the upset of which appears to depend for the most part excessive uterine haemorrhage, in my opinion it is desirable to perform hysterectomy in all such cases whenever the bleeding is severe enough to make the patient to any extent an invalid. I am old enough to remember the time when it was considered so dangerous to remove a uterine fibroid that gynaecologists more often than not suggested not operation but rest and drugs when a woman anywhere near the menopause had a fibroid which did not actually threaten her life by reason of the profuseness of the bleeding. One of my most vivid memories is of a Sunday in 1896 when, on coming away from a visit to a lady of some 50 years of age, who had spent perhaps a dozen years constantly lying down either in bed or on a couch in an adjoining room, I was told that she had been all these years awaiting the cessation of a metrorrhagia due to a fibroid. I had watched Greig Smith remove large myomatous uteri safely and easily, and had seen more than one blanched feeble creature return a few months later to thank the surgeon for renewed vigorous health; and the contrast of a highly educated woman, whose keenly enjoyed activities had been brought to an end at the age of 40, was my first big stimulus to do surgical work—not just to save a patient from impending death, but from the far more ghastly death-in-life which constitutes existence for so many chronic invalids.

Briefly, in turn, bleeding (1) at puberty, (2) during the child-bearing years, and (3) about the period of menopause must be considered. Bleeding at puberty (1) may be severe, but practically always it rights itself, and I never even heard of any case which required hysterectomy. As I have indicated, it is probably due to imperfect balance between the various internal secretions.

Excessive bleeding during the child-bearing years (2) is, as stated before, most commonly due to fibroids, and, in my opinion, hysterectomy is indicated in almost every case where excessive bleeding, either menstrual or intermenstrual, is associated with the presence of a fibroid. Apart altogether from the bleeding or other urgent symptoms, there can be no doubt that fibroids interfere with good health. The association of myocardial degeneration and aortic disease with large fibroids is too frequent to be merely coincidence, and if a fibroid which has been found in the course of an abdominal section for some other condition is removed, the patient is almost certain to remark on her subsequently improved feeling of well-being.

Excessive bleeding may be associated with hypertrophy of the ovaries.

A year ago I operated on a patient of Dr. Lankester at the Bradford Royal Infirmary. She was a young woman, aged 26 years, who had had six children, and since her last confinement had had too frequent and profuse haemorrhage. When she was admitted she was obviously blanched, and had a soft, low tension pulse. The uterus was slightly subinvolved but otherwise appeared normal. I kept her in bed for a few days until her general condition had improved, and then did a subtotal hysterectomy. She had the most hypertrophied ovaries I have ever seen. Whitehouse has treated such cases by repeated curettage without success. He suggests partial excision of the ovaries, but does not quote any case which has been successfully so treated.

It is, however, about the menopause age (3) when the most trying and frequent cases of haemorrhage occur.

(a) In cases of cervical cancer, by the time the growth has developed sufficiently to produce considerable haemorrhage it is practically certain to be too far advanced for radical treatment.

(b) Bland-Sutton has suggested that uterine fibrosis is the cause of many cases of severe uterine haemorrhage at the menopause, and in a not very large percentage of uteri removed for this condition thick-walled blood vessels can be demonstrated.

(c) A condition much more frequently found is one which affects chiefly the endometrium, known as hypertrophic glandular endometritis, but the microscope does not usually show the small cell infiltration indicative of inflammation; and it would probably be more correct to regard the condition rather as a degeneration of the endometrium. The uterus is rarely much if at all enlarged. It may be retroplaced, but is more frequently in normal position. There is, as a rule, nothing abnormal found about the appendages. After removal the uterine wall is, on section, distinctly pale, but the obviously abnormal condition is an oedematous thickened endometrium, usually in places forming one or more mucous polypi from $\frac{1}{4}$ in. to over 1 in. in length. I

have hardly ever seen any blood clot in the uterus in these cases even when the operation has been undertaken as an emergency for severe active haemorrhage—which points, of course, to a probable deficiency of thrombokinase (blood-clotting substance).

(d) In other cases of irregular menopausal haemorrhage no abnormality is discovered in the uterus, either macroscopically or microscopically.

I think there can be little doubt that in all these cases, whether an obvious lesion of the uterine wall or of its lining membrane exists or not, the essential cause of the bleeding is an abnormality in the internal secretions. Some day we may learn how to regulate the functioning of these substances, but until we do I am strongly of the opinion that whenever the bleeding is so severe and so persistent as to make the patient's life a burden to her, the only certain means of curing her is to remove the uterus. Packing the vagina, curettage, ergot and similar drugs are most uncertain remedies and at best produce only temporary improvement. For beyond a doubt the patients who consult their doctors about bleeding of this sort as a rule never feel well; apart altogether from the haemorrhage there are symptoms, none of them perhaps very bad, but in the aggregate producing a sense of illness enough to make most women willing to risk operation in order to get rid of it, if they are not definitely discouraged by their medical attendant.

REFERENCE.

¹ H. Beckwith Whitehouse's Hunterian Lecture on Physiology and Pathology of Uterine Haemorrhage, February, 1914 (*Lancet*, March 28th, 1914).

SOME DEDUCTIONS FROM THE STATISTICS ON THE PREVENTION OF PULMONARY TUBERCULOSIS.

BY

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STATISTICS show us that, in spite of all that has been said and done for the prevention of tuberculosis, our efforts in regard to pulmonary tuberculosis have not been attended with the anticipated success. The decline in mortality from this cause dates from 1838, and has continued steadily ever since down to 1913. Koch's discovery of the tubercle bacillus in 1882 does not appear to have affected it in any way. On comparison of the statistics of the four principal zymotic diseases (measles, scarlet fever, whooping-cough, diphtheria) with those of pulmonary tuberculosis, in the fifty years 1861-1910, we find the following decline:

Comparison in Deaths per Million Living.

	1861-70.	1871-80.	1881-90.	1891-1900.	1900-10.
Zymotics	2,061	1,633	1,367	1,219	909
Pulmonary tuberculosis	2,590	2,231	1,810	1,418	1,143

Representing a decline of 55.89 per cent. in zymotics and of 55.86 per cent. in pulmonary tuberculosis.

Comparing the average mortality per million living in the first six years of the period 1902-1913 with the last six years, in the air-borne diseases the following result is found: Pneumonia shows a decline of 14 per cent., phthisis of 11.6 per cent., bronchitis of 10.68 per cent., and the four principal zymotics of 21 per cent. Pulmonary tubercle is only one of the air-borne group of diseases. The chart below, prepared from the statistics of the Registrar-General for 1916, shows clearly that whatever the causes of these diseases, the same causes are common to the whole group. The death rates from the individual items that go to form the group show corresponding variations in different sections of the population. The curve of tubercle shows a slight deviation only from the other diseases of the group in the case of London and Southend, but I think this is explained from the fact that London is a big hospital centre, while Southend is one of our health resorts. It will be seen that for the whole of England and Wales and for the other sections of the population bronchitis causes a higher death rate than pulmonary tuberculosis.

We all know from experience that all these diseases are closely associated. The statistics show us that zymotic diseases expend themselves as regards fatality in the first fifteen years of life. Accounting for over 26 per cent. of

Air-borne diseases, representing three of the five principal causes of death in sections of the community. A Curve: Bronchitis, pneumonia, and other respiratory diseases. B Curve: Ditto, plus zymotic diseases. C Curve: Ditto, plus consumption.

curve of pulmonary tubercle, which, starting with 2.29 per cent. in the 1-5 age period, 10.43 per cent. in 5-15, reaches its maximum of 33 per cent. in the age period of 15-25.

The researches in regard to cerebro-spinal fever have done much to elucidate the problem of the source of respiratory infection. (BRITISH MEDICAL JOURNAL, September 18th, 1920.) It has been demonstrated how readily the meningococcus passes from throat to throat in an overcrowded community, and how rapidly it disappears with efficient ventilation and spacing out. The carrier rate rises twice as rapidly in the presence of sufferers from catarrh, so that for the prevention of outbreaks of meningitis it is more important to isolate the people suffering from colds than it is to isolate carriers.

Again, quoting from the *Australian Medical Journal* of June, 1920, in regard to the etiology of pneumonia, as the result of war experience, "Pneumonia is probably due to many factors, of which the association with persons suffering from catarrh is the most important." "Victor Vaughan found that the incidence of pneumonia among American soldiers in training camps fell when overcrowding and bad ventilation were removed." "Catarrh affects persons whose naso-facial tissues are unhealthy . . . A person with a normal nose and throat does not acquire a catarrh." The same probably applies to the "carrier" condition. Experiments to inoculate a healthy nasopharynx with pathogenic organisms, so far as they have been attempted, have been a failure. The healthy mucosa readily disposes of them. Again, what is bronchitis, which causes more deaths every year than consumption, other than an extension of the common cold where the resistance is low or where it has been reduced by repeated attacks? Over 20 per cent. of consumptives give a history of repeated colds in the head (Osler and McCrae). Putting two and two together, therefore, the common cold is probably the most important connecting link between all respiratory infections; it is the means of (1) disseminating air-borne disease, and (2) of preparing the soil for further invasions or for the condition of carrier.

In conclusion, I feel convinced that the campaign against consumption must be directed against the air-borne diseases as a whole, and against the common cold in particular. The effects of other respiratory infections, including the common cold and zymotic diseases, in early life is to prepare the soil for the later invasions of the tubercle bacillus when otherwise resistance should be high. The remedy for all these diseases is a matter of improved housing and education in ventilation and general hygiene, yet at the same time much could be done meanwhile by the more thorough recognition and treatment of the common cold and its sequelae.

THE RELATION OF TEMPERATURE TO THE ONSET OF A CARDIAC IRREGULARITY.

BY

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Much has been written on the effect of temperature on the appearance of cardiac irregularity, and notably of the extra-systole. According to a number of observers there is a tendency for extra-systoles to disappear during high temperature, with a rapid pulse rate, after the manner in which they tend to disappear during exertion. Without any desire to controvert this view, which indeed is supported by much evidence, the following case is presented as affording in one direction a remarkable illustration of an opposite state of affairs, and possibly a sidelight on the etiology of this type of irregularity.

The patient, a young miner, was admitted on September 23rd, 1917, to the War Office Trench Fever Hospital, Hampstead, on the forty-second day from that on which he had contracted an attack of trench fever in France. When first seen he was suffering a typical relapse of this condition with backache, headache, hyperalgesia of his shins, muscular pains in the legs and shin-bone pain. He himself was well able, from his experience, to diagnose what was wrong. His temperature was then 103° F., his pulse was markedly irregular, and a prolonged polygraph tracing was taken. It was found that the irregularity was itself singularly regular, an extra-systole ventricular type occurring every third beat. Only very occasionally were there

FIG. 1.

"runs" of regular rhythm, and these lasted for but a few seconds when they occurred, and then gave place to irregularity again.

FIG. 2.

The first tracing was taken at 7.10 p.m. At 9.20 p.m. the temperature had fallen slightly, and the pulse was 100, but the extra-systoles were less frequent. At midnight the temperature was 101° F., the pulse 100, and the extra-systoles less frequent still.

FIG. 3.

At 10 a.m. the next morning the temperature was 97.7°, the

FIG. 4.

pulse rate 81, and there were no extra-systoles. The symptoms had markedly abated.

FIG. 5.

An interval of six days then elapsed, during which, so far as could be determined, there were no extra-systoles. On October 1st, however, the patient began to complain again, and took to his bed with a temperature of 102.5° F., and with a large number of extra-systoles—though not so regular an irregularity as on the first occasion. His pulse rate was 110. He had pains and aches