predominant factor in the production of what was formerly called "laryngeal vertigo," an error corrected by Peter McBride, who pointed out that it was really a "laryngeal syncope." This accompanies a cough, and is best explained by inspiration during the momentary closure of the glottis, with which a cough is initiated, causing a momentary cerebral anaemia. In most of my cases of laryngeal syncope there has been a strong suspicion of arteriosclerosis of the cerebral vessels, which would produce rigidity of their walls and facilitate the suction of the contained blood.

The possible abuse of forcible nasal inspiration was demonstrated in a case which was referred to me of a middle-aged man with exceptionally powerful physique, who sought treatment for shortness of breath, and showed signs of dilatation of the heart. I was asked for an opinion as to his nose, and I found both nasal cavities almost completely occluded by the inferior turbinated bodies, which were turgid in the highest degree. He had been conscious of the obstruction for a considerable time, but in order to keep up his muscularity, of which he was extremely proud, he practised Sandow's exercises, which called for forcible inhalation through the nose, with intense zeal. The negative pressure in the chest acted on the heart, and produced the dilatation from which he suffered. The galvano-cautery point was used for the turbinated bodies, and free nasal breathing was restored. He wrote later to say that the relief then afforded him had continued.

I cannot help feeling that great discretion is required in directing children to practise nasal inspiration when the nose is obstructed. Common-sense methods should be employed for judging whether or not the nose is at least "fairly free" before the exercises are started. If such is not the case the cause of the obstruction, usually adenoids and occasionally congenital occlusion of the posterior choanae, should be rectified. If the nose is free these exercises are recommendable; after the removal of adenoids they are practically indispensable if the best results are to be obtained.

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MULTIPLE-PUNCTURE CUTANEOUS TUBERCULIN TEST

BY

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With the growing appreciation of the value of the tuberculin skin test there is an increasing need for a method which, in simplicity of technique, will appeal alike to practitioner and clinic worker, and which will, at the same time, give sufficiently trustworthy results to satisfy the most exacting statistician. At present no test in common use satisfies these requirements. The Pirquet test is very easy of application, but even when modified as suggested by McNeil,¹ Wahl and Gerstenberger,² and Ström³ its sensitivity has been said to be less than that of the intracutaneous method.^{4 5 6} The Mantoux test, on the other hand, requires the use of a syringe, takes time, and requires a certain degree of skill for its performance. In December, 1931, a form of cutaneous test was described⁷ which is simpler in technique than either the Pirquet or the Mantoux method, and which, judging by first results, appeared to be as reliable. The work in connexion with the test, commenced in Edinburgh, was continued in Bradford, where I had access to the wards

of St. Luke's Municipal Hospital, the City Infectious Diseases Hospital, and the Bradford Children's Hospital. The results, in a series of 2,009 cases (see table) confirm earlier impressions of the reliability of the method.

Cutaneous tuberculin test instrument (half scale).

INSTRUMENT AND TECHNIQUE

The instrument used (see figure above) consists of a short handle carrying at one end five needle points and fitted with a protective cap. The test is carried out as follows. A small area of skin is first cleansed with methylated ether. Then the flat spatula end of the instrument is dipped into a bottle containing undiluted old tuberculin, and a drop of the latter is transferred to the cleansed skin surface. The instrument is next held so that all five needle points rest on the portion of skin covered with tuberculin. Owing to the different lengths of the needles this involves holding the instrument so that its handle is at an angle of 30 degrees to the skin surface. With the instrument held thus it is easier to carry out the next step, which consists in quickly applying firm pressure at right angles to the test area so that all five needle points simultaneously penetrate the superficial layers of the skin. These points are then rapidly withdrawn and superfluous tuberculin is wiped off. The result of the test is read in forty-eight to ninety-six hours.

ADVANTAGES OF METHOD

In favour of the test the following claims may be made:

1. *Simplicity of Instrument.*—It can be carried conveniently in the waistcoat pocket, and, being unpretentious, it gives rise to no apprehension in children.
2. *Prolonged Potency of Tuberculin Employed.*—As has elsewhere been brought out¹¹ undiluted tuberculin retains its potency indefinitely; whereas diluted forms, as used in the Mantoux test, require to be freshly prepared.
3. *Simplicity of Technique.*—Repeated control tests have shown that one demonstration will enable those inexperienced in the method to carry it out successfully. Even with small infants the test can be performed without assistance, as it requires the use of only one hand, the other being available for the momentary control of the patient's arm.
4. *Rapidity.*—Even in the hands of the novice, the test takes less time than the Pirquet, and very much less than the Mantoux method. When large numbers have to be tested at one time the speed of the technique becomes still more apparent: working from bed to bed and with a nurse cleaning the arm of the patient in advance, the writer has frequently tested all the fifty occupants of a ward in under twenty minutes. Moreover, that this was accomplished without any sacrifice of reliability was proved by the incidence of almost 100 per cent. positive reactions in adult wards. In clinic or school work, where patients could be made to file past those performing the test, progress would be even speedier.
5. *Painlessness.*—Performance of the puncture is such a momentary affair that even the nervous child has no time to be upset, and it is not uncommon to find an infant unconcernedly continuing with its bottle feed while the test is being carried out. In the severest reactions slight itchiness locally was the sole complaint.
6. *Absence of Local Trauma and Systemic Reactions.*—In the entire series of cases no instance of these complications arose.
7. *Repetition Unnecessary.*—Repetition of the Pirquet test has been reported to increase the number of positive reactors,^{3 5 8} and optimum results with the Mantoux method are obtained by repeating it with progressively stronger concentrations of tuberculin.⁴ With the multiple-puncture test no case once negative was found to give a reaction after further applications. Taking into account the fact that the

test has been found as sensitive as the Mantoux one (para. 8) there is an obvious advantage in arriving at final conclusions regarding tuberculin sensitivity as the result of a single test.

8. *Sensitivity and Reliability.*—The opportunity of testing large numbers of adults was taken advantage of, as it was thought the high incidence of reactors among them would serve as a rough measure of the trustworthiness of the method. Examination of adults also allowed of an investigation of the effects on the test of many of the factors said to interfere with tuberculin sensitivity, and it is hoped to give the conclusions arrived at in a future communication.

Multiple-puncture Test: Results in Unselected Cases at all Age Periods

Age Period	Number Tested			Number Positive			Percentage Positive		
	Edinburgh	Bradford	Total	Edinburgh	Bradford	Total	Edinburgh	Bradford	Combined
0-1	87	32	119	15	3	18	17.7	9.4	15.1
1-3	135	37	172	36	9	45	26.7	24.4	26.1
3-5	123	28	151	49	8	57	39.8	28.6	37.7
5-7	104	31	135	43	11	54	41.3	35.5	40.0
7-11	143	84	227	65	49	114	45.6	58.2	50.2
11-12	20	14	34	14	10	24	70.0	71.4	70.6
12-13	—	33	33	—	24	24	—	72.7	72.7
13-14	—	27	27	—	20	20	—	74.0	74.0
14-16	—	19	19	—	18	18	—	94.7	94.7
16-18	—	18	18	—	17	17	—	94.4	94.4
18-21	—	40	40	—	38	38	—	95.0	95.0
21-25	—	81	81	—	79	79	—	97.5	97.5
25-30	—	64	64	—	64	64	—	100.0	100.0
30-40	—	123	123	—	123	123	—	100.0	100.0
40-55	—	244	244	—	244	244	—	100.0	100.0
55-	—	522	522	—	519	519	—	99.4	99.4
Totals...	612	1,397	2,009	222	1,236	1,458	—	—	—

DISCUSSION AND CONCLUSION

The above table gives the results obtained in both the Edinburgh and Bradford series, and included in these are 194 cases of clinical tuberculosis of all ages and all types. Three of these last failed to react to the multiple puncture, and also to the Mantoux test (1:10). All three cases were tested within four days of death, when the most sensitive tuberculin reactions are recognized as apt to fail.⁴ Of the 1,034 patients over 21 years of age investigated only five did not react; all five also proved negative with the Mantoux test (1:10). Forty of the children who were negative to the multiple-puncture test were afterwards submitted to the Mantoux test (1:10), without a single positive result being obtained.

The incidence of almost 100 per cent. (99.5 per cent.) positive reactors obtained in adults is higher than that found by British workers using the Mantoux test, Cummins having given 93 per cent. as the corresponding figure for both London⁶ and Cardiff,⁹ and Hart⁴ 95 per cent. as his finding for London. Statistics show that, particularly among younger children, the incidence of tuberculin sensitivity varies greatly in different districts, but it is generally stated^{4, 5, 10} that about one-third are non-reactors at puberty. In both the Edinburgh and Bradford series, however, the multiple-puncture test gives 70 per cent. reactors for the even earlier age period of 11 to 12 years. Taken as a whole, these results justify the claim that the multiple-puncture test is as sensitive as the Mantoux method.

The increasing need of a simple, rapid, and yet reliable form of tuberculin test has been emphasized. The

multiple-puncture cutaneous method possesses all these advantages, and on that account is the test best suited to the requirements of ward routine, clinic work, and general practice.

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Memoranda

MEDICAL, SURGICAL, OBSTETRICAL

A CASE OF INFECTIVE MONONUCLEOSIS (GLANDULAR FEVER)

This case is considered worthy of record as it presented some unusual features, and, in the early stages, considerable difficulty in diagnosis.

CASE HISTORY

The patient, an Army officer aged 32, had suffered from amoebic dysentery in 1925. There were no relapses of this condition. In other respects his previous medical history was good. He enjoyed good health up to the onset of this illness. He was treated at his quarters for three days for a mild, symptomless pyrexia before admission to hospital. On admission, on the fourth day of his illness, the temperature was 100° F., skin dry, tongue coated with a silvery fur, and pharynx slightly congested. He had the usual symptoms accompanying mild pyrexia, but did not complain of a sore

Table of Leucocyte Counts

Day of the Disease	Total Leucocyte Count	Polymorpho-nuclears	Lympho-cytes	Large Mono-nuclears*
		Per cent.	Per cent.	Per cent.
7th	7,200	24.0	74.0	2.0
9th	10,200	—	—	—
11th	11,200	16.0	68.0	16.0
16th	19,800	—	—	—
18th	31,000	11.4	3.0	84.0
19th	26,800	12.5	5.0	82.0
23rd	18,600	11.7	51.3	36.0
30th	13,000	21.0	72.0	7.0
36th (left hospital) ...	8,600	18.0	76.0	5.0
On return from sick leave a month later	8,400	37.0	10.0	52.0

* The type of cell was unusual, and might be described, as regards the depth of staining of the nucleus, as being between an ordinary large mononuclear and a large lymphocyte. The cytoplasm had a ground-glass appearance, and was tinted a faint blue. The cell was rather irregular in outline, somewhat triangular in shape, and frequently bent on itself. It gave a definite impression of fragility and immaturity.

throat. There were no physical signs of disease in the chest or abdomen.

From the fourth to the eleventh day there was a steady pyrexia—101° to 103°, with one remission to 99°. During this time he complained of severe headaches, and there was