

the escape of gas into the peritoneal cavity. This occurs in consequence of a perforation of some description of one of the air-containing viscera, and is a sign of a formidable complication in gastric ulcer, duodenal ulcer, typhoid fever, tubercular, dysenteric, or other ulcer of the bowel, appendicitis; it may be due to violence (stab, crush, etc.). Free gas in the abdomen causes, as stated at p. 10, a general enlargement of the region and hyper-resonance. The loss of liver dulness is a fairly constant symptom, but as it is also seen in meteorism, it is a positive sign of only moderate value. On the other hand, the presence of liver dulness is a stronger point of evidence against perforation of the stomach or bowel. If there be free gas in the peritoneal cavity, liver dulness is lost in the anterior regions when the patient lies on his back; but the lateral and posterior surfaces over the liver are, under these circumstances, dull on percussion. If now the patient is turned on to his left side, or partly on to his face, the previously dull area is found to be clear. This, of course, is due to the free gas rising to the highest point, and allowing the heavy organs to fall deeply into the abdomen. This change of percussion-sound on change of position is the important sign.

Diminution of resonance is found when from any cause the gases contained in the abdominal organs are decreased in quantity. The bowels may be shrunk and empty in various debilitated states, especially in starvation, stricture of the œsophagus, wasting diseases, cholera. The percussion-note in such conditions is less tympanitic than normal. Dulness in the most dependent parts of the abdomen, with clear resonance in the higher regions, indicates free fluid in the abdomen. In this condition, with the patient lying on his back, dulness is found in the flanks, and perhaps in the iliac fossæ, while the surface surrounding the umbilicus, for a greater or less distance, in accordance with the amount of fluid present, gives a resonant note, owing to the fact that the intestines float up to the highest available level of the abdomen. When the patient changes his position, the areas of dulness and clearness are altered, as the light, gas-containing intestines are floated into the uppermost levels of the fluid (see Figs. 4 and 5). Thus, in the sitting or standing position the dull area occupies the hypogastric and umbilical regions; when lying on his side, the patient's uppermost flank is clear; in the knee-elbow position the umbilical or epigastric regions are dull, while the flanks are clear. The amount of fluid in the peritoneal cavity must of necessity cause