Professor Harrison suggests that cilia remaining at the posterior part of the nose are unable to transport the relatively large particles of snuff back to the nasopharynx, and this, he thinks, accounts for the incidence of nasopharyngeal carcinoma being much the same in the Bantu as in the European. In fact, flecks of snuff can be seen at the back of the throat even after many years of snuff-taking. I remember the well-controlled start of surprise when my family doctor looked at my throat and saw what he thought at first glance were petechial haemorrhages.—I am, etc.,

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Expiratory Airways Collapse

SIR,—The phenomenon of expiratory collapse of the airways¹ is not uncommon, but recognition usually depends on the characteristic pattern being seen on a spiogram. There is, however, a diagnostic physical sign which does not seem to be widely known. This is a characteristic movement of the upper abdomen immediately after the commencement of a sharp expiration.

If the lower chest and upper abdomen are closely observed the expiratory movement will be seen to start and then immediately check, giving the appearance of a quiver or bounce. The expiratory movement then continues smoothly. This "bounce" occurs at the moment of shut-down—i.e., when the airflow from the chest is cut off and the upward movement of the diaphragm is abruptly checked, the checkwave being reflected back to the abdominal wall. This sequence is the exact counterpart of the familiar spiographic trace. "Abdominal bounce" seems a reasonably descriptive term for the phenomenon. The sign may be obvious or may have to be sought at different breathing rates. When found it is diagnostic.

All patients with expiratory collapse adopt the "pursed lips" method of expiration, the object of which is to raise intrabronchial pressure and thus keep airways patent. This should be treated as an indication to look for "abdominal bounce." Another suggestive sign is supraclavicular bulging on expiration, which is a further indication of positive intrathoracic pressure. It is important to diagnose airways collapse. These patients are considerably disabled. Twenty-six of these cases have been investigated in this hospital over the past two years. The Table summarizes arterial blood-gas findings.

Pco ₂ under 50 mm. Hg	
Oxygen saturation 95% or over	Nil
Pco ₂ under 50 mm. Hg	
Oxygen saturation 90-95% ...	3
Pco ₂ over 50 mm. Hg ...	17
Oxygen saturation under 90%	19

Thus only three patients had arterial-gas levels approaching normal values.

Therapeutically, also, it is important to diagnose the condition. As pointed out by Gandevia, these patients can be helped, often dramatically, by instruction in relaxed respiration. They have often been taught the opposite—i.e., to try to empty the chest by forced expiration, and this, of course, only serves to increase obstruction.

I am dubious about the operation of tracheal and bronchial splinting proposed by Herzog. Pressure-volume studies show the shut-down to occur during normal breathing at oesophageal pressures of +3 to +6 cm. water pressure, the majority at pressures of +4 to +5 cm. water pressure. This is indicated by an abrupt interruption of expiratory flow with a concomitant sharp rise of oesophageal pressure as soon as pressures in this range are reached. Maximum pressures reached in normal breathing range from 8 to 16 cm. w.p., with an average of 11 cm. w.p.; the majority being in the 10 to 12 cm. w.p. range. Inspection of Herzog's pressure/calibre graphs shows that at these pressures all but one of his cases retain more than 50% of their lumen—the majority above 60%. Our pressure-volume studies show a resistance in the region of 30 cm. w.p./l./sec. This is of the same order as that of a single small tube 3 mm. in diameter. Herzog's graphs show clearly that narrowing of this order is not produced by intra-thoracic pressures in the range which causes shut-down. In other words, shut-down occurs before pressures sufficient to produce bronchial or tracheal collapse are reached. This would indicate that the site of collapse is more distal, in the smaller airways. The collapse of trachea and major bronchi is an artifact produced by the forced expiratory manoeuvre.—I am, etc.,

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Thyrotoxicosis in Childhood

SIR,—Dr. F. J. Pick (21 November, p. 1329) has correctly emphasized the importance of the protein-bound iodine as a test in the diagnosis of thyroid disorders and in following up the progress of therapy as we had indicated in our paper. We would, however, like to point out some conditions where P.B.I. gives an erroneous idea of the thyroid status.

In most laboratories the normal range of P.B.I. in children as well as adults is 3.5 to 8 $\mu\text{g.}/100\text{ ml.}$ Higher levels are found in the newborn and persist for a few weeks. Similarly high levels are seen in pregnancy and during oestrogen therapy due to increased thyroxine-binding protein. Inappropriately high P.B.I.s may be met with in children with lymphocytic thyroiditis or goitrous cretinism. In thyrotoxic children under propylthiouracil therapy we have seen persistent high levels of P.B.I. for the first four to six weeks while the child became euthyroid or even hypothyroid, as judged clinically or by other thyroid-function tests. In some children when hypothyroidism set in there was a rebound increase in the size of the thyroid gland which subsided on thyroid administration. Later in the course of therapy P.B.I. more closely correlated with the thyroid status.

From the point of practical importance it should be remembered that treatment of hypothyroidism with thyroxine (T₄) causes P.B.I. levels to range between 8 and 12 $\mu\text{g.}/100\text{ ml.}$ when euthyroidism is achieved. It should be recalled that substitution therapy with tri-

iodothyronine (T₃) will result in a P.B.I. of only 2-3 $\mu\text{g.}/100\text{ ml.}$ The P.B.I. remains in the normal range of 3.5 to 7.5 $\mu\text{g.}/100\text{ ml.}$ when desiccated thyroid is administered. In the presence of normal thyroid function a low P.B.I. may be seen in nephrosis, hypoproteinaemia, and occasionally in patients on mercurial diuretics, androgen, or prolonged adrenocortical steroid therapy.

In most of the conditions pointed out above, except thyroiditis and goitrous cretinism, the butanol-extractable iodine level parallels the P.B.I. A simultaneous determination of the red-cell-T₃-¹²⁵I-uptake test will, however, be of great help in indicating the true thyroid status. We have found this test to be very reliable in following up the course of children undergoing treatment for either hyper- or hypo-thyroidism.—I am, etc.,

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Leprosy and Gynaecomastia

SIR,—You recently discussed gynaecomastia in your columns (19 December, p. 1548) and mentioned "generalized skin diseases" and "testicular atrophy" as causes. You do not, however, mention lepromatous leprosy. Your leading article the previous week (12 December, p. 1478) claims that there are some 12 to 15 million cases of leprosy in the world. The proportion of cases which are lepromatous (multibacillary) varies tremendously in reported series, but an average of 23 series reported by Skinsnes¹ would give a reasonable basis for calculation—about 30%. Roughly 10% of cases of lepromatous leprosy show gynaecomastia.² Therefore there must be at least 360,000 cases in the world.

Gynaecomastia occurs in leprosy because the mycobacterium attacks the testis as a very superficial organ; breast growth is stimulated by the pituitary in consequence of the hormonal imbalance produced. It is rather amusing, however, to note that several such affected patients claim fatherhood. Perhaps hormonal imbalance occurs before total azoospermia. The pathogenesis of this condition was recently reviewed by Davey and Schenck.³—I am, etc.,

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Red-cell Aplasia

SIR,—I was interested to read the article by Dr. C. C. Entwistle, Dr. P. H. Fentem, and Dr. A. Jacobs (12 December, p. 1504) reporting the association of red-cell aplasia with carcinoma of the bronchus. Having had some interest in the congenital type (Diamond-Blackfan anaemia) and read the adult cases by way of comparison, I was puzzled by some seemingly apparent omissions when the authors had obviously undertaken such a comprehensive review of the literature.

There are, I suggest, two other cases of red-cell aplasia associated with a carcinoma and two other interesting cases in which a thymoma was found in addition; this excludes the case reported by Opsahl,¹ where the thymic carcinoma was really accompanied by a pancytopenia. Tsai and Levin² reported a case of a 64-year-old male with a haemoglobin of 3.8 g./100 ml. and a white-cell count of 6,100/c.mm. whose bone-marrow showed red-cell aplasia and who at post-mortem, three years later, was found to have a squamous-cell carcinoma of the right lower lobe of the lung; the thymus gland was reported to have atrophied. Kark³ reported a case of a 21-year-old girl with a haemoglobin of 18%, white-cell count of 4,800/c.mm., whose bone-marrow showed red-cell aplasia when she was 24 and who died later in that year with a small fungating carcinoma 2½ in. by 2 in. (6×5 cm.) arising from the anterior wall and greater curvature of the mucosa of the pyloric antrum of the stomach.

Green⁴ (Case 2) reported a case of a 78-year-old female who was found to have a haemoglobin of 2 g./100 ml. upon emergency admission to hospital. Bone-marrow aspiration disclosed a poorly cellular marrow with few erythroid elements; radiography of the chest was normal. Two months later she was again admitted to hospital, this time with a Hb of 5.2 g./100 ml., and a small mass was found in the right breast, but operation was refused. Nine months later she was re-admitted and a further chest x-ray showed nothing remarkable and that month she died. At post-mortem a benign thymoma was found in addition to the low-grade scirrhous carcinoma of the breast. (There is a printing error in the reporting of the last illness of this patient with regard to its date.) Clarkson and Prockop⁵ (Case 1) reported a case of a 57-year-old female who was shown to have red-cell aplasia and a thymoma which was removed without any improvement to her anaemia. Two years later a mass was found in her right breast measuring 3×4 cm., mobile, non-tender, situated just below the nipple. Nine months later it was removed and proved to be a carcinoma.

These last two cases might be explained away by "coincidence," but not the first two; and is this association really so rare or is it that it has merely failed to be recognized?—I am, etc.,

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Cerebrovascular Accidents and Oral Contraception

SIR,—The letter from Dr. K. J. Zilkha (31 October, p. 1132) reporting two cases of non-fatal cerebrovascular accident in patients on oral contraceptives (one on Enavid, one on Ortho-Novin), reminded me of a difficult and puzzling case seen in casualty in April 1963.

The patient was a 29-year-old white woman, para 2, fully active and apparently fit until the day of admission. After breakfast the patient had gone upstairs. Her husband, downstairs, heard a bang from above and went to see if

something was wrong. He found his wife lying in the toilet vomiting and convulsing. She then became limp, and although her eyes were open she appeared not to see him. The family doctor was called and signs of right hemiplegia with sustained ankle clonus and increased tendon jerks were noted. Neck stiffness was not present. The blood-pressure was 130/80, and she was sent into hospital. On admission she was comatose, with equal pupils which reacted to light. The eyeballs wandered from side to side, and right hemiplegia with Hofmann and Babinski signs were confirmed. There was no papilloedema and no neck stiffness.

She was admitted under the care of Dr. J. N. Walton. Lumbar puncture revealed a clear, colourless cerebrospinal fluid with 25 mg./100 ml. protein and no pleocytosis. Hb was 13.4 g./100 ml., white blood cells 7,300/c.mm., E.S.R. 4 mm./hr., serological tests for syphilis negative. Chest and skull x-ray showed no abnormality. The electroencephalogram showed a local excess of delta activity in the left central region. Two days after admission the blood-pressure rose and respirations ceased. She was put on a respirator but did not improve, and died three days after admission.

Necropsy was performed by Dr. G. W. Pearce, to whom I am indebted for the following report: "Brain 1,440 g. There was a slight symmetrical enlargement and congestion of the brain which was considered to be due to the patient having been on a respirator for over 24 hours prior to death. Thrombosis of the left middle cerebral artery 18 mm. from its point of origin from the internal carotid artery was found. There was softening and infarction within the distribution of this artery. A segment of the right anterior cerebral artery 2 cm. in length lying immediately above and behind the genu of the corpus callosum was also thrombosed, giving rise to a corresponding degree of brain infarction. There was no abnormality of the brain-stem, and mild atheromatous changes only were found in the circle of Willis and vertebral system.

"A patent foramen ovale (heart 240 g.) was found, but was occluded when the atria were not tensioned, and there was no sign of raised right-sided pressure. There was no source of emboli within the heart and there was no thrombosis within the nervous system. Other organs showed no abnormality apart from congestion. The absence of embolic disease suggests that the thrombosis in the two cerebral arteries was primary."

This patient had started on Conovid (norethynodrel and mestranol) two weeks prior to her collapse, as she was anxious to avoid further pregnancies.

Investigations by Egeborg and Owren (cited by Dr. Zilkha) have shown an increase in Factors VII and VIII in patients taking norethynodrel, and this has been thought to play a part in the increased clotting tendency. Recently a case of Factor X (Stuart Prower) deficiency¹ has been described who had remissions while pregnant, and who has responded well to treatment with norethynodrel. Whether or not Factor X is increased in normal patients on oral contraceptives is not yet defined.

In the case described arterial thrombosis was demonstrated at necropsy at two distinct sites on opposite sides of the brain. The cases recorded by Schatz *et al.*² of thromboembolic disease associated with norethynodrel included one woman aged 39 who developed left popliteal artery thrombosis requiring amputation. A case of non-fatal anterior cardiac infarction has also been recorded in a 34-year-old woman taking Conovid.³

The rarity of cardiac infarction in young women not of familial hypercholesterolaemic stock is well known, but Watson *et al.*⁴ reported two cases of cardiac infarction in young pregnant women, and collected another

24 cases from the literature. This underlines the observations by Haber in his Factor-X-deficient patient, where pregnancy and norethynodrel produced remissions.

It appears that, in addition to the hazard of venous thrombosis and thromboembolic phenomena, arterial thrombosis is perhaps a hazard of oral contraceptive treatment.—I am, etc.,

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Need for Gastric Lavage

SIR,—The article on the treatment of acute poisoning (10 October, p. 927) was a valuable summary of current thought, but we do not think the statement that gastric lavage must be performed on all cases known to have taken drugs less than eight hours prior to arrival in hospital can go unchallenged.

As long ago as 1929 doubts about the value of gastric lavage were raised by Starkenstein *et al.*,¹ and in 1933 Marriott pointed out that in the absence of the cough reflex gastric lavage could be lethal.² In 1942 Harstad *et al.*³ carried out an extensive investigation into the value of gastric lavage. They used 10 litres of fluid and in 38 of their cases no drug whatsoever was recovered from the washings.

0-10 mg.	was recovered in	7 cases
10-100 "	" "	17 "
100-260 "	" "	8 "
over 500 "	" "	2 "

By adding radio-opaque material to their lavage fluid they were able to demonstrate that a considerable amount entered the small gut, and by adding charcoal they demonstrated at post-mortem how much of the lavage fluid had entered the lungs. They were of the opinion that the poison passed rapidly into the small gut and that after four hours it was rare to find significant amounts in the washings. They felt, too, that lavage hastened absorption of the drug and they noted that coma sometimes deepened after it. They found that death was often due to aspiration pneumonia and they felt this was a more important cause of death than paralysis of the respiratory centre. Their conclusions were that lavage was never beneficial in the unconscious patient, but that aspiration of the gastric contents might be so if performed less than four hours after ingestion of the drug in the conscious patient.

Myschetzky, from the Poisons Centre at the Bispebjerg Hospital, Copenhagen, speaking at a meeting at the Royal Society of Medicine on 24 March 1964, suggested that gastric lavage should be discontinued as it was of no value in recovering a significant quantity of drug and was often dangerous. He said their practice was to recommend lavage only on conscious patients who had swallowed tablets less than an hour prior to admission. A small pilot series carried out by us confirms the very small amounts of drug usually obtained by lavage. We used a large-bore gastric tube aspirated with a stomach pump