was 22%. There was no abdominal tenderness or guarding. Vaginal examination revealed a swelling, about 5 in. (12.5 cm.) in diameter, arising from the vault and filling the cavity of the vagina. She was bleeding freely.

She was examined under general anaesthesia after transfusion. The fundus of the uterus was not palpable on bimanual examination and there was no cervical rim. The swelling in the vagina was irregular and had the consistence of a fibroid. The diagnosis of complete inversion of the uterus associated with a submucous fibroid was made. It was difficult to distinguish between the uterus and the tumour, and, for this reason and because of the poor condition of the patient, it was decided to attempt to replace the uterus instrumentally. A biopsy confirmed that the tumour was a fibroid. An Aveling repositor was inserted and the vagina packed with acriflavine and glycerined gauze.

During the next three days the repositor and pack were removed daily, but on each occasion there was severe haemorrhage. The uterus remained inverted. On the third day the repositor was abandoned, but the vagina was repacked daily in an attempt to control the bleeding. In all, 15 pints (8.5 litres) of blood was given by transfusion during these days. On the fourth day the temperature rose to 99.6° F. (37.6° C.) and a high vaginal swab was taken; this subsequently grew *Bacterium coli* and haemolytic streptococci. During the next 10 days 11,500,000 units of penicillin and 18 g. of streptomycin were given.

On the sixth day her general condition had improved and she was again examined under general anaesthesia. A Schuchardt incision was made. The fibroid was gripped with a vulsellum, and by using considerable force the uterus and the fibroid were delivered out of the vagina. The uterus was elongated and completely inverted, and there was no cervical rim. The fibroid was 4 in. (10 cm.) in diameter, was submucous and sessile, and was attached to the fundus of the uterus. There was still profuse bleeding from the endometrium. The capsule of the fibroid was incised all round about 1 in. (2.5 cm.) from the uterine wall and the fibroid was enucleated from its bed. The uterus was replaced digitally without difficulty by pressing on the centre of the fundus. As soon as the uterus was in its normal position haemorrhage ceased.

Convalescence was uneventful. There was a blood-stained vaginal discharge for three days and thereafter no loss at all. The patient did not complain of pain or discomfort. Her temperature rose to 101° F. (38.3° C.) on the two evenings following operation and then remained normal. She was discharged 17 days after operation, the haemoglobin then being 78%. The uterus was slightly enlarged, anteverted, and not tender. The cervix was patulous, and the external os could admit two fingers. There was no vaginal discharge.

Pathological examination of the fibroid showed it to be 4½ by 3 in. (11.4 by 10 cm.) in diameter, with the typical whorled appearance on cross-section.

COMMENT

The cause of inversion in this case was undoubtedly the uterine fibroid. There were no symptoms except haemorrhage and it was not possible to determine when inversion had occurred. The patient firmly denied having had any pain.

In considering treatment, her age and general condition at the time of both operations were taken into account. Infection was slight and did not complicate the issue. Vaginal hysterectomy would have been practicable, but as she was only 35 conservation of the uterus was thought to be desirable. Replacement with Aveling's repositor was attempted before it was appreciated that the fibroid was larger than the uterus. Myomectomy presented no difficulty once the fibroid had been defined, and manual replacement was then easy.

I wish to thank Mr. John Beattie and Mr. Kenneth Watson for permission to publish this case.

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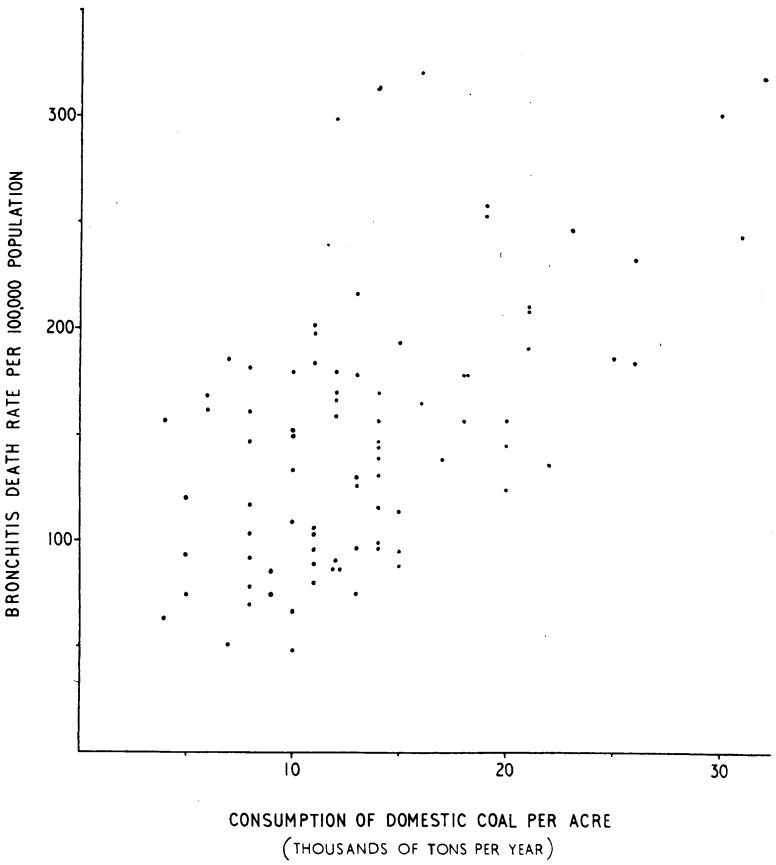
Air Pollution and Bronchitis

The results recorded in the interesting paper by Pemberton and Goldberg (1954) agree with the results of a similar analysis carried out by the Social Medicine Research Unit of the Medical Research Council. This analysis covered the five years 1946–50, but, unfortunately, only 15 county boroughs were equipped with lead peroxide instruments for the measurement of sulphur dioxide pollution throughout that period, and only 24 county boroughs gave an alternative measure of sulphur pollution (SO_4'', as a dissolved impurity in deposit gauges). Nothwithstanding this, the correlation coefficients we obtained were very similar to those given by Pemberton and Goldberg, at least so far as males aged 45–64 years were concerned. ($r=0.51$, using the first index of pollution; $r=0.32$, using the second. Average figures for the five years were studied.) Like the two authors, we felt that the pollution records were unsatisfactory—particularly in view of the considerable variation between stations in the same county borough.

Because of this, and because of the very few towns involved, we tried to find some better and more universal measure of the amount of atmospheric pollution to which the inhabitants of towns and cities were subjected. It was



Relationship between the consumption of domestic coal per acre in 1952 and the average annual death rates from bronchitis of males aged 45–64 years for the three years 1950–2, in the 83 county boroughs of England and Wales. Correlation coefficient = 0.59 ($P<10^{-6}$).

eventually decided that some index based on the amount of coal consumed annually by each town would be worth investigating, and the Ministry of Fuel and Power has recently been kind enough to give us access to such figures. So far, only some very preliminary analyses have been done, but interesting results are beginning to emerge. The Chart, for example, confirms some of the findings of Pemberton and Goldberg and extends them to all 83 county boroughs. This diagram shows the relationship between average annual mortality from bronchitis in males aged 45–64 years in the three years 1950–2, and the consumption of domestic coal per acre in 1952, in the county boroughs of England and Wales. The coefficient of correlation between these two indices is 0.59, which is highly significant (probability less than one in a million). To ensure that this high correlation was not merely the reflection of a relationship between the two variables and a third—namely, the poverty of the towns—the proportions of occupied and retired males in social classes IV and V in the various county boroughs were taken into account, but this only reduced the correlation coefficient to 0.52. Similarly, allowing for differences in the amount of overcrowding (measured by the proportion of persons living more than one per room) only reduced the correlation coefficient to 0.53. Both of these figures are still highly significant.

These results are surprising for two reasons. (1) The measurement of acreage refers to the total area of the county borough, and has been taken from the 1951 census volumes. It only bears a rough relationship to the actual area lived in, since much agricultural land is often included inside the borough boundaries. We hope to be able to obtain a rather more accurate measure of the relevant areas at a later date. (2) Only the consumption of domestic coal has been considered, although this amounts to a mere 18% of the consumption of all coal, on the average. It is worthy of note that the coefficient of correlation between these bronchitis mortality rates and the annual consumption of *all* coal (except that used by railways and shipping) is only 0.24. Since each ton of coal used for non-domestic purposes discharges about as much sulphur dioxide into the atmosphere as does each ton of domestic coal, but very much less smoke, it would seem premature to attribute the apparently bad effects of air pollution primarily to sulphur dioxide.

In conclusion, the coefficient of correlation between the index of atmospheric pollution based on domestic coal consumption and the average death rate from "bronchitis and pneumonia" of females aged 45–64 years in the three years 1950–2 is 0.54—very much higher than the corresponding figures (for bronchitis) obtained by Pemberton and Goldberg. We do not feel, however, that this contradicts their findings, but rather that the low (though consistently positive) coefficients which they found may have been due to the fact that in some of the towns used in their analysis very few females in this age group died from bronchitis in any one year. This would tend to diminish the correlation coefficient. It is for this reason that we have used three years' data, and included pneumonia with bronchitis (a procedure, incidentally, which has no effect on the corresponding correlation coefficient for males).

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Advanced Ectopic Pregnancy without Complications

Only 1% of ectopic pregnancies are said to reach the stage of viability (Dorman, 1951), and in 260 published cases of advanced ectopic pregnancy there were only 12 surviving babies (Ulrich, 1946). If the foetus lives to the end of pregnancy diagnosis and treatment may be very difficult (Dorman says that less than half the recorded cases were diagnosed before operation and gives the maternal and foetal mortality rates as 15% and 76% respectively). There is a high incidence of congenital defects (figures vary from 10% to 46%), and of babies born alive only half survive for more than a week (Dorman).

The case here recorded ran an uncomplicated course. There was no anxiety during pregnancy; positive diagnosis was made before operation; delivery was simpler than an ordinary caesarean section; there were no major complications after operation, and mother and child left hospital in good health.

CASE REPORT

A Punjabi woman aged 20 had had no antenatal supervision and came to hospital at approximately nine months because she thought that normal labour had begun. She had had two normal confinements, one and a half and two and a half years previously. There was no history of abortions or of venereal disease. She had noticed that foetal movements were less than during her previous pregnancies. There was slight leucorrhoea, and oedema of the left leg had been present for a month. Otherwise pregnancy had been normal.

Five days before delivery she had pain in the left loin and left iliac fossa following a fall. For two days she had quite severe intermittent colicky pain, which resembled labour pain. She was admitted to hospital on October 10, 1952, apparently in labour. A breach presentation of a fully developed foetus was confirmed by *x*-ray examination, and an unsuccessful attempt was made at external version. Pains continued but no progress was made. The foetal head was easily felt to the left of and slightly above the umbilicus. No foetal limbs were felt. A normal foetal heart was heard in the left iliac fossa. The os admitted one finger, and the cervical canal, which was long, led this finger forwards. No membranes or foetal parts were felt through the os, but a foetal foot was felt with surprising clearness through the posterior fornix. This led to a diagnosis of extrauterine pregnancy with the amniotic sac lying behind the uterus.

At operation, the uterus, about the size of a two months' pregnancy, was flattened against the anterior abdominal wall with the amniotic sac, covered by smooth peritoneum, presenting above and to the left of it. The right broad ligament was distended over what was obviously the placenta, the right Fallopian tube and round ligament being stretched across it. The ovaries and left tube appeared normal. There were no adhesions between bowel or omentum and amniotic sac or placenta. The placenta was covered by peritoneum in front, above, and behind, and was attached by a broad base deep in the pelvis. The amniotic sac covered by peritoneum was thin and transparent, and, though the liquor was meconium-stained, the head and hands of the foetus were clearly seen through it. The entire gestation sac was clearly extraperitoneal, no erosion of the peritoneum by the chorion having occurred anywhere. The sac was incised close to the foetal head and the foetus removed without haemorrhage. Removal of the placenta would certainly have necessitated hysterectomy, and, as it seemed that its circulation was connected with the great vessels of the pelvis, its removal would have been extremely hazardous. All foetal membranes and placenta were left *in situ*.

The baby (4 lb. 6 oz. (1.9 kg.), female) was cyanosed at first, but soon cried vigorously and appeared normal in every way and not premature. The mother was given "distaquaine," 300,000 units daily for six days, and also mepacrine, 300 mg. daily for 10 days. There was fever on two days only during the first week, almost certainly due to malaria. She chose to feed the baby artificially. It lost weight for four days, but had regained its birth weight by two weeks and was then vigorous and feeding well and apparently free from congenital defects.

During the puerperium there was a slight mucoid vaginal discharge which was sometimes stained with blood, but there were no normal lochia. Two weeks after delivery the abdominal scar was well healed. The uterus was felt displaced to the left, and the placenta, smaller than at operation, to the right of and behind the uterus, but its edges were not