

CADAVER.		1	2	3	4	5	6	7	Av.	Inc.
After cutting anterior half of capsular ligament. . .	S.T.	13.12	12.31	14.37			11.25	14.25	13.00	
	C.T.	13.75	14.68	12.81	14.37	13.75	13.50	13.50	13.43	.94
After cutting cotyloid ligament (the head of the femur then falling out of the socket, the leg being held to the trunk only by the ligamentum teres) . .	S.T.	15.31	15.93	17.18	16.25	14.37	21.50	14.25		
	C.T.	16.16	17.35	15.93	15.00	16.56	19.25	17.00	16.50	4.01

MEASUREMENTS IN CENTIMETERS.

S.T. Distance between anterior superior spine of ilium and great trochanter.
C.T. Distance between crest of ilium and great trochanter.

It would seem, therefore, that what holds the bones together is primarily the cotyloid and secondarily the capsular ligaments (of course in life the elasticity of the surrounding structures helping them out), and that "air pressure" need not be considered.

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THE DOCTOR IN THE NAVY.

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ONE way of becoming a commissioned officer in the United States Navy from civil life is to be appointed a medical officer by the President.

It is interesting to know something of the history of naval surgeons. In early times he was before the mast, with small pay and the privileges of an ordinary seaman. Later he held rank similar to a warrant officer of today, and was classed as surgeon or surgeon's mate. At the present time in the navy he has no actual rank, but enters with the relative rank and pay, privileges, etc., of a lieutenant (junior grade), and through time may finally reach the relative rank of captain in the navy. One out of the entire corps may rank with a rear-admiral by being appointed surgeon-general through influence.

In order to enter, the candidate must be twenty-one years of age and a citizen; those are practically the only requirements for application. Application letters must be in candidate's handwriting addressed to the Secretary of the Navy, stating age, place of birth, residence, citizenship, a graduate or not in medicine, if so naming the school, and enclosing two certificates of character. The law does not require a candidate to be an M.D., although they usually get the preference.

Having mailed the above letter, he receives in return a letter of permission from the Secretary to appear before the examining board. This letter the candidate must mail to the chairman of the board, respectfully asking for a date on which to appear for examination. The board is in session from September 1st to July 1st at Washington, D. C. With the above letter to the board, it is advisable

for the candidate to send all the letters of reference, including both character and education, that he can get, especially from well-known people.

About a week later he will receive his letters back and an order to appear on a certain date, also naming the place and hour of examination in Washington. Examinations were formerly held at the Brooklyn Navy Yard, but last year the location was changed to a department building in Washington, in order to be a more central location.

On reporting at the time set, the candidate meets three surgeons constituting the board appointed by the surgeon-general, fully equipped to begin an examination that will last about ten days.

First comes the physical. The candidate must strip to the skin and be examined from head to foot for any signs of disease, and must also swear that as far as he knows he has no constitutional disease about him that can interfere with his duties. He is searched for any possible deformities, enlarged glands, veins, hernia of any part, condition of joints, skin, and a bad condition of any of the above mentioned is a cause for rejection. He is weighed, and his weight is required to equal two pounds to the inch in height. He is measured in height, and chest expansion, heart and lungs are thoroughly tested, also the hearing in each ear. Any peculiar marks or scars on the body are placed on record. The eyes also come in for a rigid but rather out-of-date form of examination. Each eye is tested in reading a printed card, and although the department allows glasses the vision must be perfect. The majority of college graduates of today require glasses for various defects of vision, and most of the foreign governments have not counted this against the candidate as long as it does not interfere with his work as a medical officer, especially in cases of uncomplicated near sight. There is good reason for this: the nearsighted man is never subject to eye strain, headache: as long as his work is within his visual field, he can work for many hours without any eye fatigue, and age tends to lengthen the vision. With the farsighted person that can usually pass the test, we find the whole condition reversed, and the man passed with far sight is worse off than the man rejected on account of near sight. This same condition also applies to the man suffering from certain kidney or constitutional diseases which do not show on the surface, as secretions are not usually examined, and the candidate may be in ignorance or not of the fact. Color tests are given, and then the mouth and throat are looked over.

If the physical examination has been satisfactory the candidate is then required to write a sketch of his past life in the form of a letter addressed to the board, including an outline of his school life, textbooks studied, and diplomas received. Having completed this, he is then asked to write a thesis on some subject assigned by the board, without reference to any notes or books, and must state what experience he has had in private or hospital practice. Then for ten days it is one continuous round of written and oral questions, not only in medicine but in every subject the board cares to ask about.

*Usually it is carried on in the following detailed manner:

First day: Physical examination and letters of reference placed before the board.

Second day: Letter to the board describing candidate's life and education.

Thesis.

Three written questions in anatomy and physiology.

Third day: Oral examination in anatomy and physiology; number of questions not limited.

Three written questions in surgery.

Oral examination in surgery.

Fourth day: Three written questions in medicine, followed by an oral in medicine.

Fifth day: Eight surgical operations are usually done in a dissecting room, counts as practical surgery examination.

Sixth day: Pathology and microscopy; one written question in each.

Obstetrics and legal medicine; one written question in each.

Oral examination in above subjects.

Seventh day: Materia medica and action of drugs; two written questions followed by an oral quiz.

Chemistry and physics; three written questions followed by an oral.

Eighth day: Hygiene and quarantine; one written question in each followed by a series of oral questions.

Two patients are assigned to be reported on, one surgical, one medical when possible.

Recognition of instruments, cases of medical and surgical instruments are displayed, and candidate is required to name and describe the use of those asked for by the board.

Ninth day: Bandaging.

Use of microscope.

Examination in general subjects begun.

Tenth day: Examination concluded.

A general average of 75% must be obtained and in some subjects 80% and 85%, as shown in the official table below:

	<i>Ques.</i>	<i>Required.</i>
Anatomy and physiology	2	80%
Surgery	3	85%
Medicine	3	85%
Pathology	2	60%
Obstetrics	2	60%
Materia medica	2	80%
Chemistry and physics	3	60%
Hygiene	2	80%
General aptitude	.	80%
General education	.	80%
Total		750%

These percentages are not absolute, and a loss in one branch may be made up in another, provided the above percentages in anatomy, physiology, medicine and surgery are obtained. General education covers grammar, arithmetic, geography, languages, history, general literature, elementary botany, geology and zoölogy. Aptitude is important, and can be enough cause for rejection. The look, bearing, ability and manner of the man as he comes in contact with the board is the basis on which the per cent is given. Oral examinations last from fifteen minutes to an hour, depending on the subject.

The board allows no part of the examination to be held elsewhere, and no allowance is made for

candidate's expense in taking the examination. A candidate may withdraw at any period of the examination with the consent of the board, and present himself at a later date. If, however, he fails to pass, he may be allowed a second trial a year later, but is not allowed a third.

Although the above is the general plan, the board have the power to conclude the examination at any time, or deviate from the above plan in any way that they think best for the service. If a man is disqualified in anything, there is such a thing known as obtaining a waiver, and he may be passed; this, however, requires influence. The board is under oath to report on the mental, physical, moral and professional qualifications of the candidate. If successful he is notified at once at the close of the examination.

Appointments are made as fast as vacancies occur, and in order of merit as reported by the board, but a qualified candidate not appointed within a year from date must take a second examination. For years back there have always been plenty of vacancies, anywhere from twenty to thirty at a time, but in the last year the vacancies have been filled and some acting appointments made as a waiting list. The question has often been asked as to what caused the lack of candidates. I think principally the examination, as it is rather peculiar, theoretical, and the system of the board makes it difficult, it tends to probe a man to see if there is something he does not know. The practical part of the examination is fair and in the reach of any good practical man, but that and the man's previous record has not counted as much as theory. Graduates of some of the smaller theoretical schools have always seemed to have the advantage in passing the test, and one advertised in a catalogue that about 20% of its graduates held commissions in the medical corps, also it has aided certain quiz schools that made a specialty in preparing young men for these examinations, and their circulars advertise success. The physical examination has also been a bar to many, especially vision, lungs and heart. There have always been plenty of men willing to try, but unless they could secure a waiver for a physical defect, it only meant rejection.

A man to be a military surgeon must be able to adapt himself to circumstances as he finds them, have the ability to make the best use of material that he has to work with if he gets caught in a tight place, and this requires practical men. The results of the navy system have not as yet been in actual test, as every shore station has direct communication with large civil hospitals for consultation, and on sea-going ships they have a picked body of men under their observation.

The war with Spain was not long enough to bring out the navy surgeon's value.

Now the young man having passed, he is ordered to procure an outfit of uniforms that cost about \$520, and report at the Navy Medical School at Washington for a six months' course of instruction in the duties of a medical officer, his place on board ship, naval etiquette, diseases peculiar to the service, and the various clerical returns and reports that he is supposed to fill out for record at the Bureau of Medicine and Surgery.

When the course is over he usually is ordered to

some ship or station. Usually orders are issued so as to give the surgeon from ten days to two weeks' time to make the necessary preparations. On arriving at the ship or station, he must dress in full-dress uniform with side arms, and report to the commandant, presenting his orders, and then he becomes an official part of the routine life. As stated above, he does not have positive rank, but is ranked as a staff officer, with rank relative to a corresponding grade in the line, so his uniform is made distinctive of his corps. The assistant surgeon wears the same general uniform as a lieutenant (junior grade), but has distinctive collar and cuff device. Where the line officer has a silver anchor embroidered on his collar the doctor has an acorn over a leaf, and the gold star on the line officer's sleeve is absent on the medical officer's, but in the latter case the gold cuff stripes are sewed on a maroon background. An assistant surgeon wears a stripe and a half on the cuff, the official stripe being one-half inch wide.

After serving three years as an assistant he is examined and if successful is made past assistant surgeon. When vacancies occur he is raised to the rank of a lieutenant, with the full two bars on his collar, two stripes on the cuff. Promotions continue in order of seniority, next being surgeon with rank of lieutenant-commander, giving him two stripes on the cuff and changing the silver bars to a gold leaf. The grade of surgeon is the last on which a regular physical and mental examination is required, promotions after that going in order of long service. The next rank is termed medical inspector, ranks with commander, three stripes on cuff, a silver leaf on collar and an embroidered visor on cap. The final rank is medical director, rank of captain, a silver spread eagle on collar, and four stripes on cuff.

The highest rank to be obtained is surgeon-general, with the pay and privileges of a rear-admiral. This appointment is made directly by the President, the term of office to last four years; therefore the position is usually given to some officer that will retire at the close of his tenure, as that retires him with the rank, etc., of rear-admiral. If a younger man was given the office, he would have to resume his original rank at the close of his term, unless the new President would re-appoint him, which would hardly be likely, as the position is much sought for. There are three important factors in making such an appointment: A man about to retire would never have to step back into a subordinate position, which might otherwise prevent him from doing his work independently; he retains the relative rank of rear-admiral for life, and the pay on the retired list is greater than he could ever get again, being some \$4,125 a year for life.

The life of a surgeon is easy, work is light, hours short and Uncle Sam is an excellent provider. Each officer is supplied with all the latest medical papers, instruments, books, chemicals and all kinds of laboratory apparatus free of cost. When traveling under orders he is allowed eight cents a mile, and many railroads make a reduced rate for officers so traveling, hence a trip from New York to San Francisco would net a tidy little sum.

The pay is first class; an officer perhaps never would get wealthy on it, but he always has a comfortable income and far more than he would obtain in civil life for the same amount of work, and at the

age of sixty-two he retires on three fourths of his highest sea pay, thus being furnished a comfortable income for the rest of his life. Sometimes complaints are heard from officers about their pay, but if the United States was to offer one half the entrance salary, they would have all the men they wanted and as competent surgeons. In Europe the young officers receive a much smaller salary, and among them Uncle Sam is noted for his liberal pay table.

An assistant surgeon at sea, on a receiving ship, or in colonies like Porto Rico, receives \$1,650 per year, with \$9 per month for ration allowance; on shore duty he receives \$1,402.50 per year and partially furnished quarters—ice, light, heat, messenger and laborer service. Junior surgeons have quarters usually in a hospital, while the senior has a fine large house to himself. Past assistants receive after five years at sea in the service \$1,800, on shore \$1,530; after five years with the rank of lieutenant, at sea \$2,160, on shore \$1,836. Surgeons receive from \$2,360 to \$2,520 at sea, and \$1,989 to \$2,142 on shore, with a time service of fifteen years. A surgeon's maximum pay is \$3,500 at sea, and \$2,975 on shore. Medical inspectors receive \$4,100 at sea, \$3,400 on shore. Surgeon-general receives \$5,500 per year afloat and ashore, but his duties are at the department unless he goes to sea on a tour of inspection. When officers are ordered to shore stations where no quarters are provided, they are allowed according to their rank from \$288 to \$720 per year added to their pay for rental of quarters.

They have on sea duty \$9 a month allowance as ration money, and for longevity pay receive an increase of 10% of their salary for each five years' service, until the total amounts to 40% increase; also they are allowed what they can make in private practice, and this often amounts to considerable in certain stations.

Social life is more or less a large factor in the life and makes quite a bill of expense, yet it is not always necessary, and if the surgeon does not care for it he can readily drop most of it and enjoy himself as he pleases. The greatest expense is food and clothing. Uniforms must be of good quality, and are expensive, but if taken care of last a long time. On board ship the food arrangement is known as the "mess," and each officer is charged an equal share in paying for it. One of the officers is elected caterer each month, and he makes out the bill of fare, collects the money and pays the bills. The cost of a mess is usually about a dollar per day to the man. Wine lists and cigars are furnished, but each individual pays for what he orders, so there is no question of any unfairness in the methods, and the man that does not care for extras does not pay for any others. On shore he must provide his own food and is supposed to pay his own servants, for at sea Uncle Sam provides cook, steward and mess-boy or waiter.

Medical officers spend three years at sea, then three on shore, and are allowed one month leave a year. This is not adhered to, as the needs of the service often demand sudden changes of station. Medical directors usually do no sea duty, but are placed on boards, or in charge of hospitals. In case of disability occurring in line of duty—and it is rare to find a record of any disability not duty, although the retired officer may be doing a busy prac-

tice outside — the surgeon retires to private life on three fourths of his present sea pay.

Duties on ship are light, as the men are all selected before being sent on board, so that all report on first-class order, and the mode of military life tends to keep them so. Sick calls in morning are practically his office hours, and he has the assistance of a well-trained apothecary with several apprentices. The apothecary does the clerical work and tends the minor cases besides the prescription work. On shore he has in addition the families of officers and enlisted men to attend. This increases his work but little, as most of the families have a civilian physician.

For illustration take a tour of duty at a New England station like the well-located and historical old Navy Yard at Kittery, Me. There the senior has a fine house, furnished, electric lights, heat and ice free, beautiful large lawns, fine vegetable and flower garden, all kept in order practically at the expense of the department; a man to do his errands and chores, a fine dispensary building within a few moments' walk of his house, fitted with as good an office and library as a doctor could wish. The dispensary is in charge of an energetic, well-educated pharmacist. The pharmacist has a well-arranged set of quarters on the second floor of the dispensary. Also under the senior is a well-furnished hospital, under direct charge of a junior surgeon assisted by one or two apothecaries and three apprentices. The naval hospital has an excellent location on the bank of the Piscataqua River, surrounded with broad lawns and plenty of fresh air and sunlight.

At that station the work is light, as it is a healthy location. Sick call sounds at 9.45 A.M., usually lasts less than an hour, then outside of a little official correspondence the senior's day's work is practically over, as the pharmacist takes care of the routine work in the way of making out requisitions, inventories and various daily and quarterly sick reports. Of course all stations are not alike, some have more work, others less, but as a rule it runs along in the manner above described.

If an officer is ambitious there are plenty of chances to keep busy. Research, sanitary and diet problems are always being brought up which the department heartily approves, furnishes everything to work with, and only asks in return that reports shall be made from time to time on the progress of investigation.

On a whole the life is such that it offers a great inducement, especially if one cares for institution life. It means a good living, good social position, comfortable income, travel, and retirement at the age of sixty-two from care and worry for the rest of one's life. The disadvantages are military system, which is necessary but never makes the officer independent, and service legislation with its political background. This latter is felt more than seen, but once in a while it crops out.

There are some disagreeable duties and stations, but they are few, and the department gives due credit for men doing such duties or serving on such stations. As far as the good and bad sides are concerned, a great deal depends on the man. He can loaf and take life easily as possible, his greatest worry being the next examination for promotion, and thus become useless as a medical man, and routine life seems to produce that effect on some. On the other hand

he can go ahead with an endless field to work in and carry on experiments that the outside physician in the ordinary walk of life could not afford the time and money to undertake.

Clothing is one of the largest bills to the young officer, as he needs an outfit of good quality, enumerated as follows: Special full dress, full dress, several working uniforms in blue, chapeau, shoulder knots, shoulder straps, at least six white uniforms, white cap frame with dozen covers, two blue fatigue caps, boat cape, overcoat, white shoes, sword and belt, rain clothes, heavy and light regulation gloves, and on going to sea must be supplied with a large amount of laundry.

The navy is like one big family, and the candidate once admitted finds a cordial reception, but as a stranger trying to enter he need not be astonished at a cold reception. There seems to be a feeling in the service that the ordinary citizen is an outsider instead of an employer, and the navy is a little social world in itself, the ticket of entrance to it being an appointment to Annapolis or a commission. In the service lines are drawn as sharply as in any European monarchy, and a high official would never think of inviting an officer of the grade of gunner, boatswain, etc., yet one is just as much of an officer as the other, and recognized by the official register as such.

The only difference seems to be the fact that the gunners, carpenters, pharmacists worked their way up and the lieutenant was appointed; but in social life that makes a great difference.

New Instruments.

A NEW MODIFICATION OF TARNIER'S AXIS TRACTION-RODS.

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SOME apology seems necessary for further addition to the numerous existing traction-rods. I have had trouble with the instruments commonly used at present, and have learned that other obstetricians have had the same difficulty. The advantageous points of the rods here described have been used before, but no attempt has been made to apply them to forceps with the English lock, for which there is here so marked a preference.

The two types of traction-rods used here today are (1) Felsenreich's or Lusk's, and (2) Reynolds' or Higgins' modification of Tarnier's instrument.

The faults of the first type are of an obvious mechanical nature. The instrument can be applied only to forceps bearing a French lock; it has a bar so complicated as to render its attachment difficult, and it is essentially not a clean surgical instrument.

The second type is simple, clean and can be applied to any forceps; but in spite of the mechanical contrivance, the rods occasionally slip out. Constant attention is necessary to keep the rods in place during the application, and in swinging the rods into apposition, the good application — frequently attained with difficulty in high operations — is usually disturbed.