

means technical study. Any competent practitioner should quickly become a valuable Assistant Surgeon. A Regimental Surgeon has more to learn; the commander of an Ambulance Company or of a Field Hospital more yet; while a Division Surgeon must be a real medico-military expert.

You would be surprised if you knew the amount of work and study many Militia officers, both in the line and in the Medical Department, are giving. As soon as an officer begins to think things over he realizes that this is necessary, and sometimes gives more time than he really ought to take from his business. Congress has begun to appreciate this, and I believe will soon pass a military pay bill which will wholly or partially make up this loss, and enable many good officers to continue in the service.

The sum and substance of the matter can be expressed in two propositions:

1st. Sooner or later we shall be needed.

2nd. We must prepare ourselves for our new duties.

The transition from Doctor to Medical Officer demands considerable technical study.

I recommend the following books to those who care to look into the matter:

Manual for the Medical Department,
U. S.

Army Regulations, U. S.

Field Service Regulations, U. S.

Harvard's Military Hygiene.

Handbook for the Hospital Corps, U. S.

For more advanced study:

Morrison and Munson's Troop Leading
and Sanitary Service.

Sherrill's Map Reading.

Munson's Sanitary Tactics.

Straub's Medical Service in Campaign.

These can be obtained from W. B. Clarke Co.,
26 Tremont Street.

A STUDY OF THIRTY-NINE CASES AS REGARDS THE INTESTINAL LENGTH AND NUTRITION.

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THE observations recorded here were begun, at the suggestion of Drs. Goldthwait and Brown, to find out whether or not the length of the small intestines had any relation or bearing on general nutrition, and also to find out what the variations in length actually were.

I include here observations made by them at the Harvard Medical School, on subjects for the Surgical Anatomy Course and loaned to me by their kindness. These subjects were chosen for this course because of their leanness and lack of fat tissue.

Twenty-nine autopsies were observed at the Massachusetts General Hospital through the kindness of Drs. Wright and Richardson. All but five of the cases were measured personally and the data on the position of the viscera was

made as the abdomen was opened before the organs were disturbed.

In measuring the intestines great care was taken not to put any strain on them and an attempt was made to prevent error by stretching. To this end the measurements were made before the bowel was cut from its mesentery, while still in place, and the same technique was used in every case.

Cases were not selected but were taken as they came, regardless of the causes of death.

We give elsewhere a tabulated record of the observations.

We find in the dissecting room series ten cases, eight males and two females, all very thin, two only having a fair amount of fat tissue. The stomach contracted in several cases with an average lesser curvature of 9 1-2 in., which can be drawn down from its normal position, as given in Piersol's Anatomy, at the level of the first lumbar; in four cases as far as the fifth, thus giving some idea of the variable point to which it may come down. It is also of interest that in two cases the duodenum was free and movable. In both of the cases the lesser curvature could be drawn down to the fifth lumbar.

The figures on the length of different parts of the large intestine show that most of the length is in the transverse colons and sigmoids. The total average is four feet, that of the small intestine being 15 ft. 3/4 in. Total, 19 ft. 3/4 in. as an average in these ten cases. Taking into consideration the fact that these subjects were chosen for their thinness and lack of fat, one cannot help wondering whether the general length of the intestine is significant, and also wondering how much the lowering of the stomach by pull down of the lesser curvature during life had to do with poor nutrition.

This led to a study of autopsy cases which were better nourished. In studying these figures one finds twenty-nine cases, varying from 21 to 80 years of age, 21 males and 8 females, who died of many and varied diseases; 9 of these had visceral ptosis, 5 males and 4 females; 7 had the tubular type of stomach so often seen in the bismuth x-ray plates; 5 of these had ptosis. In all of these 9 cases of ptosis the pylorus of the stomach was at or within one inch of the umbilicus.

The liver was in its normal position at the costal border in only seven cases. In 2 it was above; in 20 it was from 2 to 4 fingers' breadth below the margin.

The stomach was examined for the length of its curvatures. The average lesser curvature was 7 1/2 in., the extremes being 3 in. to 11 in. The average greater curvature was 18 in. The extremes were 13 to 33 in.

These figures leave no doubt as to the great variability of the lengths of the curves of the stomach.

No constant ratio between the greater and lesser curvatures can be made out, and the type

SERIES OF DISSECTING ROOM CASES.*

NO.	SEX	FAT	STOMACH	LESSER CURVATURE	L. INT.	CÆCUM	TRANSVERSE	COLON	SIGMOID	L. INT.	TOTAL
1	Male	Some	Contracted	9½ in.	19 ft. 4 in.	6½ in.	27¼ in.	8½ in.	22½ in.	6 ft. 2 in.	25 ft. 6 in.
2	Female	None	Contracted	14 in.	15 ft. 11 in.	13 in.	29 in.	9½ in.	14 in.	6 ft. 7½ in.	22 ft. 6½ in.
3	Male	None	Contracted	9½ in.	10 ft. 4½ in.	3½ in.	17½ in.	8 in.	13 in.	4 ft. 7½ in.	14 ft. 8 in.
4	Male	Some	Contracted	8½ in.	18 ft. 8 in.	8 in.	25 in.	10 in.	19 in.	5 ft. 10½ in.	24 ft. 6½ in.
5	Male	None	Top 5th lumbar	10 in.	13 ft. 7 in.	4½ in.	15 in.	10 in.	9 in.	4 ft. ½ in.	17 ft. 7½ in.
6	Female	Fat	Top 4th lumbar	9 in.	10 ft. 11½ in.	6 in.	15 in.	7½ in.	10½ in.	4 ft.	14 ft. 11½ in.
7	Male	Some	Top 5th lumbar	13 in.	23 ft. 3½ in.	7 in.	26 in.	8 in.	14½ in.	6 ft. 8¼ in.	29 ft. 11¼ in.
8	Male	Fat	Base 2d lumbar	7½ in.	11 ft. 11½ in.	5½ in.	18 in.	8 in.	16½ in.	4 ft. 7¼ in.	16 ft. 7¼ in.
9	Male	Some	3d lumbar	7½ in.	16 ft. 6 in.	6 in.	34 in.	9½ in.	11¼ in.	4 ft. 10½ in.	21 ft. 4 in.
10	Male	None	2d lumbar	9½ in.	11 ft.	6 in.	20½ in.	9½ in.	10½ in.	4 ft. 6¼ in.	15 ft. 4 in.
Average				9½ in.	15 ft. ¾ in.	6½ in.	22½ in.	8½ in.	14 in.	4 ft. 6 in.	19 ft. ¾ in.

* In each case the lumbar vertebra in the stomach column means the point to which the lesser curvature could be pulled down.

SERIES OF AUTOPSY CASES.

NO.	SEX	AGE	AMT. OF FAT	VISCERA	LIVER	STOMACH	S. INT.	L. INT.	TOTAL	DEATH
1	Male	65	Small	Normal	Costal Border	Normal. 8-19 in.	15 ft.	4 ft. 6 in.	19 ft. 6 in.	Embolus
2	Male	28	Small	Low	2 fingers below	Low. 7-20 in.	18 ft. 4 in.	5 ft. 1 in.	21 ft. 5 in.	Chronic myelitis nephritis
3	Male	60	Small	Distended	Costal Border	Low tubular. 8-33 in.	25 ft. 5 in.	6 ft.	31 ft. 5 in.	Carcinoma in duodenum
4	Male	52	Large	Normal	2 fingers below	6-18 in.	20 ft. 6 in.	5 ft. 3 in.	25 ft. 9 in.	Acute endocarditis
5	Female	80	Fair	Normal	1 finger above	—	10 ft. 6 in.	3 ft. 8 in.	14 ft. 2 in.	Ulcerative cholecystitis
6	Male	53	Fair	Low	4 fingers below	Low. 9-20 in.	22 ft. 6 in.	8 ft. 5 in.	30 ft. 11 in.	Cirrhosis of liver.
7	Male	75	Small	Low	2 fingers below	High. 6-13 in.	14 ft. 4 in.	5 ft. 11 in.	20 ft. 3 in.	Broncho-pneumonia
8	Male	63	Small	Normal	2 fingers below	Normal. 7-16 in.	15 ft. 7 in.	3 ft. 8 in.	19 ft. 3 in.	Myocarditis
9	Male	42	Small	Low	2 fingers below	Low. 7-16 in.	14 ft. 1 in.	5 ft. 2 in.	19 ft. 3 in.	Primary anaemia
10	Male	42	Fair	Low	2 fingers below	Normal. 8-19 in.	18 ft. 5 in.	4 ft. 8 in.	23 ft. 1 in.	Pneumonia
11	Female	48	Fair	Normal	Costal Border	Normal. 7-20 in.	17 ft. 4 in.	6 ft.	23 ft. 4 in.	Fibroids. Post-operative
12	Male	30	Small	Slightly	5 fingers below	Normal. 7½-29 in.	20 ft. 7 in.	4 ft. 7 in.	25 ft. 2 in.	Chronic myelitis nephritis
13	Male	59	Fair	High	2 fingers above	High. 3-13 in.	17 ft. 9 in.	4 ft. 9 in.	22 ft. 6 in.	Cirrhosis of liver
14	Male	57	Small	Normal	Costal Border	Normal. 7½-20 in.	23 ft. 4 in.	5 ft. 9½ in.	29 ft. 1½ in.	Pneumonia
15	Male	45	Fair	Low	1 hand below	Low tubular. 7-15 in.	16 ft. 7 in.	5 ft. 3 in.	21 ft. 10 in.	Syphilitic aortitis
16	Male	54	Small	Normal	Costal Border	Normal. 7-18 in.	14 ft. 1 in.	5 ft. 3 in.	19 ft. 4 in.	Septicæmia
17	Female	62	Large	—	Costal Border	9-20 in.	21 ft. 8 in.	6 ft. 6 in.	28 ft. 2 in.	Pneumonia
18	Female	31	Large	—	Costal Border	8-17 in.	23 ft. 2 in.	4 ft. 8 in.	27 ft. 10½ in.	Tetanus
19	Male	45	Small	—	2 fingers below	10-21 in.	19 ft. 6 in.	5 ft. 3 in.	24 ft. 9 in.	Aneurism aorta
20	Male	46	Small	—	1 hand below	11-23 in.	24 ft.	6 ft. 9 in.	30 ft. 9 in.	Syphilitic aortitis
21	Female	43	Fair	Low	2 fingers below	Tubular. 8-13½ in.	20 ft. 6 in.	4 ft. 8 in.	25 ft. 2 in.	Chronic myelitis nephritis
22	Female	40	None	Low	3 fingers below	Low tubular. 6½-13 in.	16 ft. 7 in.	4 ft. 4 in.	20 ft. 11 in.	Cirrhosis of liver
23	Male	72	Good	Normal	4 fingers below	Sagged. 9½-21½ in.	22 ft. 9 in.	6 ft.	28 ft. 9 in.	Abscess of liver
24	Male	48	Small	High	1 hand above	High. 6½-16½ in.	16 ft.	4 ft. 8 in.	20 ft. 8 in.	Cirrhosis of liver
25	Female	71	Small	Low	3 fingers below	Low tubular. 8-14 in.	17 ft. 5 in.	5 ft. 1 in.	22 ft. 6 in.	Terminal infection
26	Male	55	Small	Normal	1 hand below	Tubular. 5½-15½ in.	21 ft. 10 in.	6 ft. 2 in.	28 ft.	Thrombosis. Uræmia
27	Male	59	Large	Normal	4 fingers below	9½-22 in.	25 ft. 8 in.	5 ft. 8 in.	31 ft. 6 in.	Blank
28	Male	50	Fair	Normal	3 fingers above	High. 6½-13 in.	21 ft. 7 in.	4 ft. 7 in.	26 ft. 2 in.	Blank
29	Female	21	Small	Low	2 fingers below	Low tubular. 7-16½ in.	19 ft. 3 in.	5 ft. 3 in.	24 ft. 6 in.	Perinephritic abscess
Average										

of stomach apparently makes no difference, as the ratio in both types was 1-24.

The small intestines showed great variations in length also. Measured from the pyloric opening to the ileocaecal valve, the extremes were 10 ft. 6 in. to 25 ft. 10 in. Of the 29 cases 15 were under 20 ft. long, 14 were over, 5 were under 15 ft.; 10 were between 15 and 20 ft.; 11 were 20-25 ft.; and 3 were over 25 ft., the average being 19 ft. 3 in. According to Treves, the average length in the male is 22 ft. 6 in. and 6 in. more in the female, the extremes being respectively, 31 ft. 10 in. and 15 ft. 6 in. for the male, and 29 ft. 4 in. to 18 ft. 10 in. in the female.

The question as to the relation between the length of the small intestines, as the absorbing part of the alimentary canal, and the amount of the subcutaneous and peritoneal fat leads to these figures.

Small intestines' length.	Amount of fat.
Under 15 ft.	4 small, 1 fair
15-20 ft.	1 very small, 5 small, 4 fair
20-25 ft.	6 small, 3 fair, 3 large
Over 25 ft.	1 fair, 1 fat

Condensing this we find:

Under 20 ft.	10 small, 5 fair
Over 20 ft.	6 small, 4 fair, 4 large

One finds there are no cases under 20 ft. which had more than a fair amount of fat tissue, with a preponderance of these small, while those over 20 ft. have an equal number of really fat persons and a preponderance of fair and fat over the small. This would lead one to think that probably the greater the length of the small intestines, the more likely is the person to be well nourished, although from the recent article in the *Johns Hopkins Bulletin* of May, on "The Resection of Intestines in Dogs," one would judge that the nutrition depends more on the functioning than on the length itself.

The large intestines, measured from the ileocaecal valve to the anus, show figures as follows:

Twelve were under 5 ft. in length, 17 were over; 2 were between 3 and 4 ft., 10 between 4 and 5 ft., 10 between 5 and 6 ft., and 7 over 6 ft., with the extremes 3 ft. 8 in. and 8 ft. 5 in.

Treves gives these, in men, averaging 4 ft. 8 in. and 2 in. less in women. Extremes, 4 ft. 6 in. and 3 ft. 3 in.

The relation between the small intestines and the ptosis cannot be made out, but it is interesting that of the 9 cases of ptosis, 3 had between 4 and 5 feet of large intestines, and 6 were over 5 ft., of which one-half had large intestines 6 ft. long.

In looking over the histories of these cases it seemed of interest to study them from the point of view of constipation and gastric symptoms. Ten cases gave a history of gastric trouble. Of these 10 cases 3 were cases of visceral ptosis. Of the 29 cases, 10 were chronically constipated, in 11 cases no mention was made, and only 8 were regular.

Considering the constipated cases, 3 had ptosis, with long, large intestines. Of the ptosis cases, 9 in all, 3 were constipated, 2 were regular, 4 had no mention, 6 of 9 had only a small amount of fat, 3 had fair, not one had a large amount.

I wish to draw attention to one case in particular, No. 22, a woman 40 years old, 5 ft. 6 in. in height, of slender frame, emaciated, with a small amount of fat at autopsy, a long thorax, viscera all low, the liver 3 fingers' breadth below the costal margin, a gall-bladder which was literally upside down, large and hanging free at its fundus and full of viscid fluid. The kidneys were low, but not markedly movable. The stomach was low, with the pylorus at the umbilicus and tubular in type.

The transverse colon was 2 in. below the umbilicus; the ascending colon was not attached at the hepatic flexure, but was all crowded down into the iliac fossa on the right. The cæcum was large and distended. The descending colon had no mesentery, and the splenic flexure was high under the ribs. The transverse colon ran from the right iliac fossa to the splenic flexure, then down to a large, loose sigmoid.

The autopsy report of death was cirrhosis of the liver, right hydrothorax, pleuritis and ascites.

Now let us read her history:

August 26 she entered the hospital, with mediastinitis, hydrothorax and hydroperitoneum.

Past history.—One year before she had gastritis, one week before entrance she had had jaundice for five or six days. Her abdomen often became bloated for one or two days, relieved by salts. Two months before this swelling of her abdomen had become marked, and increased to three weeks before entrance. Since then has decreased with the use of salts. She became short of breath and could lie only on her right side. The chest was found full of fluid and was tapped several times, shortly leaving the hospital. She was seen Nov. 11, 1911. Note says no recurrence of fluid, and again Jan., 1912, abdomen dull with fluid wave. Shortly after this she entered the hospital again, complaining that her uterus came down and a sac came out of the vagina, with marked dragging down pain in the left side of her abdomen. The only way to keep it up was by a bandage.

The records state that ever since entrance the abdomen had been bloated but became flat after active purge, resulting in severe watery catharsis.

Bowels never moved without medicine. She was tapped repeatedly, but the fluid reaccumulated as fast, and the patient gradually failed and died.

The urine reduced Fehlings but gave no fermentation test for sugar.

This woman had visceral ptosis to a marked degree, as found at autopsy, probably of long standing, if not congenital. The interesting

question arises: How much of her trouble may not have come primarily from this condition, with auto intoxication, being continued from the alimentary tract, over-work of the liver in handling of the poisons, poor functioning of all the abdominal organs from mal-position and interference with proper nerve and blood supply, due to stretching.

In conclusion:

1. Ptosis is present probably in many more cases than we realize, 9 out of 29.

2. The size of the stomach varies enormously and the tubular stretched stomach is present in most of the cases of ptosis—6 out of 9—and that the lesser curvature can be greatly stretched down, this series shows.

3. The small intestines vary greatly in length, 10 ft. 6 in. to 25 ft. 10 in., averaging 19 ft. 3 in., the length having only slight effect on the nutrition, with a tendency to more fat the longer the intestine and vice versa.

4. The large intestines vary also, averaging 5 ft. 3 in., extremes 3 ft. 8 in. to 8 ft. 5 in.

When the stomach is low the large intestine is apt to be longer and the cæcum large and pendulous, the greatest length being in the transverse colon and sigmoid.

5. The total average length of the entire intestines is 24 ft. 6 in.

6. A rather significant fact is that not only the hollow viscera are displaced, but even more often the solid, such as the liver, which was below the costal border in 20 cases.

This paper proves nothing; it merely points to several significant facts, but I feel that with a much larger number of observations and cases more definite information could be had, which would materially increase our scanty knowledge of the visceral conditions which are possible, and may help to explain some of the abdominal symptoms found clinically.

A PRIVATE OBSTETRICAL RECORD.*

BY JAMES R. TORBERT, M.D., BOSTON.

THE appended private obstetrical record card is offered not as any new proposition, but as a record which is fairly comprehensive, can be easily carried about, and is of convenient size for filing in an office desk.

A word of explanation was thought advisable and this has been extended to the emphasis of certain points in the handling of obstetrical cases which appeal strongly to the writer. There are probably other records on the market more complete and better adapted to institutional work, this one is intended for private cases and with the hope that it will be of service to the busy general practitioner. The idea has been to cover the case from the time of conception to the final discharge of the patient at the end of convalescence, and the writer is satisfied that the record is fairly comprehensive and suitable

* Read at the Boston Obstetrical Society, October 24, 1911.

for the intelligent care which should be given every pregnant woman.

In line with the great advances of late years in the practice of obstetrics, the increasing number of problems continually met, it is being more and more impressed upon us the importance of thoroughness and attention to detail in the handling of our obstetrical cases.

A concise history of past conditions, with a few minutes' talk on what to and what not to expect during the pregnancy, will many times make a great difference for the better with the happiness of that individual during her nine months of anticipation. Contingencies arising during the course of the pregnancy are noted from time to time, with their treatment and results, and it is surprising how in a comparatively few records much concise, interesting and important information is obtained.

Only of late has the importance of antepartum examinations been realized, and as in the great majority of cases the date of the expected confinement is computed with no more than from two to five days variation, the importance of this examination naturally increases with the proximity of labor. The necessity of an intelligent antepartum examination is more and more impressed upon one in the conduct of an indoor maternity clinic. At the Boston Lying-in Hospital on case after case which comes in after labor has been of long duration, we are compelled to do operations which we never should elect, and which cases with a careful antepartum examination would never have gotten into such a condition.

Lack of time is the frequent reason ascribed for failure to make this examination. The answer is that a thorough antepartum examination can be made in fifteen minutes, and surely this is not too much to ask on one of these cases?

A knowledge of abdominal palpation is necessary to good results in this work, and this is only obtainable by practice in handling of these cases.

It is really astonishing how much can be learned by one familiar with this work. More attention should be given the teaching of palpation in our clinics, it being only from the actual handling of the cases that the size of the baby, the relation of the presenting part to the maternal pelvis, and many other important facts can be ascertained.

This record is really three cards pegged together, any of which may be detached. The first card contains space enough at the top for enough data to fill out the birth certificate; this is of great convenience and gives the attendant a permanent record of the legal requirements. At the end of the puerperal card is the date for the time of reporting the birth certificate, this serving as a reminder which is often necessary. The remainder of the card is a record of the pregnancy up to the time of the antepartum examination, which we try to make as near the date of the expected confinement as possible.