

As regards medical fees, these might be arranged as is done under the Workmen's Compensation Board, namely from 60 to 65 per cent of our regular fees. Probably some rearrangement of our schedule would be necessary. There would have to be clearer definition of certain items, and probably any list agreed upon would at first be tentative only and subject to revision later. The question of specialist's fees would need careful consideration; the tendency is always to think that a specialist earns a large fee rather easily. We, who know the facts, know that this is not so, and that an opinion from a competent specialist must necessarily be costly, being based on a

very complete examination, and guided by expensively acquired skill and experience.

The cost would be apportioned between the beneficiary, the employer, and the State. Due regard would be paid to the relation of industry to sickness, and to the responsibility of the community, *i.e.*, the State. Various percentages have been suggested, but these are matters to be decided by statistical experts.

A wage-limit would have to be set, below which all workers would be insured compulsorily. Opportunity might be given to those whose earnings exceed this limit to insure voluntarily. This, again, is a matter for decision by those who are responsible for elaboration of details of the Act.

Retrospect

THE MUSCULATURE OF THE BRONCHI AND LUNGS

A RETROSPECT*

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This review illustrates the importance of a clear appreciation of the anatomy of the bronchial musculature as a prerequisite to an accurate interpretation of its physiological activity. A conception of the airway is first built up, particularly as regards the complicated terminal or "respiratory" part. This is shown to be, as Sir Arthur Keith terms it, a "bellows," capable of expanding and contracting, and this capacity is attained through its remarkable structure. It is a system of branched tubes whose walls are perforated like sieves, the apertures leading into similar branches or into blind multilocular or unilocular compartments whose final subdivisions are known as alveoli. The muscle-system is continuous from the larynx to the alveolar mouths, and in general may be visualized as a replica of the bronchial tree. It is a network of unstriated fibres mixed with elastic tissue, and in the respiratory part of the airway these fibres embrace the apertures in the wall, and form sphincters for the mouths of the air-sacs. This complicated system of airchambers and connecting air-conduits is built to allow for an "ebb and flow" of air. This means that its lining network of myo-elastic tissue must open up in inflation to permit of enlargement of the lumina of the tubes and proper ventilation of the alveoli. Contraction of this network shortens and narrows the tubes and forces out the air. Indeed, this inspiratory lengthening with widening and expiratory shortening with narrowing go on rhythmically in all parts of the lung which are in activity, and in the conducting as well as in the respiratory part. In quiet respiration only a fraction of the lung tissue shows this

change. Thus the capacity of the entire airway is a variable quantity, corresponding to the "dead space." There is a discussion of the latter, and an anatomical interpretation of it.

These activities of the muscle call for an adequate nervous control, found in the system of vagus and sympathetic nerves which supply sensory and motor fibres to the muscle and sensory fibres to the mucosa. It is suggested that there may be a reciprocal or "antagonistic" action on the part of the muscle of the bronchi, as contrasted with that of the chest wall and diaphragm, the former relaxing when the latter contracts, and *vice versa*. In this way the bronchial muscle adapts itself to the needs of the phases of respiration. When the tubes are plugged with thick exudate the muscle exhibits a sort of peristalsis, the waves travelling toward the larynx and carrying out the offending mass. This has been demonstrated by x-ray shadows of artificially introduced radio-opaque pastes. The same "escalator" action has been described in the normal free bronchi, and it may be that, in moderate degree, this is a constant phenomenon, acting to expel gases or fluids.

There has been a great deal of experimentation with drugs on the isolated bronchial muscle, and much information has been gained regarding their mode of action. Adrenalin causes a broncho-dilatation, which is regarded as helpful in asphyxia, a condition marked by a liberation of an increased quantity of this substance.

In asthma there is a local spasm of the muscle, and the site of this has been much debated. This point, and the various causes of this condition, are discussed. Anaphylaxis is similarly dealt with in relation to the muscle, together with other pathological conditions, as massive collapse of the lung.

The delicate fibres of muscle found in the interstices of the bronchial tree and spoken of as the "interstitial muscle" are described. Some 492 articles are canvassed in this review, which emphasizes the importance clinically of viewing the lung as a muscular organ.

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