mates were operated on for enlarged tonsils and adenoids, but were, of course, not benefited as regards their hearing.) Attacks of earache recurred in forty-five out of 152 cases after operation. Tinnitus in two patients (aged 8 and 12 respectively) disappeared. Acute suppurative otitis media healed in twenty-nine out of thirty-one cases, and chronic suppurative otitis media healed in fifty-six out of eighty-nine cases.

Patients complaining of headache (fifteen) and nocturnal enuresis (two) were not improved.

General Summary of Results in 1,138 Hospital Patients

The local symptoms for which the operation was recommended were completely cured in 851 (75 per cent.), partly cured in 204 (18 per cent.), but persisted in eighty-two (7 per cent.).

There was a marked improvement in general health in 982 (86.4 per cent.), but no improvement in 139 (12.2 per cent.). There were seventeen cases (1.4 per cent.) examined three weeks after operation—that is, too soon to estimate improvement in general health.

Discussion and Summary

On reviewing the post-operative symptoms and complications one sees that their total percentage is higher in the hospital patients (13.02 per cent.) than in the private patients (5.3 per cent.). If we exclude symptoms—for example, earache and cough—and complications—such as, exanthemata—we find that the percentage of 7.54 for complications in the hospital patients still remains higher than in the private patients (2.2).

The difference between the two figures can be accounted for as follows: (a) Some inherent factor is probably present in the preoperative condition of the hospital patients. Their general nourishment and constitution are, as a rule, inferior to those of the private patients, while in this hospital series several patients had predisposing factors in the causation of aural complications, and a number of them were possibly operated on in the prodromal stages of the exanthemata. (b) The results of hospital operations carried out by junior operators are not so good as those done by experienced surgeons in private practice. (c) Complications may be due to chill on the journey home in a taxi after operation; this was a possibility in the five cases of pulmonary complications, though the aspiration of septic blood clot during the operation—for example, in the case of bronchopneumonia, or of septic embolism from the operation area, as in the atypical case of pneumonia (right upper lobe) and in the two cases of pleurisy—cannot be excluded. No lung complication occurred in the private cases. (d) The only case of death after discharge from the Royal Infirmary was the case of meningitis. (e) No complication was found due to neglect of the parents to carry out written instructions given them for the pre-operative and post-operative care of the children.

In this series of hospital out-patients, for whom every precaution was taken as to the general state of their health, their preoperative preparation, conveyance from the Infirmary to their homes, and the suitability of their homes for convalescence, the total percentage of complications was rather more than twice as high as that in the private cases. Considering the nature of some of the complications recorded in hospitals—for example, temporary torticollis, paresis of the soft palate, and nasal catarrh—the difference in the percentages is hardly of sufficient importance to make us condemn the present out-patient operation system and recommend hospital authorities to provide beds for all tonsil and adenoid cases. One acknowledges that the ideal post-operative treatment for these cases would be to detain the patient

in hospital for at least forty-eight hours after the operation, but even with this precaution complications may occur. In support of this there are the statistics published by J. A. Keen in the *Journal of Laryngology* (January, 1932) in an article entitled "Medical and Surgical Complications of Tonsillectomy in Childhood." In his series of 9,344 cases each patient was kept in hospital for at least twenty-four hours after operation; sixty-six cases (0.66 per cent.) of aural complications occurred, consisting of sixty cases of acute suppurative otitis media and six cases of mastoiditis (including three deaths from this cause), as compared with our twenty-two cases (1.5 per cent.) of acute suppurative otitis media (no mastoiditis, and no deaths) in the Edinburgh hospital cases. Further, there were five cases of septicaemia (0.05 per cent.), including one death, in Mr. Keen's group, as compared with one case (recovery) (0.07 per cent.) in the Edinburgh group.

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PULMONARY TUBERCULOSIS IN ASTHMA CASES

BY

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Among 522 cases of asthma seen in recent years there were 369 which I have investigated with a uniform method between 1930 and 1932—200 men and 169 women of the working class in active employment. In all of these cases a detailed examination was made both by clinical and x-ray methods for any signs of active or healed tuberculous lesions in the lungs (E. Fraenkel').

Evidence from the Literature

The view that asthma and pulmonary tuberculosis are mutually exclusive is widespread in this country as well as abroad. Regarded from the statistical point of view there is undoubted justification for this attitude. The work of Schroeder,² for example, shows that out of 4,716 cases of pulmonary tuberculosis only thirty cases showed typical symptoms of asthma. Kaemmerer,³ an experienced German clinician, considers that tuberculosis plays no part in the genesis of asthma. Bandelier and Roepke⁴ believe that asthma may produce some immunization against the disease. In support of this we have the observation that tuberculous guinea-pigs appear to be protected against horse-serum shock; this is explained by Pagel⁵ as due to diminution of antibody formation, which is dependent on the number of tuberculous foci. In conjunction with Pulvertaft⁶ I have recently been able to show that a similar protection may be obtained by massive and repeated injections of Calmette's B.C.G. On the other hand, a single dose or the injection of dead or damaged B.C.G. was ineffective, and did not produce a local lesion. These results would seem to support in some degree the hypothesis of Pagel.⁵

Such authors of standing as Liebermeister,⁷ Krez,⁸ Zdansky,⁹ and Wernscheid,¹⁰ however, insist that the majority of asthma cases are of tuberculous origin. Harkavy and Hebal,¹¹ working at the Mount Sinai Hospital, report in a series of 400 asthma cases over 10 per

cent. as being tuberculous. Among these 400 cases eighteen were examined very thoroughly by the x rays, and seventeen of these showed cavities. In 1912 I¹² observed a case of bronchial asthma in which a tuberculous bacillaemia could be demonstrated by animal injection. Two cases of Kenner¹³ and Loewenstein in 1931 gave similar results. Further evidence of a relationship between these conditions is presented by the demonstration of a filterable tuberculous virus in a case of asthma by Sergeant and Kourilsky.¹⁴ Jiminez Diaz¹⁵ is of opinion that tuberculous allergy may bring about asthma, and later there may ensue a hypersensitiveness to other substances. On the other hand, Tauzk¹⁶ is of opinion that asthma may predispose to tuberculosis. That tuberculosis is activated and accelerated by asthma is held by Lueg.¹⁷ Opposed to this is the statement by Schroeder¹⁸ that frequently in cases of coexisting asthma and tuberculosis the latter is of the slow and relatively unprogressive kind. The classical work of the late Professor von Pirquet¹⁹ has made us familiar with the allergic phenomena associated with tuberculous infections. We are thus always faced with the possibility that this sensitization may be extended to other allergens.

Apart altogether from the theoretical significance of the simultaneous appearance of the two conditions, there can be no doubt, as has been shown by my own investigations,¹ by Eichhoff,²⁰ and by Hamann²¹ working at my suggestion, that a careful investigation and assessment of a large number of asthma cases will reveal the presence of active, even cavernous, tuberculosis in some of them. Hamann has reported on eight of my cases with asthma and active tuberculosis, of which two died and two others developed tuberculosis within two years. The facts which I wish to present here are of a similar nature to those of these two authors, except that they rest upon a considerably larger material.

Results of Investigation

The 369 cases of my series were all sent to me with the diagnosis of bronchial asthma by medical men, among whom were specialists in pulmonary diseases. Investigation showed that, of these, sixteen patients had active tuberculosis. They could be classified as follows: four of open tuberculosis with demonstrable bacilli in the sputum, four others having cavities without demonstrable bacilli, and eight others with active tuberculosis both clinically

Pulmonary Tuberculosis in Cases of Bronchial Asthma

	Males (203)	Females (169)	Total (369)
Open tuberculosis	3 } 10 * (5 %)	1 } 6 (3.5 %)	4 } 16 (4.3 %)
Active tuberculosis	7 }	5 }	12 }
Inactive tuberculosis	17 (8.5 %)	9 (5.3 %)	26 (7.0 %)
Healed tuberculosis	17 (8.5 %)	3 (1.75 %)	20 (5.4 %)
Total cases ...	44 (22 %)	18 (10.5 %)	62 (16.7 %)

* 4 had cavities.

and roentgenologically. Of the sixteen only one case had been sent with the diagnosis of asthma and tuberculosis. In addition to this we found in twenty-six other cases definite evidence roentgenologically of productive cirrhotic inactive tuberculosis. Finally, twenty further cases showed healed lesions. That is to say, that of the 369 asthma cases sixty-two (16.7 per cent.) showed signs of present or past tuberculous infection.

Discussion

The epidemiological importance of tuberculosis undiagnosed on account of the concurrent symptoms of

asthma is at once obvious. In two instances a suggestive history was obtained. In one the undiagnosed patient's wife developed tuberculosis of the eyes, and in another two children had tuberculous meningitis and pulmonary tuberculosis. Eichhoff²⁰ and Hamann²¹ have also drawn attention to this danger, and there can be little doubt that it merits our serious attention. It would appear also—and I shall give an example of this—that a tuberculosis may become established after asthma alone has been recognized. Of course, the asthma may, as a result of an allergic predisposition, be at first monovalent, later becoming polyvalent. The possibility of a secondary hypersensitiveness to tuberculous allergens now arises. Thus, a chemist's assistant who possessed a sensitization to sodium salicylate with typical asthma later developed under our observation a rapidly progressive exudative tuberculosis with persistence of the asthmatic picture. That this patient had previously been completely free from tuberculosis there could be no doubt. Another case was that of a medical man who had had asthma practically all his life and became infected with tuberculosis whilst working in the tuberculosis department of a hospital. This infection led to cavity formation, and after treatment at Davos was followed by healing. The investigation of this asthma case is still continuing. On the other hand, the history of the patient frequently shows an "influenza" infection or a catarrh of the apex. In some of such cases there is found an inactive tuberculosis, which can only be demonstrated by the x rays.

The most important aspect of these observations is the fact that an active and open tuberculosis can be concealed for a lengthy period under the guise of a bronchial asthma with both eosinophilia and skin reactions against specific proteins.

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E. J. Canal Feijoo (*Rev. Med. Latino-Americana*, June, 1934), writing from the province of Santiago del Estero, draws attention to anomalous forms of leishmaniasis met with in his region and not described before. As they differ so widely from the ulcerative, impetiginous, ecthymoid, nodular, verrucous, framboesic, and non-ulcerative varieties, of which many observers have written, he considers them as constituting a true morbid entity, even though they are caused by the same germ. In great detail, and illustrated by a wealth of excellent photographs, he describes these indigenous forms as trichophytoid, erythematous-pigmentous, oedematous, and mucous, and gives the history of the evolution of each. From his communication it may be concluded that kala-azar, like other diseases, assumes aspects which differ in various regions owing to the influence exerted upon the germ by different telluric, climatic, and meteorological conditions.