

intestines was resorted to. It was found that unless irritating substances were introduced into the bowel, no ascending contractions occurred. When the intestine is ligatured, the part above becomes filled and the part below empty. Descending contractions are generally seen commencing at the stomach and terminating at the distended portion, and as the distension ascends higher and higher, the waves of descending contraction travel less and less, until finally they are limited to a narrow segment near the pylorus. There is no such thing noticed as antiperistalsis sufficient to bring about faecal vomiting. Its true cause is due to the action of the diaphragm and abdominal muscles. The paralyzing effect of distension of the bowel above the ligature proves clearly the well known injurious effect induced by the use of purgatives in intestinal obstruction. By increasing the peristaltic contractions, they carry the contents of the intestines more rapidly and violently to the seat of obstruction, and in this way the paralysis which follows distension is more quickly brought about.

Nothnagel had many opportunities of noticing the occurrence of intussusception during the course of his experiments. The invagination always occurred from above downwards, a part that was contracting strongly slipping into a portion that was at rest. He was often able to remove these invaginations by injections of salt, which set up an antiperistaltic movement. Morphia, in doses of from one-sixth to two-thirds of a grain, has the power of preventing the antiperistalsis induced by salt injections, but if larger doses are given, from a grain and upwards, then, not only does the antiperistalsis appear, but in an aggravated degree. This anomalous effect Nothnagel ascribes to the small doses stimulating and the large one paralyzing an inhibitory mechanism which is antagonistic to the nervous mechanism stimulated by a salt solution. This action is comparable to that of digitalis on the innervation of the heart: small doses stimulating and large ones paralyzing the inhibitory fibres of the vagus. The constipation produced by morphia is thought to be owing to a stimulation of a nervous mechanism which other experiments have located in the splanchnic nerves.