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Gastric response to extragastric irritation.

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Occasional experience with the contracting stomach in the open surgical abdomen has been confirmed and enlarged by similar experimental studies on the mammalian stomach. For this purpose, a dog is narcotized with morphia and ether, and opened, under surgical conditions, in the upper abdomen with the least possible mechanical trauma. The stomach is exposed and watched for contractions. If a typical animal, after the lapse of three minutes, two waves of peristaltic contractions occur on the exposed part of the stomach and follow each other at intervals of twenty seconds. With the stomach contracting in this manner, the gallbladder is seized in a crushing clamp for a few moments and released; similarly, the appendix or the duodenum may be clamped and released. In the great proportion of instances, there is a cessation of the stomach's motility for three minutes, more or less, followed by hypermotility after clamping in this manner the gallbladder, appendix, or duodenum. The experimental series is as follows:

TABLE SHOWING RELATION OF GASTRIC MOTILITY TO EXTRAGASTRIC IRRITATION.

Exp. No.	Organ Irritated.	Change in Gastric Motility.
10.	Duodenum	o
11.	Parietal Periton	Inhibition
	Caecum (Appen)	Pylorospasm
	Gallbladder	Pylorospasm
	Pylorus	Retrostal.—Hypermotil.—Gastrospasm
18.	Gallbladder	Hypermotil.
	Duodenum	o
20.	Cecum (Appen)	Gastrospasm—Pylorospasm
	Gallbladder	Retrostal.
22.	Gallbladder	Retrostal.
	Duodenum	Hypermotil.
32.	Duodenum	Pylorospasm
	Gallbladder	o
33.	Duodenum	Retrostal.—Pylorospasm
	Gallbladder	Retrostal.—Hypermotil.
	Parietal Periton	Inhibition

35.	Gallbladder	Hypermotil.—Pylorospasm
	Duodenum	Hypermotil.—Pylorospasm—Incisura
40.	Parietal Periton	Inhibition
	Gallbladder	0
	Cecum (Appen)	Hypermotil.
41.	Gallbladder	Hypermotil.
	Parietal Periton	Inhibition
61.	Gallbladder	Hypermotil.
68.	Cecum (Appen)	Hypermotil.
	Gallbladder	Hypermotil.
	Duodenum	Hypermotil.
69.	Cecum (Appen)	Hypermotil.
	Gallbladder	Hypermotil.
	Duodenum	Hypermotil.

In these thirteen experiments, there are eleven irritated gall. bladders, eight traumatized duodeni, and five crushed appendices, The respective gastric motor responses may be expressed in percentages as follows:

2. GASTRIC MOTOR RESPONSES IN PERCENTAGES.

Organ Traumatized.	Hypermotil.	Hypomotil.	Retrostal.	Normal.
Gallbladder	61.5	0	23.1	15.4
Duodenum	66.7	0	11.1	22.2
Appendix	100.	0	0	0

After completing these experiments, the clinical records at Bellevue Hospital, Third Division, were reviewed from 1911 to the present time with the following result:

3. GASTRIC MOTOR RESPONSES IN PERCENTAGES (HUMAN).

Organ Diseased.	Hypermotil.	Hypomotil.	Normal.
Gallbladder (19 cases)	68.4	0	31.6
Duodenum (8 cases)	75.	12.5	12.5
Appendix (20 cases)	55.	0	45.

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The nature of osmotic pressure.

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The hemolytic effect of formaldehyde and that of urea, which were first observed by Eisenberg, are found to be, like that of boric acid, the result of osmotic pressure.