

consideration of the temperature, pain, and discharge nearly always gives ample warning. But it illustrates the principle that the later one may safely operate the better is the prospect of an uneventful recovery. I would draw attention to the brilliantly wise remarks of Mr. Charles Donald in the *Journal* of May 11th on the conservative attitude towards acute pyogenic infections. He concludes with the bright, practical remark: "Where there isn't pus, don't let it out!"

I hope Mr. Salkeld will reply to my letter; but not for another ten years. His conversion is already foreshadowed when he makes the observation that "in those patients in whom the temperature was high at the time of operation it often remained raised for some five or ten days afterwards."—I am, etc.,

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Hove, June 10th. Aurist, Royal Sussex County  
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### Selenium in the Treatment of Cancer

SIR,—Dr. A. T. Todd seems to be blind to the fact that in whatever form selenium compounds are introduced into the body their ultimate fate is to be reduced to the metallic form and to be deposited in the tissues—for example, in the liver or in the capillaries. In toxic doses in animals such particles may plug the lung capillaries, and the animal dies in a state of marked dyspnoea from this cause. Though similar to sulphur chemically, selenium is closely analogous to arsenic pharmacologically, producing the same paralysis of the capillaries and "identical changes in the blood-forming organs" (Sollmann: *Man. of Pharmacol.*, 1932, p. 1007). In its action its salts "produce symptoms resembling those of the heavy metals and arsenic in many points" (Cushny: *Pharmacol. and Therapeutics*, 1934, p. 714).

Injections according to Todd's method (with clean syringes!) have in my cases frequently been followed by fever and marked pain in the growth: even he admits to seeing about twelve "shock reactions" in a year, so undoubtedly there exists a close resemblance of his injection method to protein therapy. The toxicity is largely dependent on the dose given. Dr. Todd is a believer in almost homoeopathic dosage. His  $\alpha$ -ray dose is about a tenth of an erythema dose, and his radium dose (weekly) about a ten-thousandth of that sometimes given by intravenous injection, or a fifty-thousandth of that taken by the mouth at various radio-active spas daily for weeks on end!

I wish Dr. Todd and Dr. Hernaman-Johnson had replied more fully to the ten or more points raised in my letter of May 25th (p. 1097). I can suggest to Dr. Todd that if he will re-read it he will find it not the "agglomeration of misstatements" he dubs it. He has still to reply to my statement that experimentally and clinically in cancer selenium has had "regularly and consistently negative results"—to quote Kolmer on Keysser's results subsequent to his first experiments with Wassermann (Kolmer: *Chemotherapy*, 1926, p. 438). With the heavy metals, or metal-resembling substances, "no matter what preparation has been used, it has been possible to produce therapeutic effects only by the use of relatively enormous doses . . . scarcely lower than the lethal dose" (loc. cit.). The safe but often very painful dose scheme used by Dr. Todd has led in the eight cases I have treated to apparent retardation of growth in four cases temporarily, then to a negative result and death in all but two—one now going downhill. The best case is that of a patient with a liver tumour (not histologically diagnosed). This is a poor result after the expenditure of a great amount of time and trouble on the part of patients and collaborators. I believe

small generalized  $\alpha$ -ray dosage would have led to as good temporary alleviation with much less difficulty and avoidance of painful injections and reactions in the patients selected for trial of the method.

One point raised by Dr. Hernaman-Johnson I have investigated more fully: it is his statement that as a rule a period of two years elapses between operation and any local recurrence in breast cancer. Examination of my Middlesex Hospital statistics of scar recurrences for the years 1925 to 1932 inclusive shows that there were 120 such patients, and in seventy of them (58.3 per cent.) the recurrence had appeared in the first or second year following operation. The "rule," therefore, is that the first two years are more dangerous for recurrence than any two subsequent years. All the more reason why adequate treatment should be given immediately after operation. Dr. Pfahler's methods are based on his "saturation method" course, which aims "at keeping the tissues saturated to the limit of normal tissue tolerance for three or four weeks" (Pfahler and Vastine: *Amer. Journ. Roent.*, 1935, p. 41). This is a very different treatment from the small-dose method usually advocated by Dr. Hernaman-Johnson for breast cancer. In conclusion, both he and Dr. Todd believe in the *indirect* theory of radiation action in cancer; but could they controvert the many points enumerated by Lacassagne in favour of the direct theory (*Radiol.*, 1928, xi, 393)? Both their theory and their practice stand on shaky foundations, and many further proofs—not assertions—are required before acceptance is possible.—I am, etc.,

London, W.1, June 8th.

J. H. DOUGLAS WEBSTER.

### Examination of Tuberculosis Contacts

SIR,—I have read with interest the letter from Dr. R. D. B. Wright in the *Journal* of June 1st, following the correspondence of Dr. E. Ward and Dr. Halliday Sutherland. I do not propose for one moment to elucidate the virtues or otherwise of the tuberculosis officer. I am, however, whole-heartedly in sympathy with the remarks of Dr. Wright as regards the scant support the prevention of tuberculosis receives in proportion to the modern and up-to-date methods of diagnosis and treatment.

Patients can discharge themselves almost with impunity from tuberculosis institutions and infect their offspring, while advanced cases are still rampant among the population without discovery. X rays, which we have heard so much about of late in highly technical terms, no doubt have their uses. I suggest it will be time enough to get excited and laud their praises when cases of tuberculosis, which are almost possible to diagnose with the eye, let alone the stethoscope, are dealt with. We must be sure we can walk properly before we attempt to run, and once and for all get down to realities and feel sure we are doing all that is required under the old regime before resorting entirely to the modern and more spectacular methods.

The annual report for the year 1933, published by the Chief Medical Officer to the Ministry of Health—p. 124, notification of tuberculosis—gives one much food for thought. As regards modern treatment, it would be interesting to know how many cases of pleural effusion and empyema can to-day be attributed to the tubercle bacilli and how many to modern treatment. One cannot help feeling impressed at the rejoicing to-day in the tuberculosis world over the diagnosis of an early case (which is not the infectious one), compared with the calm resignation displayed over the ninety-and-nine highly infectious ones that roam about infecting the public unheeded.—I am, etc.,

Dagenham, June 4th.

G. M. MAYBERRY.