tions are obtained in country life and that combined with abundant sleep moderate exercise and the avoidance of late hours they improve the functions of the body. Many would infer that these conditions increase the resistance to infective diseases, raising in some manner the natural immunity of the body.

It does not appear to us that these conditions are sufficient to account for the low percentage of infected persons among those living the country life. It may further be pointed out that the town dwellers include one hundred and one persons residing in Broken Hill. Broken Hill is a country town situated on a plateau three hundred metres (one thousand feet) high in an area of low humidity. Its climate is of such character that many persons affected with pulmonary tuberculosis have proceeded to Broken Hill and have lived there for the benefit of their health. It possesses, however, a population of 27,000 people living in a comparatively small area and therefore affording abundant chances for the transference of tubercle bacilli.



Of the one hundred and one persons suffering from pneumonoconiosis who remained in Broken Hill, twenty-seven or 27% have developed pulmonary tuberculosis.

We conclude, therefore, that changes in the lungs due to the inhalation of certain mine dust produce a definite susceptibility to the developement of pulmonary tuberculosis; that the developement is most frequently not an activation of an old lesion but a new infection and that the frequency of infection is proportional to the number of persons with whom the affected worker is daily brought in contact.

## TUBERCULOSIS IN NATIVES OF THE TERRITORY OF NEW GUINEA.

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### Autopsies.

Of ninety-eight autopsies on natives performed by the writer during the last two years, death was due to tuberculosis in twenty-two, about 22%.

In seven others, dying from other causes, tuberculous lesions were found, so that the total percentage showing tuberculous infection was about thirty.

Most of these natives were work boys in the Rabaul district, drawn from various parts of the Territory, but a few were local free natives. The majority were males, only one was below twelve years of age and the average age was perhaps about eighteen years. Many of the cases were examples of very acute and rapidly spreading disease, with great tendency to generalization. These natives show the low power of resistance to the disease characteristic of many native races.

It will be noticed that in the majority of patients showing any tuberculous infection, this had caused death; only seven of the natives dying from other causes had tuberculous lesions. In three of these seven the bronchial glands only were affected, in one the abdominal glands only, in one both bronchial glands and mesenteric glands, and two showed lesions in the right apex (in one without caseous foci in the glands).

Of the total twenty-nine natives ten only showed in any of the lesions apart from lymphatic glands any old cicatricial tissue whatever, giving evidence of partial or local arrest at some stage: in a few, however, the amount of fibrosis was considerable.

The twenty-nine cases may be classified as follows:— In five cases the lymphatic glands were alone affected. These were all in persons who died from causes other than tuberculosis, and have been referred to above.

Four were cases of tuberculous meningitis. Three were in adult males and one in a female of about four years of age. In two of the adults the only tuberculous lesions outside the central nervous system were in the bronchial glands. In the other the right lung and pleura and a right bronchial gland were affected, in addition to the meningitis, which involved the cord to an unusual extent and had given rise to an *ante mortem* diagnosis of transverse lesion of the cord. This was the only case resembling fibroid phthisis seen and also the only one with evidence of hæmoptysis. In the fourth case, that of the child, in addition to the meningitis one bronchial gland and some of the mesenteric glands showed caseous foci.

Six were cases of pulmonary tuberculosis, confined to the lungs or to the lungs and tracheo-bronchial glands; one native had also secondary tuberculous ulcers of the ileum with caseation of the glands draining them.

Fourteen were cases of generalized tuberculosis. In all of these the lungs showed tuberculous lesions of some kind. Several were cases of acute generalized miliary tuberculosis showing no other type of lesions, outside the lymphatic glands.

The sites of the lesions which had the oldest appearance were noted in twenty-five: these were the lungs in nine, the tracheo-bronchial glands in five, the lungs or bronchial glands in five, the cervical or upper mediastinal glands in two and the mesenteric glands in four. It is, of course, not claimed that these observations necessarily indicate the routes of infection.

Of the total twenty-nine persons twenty-one showed pulmonary lesions of some kind. In thirteen of these in which notes were kept of the condition of the tracheo-bronchial glands, caseous deposits were present in one or more glands in eleven and absent in two.

The similarity between tuberculosis in native races and in white children has often been pointed out and is shown by those natives in the tendency to miliary tuberculosis, broncho-pneumonia and tuberculous meningitis. No case of tuberculosis of the bones or joints was seen.

Of eight Chinese, excluding babies, who were seen *post mortem*, three had died of tuberculosis and five showed tuberculous lesions. There was evidence of more power of resistance to the disease than the natives. Their average age was much above that of the latter.

### Von Pirquet Tests.

Altogether 1,679 adult natives (estimated to be over fifteen years of age) were tested and 353 children (estimated to be under fifteen).

A reaction to the von Pirquet test was obtained in 520 out of the 1,679 adults or 29.9% and in forty-eight out of the 353 children or 13.6%.

Two groups of which these natives were mainly composed, may be considered separately, namely indentured labour in the Rabaul neighbourhood and free villagers. The former were drawn from various parts of the Territory and the majority were labourers on plantations near

These figures would seem to show a progress of the infection during the last nine years.

**Conclusion.**

The facts given in this paper show that tuberculous infection is moderately prevalent in natives of the Rabaul district, especially in indentured labourers. Nevertheless, on account of their great susceptibility, it is a very important cause of death among them, second only to pneumococcal infections and the number with active disease must be considerable.

The same is probably true of other settled districts.

Tuberculosis is spreading throughout the native population generally and as settlement increases and native labour is made use of to an increasing extent, its rate of spread will tend to increase.

Favourable factors are the dispersed character of the small native villages in the thinly populated country and the absence at present of large aggregations of natives at extensive works.

Alcoholism, by which it is often sought to explain the lack of resistance to tuberculosis of native races, plays no part in the Mandated Territory of New Guinea.

## DISPENSARIES AND THEIR VALUE IN THE CONTROL OF TUBERCULOSIS.

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Before this assembly there is little need to emphasize the value of anti-tuberculosis dispensaries in the control of tuberculosis. We are all agreed that dispensaries are necessary, though we may differ as to the scope of their work. The dispensary should form the centre round which all other methods of treatment are grouped. In this paper it is proposed to place before you a few of the results of ten years' experience in the work of the Anti-Tuberculosis Dispensary at the Royal Prince Alfred Hospital, Sydney.

Briefly the objects of the dispensary are to determine the presence or absence of tuberculosis in the patient, to decide its extent, to ascertain whether the process is open or closed, active or quiescent, to gain information as to the patient's mode of life, temperament, environment and financial position, to determine the best mode of treatment for the individual, whether to treat him at home, or send him away, and lastly to educate and drill him in the precautions necessary to render him innocuous to others. If he go away either to a sanatorium or to a home in the country, the dispensary should keep in touch with him and regulate his life on return. To carry out this duty efficiently, close cooperation should exist between the dispensary and the sanatorium.

The dispensary should inspect through the medium of the tuberculosis nurse, the home and surroundings of the patient so as to remove sources of infection and predisposing causes of disease in other members of the home. The physician should examine and where necessary reexamine contacts and so detect early, latent or unsuspected cases. And lastly the dispensary should educate the public through patients and contacts.

The dispensary should always be attached to a general hospital and should not attempt to work as a separate institution. The reasons for this are obvious. The general hospital provides facilities for radiographic examination, for testing sputum, for examining the larynx and sinuses, for the preparation of vaccines, for treatment by pneumothorax or other special methods, for admission of the patient to hospital for special tests, for transfer of patients to the dispensary from the hospital and for the investigation and subsequent care of all patients with pleurisy, hæmoptysis or active tuberculosis. The hospital is also enabled to give the dispensary the aid of the existing social service department.

Lastly an important advantage of the dispensary's attachment to a general hospital is the fact that patients can attend without being branded as tuberculous.

A dispensary should be attached to every large general hospital and serve a specified district so as to prevent overlapping and to insure the interception of all cases. All patients entering hospital and suspected of tuberculous infection should be sent to it on leaving. All patients discharged from sanatoria should be instructed to attend the dispensary of their respective districts and the dispensary should be notified by the sanatorium of the discharge of the patient. Every patient with suspicious or definite signs of tuberculosis who is unable to pay for private treatment, should be sent for care to the dispensary. In this way all patients would be kept under supervision and prevented from relapsing. At the same time a general control would be exercised over the indigent tuberculous patients throughout the State.

As the result of the deliberations of the Tuberculosis Advisory Board appointed in 1912 to advise the Premier and Chief Secretary of New South Wales, it was recommended that anti-tuberculosis dispensaries be opened in connexion with the Sydney and the Royal Prince Alfred Hospitals. Royal Prince Alfred Hospital fell in with the idea and a dispensary has existed there for ten years past. It comprises one full and two assistant honorary physicians, a resident physician and two full time nurses. All patients with tuberculosis or suspected tuberculosis attending the hospital are referred to it and the practitioners in the surrounding districts are supplied with admission cards stating the hours of attendance and the mode of sending patients to the dispensary.

On their first attendance patients are seen by the resident physician and nurse, their histories are taken, a von Pirquet test carried out, the sputum taken for examination and an X-ray examination made of their chests. Subsequently they attend on Wednesday afternoon or Tuesday evening when their cases are dealt with by the honorary physician in attendance. Where necessary the patient is taught to keep an hourly record of his temperature.

During its ten years' existence the dispensary has dealt with an average number of patients including contacts in attendance of 536 *per annum*. The average number of attendances *per annum* has been 2,700.