was sent only for a radiographic examination of the teeth, sinuses, etc. Frequently the radiograph of the painful joint showed no bone or joint change, but definite apical abscesses or evidence of sinus infection were detected.²

	The Queen's Hospital.	Royal Cripples Hospitals.	St. Chad's Hospital.	Pensions Hospitals.	Total.
Total	149	54	53	91	317
Normal	90	20	19	48	177
Arthritic changes:					
Acromio-clavicular joint	23	8	10	10	51
Shoulder-joint ...	6	3	4	11	24
Loose body... ..	2	4	4	(21 included)	11
Old fracture	11	5	7	(not included)	24
Dislocation (unreduced):					
Acromio-clavicular joint	4	—	4	—	8
Shoulder-joint ...	2	—	2	—	4
Tubercle	4	8	1	16	29
Cyst of humerus ...	—	1	1	—	2
Carcinoma	2	—	—	—	2
Sarcoma	2	1	1	—	4
Myeloma	2	—	—	—	2
Exostosis	—	2	—	—	2
Osteomyelitis with arthritis	1	1	—	5	7

The table shows that the most frequent site of injury or arthritic changes to appear on the radiograph is the acromio-clavicular joint. Most of the shoulder-joints which had been dislocated showed definite changes. The most common evidence of arthritis in the shoulder-joint shown on the radiograph was pointing and irregularity of the articular margins.

The areas in the head of the humerus described by A. L. Fisher¹ as cavities, which he believes to be due to local necrosis brought about by amoebic infestation, and as being characteristic of the first signs of osteo-arthritis, I have regarded as varieties of the normal cancellous structure of the head of the humerus, because they are found in many patients in whom there is no suggestion of osteo-arthritis. Fisher admits that such areas are found when there is no other radiographic evidence of arthritic changes. Apart from the pensions hospitals, definite marked osteo-arthritic changes, as shown by indications of erosion and burnation in the shoulder-joint, were seen in only one case.

Loose bodies were seen in only 3 per cent. of the total cases. In all these cases there was a definite history of severe injury. In five a definite history of dislocation was obtained, and in these cases the radiographic appearance suggested detached fragments or calcification of particles of damaged joint structures. The remaining three suggested calcareous deposits in the subcoracoid and subdeltoid bursae.

No case of the condition of osteo-chondromatosis occurred in the series. The loose bodies in this condition usually contain sufficient calcium to permit of their demonstration by x rays. Hagemann⁸ recorded a case in which the bodies were shown in the shoulder-joint, in the bursa beneath the coracoid process, and in the synovial sheath of the tendon of the biceps. Albee¹ recorded a case in which sixty-four joint mice were found in the shoulder of a patient, aged 33, who gave a history of trauma thirteen years before. Hugh Jones⁸ records a case of osteo-chondromatosis of the shoulder-joint of a girl of 20, in whom the symptoms extended back twelve years. They were removed, but a further radiograph sixteen months later showed that a new collection had developed.

The presence of "rice" bodies in the joint usually cannot be detected on the radiograph, and there was no record of these bodies having been found in the shoulder-joint or bursae in this series. Mumford¹⁰ records a case in which a large number of rice bodies, not shown on the

radiographs, were removed from a large subdeltoid bursa, the walls of which microscopically suggested the diagnosis of tubercle.

In my experience recurrent dislocation of the shoulder is not often associated with loose-body production.

Fractures and Dislocations.—The numbers recorded under these headings refer only to those cases in which the fracture or dislocation had not been suspected or diagnosed at the time of the injury, and had been found only when, owing to the persistence of the pain in the shoulder, and sometimes at the demand of the patient, a radiographic examination was made. The majority of the bone injuries so discovered were limited to the greater tuberosity of the humerus.

Lesions in the Soft Tissues.—The radiograph does not give any evidence of inflammatory conditions of the muscles, tendons, or bursae unless they have existed for some time and calcium has been deposited in or upon the damaged structures. I reported two cases of infestation with *Cysticercus cellulosae* to a meeting of the Electro-Therapeutic Section of the Royal Society of Medicine in 1925.^{2(c)} These patients complained of "rheumatic" pains, and radiographs showed calcified cysts throughout the musculature of the shoulder. I referred to similar findings by Stieda, Saupe, and Pickler, and to a case of trichinosis reported by Levy Dorn in 1923 in which the radiographs showed numerous minute calcified cysts throughout the musculature.

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ASTHMA IN CHILDREN.

BY

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ASTHMA occurs in young children more frequently than is generally supposed, for in infancy the clinical picture often differs from that seen in adult life: catarrhal features are much more in evidence and tend to obscure the diagnosis.

CLINICAL TYPES.

Above the age of 5 or 6 years the attacks are usually of the adult type, occurring at irregular intervals, and characterized by the sudden onset of dyspnoea, usually in the early hours of the morning. There is often considerable distress, the face is pale or cyanosed, the chest more or less fixed in the position of inspiration, and expiration is difficult, prolonged, and wheezing. Fever is usually absent. Cough is dry and hard at first, but, as the attack passes off, it becomes loose, and is associated with the appearance of bubbling rales in the chest. The duration

rare cases careful observation of the conditions immediately preceding an attack of asthma may lead to the discovery of the substance responsible; it may be the presence of a cat, or a horse, or a feather pillow, or the ingestion of some food. These cases are very rare, but in them prophylaxis by avoiding contact with the substance to which they are sensitive is not, as a rule, difficult. If there is no such clue to the specific allergen responsible, it is scarcely worth while to attempt its detection by protein skin tests. The results in almost all cases are equivocal; in some cases a reaction is obtained with a large number of substances, in others with none of the substances used. There is, however, good reason to believe that in the great majority of cases the allergen which is causing attacks of asthma is inhaled. In the absence of a specific diagnosis, it is our duty then to investigate the effect of environment of the case. If any locality is found where the child is free, or comparatively free from attacks, let him stay there for as long periods as possible. We know that a large proportion of asthmatics are free from attacks at high mountain altitudes. Many London children are free from attacks in the country.

Attempts at Desensitization.

(a) *Specific Desensitization.*—In these rare cases where the offending substance is discovered, and where avoidance of contact with it is difficult, specific desensitization may be tried. Repeated subcutaneous injections with the substance, beginning with minute doses which are very gradually increased, may ultimately so reduce sensitiveness that the patient remains symptom-free. This is a method of treatment not to be lightly undertaken; it should be left to experts. Such patients are often highly sensitive, and it is easy to precipitate severe symptoms resembling anaphylactic shock in animals. Dudgeon³ has recorded the case of a lady who had suffered from severe horse asthma from childhood. Deciding to attempt specific desensitization, he gave as an initial dose 0.25 c.cm. of serum. Within five minutes of the injection she was comatose, with signs of severe pulmonary oedema and heart failure. A reaction may occur with such alarming suddenness that an injection should never be made without having ready a solution of adrenaline.

(b) *Non-specific Desensitization.*—Experience shows that sensitiveness to a particular allergen may be diminished by treatment not only with this allergen, but also with any other substance to which the patient may be sensitive. When skin reactions are obtained with many different proteins, good results may be expected by treatment with any one of them. We may speak of this as non-specific desensitization—though it is possible that we are really using the specific allergen which happens to be a common component of many different substances. Professor van Leeuwen found that the majority of asthmatics were sensitive to old tuberculin. Deciding that it was therefore rational to attempt non-specific desensitization by repeated injections of small and gradually increasing quantities of old tuberculin, he proceeded to carry out this treatment in a large number of cases, and has reported striking success. The method has been used to some extent in this country, and a recent report by T. M. Ling⁴ shows that results in children are encouraging.

Briefly the method is as follows: a series of decimal dilutions of old tuberculin is needed, conveniently put up in rubber-capped vaccine bottles—namely, 1 in 100, 1,000, 10,000, 100,000, and 1,000,000. The possibility of active tuberculosis is excluded as far as possible. A scratch skin test with pure old tuberculin is then performed, and the size of the initial dose is judged by the results. If there is a very intense reaction, the first dose should be 0.1 c.cm. of the 1 in 1,000,000 dilution. With a moderate reaction 0.5 c.cm. of this dilution may be given, and with a negative reaction 0.1 c.cm. of 1 in 100,000. Injections are given twice a week, each dose being increased by 0.1 c.cm.; after about four months the interval is increased to one week, and later, for the last four months of treatment, to two weeks. Treatment must be continued for a year or longer. When definite improvement seems to have been achieved, no further increase in the dose is made.

We are able to report on nine cases treated by this method during the last twelve to eighteen months at the East London Hospital for Children, Shadwell. The results have convinced us that in old tuberculin we have a most

valuable ally in the treatment of asthma in children. The mothers have brought their children with striking regularity. They are in no sort of doubt that marked improvement has occurred during the course of treatment. An early improvement in the child's general condition is especially noticeable. We may add that a point which seems to throw some doubt on the rationale of this treatment is that we have not seen a positive skin reaction with old tuberculin in any of our cases.

Eight of our cases are boys, one a girl. The most striking successes are Nos. 2, 5, 7, and 8 of our series.

Case 2 is a boy, aged 6 years, who had had attacks of asthma every two to three weeks in the winter months, and at rather longer intervals in the summer, for four years, and who, for a period of about two months shortly before tuberculin treatment was started, was having attacks almost every night. Eighteen months' treatment by the usual methods produced no improvement. He has been treated for one year by injections of tuberculin, and during that time has had only three attacks of asthma.

Case 5 is a boy, aged 8 years, who for about four years had suffered from asthmatic attacks at roughly three weeks' interval. During sixteen months of treatment by the usual methods he had nineteen attacks. During the following twelve months he was treated with tuberculin, and had only five slight attacks.

Case 7, a girl, aged 10 years, had suffered from asthma for about 5 years, attacks occurring at roughly monthly intervals. During 10 months of treatment by the usual methods, and with peptone injections in addition, she had twelve attacks. This was followed by tuberculin treatment, which has been given now for seven months; during this time she has had only three slight attacks.

Case 8 is even more striking, for no attacks whatever have occurred during six months' treatment in a child who was having them at four to six weekly intervals.

Cases 4 and 6 of our series show a slight improvement only—not strikingly different from that obtainable by the usual methods. Cases 1, 3, and 9 are improved, but to an even less degree.

We feel confident in saying that six out of our nine cases have derived considerable benefit from tuberculin injections, and that this is a method which might with advantage be used much more extensively in this country.

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THE USE OF EPHEDRINE IN ASTHMA AND WHOOPING-COUGH.

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THE introduction of ephedrine into the realm of therapeutics has not received the attention in the English literature which it merits. The main facts as at present known of its therapeutic and pharmacological action are as follows:

1. The pharmacological action and chemical structure resemble those of adrenaline.
2. The salts of ephedrine, the hydrochloride and the sulphate, are remarkably stable, and solutions of them can be boiled without any decomposition or loss of activity. They are effective whether given orally, hypodermically, intramuscularly, intravenously, or intrathecally.
3. Ephedrine raises the systolic blood pressure. Although it acts more slowly and less completely than adrenaline, yet its action is more prolonged.
4. In animals ephedrine causes contraction of the uterine musculature.¹ It thus differs from adrenaline in this respect.
5. Spasm of the bronchi, not only induced experimentally in animals, but also occurring in asthma, is relieved by ephedrine.
6. Locally the drug acts as a mydriatic² and blanches mucous membranes, as those of the nose and pharynx.³
7. Given in large doses to animals, its action resembles that of adrenaline in stimulating the release of glycogen from the liver, thus raising the blood sugar.⁴ I have found, however, that therapeutic doses of 1/2 grain to 2 grains do not raise the blood sugar level in the normal or diabetic subject.