3. A subfebrile temperature, rising occasionally to 100°;
4. The presence of capillary veins and a growth of hair over the upper thoracic spines; and
5. The absence of any obvious disease;

should induce the school medical officer to examine carefully for pulmonary tuberculosis and enlarged bronchial glands. If in doubt the little patient should be sent to the radiologist. The most difficult glands to materialize are the left bifurcation glands.⁸⁷ Special contrivances must often be adopted to bring them, as well as the tracheo-bronchial glands, into prominence.

VI.

TREATMENT.

If there is the slightest doubt, the patient should receive the benefit. All hygienic measures—such as proper diet, graduated exercise, sea air or sanatorium, open-air school or entire freedom from school routine for several months—should be adopted. Virol, red bone marrow, and cod-liver oil are said to increase the bactericidal powers of the blood. Ichthyol⁸⁸ (tabloids) and calcium sulphide are believed to hasten the fibrotic changes we desire; iron is useful to tone the erythrocytes, which, according to Spengler, manufacture the immune bodies. With regard to the curative value of the several varieties of tuberculin, the special treatises must be consulted. On the analogy of the cervical glands, the x rays may be suggested, making use of a hard tube and of filters, and treating a circular area around the spine of the fourth dorsal vertebra with a third of a pastille dose once a week.

A radiogram should certainly be taken first in order to localize the situation of the affected glands.

In conclusion, my best thanks are due to Dr. Walsham, who provided me with several typical cases and assisted me throughout with valuable advice.

REFERENCES.

- ¹ Bartels: *Das Lymphgefäss System*, 1909.
- ² Robinson, in Cunningham's *Practical Anatomy*, figures 16, 17, 18. Fifth edition, 1912.
- ³ Ewart: *BRITISH MEDICAL JOURNAL*, October 12th, 1912.
- ⁴ Ewart: *Loc. cit.*
- ⁵ Schäfer: *Textbook of Microscopic Anatomy* (Quain), 1912, p. 588.
- ⁶ Haythorn: *Journal of Medical Research*, December, 1913.
- ⁷ Cornet: *Scrofulosis*, second edition, 1914, p. 88.
- ⁸ Tandelor: *Muench. med. Woch.*, 1907, p. 106.
- ⁹ Most: *Archiv für Anatomie und Physiol.*, 1908. Beitz: *Virchow's Archiv*, 1906, Bd. 184.
- ¹⁰ *Der primäre Lungenherd bei Tuberculose der Kinder*, 1912.
- ¹¹ Walsham: *The Channels of Infection in Tuberculosis* (Weber-Parkes Prize Essay, 1903, p. 40).
- ¹² Walsham: *Op. cit.* p. 32 et seq.
- ¹³ Still: *Common Diseases of Childhood*, 1912, p. 389.
- ¹⁴ Shennan: *Lancet*, March 7th, 1914.
- ¹⁵ Still: *Op. cit.*, p. 389.
- ¹⁶ Birch-Hirschfeld: *Deutsch. Archiv f. Klin. Med.*, 1899.
- ¹⁷ Hutinel: *Archives de méd. des enfants*, July, 1909.
- ¹⁸ Von Pirquet: *Article in Tuberculosis* (Klebs), 1909, p. 142.
- ¹⁹ Bandelier and Röpke: *Clinical System of Tuberculosis*, 1913.
- ²⁰ Overend: *Lancet*, August, 1901.
- ²¹ Lombardi: *Gior. Internaz. d. Sci. Med.*, Naples, 1913.
- ²² Overend: *Lancet*, August, 1901.
- ²³ Petruschky: *Muench. med. Woch.*, 1903, p. 364.
- ²⁴ Neoggerath and Saller: *Jahr. für Kinderheilkunde*, 1911, Bd. 74, p. 71.
- ²⁵ Starling: *Principles of Physiology*, 1912, p. 1216.
- ²⁶ Roy and Adams: *Proc. Physiol. Soc.*, May, 1885.
- ²⁷ French: *Lancet*, September, 1911.
- ²⁸ Dautwitz: *Beiträge zur med. Klinik*, IV Jahrgang, Heft 9.
- ²⁹ Riviere: *The Early Diagnosis of Tubercle*, 1914.
- ³⁰ Stoll: *American Journal of the Medical Sciences*, 1911.
- ³¹ Krause, in Lehmann's *Atlas*, vol. vii, p. 82.
- ³² Morton and Owen: *Archives of the Röntgen Ray*, August, 1913.
- ³³ Boardman: *Johns Hopkins Hospital Bulletin*, 1911, xxii, pp. 229, 247.
- ³⁴ Rieder: *Lehrbuch der Röntgenkunde*, 1913, p. 284.
- ³⁵ Morton: *BRITISH MEDICAL JOURNAL*, October 11th, 1913.
- ³⁶ Schulz: *Beiträge zur Klinik der Tuberculose*, Band xxi, Heft 1, 1911.
- ³⁷ Assmann: *Erfahrungen über d. Röntgenuntersuchung der Lungen*, 1914, p. 47.
- ³⁸ Overend: *Ichthyol in Tuberculous Glands*, *Lancet*, January, 1904.

LIEUTENANT-COLONEL ANDREW ARTHUR MACROBIN, R.A.M.C., left estate valued at £13,335.

IN the *Revue Médicale de la Suisse Romande* there is a note from the President of the Swiss Medical Commission stating that certain members of the medical profession have taken advantage of the absence of doctors called out for service with the army to establish themselves within the area of practice of their absent brethren. The President calls upon all the cantonal medical societies to do whatever lies in their power to safeguard the interests of the mobilized practitioners. He deplores the fact that men capable of such conduct should be found in the ranks of the profession, and expresses regret that there are no means at present available to prevent such action.

THE "ELDERTON" METHOD OF CONTROL IN TESTING THE VALUE OF NEW TUBERCULIN.

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PROFESSOR SAHLI has published a criticism¹ of the way in which an endeavour has been made by myself and fellow-workers to arrive at definite conclusions as to the therapeutic value of tuberculin. Such criticism is the main topic of his contribution; but he has also referred to other matters in which we evidently are at variance, and I feel it is due to Professor Sahli that a reply should be made, not only because of the extreme interest of the arguments he puts forward, but also because his point of view is different from the one which, I think, activates practice in this country.

The first duty is to give answers to some of Professor Sahli's remarks: that I have "not the least chronological sense" in reverting "time after time to the experiments of Koch"; that I am wrong in assuming that "no one bases himself now . . . on these far-distant experiments"; that "there is, therefore, a grave injustice" in my "comparison between the quack doctor's lack of criticism and the similar lack which" I assume "in the tuberculin therapist"; that I see "only harmful action in these anaphylactic phenomena"; that my view, "that in anaphylactic phenomena . . . no curative side is to be recognized, should find little approval"; that "the significance of the modern reactionless tuberculin treatment appears to be little recognized" by me.

Professor Sahli does "not think that any thoughtful adherent of tuberculin treatment can nowadays be found to contend that tuberculin produces immunity against tuberculosis." It is an "old argument, which is scarcely used nowadays, that tuberculin treatment is an immunization, and that from the possibility of a protective inoculation against typhoid . . . it might be concluded that such an inoculation must also succeed in the case of tuberculin."

I am sorry that Professor Sahli thinks I have failed in the chronological sense. This is my answer: that I went to the fountain source of Koch's experiments under date of 1890, that I then read Löwenstein's and Römer's articles in Kraus and Levaditi's *Handbuch*, 1908; Cornet's *Die Tuberculose*, 1907; Bandelier and Roepke's *Lehrbuch*, 1908; and Wolff-Eisner's *Handbuch*, 1910, which I had hoped had brought all the experimental work on tuberculin up to that date.

It is my misfortune if I have missed any reference to the experimental proof of the specific cure by means of tuberculin of any animals since the year 1910. At the time of delivering my lecture none of my friends in this country who are following the matter with the greatest acumen knew of any further experimental work supporting Koch's original contention (reiterated by authorities abroad as shown above, and shown by Römer to be wrong) that tuberculin could cure animals of tuberculosis. I submit to Professor Sahli that his charge is not justified, and I fail to find in his own publication any reference to further experimental cure. I am obliged to revert to Koch's experiments, as they are the only ones which it is stated prove the specific curative value of tuberculin. The advocates of the use of tuberculin also revert to these experiments repeatedly as a foundation for their practice.

Now as to the grave injustice done to the tuberculin therapist. As shown in my lecture, all the experimental proof put forward by Koch and reverted to by modern workers is of doubtful value, and Professor Sahli joins me in saying Koch's experiments have never been confirmed. Then I submit that a tuberculin therapist who, in face of the inability to repeat and confirm Koch's experiments, says that he can cure tuberculosis of the lungs or any other organ in human beings by means of tuberculin, lays himself open to the charge of quackery—it makes no difference whether he is a qualified practitioner or not. The injustice so severely commented on by Professor Sahli can only be felt by those who say they "treat" rather than "cure" the disease. My lecture was

in no way meant to be an attack on those who did not use the word "cure." It is common knowledge that some tuberculin therapists use tuberculin to affect the temperature chart, much as many others reduce temperature by using cold baths or antipyretics; but they do not pretend to "cure" by such means. Professor Sahli objects to my seeing only harmful action in anaphylactic phenomena. The answer I would make is that until experiment shows that such anaphylactic phenomena when provoked are curative and not harmful, or that when such small doses of tuberculin are given as to produce no objective or subjective signs of anaphylaxis that cure can be experimentally proved, I am obliged to hold to this statement: Given the development of anaphylactic phenomena, the patient suffers harm varying in degree from the slightest injury to the grave effect produced by Koch and his immediate followers.

I fully admit that I do not recognize the significance of the modern reactionless tuberculin treatment in so far as such treatment effects a cure. It has not been proved in animals because so far it has been impossible to prove it, and I feel that attempts to cure human beings on the same lines are *a priori* bound to be failures too. Without controlled experimental proof, or controlled proof in human beings, I feel that the reactionless dosage with tuberculin is merely doing something to let the patient feel that something is being done—suggestive tinkering, in fact.

So far from condemning the argument that because vaccination against small-pox can, and does, for a time, prevent subsequent attacks of small-pox, and typhoid vaccination can and does prevent for a time the infection by the typhoid organism, it is thinkable that preventive vaccination by means of tuberculin may prevent infection by tubercle bacilli, I am quite open-minded enough to admit the possibility. But admitting such a possibility is quite different from asserting that tuberculin, typhoid vaccine, or small-pox vaccine can cure the diseases, tuberculosis, typhoid, or small-pox, when once these diseases have established themselves.

The reader who cares to peruse the lecture which Professor Sahli attacks, will see that this reply of mine merely reiterates what I have already said. My apology must be that I really have no alternative—that is, if I give any answer at all to Professor Sahli's criticism.

A final point needs discussion, and it is the most important of all. Professor Sahli has thrown up the statistical method, and if I read his criticism aright, his condemnation of my remarks on the points for and against the use of tuberculin as a specific cure is dependent on this fact. In common with other workers in the same field, I feel that until figures are forthcoming which prove, or disprove, the value of tuberculin, I ought not to give up the statistical method. Thanks to Professor Karl Pearson and his pupil, Mr. W. Palin Elderton, I can see that the statistical method shows that the specific cure of tuberculosis by tuberculin is not proven, and that our methods in the past of establishing a cure are at fault. The pernicious and utterly illogical plan of simply treating what we call "suitable cases" without instituting controls is responsible for a large amount of useless clinical work. I fully admit that that is a matter for great regret; energy has simply been turned into the wrong channel, and time and money have been wasted. Dr. Thompson Rigg,² Dr. Arthur C. Watkin,³ and recently Drs. G. V. Stockdale and Ronald Hodson⁴ have carried out the treatment of pulmonary tuberculosis by tuberculin under what is a controlled method, the details of which are given in their respective papers.

Professor Sahli does not approve of the scheme, but, as he has abandoned the statistical method, his criticism is hardly to the point. He relies on pontifical assertion; we rely upon convincing our readers by figures. The following table gives an analysis of the cases—84 in number—which were treated by reactionless doses, Dr. Rigg's being omitted because they were treated by reacting doses. The criteria of improvement, etc., was the diminution or increase of rales; all the cases had tubercle bacilli present in the sputum.

It is a matter for regret that the total of 84 cases is so small, but, as was originally pointed out in an earlier paper, the figures are published in the hope that others will follow out the "Elderton" method of control. There

Observer.	Tuberculin or Not.	Afebrile.			Intermittently Febrile.			Febrile.		
		Improved.	Worse.	In statu quo.	Improved.	Worse.	In statu quo.	Improved.	Worse.	In statu quo.
Dr. Watkin ...	Tuberculin	1	0	1	2	4	0	0	0	3
	No tuberculin	0	2	1	3	3	0	0	0	2
Drs. Stockdale and Hodson	Tuberculin	5	1	3	3	11	6	0	0	2
	No tuberculin	2	2	5	7	5	8	0	1	1
Total (84 cases)	Tuberculin	6	1	4	5	15	6	0	0	5
	No tuberculin	2	4	6	10	8	8	0	1	3

(a) Of 23 cases which improved, 11 had been treated with tuberculin, 12 had not.

(b) Of 29 cases which were worse, 16 had been treated with tuberculin, 13 had not.

(c) Of 32 cases which remained in statu quo, 15 had been treated with tuberculin, 17 had not.

can be no denial of the fact that, so far as afebrile cases are concerned, the reactionless dosage with tuberculin gives more favourable results than treatment without tuberculin, as far as these cases (23 in number) are concerned. Before complete satisfaction can be given more cases should be tested, and it is most desirable that the numbers should be increased very much—a task which can only be rendered possible in the near future by the sympathetic co-operation of those whose lot it is to have cases under observation.

I sincerely hope that readers will not conclude from the above analysis of 84 cases that my figures prove that it is justifiable to give tuberculin in small reactionless doses. They should, I submit, merely feel that so far as 23 afebrile cases are concerned, 11 of which were treated by reactionless doses, and 12 of which were not, but merely left to what may be called expectant methods, more improved, less got worse, and less remained in statu quo with tuberculin treatment than without it. The plan by which the choice of cases to be treated with or without tuberculin has been left to chance, will, when a larger series has been completed, give a true estimate of the value of tuberculin. I frankly confess that I hope tuberculin will be found to be efficacious, but I am told on high authority that many more cases must be studied by the controlled method we have adopted before such favourable verdict as our 23 cases give can be accepted as final.

That the criticism made by Professor Karl Pearson of the methods adopted by medical men to prove the value of tuberculin is bearing still more fruit, is shown in the preliminary report on the treatment of pulmonary tuberculosis with tuberculin at the King Edward VII Sanatorium, Midhurst, by Dr. Noel D. Bardswell (London: H. K. Lewis, 1914), and I cannot do better, in order to encourage others to help in elucidating this most important question on scientific lines, than to ask readers to peruse this volume, which contains salutary remarks by Professor Karl Pearson (pp. 1 to 13), and in the concluding section of which will be seen the following statement by Dr. Bardswell:

Experience has shown that tuberculin, as at present used, is not a remedial agent which can be depended upon to revolutionize either our sanatorium results or our conception of the outlook for the average consumptive. Tuberculin has not proved itself to be a remedy in the ordinary sense of the term, and no immediate or striking results are to be expected from it, even in the most favourable cases. Even if it be assumed that good effects are produced by tuberculin, they occur almost imperceptibly, the slowness of its action being such that it is often difficult to determine, as regards patients treated under favourable hygienic conditions, how much, if any, of the improvement that takes place is due to its use.

REFERENCES.

¹ BRITISH MEDICAL JOURNAL, April, 1914, p. 808. ² Ibid., February 1st, 1913. ³ Ibid., June 28th, 1913. ⁴ Ibid., July 25th, 1914.

ANDREW CROLL, M.D. Edin., F.R.C.S., of Saskatoon, Canada, has been elected a Fellow of the American College of Surgeons.