prevented or discovered early, and the nutrition of the
dead. It is noteworthy that the only death occurred in a patient where the mother
refused the services of the Health Centre staff.

**DISCUSSION**

The effectiveness of active immunization against whooping
cough has been discussed at length in the literature. Silverthorne and Cameron (1943) extensively reviewed the
effects of anti-pertussis vaccines as tried in Europe and
America. In South Africa, Ordman (1949) gave figures
which suggested the effectiveness of the vaccine produced
by the South African Institute for Medical Research. It
is felt that the results of the inoculation of children in
Lamontville provide more conclusive evidence of the
effectiveness of this vaccine.

The problem of getting the vaccine to the patient
remains. The Health Centre approach is a potentially
effective means of getting a community to make use of the
available health services.

This account of an epidemic of whooping cough in an
urban Native township illustrates how a team of medical
officers with auxiliaries approached a particular health
problem in the community.

**SUMMARY**

An epidemic of whooping cough which occurred in a
Native urban township is described. The epidemiology of the disease was studied in relation
to residence, age, sex, inoculation state and attendance at a
nursery school.

1. There was a significantly lower incidence in older children.
2. The incidence was higher among girls but not significantly so.
3. Only 2.1% of children who had been inoculated with
anti-pertussis vaccine before the onset of the epidemic
developed whooping cough as compared with 9.9% of
those who had not been so inoculated. This difference was
significant.
4. Children attending a nursery school had an incidence
significantly higher than children who did not attend, but
inoculation appeared to protect attenders as well as non-
attenders.
5. Children coming from homes where at least one child
attended nursery school had an incidence significantly
higher than children from other homes. Inoculation
appeared to be effective in protecting these children too.

The clinical features of the cases are discussed.
The activities of a Health Centre of the Union Health
Department's Training Scheme for Health Personnel in
the prevention, detection and management of cases are
described.

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**REFERENCES**

Saunders Co.
in Infectious Diseases, Second Edition, p. 192. Edinburgh:
E. & S. Livingstone.
8. Hill, A. Bradford (1946): Principles of Medical Statistics,
20, 1.
19. Tompsett, R., Timpanelli, A., Goldstein, O. and

**DOUBLE DUODENAL ULCER WITH PERFORATION FOLLOWING A BURN**

M. R. MYNHARDT, M.B., B.CH. (RAND)
Johannesburg General Hospital

In 1832, 10 years before Thomas Curling’s report
appeared, Dupuytren reported on changes in the intestinal
canal which follow burns. Violent congestion, severe
gastro-enteritis and more or less deep ulceration was
described. The term ‘Curling’s ulcer’ was adopted
because of the large number of cases he collected.

**Incidence:** Statistics on the incidence of Curling’s
ulcer vary considerably. J. J. Levine in 1929 stated that
over a period of 48 years in the Johannesburg Govern-
ment Mortuary, where at that time approximately 1,000
post mortems were being performed annually, he encoun-
tered only two cases, both occurring in children. The
accepted incidence, however, is 3.8% of all fatal burns
cases (Harkins). Statistics indicate that the condition is
more common in children and females, and the ulcer is
said to occur from 18 hours to 100 days after the burn.

**Aetiology:** Numerous theories of the aetiology of
Curling’s ulcer have been advanced, but that most widely
accepted is a local thrombosis which is the result of
toxaemia and sepsis associated with the burn.
Histopathology: The description of Pack (1926) may be summarized as follows: Duodenal ulcers following burns may be single or multiple. The situation is either in the first or second part of the duodenum. The size varies from a pin-head to a quarter inch. The shape of the ulcer is irregular, dentate or long and narrow and occasionally circular. The edges are sharply cut, the base is clean and greyish, and there may or may not be inflammation at the margin. The outcome of the ulcer is perforation, haemorrhage or healing.

CASE REPORT
The patient, an unmarried female aged 34 years, was admitted to the Johannesburg General Hospital on 8 September 1950. She was heavily intoxicated and most unco-operative. She had been perfectly well until two hours previously, when her flimsy dress caught alight. The burn area was calculated as 60-64% of the body surface and the burns were of second and third degree. The pulse was 88 per minute, the blood pressure 80/60 mm. Hg., and the haemoglobin 80%. The patient stated she had been suffering from anaemia for a long time.

The burnt clothing was removed; no cleansing was attempted and the wounds were dressed with vaseline gauze and pressure dressings applied. The patient was put on to Crystacilline 300,000 units twice daily, and Streptomycin ½ gm. twice daily. Shock was combated by intravenous therapy; during the first 10 hours the patient received 6,500 c.c. of which 1,000 c.c. was serum and 1,000 c.c. blood.

She was kept on a diet high in protein and vitamins (approximately 200 gm. of protein were supplied daily). The haemoglobin dropped to 50%, but after multiple transfusions rose to 94%. The patient began to develop contracture deformities of her hips and feet on 22 September a plaster-bed was constructed for her. She was very definite abdominal tenderness and a positive peritonitic sign. A portable X-ray of the chest showed clear lung fields, but a marked elevation of the right lobe was suggestive of free gas and fluid levels. At this stage the diagnosis of a perforated Curling's ulcer was made.

On 6 October 1950 the patient's general condition had markedly improved, following administration of Aureomycin, Penicillin, vitamin K, Heparin and Digoxin. The blood urea was 77 mg. % and the chlorides 615 mg. %. On 8 October 1950 the patient's general condition gradually deteriorated, an hypostatic pneumonia having set in. On the next day the patient died.

Autopsy Report. A well-nourished female, who had 64% of the surface area involved in healing second and third degree burns.

The Lungs showed evidence of hypostatic pneumonia which was considered to be the cause of death.

Gastro-intestinal Tract. There appeared to be a marked excess of omental fat with a fair number of adhesions near the hepatic flexure. There was no free fluid in the peritoneal cavity.

Histopathology:

A Curling's ulcer approximately ½ inch long and irregular in shape was found 1 inch distal to the pyloric sphincter on the antero-superior wall of the first part of the duodenum (Fig. 1). The ulcer had perforated, but was sealed off by omental adhesions. A blackish discoloration (due to local thrombosis) round the edge of the ulcer was a prominent feature. Another, more circular ulcer which had not perforated was present in the second part of the duodenum.

Microscopy of liver, kidney and heart muscle showed nothing more than some degree of post-mortem autolysis.

SUMMARY
1. Curling's ulcer is described with brief reference to history, incidence, aetiology and histopathology.
2. A case is described in which perforation occurred on the 27th day.

I would like to thank Mr. A. Lee McGregor for granting permission to publish this case and for his help and encouragement.

REFERENCES