especially having regard to a decision in the House of Lords (1935), when workers breaking down shale, which though not silica rock in itself, contained small lenticles of quartz, were considered to be in an occupation scheduled under that act.

SUMMARY

Stourbridge clayminers are exposed to dust containing free silica.

A case is described in which the autopsy reveals that the pathological condition is silico-anthracosis.

Two other cases are described with similar occupational and medical histories and radiological appearances; these are therefore presumed to be suffering from the same pathological condition.

These clayminers should be eligible for compensation under the provisions made for cases of silicosis.

My thanks are due to Dr. A. Meiklejohn for standing godfather to this paper; to Dr. W. Stewart and Dr. Leslie Bold for their coöperation; to Mr. H. E. Monk, F.I.C., and Mr. E. R. Nind, F.I.C., for their work on the chemical analysis, and the colliery authorities for their courtesy and help; finally, to Mr. F. Fitzhugh for his help in the preparation of this paper.

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A CASE OF SYPHILIS OF THE LUNGS

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THE scarcity of recorded cases of syphilis of the lungs may partly be due to the infrequency with which it is recognised and the belief that antemortem diagnosis cannot be established.[1] The object of publishing this case is to show that a diagnosis can be arrived at during the patient's life and to help in establishing clinical data on which a diagnosis can be made.

A widow, aged 54, was asked to attend a clinic under the tuberculosis scheme because she had been notified as suffering from "tuberculous disease of the malar bone." Her occupation was domestic duties. Apart from an intractable ulcer on her left leg in 1927 she had always been healthy until 1936, when she began to suffer from cough, with small amounts of sputum streaked from time to time, lassitude and dyspnœa. Dyspnœa had only become pronounced during the previous few months, when her duties had become too much for her. Has one grown-up son. No history of miscarriage. Her husband died in 1919 at the age of 37 from "growth on the brain." First sought medical advice for a swelling over the left temporo-frontal region which developed in 1937 and for which she received treatment from her doctor for 8 months. The swelling was excised at the local hospital in January, 1938, but a chronic discharge persisted until December, 1938. About this time she developed a similar swelling over the left malar bone which was incised at the same hospital in November, 1938.

At her first attendance at the clinic on March 2, 1939, the lower of the two incisions was weeping slightly while the upper had healed completely. Weight 8 st. 5½ lb.; best known weight 10 st. The chest was symmetrical. Some restricted movement of the left upper half where the percussion note and air entry were impaired but no adventitious sounds were detected. Apex-beat in normal position. Heart-sounds normal. B.P. 145/95 mm. Hg. Pulse-rate 70 per min., regular. Mentality and memory good. Pupils equal and reacted to light and accommodation. No objective sensory changes. Complained of pain over left femur not unlike tabetic pains. No rombergism. Tendon reflexes normal. Healed ulcer with tissue-paper appearance over upper end of left fibula. No tubercle bacilli found in sputum (no further examinations made because cough had gone by next attendance). Blood Wassermann and Kahn reactions ++. Radiogram of chest on March 2 (fig. I, plate): arch of aorta slightly prominent and contains a calcified plaque; left upper zone contains a large opaque area irregular in outline from which radiate processes connecting it with a similar but smaller opacity in lower zone lying near root.

For various reasons only ambulatory treatment could be undertaken. Antisyphilitic treatment was instituted immediately the true cause of the lesion was suspected. She attended a local treatment centre—and still continues to do so, for her Wassermann and Kahn reactions are still positive. She was asked to attend for X-ray examination fortnightly but failed to do so, and her second attendance was not until April 20, 1939, when the film (fig. II) already showed considerable absorption of the opacities originally noted. Her symptoms, too, were much improved; she could do a day's work and walk upstairs without undue dyspnœa; her cough had disappeared; the sinus over her left malar bone had healed. Further radiograms showed progressive improvement. At her last attendance on Jan. 20, 1941, she was in "better health than ever" (fig. III). Despite "winter colds" there is no persistent cough. Weight 8 st. 10¼ lb.

This appears to be a case of the gummatous form of lung syphilis.[2] The criteria on which the diagnosis is based are:

(1) Length of history.
(2) Positive serological findings.
(3) Absence of tubercle bacilli in sputum.
(4) Prompt relief of symptoms and progressive, rapid and maintained improvement in X-ray appearances following antisyphilitic treatment.
(5) Presence of syphilitic lesions elsewhere.

I should like to thank Dr. T. W. Stallybrass, the county M.O.H., for permission to publish this case, and Dr. T. V. Cooper, the county pathologist, for the laboratory investigations.

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ACTION OF BISMUTH CARBONATE IN GASTRIC DISEASE

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THE gastric antacids and sedatives constitute an important group of therapeutic agents, and it is comparatively easy to confirm their effectiveness. In certain kinds of gastroduodenal disease temporary relief of pain consistently follows the administration of an antacid in a high proportion of cases. The action of these compounds on the pH of the gastric contents is also demonstrable by observations made in the course of fractional test-meals.

Bismuth carbonate and bismuth subnitrate are included in this group of drugs. The employment of these basic salts of bismuth dates from the use of the subnitrate by Odier in 1803. It is noteworthy, however, that he used this salt in doses of only one grain and always prescribed with it magnesia (gr. 10) and sugar (gr. 10).* Odier thought this compound powder an infallible remedy for gripe, and since then bismuth preparations have enjoyed a vogue in the treatment of gastroduodenal lesions. MacKenna (1931), in a paper on the history of bismuth, mentions that in 1852 Chambers in England, and Kussmaul in Germany, advocated bismuth salts in the treatment of gastric ulcer; Kussmaul recommended the subnitrate in doses of 10–20 grammes daily. In recent years bismuth subnitrate has fallen into disrepute, after the publication of a number of cases of nitrite poisoning attributed to the reduction of the nitrate by intestinal bacteria. Bismuth carbonate, on the other hand, is still widely used in the treatment of gastroduodenal disease, especially in cases of peptic ulcer and gastritis. According to standard works on pharmacology (Cushny 1941, Poulsson 1940, Dilling 1940) this insoluble salt acts mainly by coating the gastroduodenal mucosa, thus behaving as a protective in much the same way as a

* In the third edition of Odier's Manual, published in 1821, the author is less conservative and recommends the "white oxide of bismuth" in doses of gr. 6–12 four times daily. He also states that he discovered the remedy in 1786.

dusting powder soothes an irritated skin. Hurst (1929), however, describing a series of radiological observations made by his collaborator Dr. P. J. Briggs, states that "half an ounce of bismuth oxycarbonate taken in suspension on an empty stomach does not as a rule adhere to

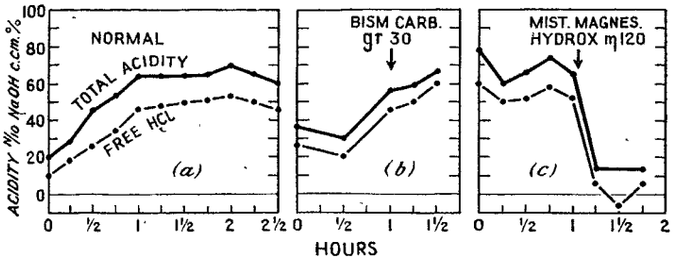

FIG. I—Consecutive fractional test-meals from one patient. (*a*) Normal record. (*b*) With bismuth carbonate 30 gr. acidity continues to rise. (*c*) With mist. magnes. hydrox. m 120 there is a large immediate fall in acidity.

the ulcer crater surface of even a large gastric or duodenal ulcer." Bismuth carbonate is also reputed to have an astringent action on the stomach (Adams 1939), and to act as a weak antacid (Dilling 1940, Whitla 1933). The antacid value of bismuth carbonate has been carefully studied by Freezer, Gibson and Matthews (1928). They have shown that when 0·3% hydrochloric acid (pH 1) is mixed with an excess of bismuth carbonate the solution never attains neutrality, but remains persistently acid (pH 4); and no further reaction takes place after one minute. They also tabulate their conclusions regarding the relative efficiency of the "alkalis" expressed as a comparison with sodium bicarbonate, which is assigned an arbitrary value of 100; the figures for magnesium oxide, calcium carbonate and bismuth carbonate are 317, 20 and zero. Again, Clark (1940) points out that the acidity of the gastric juice secreted by a normal person in 24 hours corresponds to about 5 g. of pure hydrochloric acid; and whereas this is neutralised by 3 g. (gr. 45) of magnesia, as much as 136 g. (gr. 2000) of bismuth carbonate would be required.

PRESENT INVESTIGATION

The object of this investigation was to determine the value of bismuth carbonate in relieving the pain of gastroduodenal disease, and to examine the views commonly accepted as to the fate of this salt in the stomach.

Antacid action.—The in-vitro experiments of Freezer, Gibson and Matthews referred to show that, although the addition of bismuth carbonate to weak hydrochloric acid raises the pH the reaction of the mixture never approaches neutrality. My own observations were made using open test-tubes instead of the closed apparatus described by these workers, but the results were substantially the same. A quantity of bismuth carbonate (B.P.) weighing 1·5 g. was shaken up in a wide tube with 15 c.cm. of distilled water, and 15 c.cm of N/10 hydrochloric acid (pH 1) was then added. The mixture was filtered and the pH of the filtrate was found to be in the region of 3·3. The same result was obtained when similar mixtures had been allowed to stand for intervals ranging from 1 to 10 minutes. Hydrogen-ion concentration was determined by means of chemical indicators and the Lovibond comparator, and the figures are regarded as being only approximate. These rough estimations of the neutralising power of bismuth carbonate on decinormal HCl were carried out merely as a preliminary to similar observations on gastric juice. It was found that the addition of an excess of bismuth carbonate to gastric juice in vitro produced only slight changes in acidity, as is shown by the following example:—

	Decinormal HCl c.cm. % Free HCl	Total acidity	pH
Before addition of bism. carb.	40 ..	55 ..	2
After excess bism. carb.	32 ..	50 ..	2·1

The feebleness of the antacid action on gastric juice is probably partly due to the buffering effect of mucoprotein.

The third method of investigation consisted in making observations during fractional test-meals. In any individual, however, day to day variations in fractional test-meal results are so considerable that experiments of this type necessarily lack controls that are completely satisfactory. The nearest approach to obtaining adequate control readings consists in using the first three or four of a series prior to the administration of the drug under investigation. Although this method is imperfect its value is increased when applied to a drug whose potentialities are already known from in-vitro experiments; and the negative results from bismuth carbonate are more convincing when compared with the effect of the powerful antacid magnesium hydroxide (fig. I). In all, 9 patients were investigated by means of fractional test-meals, using half-drachm doses of bismuth carbonate. It was found that the acidity was unchanged or continued to increase in 7. In 2 who had very low acidity (corresponding to 10 and 20 c.cm. N/10 NaOH% respectively) the curves fell to zero after the administration of the salt; that these falls were spontaneous rather than the effect of the bismuth carbonate is suggested by the fact that the addition of an excess of bismuth carbonate to gastric juice in vitro never reduced the acidity by more than 10 c.cm. N/10 HCl%.

The effect of administering a single large dose of bismuth carbonate was also studied. Two fractional test-meals were performed on a healthy medical student. During the first he received an average dose (gr. 15). It will be seen (fig. II*a*) that the fall in the gastric acidity was negligible; indeed the curves reveal that spontaneous alterations were greater than the change attributed to the action of the bismuth carbonate. On another occasion he was persuaded to take a very large dose (gr. 210). The effect on the gastric acidity was more impressive (fig. II*b*) but it lasted only half an hour. My colleague Mr. J. B. Pettigrew estimated the hydrogen-ion concentration of the samples electrometrically and found that the change was comparatively small (pH 1·67 to pH 2·16). The bismuth carbonate and bismuth oxychloride which

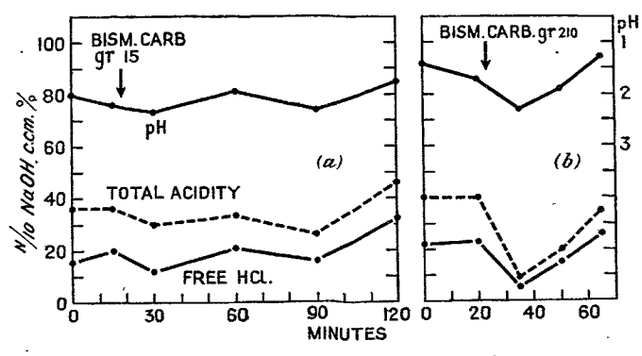

FIG. II—Consecutive fractional test-meals from one patient showing effect of (*a*) gr. 15 and (*b*) gr. 210 of bismuth carbonate on gastric acidity.

were present in all the samples of gastric juice appeared to have caused the mucus to form curd-like masses.

Astringent action.—Bismuth carbonate can act as an astringent in the stomach only if it is sufficiently soluble in the gastric juice. Dissolved bismuth can be detected by adding to it a freshly prepared solution of stannous chloride in strong caustic soda; the bismuth salt is immediately reduced and is precipitated as metallic bismuth, which gives colours ranging from jet black to light brown according to the quantity of the metal present. The test is sufficiently sensitive to detect 1 part of bismuth in 400,000. By this means it was found that after mixing 0·3% hydrochloric acid with an excess of bismuth carbonate the amount of bismuth in the filtrate was not more than 1 part in 160,000. To test the astringency of this concentration of bismuth, a sample of the filtrate was added to an aqueous solution of egg-albumin. No coagulum was produced, indicating that the astringent effect of the dissolved bismuth was negligible. The question arises as to whether bismuth carbonate is soluble in the organic acids of the gastric juice. It has been shown that lactic acid is formed in the stomach only when free hydrochloric acid is absent or diminished—less than 20 c.cm. N/10%. The solubility of bismuth carbonate in N/10 lactic acid was estimated. It was found to be approximately 1 part in 300,000. Here again, no astringent action was perceptible when measured by the effect of the solution upon

egg-albumin. As a control, the same solution of egg-albumin was used to demonstrate the astringency of dilute solutions of tannic acid (B.P.). Coagulation of the protein was readily produced by a 0·05% solution of tannic acid.

The solubility of bismuth carbonate in gastric juice was investigated. Samples of juice were obtained from 4 patients; the total acidity ranged from 10 c.cm. to 56 c.cm. N/10% and the free hydrochloric acid from zero to 48 c.cm. N/10%. The samples were mixed with an excess of bismuth carbonate and kept at body-temperature for two hours. Some of the juice was then decanted and tested for dissolved bismuth. The stannous-chloride test gave a negative result in all cases.

The conclusion that only a minute trace of bismuth dissolves in weak hydrochloric acid is not incompatible with the observation that bismuth carbonate can increase the pH of the solution. In the presence of hydrochloric acid bismuth carbonate forms bismuth oxychloride, and thus, within certain limits, it diminishes the hydrogen-ion concentration. The following test was done to demonstrate this action.

An excess of bismuth carbonate was added to about 50 c.cm. of hydrochloric acid which had a pH of 0·7. The mixture was shaken and set aside for a few minutes. It was then filtered and the filtrate was found to have a pH of 1·1. The residue was washed with distilled water until free of hydrochloric acid—that is, until the washings failed to give a precipitate with silver nitrate—and it was then dissolved in nitric acid (B.P.). About 5 c.cm. of the nitric-acid filtrate was tested for chloride by means of silver nitrate. A heavy white precipitate formed, proving that abundant chloride was now present in solution. As a "blank" bismuth carbonate was dissolved in strong nitric acid; this solution gave no precipitate with silver nitrate.

Radiological findings.—Seventeen observations were made on 12 patients, 2 of whom had large penetrating ulcers (about 1·5 cm. in diameter) situated on the lesser curvature approximately 7 cm. from the pylorus (fig. III, plate). On screening while the patient was standing, the aqueous suspension of bismuth carbonate was seen to trickle in a narrow stream to the most dependent part of the stomach where it formed a shallow pool (fig. IV). A small proportion remained in the track between the cardia and the lowest part of the greater curvature. There appeared to be no tendency for the drug to distribute itself over the whole lining of the stomach; and no evidence was obtained for Cushny's (1941) statement that bismuth carbonate "is later distributed evenly over the surface and forms a continuous sheet over any ulceration. . . ." Even after appropriate manual palpation and alteration of the patient's posture the distribution of the bismuth carbonate was not permanently altered; with the resumption of the erect posture the pool immediately reappeared in the original position. Repeated efforts to fill the large ulcer craters failed even after giving gr. 90 of the drug.

Nine of the patients were investigated to discover the effect of taking a meal about half an hour after a dose of bismuth carbonate. They received 2 g. (gr. 30) of the salt about half an hour before breakfast and a radiological examination was made 2 hours later. In 5 of this series there was no sign of the drug; apparently it had mixed with the foodstuff and was carried through the pylorus during the early stages of emptying of the stomach. In the remaining 4 patients a variable amount of the drug had been retained at 2 hours; it was invariably confined to the prepyloric region of the greater curvature as in fig. VI. Complete disappearance of the salt was accelerated by the taking of more food. In one patient, however, it persisted for at least 28 hours although five meals had been taken during this time (fig. VII). When there was food in the stomach at the time of administration of the drug, the suspension of bismuth carbonate was seen to follow the usual course, but the stream was soon broken up into several smaller ones by the food masses, and the bulk of the salt accumulated about the middle of the body of the stomach. Thereafter the drug gradually dispersed and became intimately mixed with the gastric contents (fig. V).

Therapeutic tests.—Observations were made on 21 male patients admitted to a medical ward of Stobhill Hospital on account of abdominal pain thought to be associated with abnormalities of the stomach or duodenum. After the usual clinical examination the patients were investigated radiographically, a fractional test-meal was done, and the stools were tested for occult blood. The patients were given the ordinary ward diet. Each patient was then presented with a batch of 18 powders; 6 of these contained bismuth carbonate gr. 30, coloured pink with a trace of azorubrum (B.P.C.); 6 were composed of lactose, the quantity (gr. 40) having a similar bulk to the bismuth carbonate powders, and these were tinted with methylene-blue; 6 were made of dried milk, which had a natural light yellow colour.

The choice of substances that can be used as controls is very limited. Many compounds which are inert when applied externally act as adsorbent antacids in the stomach. Lactose appears to be the only substance, easily obtainable, which is entirely satisfactory. Milk is an antacid, neutralising its own volume of gastric juice (Freezer et al. 1928), and powdered milk must be regarded as an antacid when adequate quantities are used. In doses of about gr. 30, however, this effect is hardly likely to be appreciable. This view is supported by the results of the present investigation, and milk powder in small doses was regarded as an inert substance and was accordingly used as an additional control.

The patient was directed to take the powders in any order and to decide in the course of a week or ten days which of them, if any, gave relief from pain. It was emphasised that he must not take a powder unless he had pain; and in the event of a powder failing to give relief he was to wait for half an hour before trying one of the others. Effects other than the action on pain were ignored. The composition of the powders was not disclosed to the patients, or to the nursing staff with the exception of the ward-sister; the powders were referred to only by colour. The group of patients was not selected except in so far as it was found necessary to abandon the investigation in a few patients who were not sufficiently intelligent to coöperate satisfactorily. No precautions were taken to prevent conversation between patients who were receiving treatment with the powders at the same time. The patients' descriptions of the effects of the powders were roughly classified as (*a*) no relief; (*b*) doubtful; (*c*) definite relief; (*d*) pronounced relief. The last two were considered to be significant. In 16 patients there was objective evidence of disease: duodenal ulcer or scarring 10; gastric ulcer 2; gastritis 1; gastric spasm 1; simple hyperchlorhydria 2. In 5 patients no signs of disease were discovered. The answers are summarised in the following table; several of the patients reported relief from more than one powder, and therefore the number of answers exceeds the number of patients.

EFFECT ON GASTRODUODENAL PAIN OF BISMUTH CARBONATE AND CONTROL POWDERS

—	Whole series	Disease proved	Disease not proved
Relief from—			
Pink powder (bism. carb.) ..	6	6	0
Blue powder (lactose) ..	8	6	2
Yellow powder (dried milk)..	6	5	1
Unrelieved by any of powders	5	3	2

Among the 6 patients who appeared to get relief from the bismuth carbonate, 4 were also relieved by taking lactose or dried milk, and 2 experienced no relief from either of these pharmacologically inert powders. None of the patients said that the three powders gave equal relief.

Eight of the patients, after completing the course of treatment with the coloured powders, were given a similar opportunity to express an opinion on the effectiveness of a "white powder" which was magnesium oxide given in doses of gr. 6 (Mist. magnes. hydrox. ℿ 120). The object of using this substance was to determine whether the pains were amenable to treatment by a drug which is known to have a powerful antacid action. Six of these reported immediate relief from pain, and the benefit far exceeded any that had been obtained from the coloured powders. It is noteworthy that lesions of the stomach or duodenum had been demonstrated in all of these 6 patients; in the other 2 patients no disease had been

discovered, and neither of them benefited from the magnesium hydroxide.

These results were examined statistically by Dr. Richard A. Robb of the mathematics department in the University of Glasgow, and his findings may be summarised as follows.

The effects of the inert powders (lactose and dried milk) is shown by contingency tables where the 21 patients are classified according as they have or have not disease, and according as they do or do not get relief from the powders. As is to be expected, the classifications are independent, using the χ^2 test; that is to say, these inert powders gave as much relief to patients with disease as to those with disease not proved. The same analysis when applied to the results obtained from bismuth carbonate again shows that the classifications are independent—the response of the patients was the same as when the inert powders were used.

It was found possible to distinguish between the degrees of relief obtained from the treatment, so that further analyses of the data were made. Again the figures indicate that there was no difference in the response of the patients to the three powders—bismuth carbonate, lactose and dried milk. If the 5 patients with no evidence of disease are excluded from the series and the analysis confined to those known to be suffering from gastro-duodenal disease, the results are the same.

DISCUSSION

The investigations provide no evidence in favour of the view that bismuth carbonate in therapeutic doses is a reliable means of protecting the gastric mucosa. After administration by mouth, the salt collects in the most dependent part of the stomach and there is a tendency for it to adhere to the mucous membrane in a relatively small area in the prepyloric region; but the ulcer-bearing area of the stomach is rarely affected.

Bismuth carbonate may exert an astringent action on the empty stomach, but the investigations show that even under favourable conditions this must be very slight; and in practice it must be rendered negligible by the combination of the minute amount of bismuth in solution with the mucoprotein of the gastric juice. It is clear that when a gastric astringent is required other drugs offer a much more reliable method of treatment—e.g., tannic acid in the form of glycerin of tannic acid (B.P.).

Previous workers have shown that the chemical properties of bismuth carbonate make it an unsatisfactory antacid for clinical purposes, and this conclusion is confirmed. The antacid effect following therapeutic doses of bismuth carbonate is seen to be trivial or entirely absent. Although very large doses produce appreciable changes in gastric acidity, even these are transient, and the side effects of such large quantities, especially constipation, cannot be disregarded. There seems therefore to be little justification for the view that bismuth carbonate is a valuable adjuvant to powerful antacids such as magnesia. The negative results obtained in test-meals are in keeping with the conclusions drawn from the therapeutic trials in patients suffering from gastro-duodenal disease, when it was found that bismuth carbonate was no more valuable than powdered milk or lactose in relieving pain. The findings as a whole support the view expressed by Hurst (1929): "It seems very improbable that the small dose of bismuth [carbonate] given with sodium bicarbonate in the usual alkaline mixtures, powders and tablets can exert an action of any kind in the stomach. Its use should therefore be discouraged, as it has the disadvantage of making the stools black so that the immediate recognition of slight melæna by the patient becomes impossible."

SUMMARY

The action of bismuth carbonate as an antacid was investigated in vitro, and also by fractional test-meals in healthy and ulcer subjects. Therapeutic doses were found to have only a negligible effect on gastric acidity.

Hydrochloric acid or lactic acid of the strengths found in the stomach dissolve only a trace of bismuth carbonate. Such solutions were found to have no astringent action on egg albumin.

In 12 patients who were screened after taking doses of bismuth carbonate the drug formed a pool at the most dependent part of the stomach, and showed no tendency to distribute itself over the lining of the stomach or to fill the crater of an ulcer when one was present.

Three powders consisting of bismuth carbonate, lactose and dried milk respectively were given to 21 patients complaining of abdominal pain thought to be due to abnormalities of the stomach or duodenum, and they were asked to say which powder relieved their pain. No significant difference was found in the pain-relieving effects of the three powders. Six of the patients with demonstrable disease of the stomach were then given magnesium hydroxide; all of them reported much greater relief than from any of the powders.

It is concluded that in therapeutic doses bismuth carbonate has a negligible effect as an antacid or as an astringent dressing for the gastric mucosa, and that it is of no value for the relief of pain in gastroduodenal disease.

I desire to thank Prof. Noah Morris for his interest in this work; Mr. David T. Gibson, D.Sc., of the chemistry department in the university, and Dr. W. D. C. McCrorie, assistant radiologist at Stobhill Hospital, for advice and criticism; and Sister H. D. Collins and Sister J. E. Rennie for their coöperation.

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BLAST INJURY OF THE LUNGS

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MUCH attention has been given lately to the effects of the blast of high explosive on people in the immediate neighbourhood. Apart from its scientific interest a careful study of the subject is of great importance in deciding correct treatment, and we are therefore recording our experiences in the treatment of a series of cases of men suffering from blast injuries of varying severity.

On Nov. 18, 1940, a high-explosive bomb dropped close to a wooden hut housing a number of soldiers. The hut was demolished and almost all of the men within were affected to some extent. Of those admitted to hospital 9 were dead on arrival or died within a few minutes. The majority of these 9 had no external injury and had not been buried; no autopsy could be held on them because of pressure of work in looking after the living. A number of other men were picked up dead but were taken straight to a mortuary; they were examined by a medical officer who also reported little evidence of external injury. Of the men who survived for an appreciable time after admission, 8 were suffering from severe pulmonary blast, 2 others had severe blast injuries associated with injury to the chest wall, and 7 had lesser degrees of blast injury from which they made uninterrupted recoveries. These 17 cases form the subject of this paper.

The men were admitted within two hours of exposure to H.E. blast. The circumstances have been reconstructed with some care and there is little doubt that with two exceptions, cases 9 and 10, these men suffered from the effects of blast only. The men were billeted in wooden huts which formed part of a small pleasure fair ground. There was a bright moon with a thin layer of cloud. A sentry observed the descent of a parachute and ran to warn his sleeping comrades. He did not succeed in rousing them before the bomb struck a wooden tower close to the huts. The explosion was of such violence as seriously to shake the hospital over two miles away. The huts were completely demolished. Rescue work was begun immediately and many of the men were got out at once. Others were buried under debris which was not of a heavy character. None of the patients