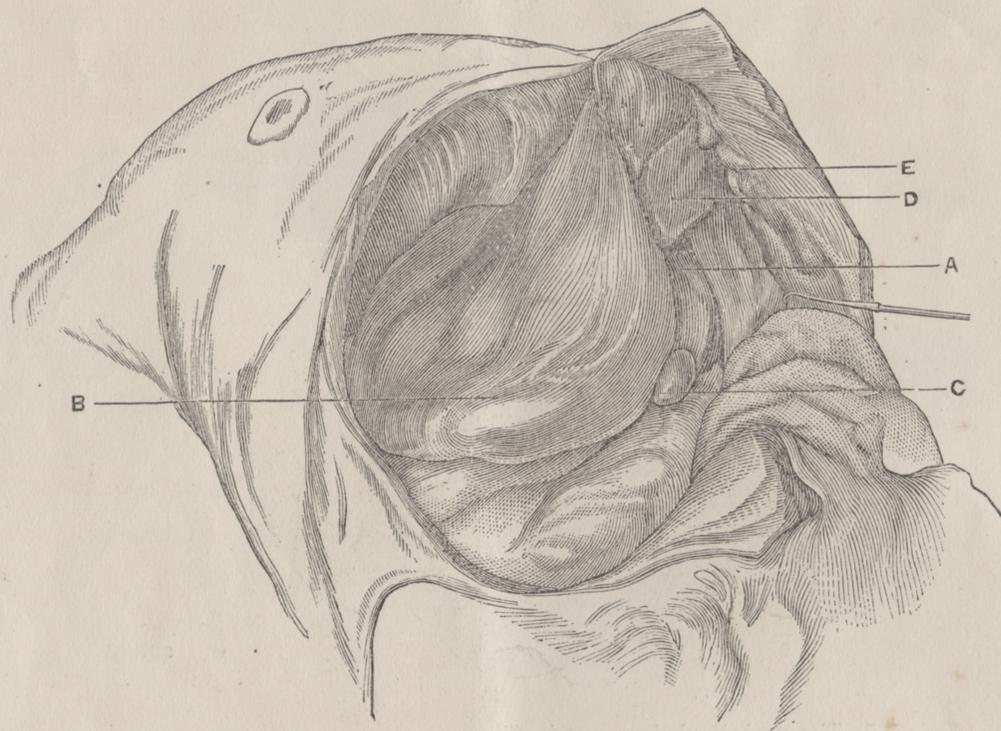


tended entirely across the right hypochondriac and epigastric regions. Its external free border was not in contact with the

FIG. 6.



ENG.

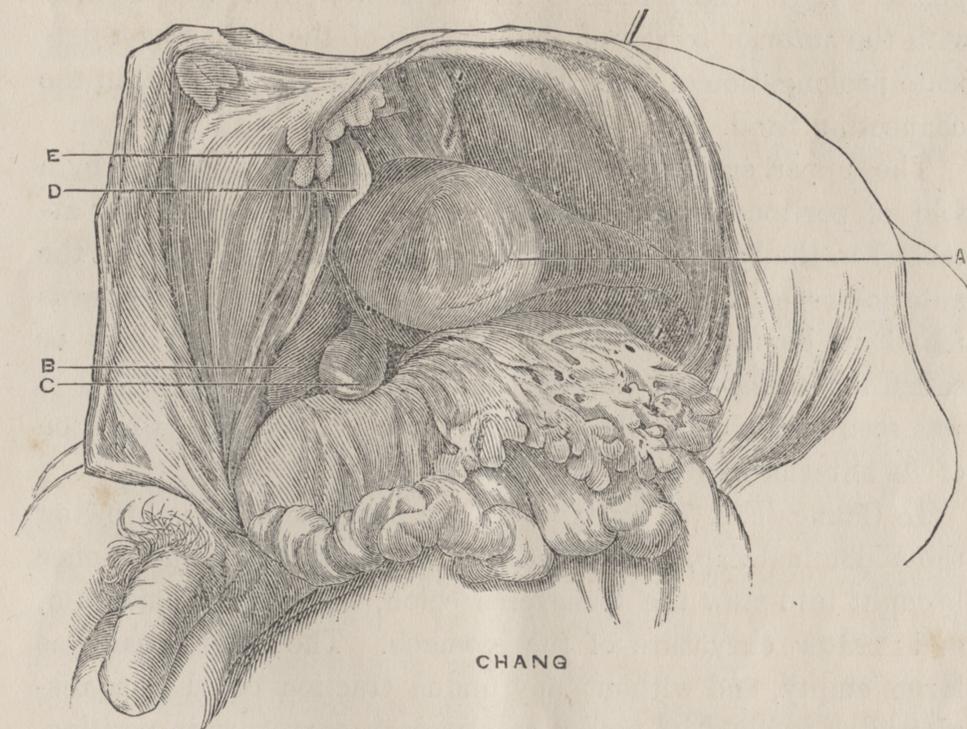
FIG. 6. The abdominal organs in Eng—the small intestines removed.

- A. Left lobe of liver.
- B. Right lobe of liver.
- C. Gall-bladder.
- D. Suspensory ligament.
- E. Lobules of fat in the position of the termination of the umbilical ligament.

ribs. Between it and the external abdominal wall there was an interval of nearly an inch at its greatest part, which was crossed by the external lateral ligament. The inferior border of the lobe rested upon and nearly concealed the pylorus of the stomach as well as upper half of right kidney. Corresponding in position to the upper portion of the right kidney was a well-defined layer of peritoneum, presenting a sharply defined internal border. Upon dissecting away the peritoneum from this border, it was found to answer to the inferior vena cava. The

lesser omentum occupied its usual position. The fundus of the gall-bladder was two-thirds of an inch beyond the anterior border of the lobe, immediately to the outer side of the caudal lobe. The position of the longitudinal fissure was well off to the left side of the abdomen, presenting, between the right and left lobes, a conspicuous cleft which was partially occupied by the base of the caudal lobe. The round ligament, with its

FIG. 7.



CHANG

FIG. 7. The abdominal organs of Chang in position—the small intestines removed.

- A. Left lobe of liver.
- B. Right lobe of liver.
- C. Gall-bladder.
- D. Suspensory ligament.
- E. Lobules of fat in the position of the termination of the umbilical ligament.

associated suspensory ligament, had doubtless passed nearly vertically, before the relation had been disturbed by the incision in the abdominal wall, upwards and forwards to the an-

cess could be well defined beneath the skin, the subcutaneous connective tissue being more abundant in Chang than in Eng. The upper surface measured two and one-half inches in width at its base toward Eng, and two and one-third inches at the base toward Chang. It was two inches wide at its middle.

FIG. 2.



FIG. 2. The twins in the acquired position (E. R., C. L.), showing band and the primary incisions, *a-b, c-d*. From a photograph taken after death at Philadelphia.

The *lower* surface was much narrower than the upper. It was marked in the centre, but nearer the anterior than the posterior border, by a linear scar one inch in length, which it was thought answered the position of the single umbilicus. The skin was adherent at this point, but elsewhere was easily raised in folds. Behind the scar—i. e., toward the posterior part of the band, the skin was somewhat corrugated. This portion answered, in position, to Chang's umbilical pouch.

The *lateral* surfaces. The terms *upper* surface and *lower*

surface have fixed values, no matter how they may be approached by the observer. This is not the case, however, with the lateral surfaces, as will appear from the following considerations. Viewing the band as a separate form—as it was spoken of during the life of the twins—we will see that the terms front (“anterior”) and back (“posterior”), as given to the lateral surfaces, were derived from studying the acquired position. Thus we were bound not to cut the “front” of the band, but allowed to make an incision on the “back.” Now this position of selection was destroyed, and its terms deprived of what meaning they may have had, by the reproduction of the congenital relations of the bodies.

There is no doubt that in infancy and early childhood there was no acquired position, and, therefore, neither “front” nor “back” to the band. And later, when, as we have reason to believe, the position of selection was gradually adopted, the terms “front” and “back” were reversible—the “front” meaning that which corresponded to the surface of least thoracic approximation. Thus when the adult condition was fixed, and the “front” answered to the widely separated right side of Eng's chest and left side of Chang's chest, the “back” was in relation with the closely approximated left side of Eng's chest and right side of Chang's.

To avoid awkward repetition of phrases expressing the facts of the last sentence, the following characters will be employed in describing the “lateral” surfaces of the band.

E. R., C. L. (Eng's right, Chang's left) will designate the “anterior” surface of the acquired position. C. R., E. L. (Chang's right, Eng's left) will designate the “posterior” surface. Since the right side of Chang's half of the band merged into the left on Eng's half, while the right side of Eng's half, after it passed the middle line, became the left half of Chang's, we propose using the characters E. L., E. R., and C. R., C. L., which will be understood as signifying left side Eng, right side Eng, etc.

Using the above signs, we found that the surface E. R., C. L.

These were in all respects average children, excepting two, a boy and a girl of Chang's, who were deaf-mutes.

The twins resided in a rolling country, about four miles from



FIG. 1. The twins in the acquired position (E. R., C. L.). From a photograph taken in St. Petersburg, 1870.

Mount Airy, Surrey county, N. C. They were prosperous farmers, each owning his own farm. The dwellings of the two families were a mile and a half apart. The twins resided three days in each of the homes alternately. They were expert in the handling of tools, in plowing, shingling, shooting, etc.

They lived much in the open air, and frequently drove in a carriage to the neighboring village.

The events leading to their death were as follows: About six years ago Chang, who had always been the more excitable, became addicted to immoderate drinking. Three years ago, while on a voyage from Liverpool to New York, he was stricken with hemiplegia of the right side. He in a great measure recovered from this attack, but could never ascend and descend stairs with facility. For this reason the twins occupied rooms on the ground floors of their homes.

On Monday evening, January 12, 1874, Chang was seized, while at his own house, with an attack of bronchitis. He had a cough; scanty, frothy sputa; but no pain. On Wednesday the symptoms had somewhat subsided; the skin was acting freely. Loud bronchial râles were present over the left side of the chest. On Thursday evening the twins insisted upon leaving Chang's house for Eng's. The weather was very cold, and the journey was undertaken in an open carriage. On their arrival, however, Chang continued as well as before, until Friday evening, when he complained of thoracic oppression and inability to lie down with comfort. After having retired that evening, the twins were heard to get up and go out on the porch, by the side of the house, where they drank of water, and returned to their room. They built a large wood fire and sat down; Eng soon complained of being sleepy, Chang declaring that he could not breathe if he should lie down. Finally they again retired. They both fell asleep. Near daybreak (January 17th) Eng called to one of his sons, who slept in a room above, to come down and waken Chang. The boy soon made his appearance, and going to the side of Chang, cried out, "Uncle Chang is dead!" Eng at once said, "Then I am going!" It is probable that Chang was sleeping when he died.

Eng made no further mention of Chang other than to request that the body be moved closer to him. Soon afterward Eng desired to have his limbs moved. This desire continued for half an hour. He then asked for a urinal, but did not void over