the right-hand side of the chart, you will see that the feeble-minded people will, in ten generations, override the normal. You can make your own deductions from this chart, which is the actual condition proved by thorough scientific investigation. I might state here that 12 per cent of the population of the United States do not earn a living or contribute anything to their own support, and a great number of these are feeble-minded who are reproducing their kind in greater proportion than the normal people.

Dr. Hiram Byrd, Jacksonville, Fla.—I merely went to emphasize the very great importance of this subject. It has been given entirely too little attention. It is only within the last two years that very exact information has been accumulated about it. Lombroso has pointed out something that is worth considering. He finds that in Italy one-third of all the crimes come from families already overloaded with crimes, and that another one-third of all the crimes of Italy come from families of defectives—not necessarily criminal families. There, then, are two-thirds of the crimes of Italy that come from defectives. Woods Hutchinson is authority for the statement that five per cent of the children born in the United States are defective. If the same percentage prevails in Italy, five per cent of the population of Italy is furnishing two-thirds of the crimes of Italy, while the other ninety-five per cent is furnishing only one-third of the crimes. Tredgold has pointed out that in England those families whose children attend the parochial schools have an average of four children to the family. Those families that have a member in the school for defectives average 7.3 children to the family. Wheatnam is authority for the statement that Japan has already made insane asylums unnecessary in that country. If that is true, is it any wonder that Japan is coming to the front as a nation? It has gone into the business of human breeding, just as the stock breeder has done, as Burbank has done in plant breeding, and as they have done in England in bringing forth such magnificent specimens as the hunter horses or the Berkshire pigs. We, more than any other nation, in our democracy, are permitting and actually encouraging the propagation of this very undesirable class of citizens. As soon as an individual makes some improvement in an insane asylum, we turn him out and let him go on propagating. I was told of an individual in an insane asylum here who is a little better occasionally. About once a year they have this man taken home awhile, but his family soon send him back. This has gone on for several years. When Dr. Randolph took charge of this institution and they asked to have this man sent home, he went to the family to see the conditions at the patient's home. He found that the insane man has a wife and eleven children, several of whom are coming along in their father's footsteps and are defectives. Those apparently normal at this time will probably show defectives in the next generation. Here is a family of eleven passing it right on down the line.

Dr. P. R. Harris, Henderson, N. C.—I simply want to say one word. I am sure that if the doc-

tors would interest themselves in this question and inform themselves as to the facts, they would soon let the world know of these things, and we should see a great change. I believe that the time is ripe when we may change the character of the human race; and we must do it in order to perpetuate this great country. Some nation is going to do it; and why not America first?

THE RADIOGRAPH AS AN AID TO THE DIAGNOSIS AND TREATMENT OF GASTRO- INTESTINAL LESIONS.

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An accurate knowledge of the normal visceral relations of the gastro-intestinal tract is entirely essential to the interpretation of pathological conditions. Only since the advent of the radiograph have we established the true topographic anatomy of these organs. This has been accomplished through revolutionizing our previous inaccurate knowledge gained at the autopsy and operating table.

It is now a matter of simplicity to establish positive pictorial evidence of the normal and abnormal outlines and positions of the hollow abdominal viscera. Normally we find:

1. Marked variations in the normal position, size and shape of the stomach during the various stages of digestion; enlarging, elongating and lowering to the left, frequently until the pylorus is below the umbilicus in diastole. It regains the size and position in systole coinciding with what we formerly thought were the normal position and outlines, i. e., the lower border an inch or more above the umbilicus and the pyloric portion in and to the upper right of the epigastrium.

2. Normally there is a marked variation in the topography of the stomach in the vertical as compared to the horizontal position. A stomach normally presenting its lower border above the umbilicus in the horizontal position will drop this lower border several inches below the umbilicus when the patient stands in the vertical position, the pyloric portion will swing to the left, to or even beyond the midline. There will also be elongation with a lengthening of the lesser curvature.

3. There is a wide normal variation in the position and longitudinal diameter of the stomach in the abdominal cavities of varying longitudinal diameter, i. e., normally the stomach of the individual with a long, narrow abdominal cavity has a longer diameter with the pyloric portion com-

paratively lower and nearer the midline than occurs in patients with a shorter vertical abdominal diameter.

With an accurate knowledge of the normal topography and careful interpretation of the complex motor phenomena of the gastric cycle, a competent radiologist may interpret the following forms of obstruction in the intestinal tract:

1. Esophageal diverticulae.
2. Carcinoma.
3. Hour-glass contraction.
4. Adhesions from gastric or duodenal ulcers or gall bladder infection, with or without calculi.
5. Dilatation of the pars pylorica from obstruction.
6. Atonic dilatation, with or without prolapse of the pylorus.
7. Atrophic contractions.

"The radiologist can recognize and differentiate

between these conditions with about the same degree of certainty as can the surgeon at the exploratory operation without the microscopic examination of the specimen." (Louis G. Cole, Jr. A. M. A., November 30, 1912.)

By the bismuth radiographic method we may determine dilatation and obstruction of the duodenum and evidences of stasis of the lesser intestine through observations as to the length of time necessary for the bismuth to arrive at the cecum. Especially is this noticed in the position of the transverse colon. It has a wide range of position in the vertical as compared to the patient in the horizontal position. Normally, too, the transverse colon occupies a relatively lower position in abdomens of longer vertical diameter.

The following plates will serve to illustrate some of the features of radiographic bismuth examination:

CASE 1. Normal position of the diastolic stomach in an individual with a long vertical abdominal diameter, radiograph taken in the vertical position immediately after the ingestion of two ounces of bismuth subcarbonate. Note the long gastric diameter with the pyloric portion to the left and at the umbilicus. This normal stomach would have been readily termed pathological in the light of our former inaccurate knowledge of gastric topography.

CASE 2. Gastric ptosis. Pathological position of the diastolic stomach in an individual possessing an elongated vertical abdominal diameter. Radiograph taken in the vertical position. Note the lower border of the stomach lying in the left iliac fossa, the pyloric portion lying far below and to the left of the umbilicus. This stomach will be suspended by reefing the gastro-hepatic omentum together with suspension of the transverse colon.

CASE 3. Fairly normal colon in a patient with elongated vertical abdominal diameter. Radiograph in the vertical position. Note the transverse colon, much lower than our former conception of its normal position.

Case 4, Mr. S. Suffering with the usual signs of intestinal intoxication as a result of colonic stasis, i. e., constipation, fermentation, dilatation, increased loss in weight, marked nervous manifestations of the absorption of toxic intestinal products, impotence, odorous perspiration, sulphur bodies in the urine.

Operation Mobile Infirmary, April 15, 1912. Living pathology positively confirmed the radiographic findings. Separation of a dense band of adhesions from the inner half of the transverse and ascending colon. Appendectomy. Suspension of the transverse colon to the anterior abdominal wall by interrupted sutures in the gastro-colic omentum.

CASE 4, Plate 1. Colonic stasis. Adhesions of the transverse colon to the cecum. Normal abdominal diameters. Radiograph taken in the vertical position twelve hours after ingestion of bismuth meal. See plate 2.

CASE 4, Plate 2. Mr. S. Radiograph taken in the vertical position one year after operation. Note fairly normal hepatic flexure, normal transverse colon and entire absence of adhesions between the ascending and transverse colon. There has been entire relief of symptoms of intestinal intoxication, the patient gaining twenty pounds, is now remaining at normal weight.

Case 5, Mrs. B., City Hospital. This patient suffered the usual symptoms and signs of intestinal intoxication, together with the symptoms of prolapse of the right kidney.

Operation April 23, 1913, City Hospital, Mobile, Ala. The living pathology entirely confirmed the radiographic findings. There was ptosis of all the abdominal viscera without adhesions. The entire large intestine was suspended by three interrupted sutures through the gastro-colic omentum, the sutures being carried up through a low midline incision in the jaws of a long intestinal clamp. A small incision was made at three points across the upper abdomen where the jaws of the clamp were pressed outward against the anterior abdominal wall. The three sets of sutures were drawn through their individual small incisions and tied. This procedure obviated a long abdominal incision.

The patient left the hospital within two weeks with apparent immediate relief of the constipation, and already writes, one month after operation, that there is a marked alleviation of the nervous manifestations of her intestinal intoxication.

I also did a modified Longyear operation, suspension of the right kidney.

Summary—The radiographic bismuth examination of the gastro-intestinal tract offers the greatest modern aid to the clinical diagnosis of lesions of these viscera, and accurate knowledge of the modern views of the gastro-intestinal topography and its motor phenomena should to a large extent obviate the necessity for exploratory surgery. This will assuredly facilitate the establishment of sound surgical procedures for the relief of many hitherto vague pathological lesions of the gastro-intestinal tract.

CASE 5, Plate 1. Mrs. B., City Hospital, Mobile, Ala., April 23, 1913. Nephrocoloptosis. Intestinal intoxication from colonic stasis due to ptosis, no adhesions. Patient with an elongated vertical abdominal diameter. Radiograph taken in the vertical position twelve hours after ingestion of bismuth emulsion.

Note cecum and appendix lying in the true pelvis, the upper border of the hepatic flexure at the iliac crest and a portion of the transverse colon lying in the right iliac fossa. See plate 2.

CASE 5, Plate 2. Mrs. B., City Hospital. Same patient with bismuth meal supplemented by a bismuth enema showing the transverse colon lying in the true pelvis. Note the appendix 202-204 Conti Street.