CONCLUSIONS.

1. Ephedrine has a definite beneficial effect on moderate attacks of asthma, their number and severity being diminished or even completely aborted.

2. It has no effect on severe attacks of either simple or complicated asthma.

3. Its effect in pertussis is to relieve the violent cough, the whoop, and vomiting, in mild or moderate cases. In severe cases there is no effect at all. The progress of the infection is not influenced, the relief being limited to the mechanical factor.

4. Ephedrine appears to act by relieving the local spasm in the broncho-constrictors. This spasm is produced by the irritant effect of the tough mucus on the mucous membrane, made hypersensitive by the toxins of *B. pertussis*. By relief of this spasm the irritant mucus can be removed without the violent expiratory efforts or coughs which are usually necessary. The paroxysms are thus made shorter and less severe, and hence in favourable cases the whooping and vomiting disappear. Belladonna paralyses the broncho-constrictors, and thus aids the action of ephedrine, which stimulates the broncho-dilators. If belladonna be given with ephedrine it is necessary to antagonize the "drying effect on the secretion" of the former drug by giving an expectorant. In bringing about this effect ephedrine in no way influences the course of the infection, but simply relieves the mechanical difficulty of removing the secretion and hence minimizes the exhausting efforts on the part of the child.

[Since this article was written a further 10 cases of asthma and 15 cases of pertussis have been treated with ephedrine. Similar results were obtained to those described.]

I am indebted to Dr. Jewsbury for permission to publish my results on many of the cases.

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A NOTE ON A SYMPTOMATIC TREATMENT OF ASTHMA.

BY

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A FEW short notes on a symptomatic treatment of asthma which has been in use for over four years, and has given consistently good results, may be of interest and possibly of value to others. Accurate figures of the number of patients treated are quite unobtainable, for the majority have been out-patients, and the records are practically impossible to collect. It is estimated that at least three hundred cases have been treated, and only two have shown so little improvement that admission became necessary.

This "system" is not intended to be employed alone, except in asthma of children; in them it has given good results, and in a fair proportion there have been long intervals of freedom from symptoms. In adults the treatment is usually associated with some form of radiotherapy—either α -radiation of thorax or spleen, or ultra-violet radiation of the surface of the trunk; or it has been combined with some form of specific or non-specific protein therapy. As this article is not concerned with the whole treatment of asthma, these associated treatments will not be discussed further. A sufficiently large proportion of the cases have been treated solely by this method to convince me that it is of value.

Before starting treatment various etiological factors are inquired into, and removed when possible. Most attention is given to the contents of the bedroom in cases with nocturnal incidence, and to clothing, occupation, and diet of the cases with variable or diurnal attacks. All are advised to take a light supper or dinner and to attend to the common rules of hygiene. In view of the known clinical and experimental relationship of asthma to lesions

of the nasopharynx, this is carefully examined and treated if necessary.

This series contains a number of cases of hay asthma and hay fever; both have responded well. The calcium mixture should be administered for about six weeks before the attack is due. The calcium mixture has been altered many times, in attempts to make it more palatable and stable; we have not been able to better the formula now published. It is the camphor which causes most trouble; many people are susceptible to it and develop nausea or syncopal feelings. The camphor may be omitted in cold weather, but in summer the mixture decomposes in a few days unless camphor is present. The calcium mixture contains:

Albuminate of calcium chloride	...	...	15 grains
Simple syrup	...	...	15 minims
Water	...	...	1 ounce

The dose of albuminate is in terms of calcium chloride.

One ounce is a full dose. To this amount is added one-third of a minim of liquor atropinae (*B.P.*). It is given thrice daily for about two weeks and the result is watched. Then the amount of atropine is increased or diminished to that which gives definite, but slight, dryness of the mouth. It is found that it is necessary to reach the lower level of toxicity to obtain alleviation with atropine. Children are given a slightly smaller dose; it is well known that children stand atropine well.

It is not so easy to dispense this mixture as might be thought; it is very much better to make it in bulk, but the addition of the atropine should be reserved until the mixture is issued. The best method for making the albuminate above mentioned is as follows:

Take the whites of seven fresh eggs, add an equal amount of distilled water and 25 grains of powdered camphor. Shake, and let stand for two hours or so. Strain through muslin. Dilute to one pint with distilled water and then add 30 ounces of 1 in 3 aqueous solution of calcium chloride. Filter, and, if necessary, make up the volume to 50 ounces.

The dose is 1/2 to 1 fluid ounce, taken thrice daily, after meals. Many patients find that it is less unpleasant if taken in milk, others do not agree. It certainly is so unpleasant that the patients would not go on with it unless there was some decidedly good result. After some weeks of it most of the patients appear to acquire some tolerance and a few even get to like it. A strong peppermint immediately before drinking the mixture is useful. It should be taken regularly, even if the attacks cease, and it should be continued for at least a month after the last attack.

This mixture is used a good deal locally in other conditions in which calcium medication is necessary. It has been found of use in the related conditions—angio-neurotic oedema, urticaria, eczema, and erythema pernio. In these it should be associated with administration of ostelin and parathyroid extract. For some years Messrs. Ferris and Co. of Bristol have manufactured it for private patients; it is called Mist. calci chlor. (alb.) locally, for ease of prescribing.

The second part of the treatment is the administration of the caffeine mixture. This is given in drachm doses at the onset of symptoms, or before the onset when possible. In the event of regular nocturnal attacks a dose is taken before going to bed, and the bottle is kept at the bedside in order that another dose can be taken as soon as any symptom appears. The irregular cases carry a small flask of it about with them. It is quite safe to give several doses in twenty-four hours. This caffeine mixture is called "caffneine" locally, again for ease of prescribing, and has been manufactured by Messrs. Ferris for some years. It contains:

Caffeine sodium iodide	...	...	5 grains
Sodium iodide	...	...	5 grains
Dilute hydriodic acid (<i>B.P.</i>)	...	...	5 minims
Decoction of coffee	...	...	50 minims
Water	...	...	to 1 drachm

The decoction of coffee is made in the usual way with 3 ounces of fresh coffee powder to one pint of water. This is filtered and the three iodides are added.

Before being issued for use 1/4 to 1/2 grain of ephedrine hydrochloride is added to each dose. This has been done for over a year; but the "caffneine" as issued by Messrs. Ferris at the present time does not contain ephedrine.

After two years of experience of ephedrine it is found that not more than $1\frac{1}{2}$ grains should be administered in a day, otherwise unpleasant gastric and circulatory symptoms will be frequent. Children require a proportionately smaller amount.

Discussion of the Mode of Action.

This basal method is not purely empirical and the selection of the ingredients is not fortuitous. It is admitted freely that an exact explanation of the mode of action will have to wait until our knowledge of pharmacology is bettered. In brief, the actions appear to be as follows. Calcium may make up the deficiency of this element, which is usually found in asthma. The defect may be a part cause of the spasm and irritability of the bronchial muscles. It should act in depressing vagotonia, if this be present. It appears to be rather intimately linked with several pleuro-pulmonary disorders. It should reduce vascular permeability. Atropine is too well known to require discussion. Ephedrine has the same actions as adrenaline, but is effectively absorbed from the alimentary canal. Its effects are usually discernible about thirty minutes after ingestion; at least, this is so in cases of colic, in which it is of use also. It should reduce spasm of the bronchial muscles. It should reduce vagotonia, if present. Caffeine is difficult to account for, although it has enjoyed a reputation in asthma for years. Theoretically it should not be of use, for it acts in the opposite direction to ephedrine and adrenaline;¹ the latter stimulate the sympathetic side of the vegetative system, the former paralyse it. Caffeine also causes increase of muscular irritability, and so is opposed to calcium. It is possible that it acts by its respiratory and circulatory stimulation. The iodides probably act as expectorants; but in part they may stimulate the sympathetic side indirectly.

It has been admitted that this explanation is scanty and incomplete, but a full attempt would take up much space and still be indecisive.

I have to thank Mr. A. L. Taylor and the pharmaceutical staff of the Bristol Royal Infirmary for their help in the preparation of these mixtures.

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Memoranda :

MEDICAL, SURGICAL, OBSTETRICAL.

IMMEDIATE ENUCLEATION FOR THE TREATMENT OF QUINSY.

SINCE 1915 I have performed tonsillectomy in various ways on more than 7,000 patients. As up-to-date journals or instruments were not available, for the first thousand or so I used different methods of enucleation by dissection, and still consider that for speed and sureness of removal finger dissection cannot be beaten. The clinic operator, who guillotines his fifteen or twenty an hour, should always have handy a Collins pile forceps, which is necessary in case, owing to previous operations or rigid muscles in the fauces, the guillotine has failed and the patient is coming round.

While watching the course of cases of quinsy the conviction grew that the disease was in reality a septic cellulitis, which settles down into an abscess only when Nature is winning the battle, and at varying rates of formation of pus. It is an attempt to get rid of an infected foreign body, and we should remove it to hasten cure and prevent future invalidism.

It is like taking off the rotting, useless trapdoor of a cellar which one wishes to empty and disinfect, and happens to be as simple. Acting on this assumption, I have performed over 120 of these operations, and have regretted none. Emboldened by the rapid convalescence, immediate relief from pain and fever, and perfect anatomical results, I have extended the operation, and now usually remove the opposite tonsil as well, and often the post-nasal adenoid tissue when present. I do this only when the clinical picture is one of sepsis being successfully fought and one can trust to the patient's plentiful supply of antibodies to heal the extra raw surfaces.

Usually it is not possible to operate until the third, fourth, or fifth day of the disease. Before the operation one should use heat in every form to aid the defensive forces of the system. Sometimes even then pus has not developed, and only cellular jelly meets the gloved finger. Even this, like pus, makes it easier for one to strip the often buried and adherent fibrous tonsil from its bed, the active inflammation digesting the adhesions to the overlapping anterior pillar and plica triangularis. In order to hasten the period of epithelialization of the raw surface one can leave much of the anterior pillar. But I believe the sole use of the muscle in it is to act as the front handle of the "lemon-squeezer" which is formed by the anterior and posterior pillars of the tonsil-bed. The "squeeze" should help to empty the crypts of the tonsil during each act of swallowing, and, by the pain produced by swallowing when the tonsil is congested, prevents us from overeating when chilled or fevered. In sthenic or strumous people, who need much antibody in the system, the anterior pillar overlaps the tonsil very extensively, so that much of the tonsil juice is squeezed into the lymph vessels of the neck, where it can produce further effects in the glands. Hence, when we have removed the tonsil the squeezer muscle is unnecessary, and for a series of about 300 patients I removed the anterior pillars (including my own). The results were good, and the "beds" cleaner and free from the dirty clot which sometimes adheres in deep beds, but owing to the extra time taken during healing I usually spare it now.

The instruments are: (1) thick gloves; (2) tongue clip of towel-clip type; (3) gag (Sydenham's preferably); (4) long straight vulsellum or Lane's tissue forceps (I prefer Mayo's vein-dissecting forceps); (5) long blunt-pointed straight scissors (Mayo); (6) long straight Collins pile forceps, with oval fenestrated ends capable of clamping on to the large juicy tonsil when the upper half is stripped from its bed. One can get nearly all of a "ripe" tonsil free; the final movement with the Collins forceps is one of shoving the tonsil down the throat to peel its lingual tail off. Tags and fringes can be clamped and pulled off with it, and this stops bleeding well.

The position is: head extended, hanging down over the end of the table. The anaesthetic is ethyl chloride sprayed slowly on to a Skinner's mask well wrapped round with Turkish towelling, or, for longer work, atropine and chloroform. I have had some very severe and chronic quinsies to treat.

In one case of five weeks' duration with a history of fifteen previous attacks, a two and a quarter inch styloid process snapped off from the skull and came away attached to the back of the quinsy tonsil. Two cases occurred during pregnancy. One at three months proceeded to full term; another had to be operated upon at full term, and three days later I had to deliver her with forceps for a "deep transverse arrest." She made a perfect recovery.

I have several times operated thus for patients with infectious fevers, including scarlet fever and diphtheria, and for others with otitis media and mastoiditis. In one case there was a large cervical abscess, which, opened first, allowed the patient to breathe through the hole in the neck and the tonsil bed, when allowed to do so. The results were perfect, and no complications occurred. I have seen four patients die from septicaemia without an operation being possible—abscess not attempting to form. After operation two or three cases threatened to develop secondary haemorrhage, but the Collins pile forceps pushed well home over the spot, clamped, and jerked away, caused the elastic recoil and intra-vascular clotting in the coiled-up arteries needed to stop it.

This method never fails in the haemorrhage which sometimes follows the use of a too sharp guillotine, or the bleeding which sometimes comes in an alarming flood a few hours after the use of any of the two-bladed (crushing plus cutting) guillotines. In "bleeders" haemoplatic serum can be injected either before (if one has warning) or afterwards when one is caught unaware, *actually under the tonsil bed*. One should begin from above in the palate and travel down in the oedema caused by the serum; this relieves one from the fear of touching one of the vessels in the carotid sheath. This method stops "bleeders" from oozing, practically instantly. Few members of the working class, who suffer from quinsy repeatedly, can be induced to have an "interval" operation; and this, when it is performed, seems to me to cause much more pain than an operation undertaken during the quinsy.

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