the eyes in exophthalmic goiter, but as he declared that the same bruit was audible over the normal eye, we must accept his own explanation of it: that it was due to the rotary movement of the eyelids, hence not the sound in question. Hueter⁴ spoke of a sound audible over the eye with the dermatophone, but as he heard the same sound over the temporal region and as he does not speak of exophthalmic goiter specifically, his observation is not germane to our subject. Schönfeld,⁵ in the course of a description of a single case of exophthalmic goiter, says, "On placing the stethoscope over the eye, a hum synchronous with the pulse could be heard." Carrington⁶ and Drummond⁷ also give clear descriptions of the bruit.

In view of these several observations it is strange that the sign is not mentioned by systematic writers on exophthalmic goiter or by textbooks on diseases of the eye. The bruit, like other signs of exophthalmic goiter, is not constant, and I have looked for it in vain in several quite typical cases of the disease. I have noticed a similar sound several times in aortic insufficiency, which is not surprising since many of the vascular phenomena of the two affections are very similar.

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EXPERIMENTAL STUDIES IN THE PRODUCTION OF CHRONIC GASTRIC ULCER *

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Recently streptococci have been isolated from typical indurated ulcers of the stomach, and these when injected into the blood stream of animals have caused ulcerations of the stomach.¹

The present investigation has for its object the production of an ulcer with a chronically inflamed and indurated edge which exhibits no tendency toward healing. It seemed to us that if organisms isolated from similar ulcers from human stomachs were injected directly into recent defects in the stomach wall of animals, the opportunity for the production of characteristic chronic ulcers would be enhanced.

In a number of animals the healing of a surgically produced defect was first studied. These defects were made by excising tissue from the stomach wall down to and including part of the muscularis, and measured from 1 to 2 cm. in diameter. It was shown that such defects healed completely in from one to two weeks. The epithelium from the neighboring mucous membrane spread across the base of the defect, and, in addition, the contraction of the stomach wall tended to make the defect appreciably smaller. As the mucous membrane approximated, small cystic spaces either directly on the surface or deeper down were

formed, probably by epithelial inclusion. These were lined by the columnar epithelium of the surface of the stomach. Such a process was also observed in several human cases in which the opportunity was afforded of studying microscopically a healed ulcer.

The method of investigation was as follows:

Cats were used, and all operative procedures were done under full ether anesthesia. The abdomen was opened in the middle line, the stomach was delivered and an incision into it was made parallel to and near the major curvature so as to enable one to evert the mucous membrane of the stomach along the lesser curvature. The defects were then made as described previously along this line, and the entire base of the defect was then infected with a suspension of the bacteria by injecting it into the tissue layers.

The bacteria used were those obtained by making cultures of human gastric ulcers which were obtained by excision during the course of an operation. The method of culture was that described by Rosenow. These cultures were made by Dr. H. L. Celler, to whom we are indebted for the suspensions used in our experiments. It was possible to cultivate from these ulcers a streptococcus and in a certain number also a yeast.

Some of the defects were infected with strains obtained from a single human ulcer; others with strains obtained from two or more ulcers, and still others with these strains plus the yeast, or with yeast alone. The suspensions were made with bacteria of the third or fourth generation.

The animals were returned to their cages, and the postoperative treatment included immediate feeding which did not differ from that which the animals are accustomed to receive ordinarily. After the first twenty-four or forty-eight hours the animals ate freely. They lost no appreciable weight.

At varying intervals the animals were anesthetized and the abdomen was opened again, usually through the old scar. The stomach was delivered, and either the old gastrotomy wound was reopened, or a new one was made and the condition of the defect observed. When there seemed to be a tendency to heal, the ulcer was again infected as described previously with the same bacteria, and the stomach sutured and returned to the abdomen. In order to watch the progress of the ulcer, it was necessary to repeat this procedure several times in each animal.

Nine animals were used, and in all of them, irrespective of the size or depth of the defect or of the virulence or number of the organisms injected, the surgical defects healed as promptly as those observed in our controls. The series of experiments demonstrates that the presence of the organisms found in human gastric ulcers has no appreciable effect either in giving to the experimentally produced defects the characteristics of the chronic indurated ulcer, or in retarding the healing.

Prevention of Blindness.—The April issue of the *News Letter* of the National Committee for the Prevention of Blindness contains many interesting items showing the activities of the committee and also the activities of the various states in their work for the prevention of ophthalmia neonatorum and the reduction of blindness and eye injuries in the industries. In many states a vigorous campaign is being carried on having as its object the conservation of vision and the prevention of blindness.

4. Hueter: *Centralbl. f. d. med. Wissensch.*, Dec. 21, 1878, p. 929.

5. Schönfeld: *Ein Fall von Morbus Basedowii*, Inaug. Diss., Berlin, 1881.

6. Carrington: *Tr. Ophth. Soc. United Kingdom*, Session 1885-1886, vii., 99.

7. Drummond: *Brit. Med. Jour.*, 1887, i., 1027.

* From the Pathological Laboratory of the Mount Sinai Hospital.

* Work done under tenure of a George Blumenthal, Jr., Fellowship.

1. Rosenow, E. C.: *Jour. Infect. Dis.*, 1915, xviii, 219; *Jour. Indiana State Med. Assn.*, 1915, viii, 465; *Elective Localization of Streptococci*, *The Journal A. M. A.*, Nov. 13, 1915, p. 1687.