BRITISH MEDICAL JOURNAL. I am glad to find that so large a favourable experience of the treatment had been placed on record from so many quarters. There seems to be a consensus of opinion that the remedy is valuable as part of the general treatment of tuberculous disease. I quite agree as to the value of climatic conditions as favouring the action of the remedy, but the effect of the climate alone in consumption has been and is greatly over-estimated. The personal surroundings of the patient are equally important—in fact, I believe that the winter resorts of the south coast of England, with the familiar home comforts, family ties, and the society of friends are more favourable to recovery in a very large number of cases of phthisis, especially those which have advanced beyond the first stage, than the most vaunted health resorts on the Continent, and even more distant lands. Management, in the widest sense of the term, constitutes the successful treatment of consumption as hitherto. There have hitherto been no specific remedies for the disease: tonics, cod-liver oil, etc., only act as stimulants to the general health, but in tuberculin, I believe, we have more than the promise of a remedy possessing an elective and specific action on the materies morbi of tuberculous disease.

[Dr. Sinclair Coghill exhibited a number of sphygmograms, along with several charts of cases under inoculation, which illustrated the close sympathy and correspondence of temperature, pulse, and breath rate—a relation, however, very much more marked in the pulse than in the breath rate—without reference even to the extent of the pulmonary lesions. This phenomenon was as marked in all cases as it was unexpected. The pulse tracings show that the effect of the inoculation is simply that produced by ordinary pyretics.]

The dirotism is more or less marked according to the rise of temperature, and seems to bear a close, though not always an invariable, relation to it. Sphygmograms Nos. 1, 2, 3, and 4 illustrate this very well.

Fig. 1.—Female: inoculated 10.33 A.M., January 2nd, 1891. Tuberculin 0.002 g. 7 P.M. Temperature 104.2°, pulse 115, pressure 53ss.

Fig. 2.—Female: inoculated 10.30 A.M., January 19th, 1891. Tuberculin 0.005 g. 7 P.M. Temperature 104.3°, pulse 145, pressure 51j.

The sphygmograms Nos. 3, 4, 5, and 6 exhibit an anomaly in the relationship of temperature and dirotism, and would seem to show that the dirotism is more in relation to the pulse rate than to the temperature when these do not correspond.

Fig. 3.—Male: inoculated 10 A.M., January 2nd, 1891. Tuberculin 0.005 g. 6 P.M. Temperature 103.4°, pulse 83, respiration 32.

Fig. 4.—The same at midnight. Temperature 104°, pulse 116, respiration 36.

Fig. 5.—Male: inoculated 10 A.M., January 2nd, 1891. Tuberculin 0.002 g. 6 P.M. Temperature 103.2°, pulse 90, respiration 49.

Fig. 6.—The same at midnight. Temperature 102°, pulse 120, respiration 36.

Here (Fig. 5) with a temperature of 103.2°, we have a pulse rate of 90, and (Fig. 6) with temperature of 102° a pulse rate of 120, while the respiration is in relation to the temperature.

Sphygmograms Nos. 7 and 8 are from the same patient, No. 7 being the tracing taken before the first inoculation, and No. 8 that taken after the seventeenth inoculation.

Fig. 7.—Tracing of pulse December 26th, 1890, at 9 P.M. Pulse 80, pressure 51j, previous to inoculation.

Fig. 8.—Tracing of pulse March 2nd, 1891, at 8 P.M. Temperature 99°, pulse 80.

At 10.15 A.M. inoculated with 0.05 g. tuberculin. This was the patient's seventeenth inoculation. She had three subsequent inoculations of 0.06 g. on March 10th, of 0.07 g. on the 17th, and 0.08 g. on the 24th, when on each occasion the temperature never rose above normal. No sphygmograms were taken after that of March 2nd. This patient, who had an excavation at the right apex, is now perfectly cured.

Nos. 9 and 10 also illustrate the establishment of tolerance for the remedy, and the increased energy of the circulation as a result of treatment. They are from the same patient, a female with cavitation but no pyrexia. She gained 21 lbs. during the inoculations. The pulmonary lesion underwent a correspondingly favourable change.

Fig. 9.—Tracing taken December 26th, 1890, at 7.30 P.M. Temperature 98.6°, pulse 70.

Fig. 10.—Tracing taken March 2nd, 1891, at 7.30 P.M. Temperature 99°, pulse 68. Inoculated at 10.15 A.M. with 0.05 g. tuberculin.

This was the patient's seventeenth inoculation. She had three subsequent injections—on March 10th 0.06 gr., on 17th 0.07 g., and on the 24th of 0.08 g.—without reaction.

ON THE USE OF TUBERCULIN IN THE TREATMENT OF LUPUS AND TUBERCULOSIS.

Read in the Section of Therapeutics at the Annual Meeting of the British Medical Association, held in Bournemouth, July, 1891.

By E. MARKHAM SKERRITT, M.D.LOND., F.R.C.P.,
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IN conjunction with my colleague, Dr. Barclay Baron, I have been engaged for seven months in carrying out at the Bristol General Hospital a series of careful observations on the results of treatment with Koch's fluid. We have declined to inject patients except under the favourable conditions which a hospital affords. The cases treated were some 40 in all, and included 11 of lupus, 23 of pulmonary phthisis, and 6 of laryngeal disease. The following are the results obtained up to the present time.

A.—LUPUS.

1. Very marked improvement occurred in some cases, greatest in two. One, a boy aged 12, with extensive lupus of the face, which is now almost transformed into cicatricial tissue, one small patch of scabbed lupus tissue alone remaining. The other, a woman who had suffered from lupus of the face for about twenty-five years, and had undergone every

variety of treatment with no permanent benefit; the disease extended from the forehead, ear, and jaw forward over the whole of the side of the face, and affected the entire surface of the nose, where it was thickly crusted. Under the influence of the injections wonderful improvement has taken place, and the greater part of the affected area is now a cicatrix; the disease has altogether disappeared from the nose except for a small patch at the extreme tip, which is still ulcerated. The patient herself is exceedingly pleased with the result, and says that no other treatment has ever done her so much good.

2. Some improvement took place in all the cases treated, varying from slight and almost unappreciable up to considerable, though not to the same degree as in the previous class.

3. No complete cure has resulted, even in the most favourable cases; usually at first marked improvement occurred, but as the patients became accustomed to the injections the local effect diminished, and at length the cases seemed to come almost to a standstill. A very instructive observation was made in the case of the patient above referred to as having so signally improved; on the other cheek were a few "apple-jelly-like" nodules, which never distinctly reacted, and at the present time appear to be practically in the same state as at the commencement of the injections.

4. Relapse has been carefully looked for, and the following evidence of its occurrence has been noted. A patient with extensive lupus of the face, mouth, and throat, also had on his back a large patch of cicatricial tissue surrounded by a somewhat thickened margin; this margin is now showing evidence of increased activity. A patient with lupus of the uvula, fauces, and interior of the nose had marked general reactions to the injections, but never much local reaction; after continuous treatment for several months she left the hospital; a month later fresh ulceration had occurred, and the disease showed a tendency to greater activity than it had ever before displayed.

B.—THROAT DISEASE.

The throat was carefully examined in all cases submitted to treatment, and in no instance of purely pulmonary phthisis when the throat was healthy before injection has mischief arisen during treatment. In one case of pulmonary disease with inflammatory laryngeal mischief and aphonia, the inflammation lessened, and the voice improved under the injections; when the treatment was stopped the condition recurred, and improvement once more ensued when the injections were resumed.

In another patient with extensive lung disease, and thickening and partial fixation of the vocal cords, exactly the same improvement occurred under tuberculin as had been noted during his stay in the hospital on a former occasion, when no specific treatment had been adopted.

In another case of pulmonary and laryngeal phthisis the infiltrated arytenoids lessened in size, the ulceration of the vocal cords and ventricular bands diminished, and healing is now evidently going on; the voice has improved, and the patient can swallow with greater comfort. In a woman with lupus of the face an ulcer formed on the end of the uvula after injection, and, after a few days of active erosion, completely healed.

An important case was that of a young man with extensive lupus of the face and hands, and bacillary phthisis of both lungs; the patient had sung in public just before admission, and his voice was good when the injections were begun, though some swelling of the left arytenoid existed. After the fourteenth injection a severe laryngeal reaction almost extinguished his voice, and ulceration soon appeared in the arytenoid; the left ventricular band swelled, and the left vocal cord became fixed and ulcerated; as the injections were continued, ulceration attacked both the vocal cords and ventricular bands, as well as the left arytenoid. At the same time the skin lupus became more active. As the patient was weak and ill the treatment was discontinued for one month. By this time a grey necrotic mass was visible in the interarytenoid space, and also a red subglottic growth. The injections were now resumed, and from this time the parts became healthier, so that now the larynx was in nearly as good a condition as when the injections were begun.

C.—PULMONARY PHTHISIS.

1. *Stage.*—All stages were treated; the physical signs in some first-stage cases were so slight that, in the absence of bacilli, the diagnosis might have been disputed, but reaction occurred in all. Most of the patients were in the second stage, some in the third, including two well-marked cases of hectic.

2. *Effect on General Symptoms.*—In almost all cases improvement took place. There was usually an increase in weight, in several patients very marked. Cough and expectoration were often much diminished. Night sweats were not pronounced to begin with, and were not much influenced. The improvement in general health might, to a certain extent, be attributed to the better conditions under which the patients were placed in the hospital; but this would not apply in the case of some who were not of the class of ordinary hospital patients, and were admitted only for safety in treatment, but who benefited equally with the others.

3. *Influence on Physical Signs.*—(a) Disappearance was noted in two cases—one a girl who got very fat under treatment, and in whom the physical signs of slight consolidation at the left apex disappeared; the other, a young man with similar signs at the right apex, which also disappeared; but in this case hæmoptysis had occurred just before admission, and it was possibly the clearing up of the results of the hæmorrhage, such as might take place apart from special treatment, and not the disappearance of a true tuberculous consolidation. (b) Diminution in several cases was very definite, consolidation lessening, and râles becoming much fewer. (c) Persistence unaltered: This was the rule in most cases, even in spite of considerable improvement in general health. (d) Increase: In two cases of hectic, where the progress of the disease seemed to be unaffected by the treatment, increase in the physical signs occurred. In another patient, a woman who, when the injections were begun, had limited dry consolidation at the right apex, marked local reaction in the lung followed the injections, with extension of dulness and appearance of moist râles; at the present time the increased dulness persists, and also the râles. Here the treatment is open to the suspicion of having lit up active mischief in and around a quiescent focus. And again, the man referred to in (a) as having been dismissed with no physical signs of disease, lately came to the hospital with evidence of considerable active mischief in the lung.

4. *Bacilli* were in most cases unaltered in number in spite of marked general improvement; in others they became much fewer; in others again they disappeared from the sputa for greater or less intervals; they were also noted to be sometimes changed in character, being stunted or broken. It is to be remembered, however, that all these variations may be met with apart from any special treatment, and often without any definite significance.

5. *Evidence of Cure.*—In no case where there was evidence of active disease did this disappear under treatment; in no case where moist râles existed at first did the lung dry up and the moist râles vanish. The result was in this respect similar to that obtained in lupus.

6. *Comparison with other Methods of Treatment.*—The improvement obtained under Koch's method has not been greater than that which may occur under other conditions; in fact, better results are sometimes met with from other non-specific lines of treatment than have as yet followed the injections, as instanced by cases in which the signs of early consolidation have totally disappeared, or active disease at a later stage has become quiescent, under measures that are free from the risks that accompanied the use of tuberculin. It is to be noted that many of the patients are very pleased with their progress.

7. *Safety of the Injections.*—If the treatment is conducted with reasonable care, probably no serious immediate danger attaches to the injections. In the cases treated at the Bristol General Hospital no symptoms have arisen sufficiently grave to cause anxiety. No patients died while under treatment. One in whom the injections were about to be commenced was attacked with profuse hæmoptysis, which recurred and speedily proved fatal; had this occurred later, the result would have been attributed to the treatment. In a girl, the substitution of water for tuberculin proved the severe symptoms following the injection to be of purely mental origin.

8. *Conclusions from the above Series of Cases.*—In some cases it may be fairly concluded that tuberculin has done decided good; in others that it has been negative in its effects; and again, in others that it has probably been harmful. As to the selection of patients for treatment, provided that very advanced cases are excluded, the experience obtained by careful observations during the past seven months has thrown no light whatever upon the subject, and my colleague and I are still absolutely at a loss for data to determine beforehand what are and what are not suitable cases for treatment with tuberculin.

TREATMENT OF CONSUMPTION BY THE HYPODERMIC ADMINISTRATION OF GUAIACOL AND IODOFORM.

*Read in the Section of Therapeutics at the Annual Meeting of the
British Medical Association, held in Bournemouth,
July, 1891.*

By R. ROBERTSON, M.D.,

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IN 1884 Dr. Roussel introduced a method of treating phthisis by injecting hypodermically solutions in sterilised olive oil of eucalyptol, thymol, and other antiseptic agents. Later, Shetelig, of Nervi, used creasote with olive oil, until finding that guaiacol might be used for the creasote, and that it was less irritating he substituted for it injections of pure guaiacol. These methods were asserted to be of great service in the treatment of this disease, but I cannot find that Roussel's method was ever used in this country, and Shetelig's method has disadvantages which must always make its use in consumption a serious consideration.

Professor Picot, of Bordeaux, published in the *Semaine Médicale* of March 4th of this year a paper upon the use of iodoform and guaiacol administered in solution in sterilised olive oil by the hypodermic method, and the SUPPLEMENT to the BRITISH MEDICAL JOURNAL of March 14th, page 85, gives a short summary of his statements. He had tried this method for two months in twenty-five cases of phthisis and tuberculous pleurisy, and his conclusion was that under no other treatment in his experience had he obtained such favourable results. Creasote has been favourably thought of in consumption for about sixty years, and iodoform was introduced by Dreschfeld as a valuable adjunct to our means of combating the progress of that disease ten years ago. Faith in their powers has, however, of late been seriously tried by the large quantity of these drugs which some of their advocates have employed and recommended. Fifteen minims of pure guaiacol once or twice daily, and 30 grains of iodoform daily for a month, do not seem to have achieved more than was claimed for much smaller doses. Picot's treatment goes to the opposite extreme apparently, for he commences with injections of one-sixth of a grain of iodoform daily, and less than a minim of guaiacol, and increases the dose gradually up to three times that quantity. It is only in contradistinction to these larger doses that Picot's appear small, however, until custom modifies the effect the smallest dose usually causes a flush of heat on the surface of the body, and profuse sweating within half an hour of the injection.

The success of Professor Picot induced me to give the method a trial.

The strength of the solutions used in the following cases was, according to Professor Picot's recommendation, 0.01 iodoform and 0.05 guaiacol in 1 c.c. of olive oil, increased to three times that proportion of the drugs by degrees. The plan followed was to begin with the weaker solution, at the seventh injection to use the second strength, and at the twenty-first the third strength, discontinuing at the thirtieth injection. In a few cases, after a short interval without injections, they were resumed at the request of the patients. In four cases less than the full number of injections were administered, owing to the irksomeness of the treatment to the patients.

Three of the patients were suffering from empyema, twenty-five from consumption. Of the latter some were in

the earliest stage, the majority had cavities in one or both lungs, two or three were so advanced that no improvement from treatment could well be expected.

In two cases operation had been performed for empyema. In one case thirty injections were given with reduction of temperature from 100.8° in the evening to normal after the sixth injection, diminution of cough and of discharge from the pleura, and general improvement in health. After a few days' interval the injections were resumed at the patient's request, and he continued to improve. He gained 11 lbs. during the first two months of treatment, and then lost 2 lbs. before leaving. In the other case, very similar except in the absence of pyrexia, the patient steadily improved and gained 7½ lbs. in weight during the first five weeks of residence. On the thirty-ninth day his temperature rose to 105° F., the injections were stopped, but other symptoms of tuberculous meningitis manifested themselves, and the patient died a few days later.

The cases of phthisis are classified into pyrexial and apyrexial cases, for the immediate urgency of a patient's condition is best estimated concisely by the daily excursion of his body temperature. The pyrexial cases were eighteen in number, some of them being only occasionally pyrexial and to a small degree, while others were of a more severe type.

Two of the cases of advanced disease with temperatures ranging to 103° F., were unwilling to continue the injections long enough to say that they had been fairly tried. In a third case of a temperature of nearly 104°, with a pleuritic exacerbation of the disease, nine injections were given and the temperature fell to normal, but became unstable when at the patient's request they were discontinued. In another similar case the temperature fell from 104° F. to normal after sixteen injections, the patient's appetite improved, cough greatly diminished; the expectoration, which had been about 1½ ounce daily, practically disappeared, and the patient remained well. In this case there was tuberculous affection of both apices with excavation on one side.

In two cases the pyrexia was not materially influenced; the patient's condition in one of these improving, however, as regards cough and expectoration, the latter being reduced in six weeks from 3iv 5j in twenty-four hours, to 5j 5j in that time.

In five other cases the pyrexia was of equally severe type. One was a very advanced case with large cavities and much crepitation in both lungs, with a pulse of 140 to 160 and diarrhoea. He was kept in bed at first owing to his high temperature and great feebleness. At the end of sixteen days—after use of ice bags, stimulants and quinine—his temperature was still 103.4°, though it had fallen on first commencing the ice-bags, and again on beginning with the quinine, but after a day or so it had again risen. Then the guaiacol and iodoform injections were commenced, and in five weeks the pyrexia had disappeared. He was able to be about. His cough and expectoration were much reduced and his appetite and strength improved. He left the hospital then, and we have lost sight of him.

In another similar case of hopelessly advanced lung disease with diarrhoea and laryngeal tuberculosis, the temperature fell a little, cough and appetite improved, and the expectoration was reduced from 8½ ounces daily to 3½ ounces. But while still making good progress pneumothorax occurred and the patient died. In a third case of less advanced disease the temperature fell to normal from 103° F., and the expectoration was reduced from 4½ ounces to 1½ ounce, when a pleuritic exacerbation occurred, and the temperature rose again to 103.2° F., and the expectoration to 3 ounces daily, but in six days the temperature was again normal and has continued so. In the other two cases of severe type the progress was somewhat similar; pyrexia disappeared, cough diminished, expectoration diminished greatly (in one case entirely ceased), and the general condition improved, with slight increase in body weight.

The progress of the other seven pyrexial cases was much the same. Sometimes only after prolonged treatment, sometimes more quickly, the pyrexia subsided, and other symptoms correspondingly improved; with one exception—a case of variable temperature of no great severity, with advanced disease of the left lung and serious laryngeal trouble—the expectoration increased from 2½ ounces to 4 ounces, apparently through the guaiacol, which he tasted, causing irritation of the larynx. The man's body weight, however, increased at the same time by 7 lbs., so that some improvement occurred even in these cases.

The apyrexial cases need little mention. They all, without exception, gained in body weight, but not more than might have been expected without the injections; if anything, perhaps less than is common at the Ventnor Hospital in apyrexial cases. One of these patients had a slight attack of hæmoptysis after he had had seventeen injections, and they were therefore stopped. No other untoward symptoms manifested themselves, nor was there any local trouble from the injections in any instance.

Of the cases of empyema one had burst into a bronchus and there was a daily expectoration of 10 to 12 ounces of foetid pus. In this case a stronger solution than that of Picot was employed and daily injections were given. Except for the necessary cough and the expectoration, this patient was pretty well. He had thirty injections in all, and during the period of their administration he gained 10 lbs. in weight. After they ceased he lost 6 lbs. while taking terpene hydrate in pill. No material improvement in the factor of the expectoration nor in its quantity occurred while the patient was in the hospital.

The conclusions which seem warranted from these cases are:—

1. That in empyema with free drainage the treatment does good in improving the general condition and in diminishing the discharge from the pleural cavity, but that without free drainage it is of uncertain value.

2. That in pyrexial phthisis, whether the disease is small in extent or so extensive that the case seems almost hopeless,