had been no chills, fever, nor sweats. There was little redness or irritation around the wounds.

Hospital Examination.—When admitted to the hospital there was a wound one inch and a half long on the outer aspect of the anterior portion of the foot, and a smaller wound on the inner side near the heel. The trismus was pronounced, and every three to five minutes there was contraction of the muscles of the back with pronounced opisthotonos.

Surgical Treatment.—The patient was anesthetized. The

anterior wound appeared healed, but on separating the edges a piece of glass and some debris were found in it. A smaller piece of glass with pus was found in the posterior wound. These had been there for seven days. The pus was examined for tetanus bacilli and none found; an anaerobic culture was made with no result. The wounds were curetted, cauterized with a 95 per cent. solution of carbolic acid and packed with iodoform gauze. The patient slept a short time after the anesthetic. Then the convulsions came on every ten to fifteen minutes and lasted one to three minutes. His temperature was 99.8 degrees; pulse 110.

Treatment by Antitetanic Serum.—On July 11 he was given three full doses of antitetanic serum, without effect. The convulsions increased in frequency and were almost continuous.

Treatment by Morphin-Eucain Injections.—On the morning of July 13 a lumbar puncture was made and 16 c.c. of cerebrospinal fluid withdrawn. It was cloudy in its appearance to the naked eye. At the same time, through the needle, 3 c.c. of the following solution were injected into the subarachnoid space:

R. B. eucain.....	gr. iss	09
Morphin sulphate.....	gr. 1/3	02
Sodium chloridi.....	gr. iii	18
Distilled water.....	℥iiss	105

This had been sterilized by boiling. The patient slept four hours immediately following the injection, and through the night slept an hour and a half at a time. The spasms were of shorter duration and he had only eight in the succeeding twenty-four hours. His temperature the evening of July 13 was 102 degrees and his pulse 120.

Course and Recovery.—On July 14 a spasm occurred at about 4 a. m. which was the most severe he had had since the injection. At 11 a. m. another puncture was made and 15 c.c. of fluid withdrawn. This looked comparatively clear. Four c.c. of the above solution were again injected. He slept four hours following this injection. Pulse was 100, temperature 100 degrees. He had eight spasms between this and noon of the following day, July 15, when they began to increase in frequency. The spinal canal was again punctured, 15 c.c. of fluid withdrawn and 4 c.c. of the morphin-eucain solution injected. He had no spasm until late in the afternoon and only an occasional mild spasm through the night. At noon, July 16, 15 c.c. of fluid were withdrawn and 4 c.c. of the solution injected.

July 17 his condition was so good that no injection was made. In the night the spasmodic contractions again occurred, and by the next morning they were being repeated every hour, though of mild severity. He could now talk well and had had a good night's rest. On July 19 the usual aspiration and injection were made. On July 20 he had a few very mild spasms.

On the morning of July 21 the spasms were a little more severe, although at intervals of three or four hours. At noon there was another aspiration and injection made. Following this there was no spasm; his condition improved; the trismus gradually subsided and he was discharged cured July 31.

THE DOSAGE.

It will be noted that the quantity of morphin in each injection was 1/75 of a grain, and of eucain 3/50 of a grain. These were extremely small doses, and as it was my first case I feared to increase the quantity. There was no sweating, headache nor collapse, symptoms so frequently noted after injections of cocain for spinal analgesia. It will be recalled that at the time cocain was first used for analgesic purposes, it was believed the injection of any solution in the spinal canal would produce these symptoms. The injections immediately relaxed the spinal muscles, and they remained relaxed for considerable periods of time, hence the patient had a good opportunity to sleep and rest from the time he received the first injection. It is my belief that the strength of the eucain portion of the solution should be increased so the patient would receive 1/6 or even 1/3 of a grain with each injection. Furthermore, that

the aspirations and injections might be repeated with greater frequency. There seemed to be no ill effect from the withdrawal of the fluid, and after the third day the fluid showed no polynuclear leucocytes.

SUGGESTIONS FOR FUTURE CASES.

I believe eucain is much safer than cocain; first, because it admits of boiling for sterilization; and second, because there is less idiosyncrasy to intoxication. As these patients die, many of them from exhaustion from the spasms, and some from the severity of the spasms of the respiratory muscles themselves, I feel that this can be entirely overcome with the injections. I have not had an opportunity to try it on other cases, and publish this merely as a preliminary report—as this is the season in which tetanus is most frequent—that others may be induced to try it. I do not know whether the benefit was attributable to the extraction of the cerebrospinal fluid or to the injection of the solution, or both. The fact the fluid withdrawn on the first, second and third days contained pus, and after that none, would lead one to believe that possibly the diminution of pressure in the cerebrospinal cavities aided the fluid in overcoming the infection, just as in epidemic cerebrospinal meningitis, repeated spinal puncture relieves the pressure and gives the greatest percentage of recoveries.

There is no reason why the cerebrospinal cavities can not be washed out in severe infections with salt or other neutralizing solutions by the following method, which I shall put into practice in the first case of cerebrospinal meningitis coming under my observations: First, make a drill puncture of the cranium over the lateral ventricle; insert a fine needle until the cerebrospinal fluid escapes; second, insert a needle into the spinal canal in the lumbar region and allow a normal salt solution to flow, under hydrostatic pressure, from the needle in the right ventricle, down through the foramen of Magendie and the spinal canal, to, and out of the needle in the lumbar area. This can be accomplished on the cadaver, as I have demonstrated. Permanent drainage of the cerebrospinal canal has been almost uniformly fatal, and should not be instituted.

Special Articles.

THE UNITED STATES PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE.

PART I. A HISTORICAL SKETCH.

(Continued from Page 403.)

(C) DR. HAMILTON'S ADMINISTRATION (1879-1891).

In 1879 Surgeon-General Woodworth died, and was succeeded by Surgeon John B. Hamilton. The new head of the service vigorously pursued the policy inaugurated by his predecessor in office. The regulations were revised and brought up to date, embodying the substance of circulars and orders issued since 1873. Stricter accountability for public property, improved discipline, greater amount of relief furnished at a relatively less cost, and greater accuracy in the medical statistics were the objects attained by rigid enforcement of regulations.

During the first four years of Dr. Hamilton's administration, the National Board of Health, created by the law of 1879, was in active existence, and the public-health work of the service did not increase in consequence. The law under which the National Board of

EDITOR'S NOTE.—This article began July 30. The Army Medical Department was discussed May 7, 14, 21, 28 and June 4.