Protein sulphur is also attacked by the coli-typhoid group of organisms¹³ in the alimentary canal with the production of hydrogen sulphide, which, when absorbed in quantities, dissolves erythrocytes and contributes to anaemia; "some cystine is absorbed as such, taurine is produced from cysteine, and a portion of the cysteine probably passes the liver and is picked up by the tissue cells."¹⁴ From Hopkins's feeding experiments it appears that animals are unable to make sufficient tryptophane, tyrosine, lysine, or cystine for their needs, and that these amino-acids must be present in their diet; but if owing to an intrinsic or acquired abnormal condition of the upper intestine excessive invasion of this viscus by coliform organisms takes place, and such powerful substances as formaldehyde and its derivatives with strong affinities for sulphur are present to an abnormal extent, a serious reduction in the amount of cysteine available for the tissue cells seems inevitable. It is possible also that formaldehyde in low dilution may have a deleterious effect locally on the intestinal mucosa if its action is kept up for a prolonged period. One has in mind, too, in this connexion arteriosclerotic changes with deposition of calcium.

There are, then, various ways in which formaldehyde arising from bacterial action may interfere with cellular respiration which, arguing from the constantly observed association of confusional mental states with profound destruction of erythrocytes in cases of malignant malaria, and certain other facts bearing on states of acidosis, is, as I have pointed out elsewhere,¹⁵ of the utmost importance to the maintenance of mental health.

As far as treatment is concerned, obviously an attempt to replace the offending organisms by an innocuous type is very desirable. This is, however, a matter of considerable difficulty. It is probable that certain conditions exist in some individuals which favour a certain type of organism, and although the latter may be by artificial means supplanted by another, such as the *B. acidophilus*, a very short time after discontinuing treatment—which, to be effective, is by no means a simple matter and decidedly unpleasant to the patient—the offending organism returns again as actively as ever. A more practical method of dealing with the condition would appear to be the regular administration of liquid paraffin combined with occasional doses of salts and treatment directed to restoring general tone to the system. It is possible that liquid paraffin would mechanically tend to prevent formaldehyde production. The use of calcium salts might also be borne in mind.

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THE TREATMENT OF COLDS IN TUBERCULOUS SUBJECTS.

BY

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Colds in the tuberculous cannot be regarded lightly, and any remedy which will lessen their incidence is obviously of importance. Some time ago it was suggested to me that I should try the effect of a vaccine for colds (Parke, Davis) on certain selected cases of tuberculosis of the lung, suffering from constant colds, who were attending Margaret Street Hospital for Consumption as out-patients.

Before treatment every case was tested by the "multiple cutaneous tuberculin test" of Ellis. For the purposes of this paper, those who reacted to dilutions of 1 in 500 old tuberculin are referred to as "hypersensitive," to dilutions of 1 in 100 as "sensitive," and to dilutions of 1 in 10 as "sub-sensitive." In addition a skiagram of the chest was made, the sputum examined for tubercle bacilli, and the

blood pressure taken; every case was provided with a four-hourly temperature chart, and only afebrile cases were dealt with. In each case the initial dose of the cold vaccine was 0.1 c.cm., with rapid weekly increments till 1 c.cm. was reached.

The results were disappointing. Out of 28 cases treated 16 did well, but in 12 the colds became distinctly worse and the condition of the patient was certainly not improved. I then tried a detoxicated vaccine (Genatosan, Ltd.), commencing with a smaller dose, 0.01 c.cm., with gradually increasing doses. It was administered twice weekly, and some twelve doses were given in each case. The results were better, but even with the lessened dose 2 out of 6 cases had severe reactions. I am now using a sensitized vaccine, commencing with 0.01 c.cm. The results, in that no ill effects have been produced, are satisfactory, but I have not employed it sufficiently long to form a definite opinion as to whether its curative effect is better than that of the "vaccine for colds."

Being impressed with the poor results I obtained from the administration of the "vaccine for colds," I have made an attempt to ascertain the cause. It must be either (a) in the patient, or (b) in the vaccine and the dose used.

Under the first heading we may consider (1) the presence or absence of tubercle bacilli in the sputum; (2) the sensitiveness to tuberculin and the blood pressure.

Presence of Tubercle Bacilli in the Sputum.

This seems to be immaterial. Of 8 cases with tubercle bacilli in the sputum 4 did well and 4 badly.

Sensitiveness to Tuberculin and the Blood Pressure.

I have grouped the cases into two large classes: (a) those with a blood pressure of 125 and under, and (b) those with a blood pressure of 130 and over. I have also divided the cases into subgroups according to sensitiveness to tuberculin. I have also tabulated cases of tuberculosis treated with tuberculin, and have subdivided these into those who were and those who were not suffering from colds. The tuberculin-treated cases were all afebrile, and the sputum was free from tubercle bacilli. I have placed in the columns marked "good" cases in which the colds disappeared and in which there was obvious general improvement. The remainder I have placed in the columns marked "bad." The cases recorded are too few to justify percentages as anything more than a means of memorizing results, but they perhaps make the position clearer. I have recorded these percentages to the nearest whole numbers.

TABLE I.—Blood Pressure 125 and under.

	Colds Treated with Vaccine for Colds (11 cases).		Treated with Tuberculin.			
			Colds (17 cases).		No Colds (24 cases).	
	Good	Bad	Good	Bad	Good	Bad
Hypersensitive, 1 in 500 ...	1	2=66%	11	0=0%	11	0=0%
Sensitive, 1 in 100 ...	3	3=50%	4	0=0%	7	0=0%
Subsensitive, 1 in 10 ...	2	0=0%	2	0=0%	6	0=0%

TABLE II.—Blood Pressure 130 and over.

	Colds Treated with Vaccine for Colds (17 cases).		Treated with Tuberculin.			
			Colds (11 cases).		No Colds (19 cases).	
	Good	Bad	Good	Bad	Good	Bad
Hypersensitive, 1 in 500 ...	5	2=28%	3	1=25%	5	2=28%
Sensitive, 1 in 100 ...	4	5=55%	3	1=25%	4	1=20%
Subsensitive, 1 in 10 ...	1	0=0%	3	0=0%	6	1=14%

These figures, though meagre, are significant. They seem to show that sensitiveness to tuberculin, not blood pressure, is the important factor in treatment with vaccines for colds. In treatment with tuberculin the converse holds

—blood pressure is the important factor. This is what one would expect. In cases of tuberculosis, in which the blood pressure is low, indicating poor power of resistance, we may presume that sufficient antibodies are not being formed, and the patient demands and responds to the stimulating action of the tuberculin. When the blood pressure is higher probably sufficient antibodies are being formed, and therefore there is less need for, and consequently less response to, tuberculin.

On the other hand, we would not expect the vaccine for colds to influence tuberculin antibodies, but we can suppose that a patient who is intolerant to a small dose of tuberculin will be also intolerant to a much larger dose of another vaccine. It seems unlikely that the brand of vaccine has much influence. It is probably a question of dose. Since I have reduced the initial dose of the vaccine and proceeded more cautiously the results have been much better. But this takes time. Instead of completing the course in three or four doses I now take eight to twelve or more. If time permits I prefer to treat these cases with tuberculin, as it appears to me that in cases thus treated immunity to colds is more lasting.

Conclusions.

Vaccines for colds should be used with caution in the tuberculous if there be a tendency to sensitiveness to tuberculin. The initial dose should be smaller than that usually given, and rapid increment of dose should be avoided.

A STRIKING CASE OF CHICKEN-POX SIMULATING SMALL-POX.

CHARACTERISTICS WHICH DISTINGUISHED IT.

BY

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A CORRECT decision in a case of this nature is so vitally important to the public, to the patient, and to the practitioner, that a note may be convenient to repeat the pathognomonic criteria which pointed with complete certainty to the true nature of the disease.

E. L., aged 19½ years, was seen in consultation with Drs. Alexander and Dunlop, to whose courtesy I am indebted for these notes. An initial point of interest always lies in the answer to the question, "What aroused the suspicion of small-pox?" It was the facial appearance in this case. About 80 lesions on the face, some papular, some vesicular, some becoming pustular—many of them hard and "shotty" as felt against a bony background—strongly suggested small-pox, a suspicion which was heightened by abundant raised hard lesions felt in the hairy scalp; which, of course, were also palpated against a hard background. And certainly, regarded from a short distance, the lad's appearance instantly brought small-pox to mind, strongly simulating as it did some of the milder cases seen in October, 1922, in that same neighbourhood (Poplar). How, then, could the grave suspicion of small-pox be confirmed or dismissed?

It is seldom that such a case cannot be completely and easily cleared up by the use of the following four heads of cross-examination, after a general inspection of the patient has been made.

1. *What was the local and general distribution of the rash?* A rapid approximate count of the spots was made and noted within five minutes, the patient sitting up (a) stripped to the waist, (b) in a good light. Ridicule has been poured on this method of observation, apparently on the ground that clinicians should not reach their results by rule-of-thumb addition and subtraction. What such a count does, however, is to compel close observation, heighten accuracy, quicken and shorten record, and save a deal of talk. This patient's spots showed as follows:

Right hand 1; left hand 0.
Right forearm 25; left forearm 21.
Right arm 45 to 50; left arm 45.
Right axilla 3; left axilla 8.
Pharynx 8, including 2 on the posterior pharyngeal mucosa,
and 2 on the right anterior pillar.
Face about 80.

Front of chest and abdomen about 120.

Lower extremities: Spots not counted, but they were remarkably numerous on both shins, about 20 to 25 spots on each; and it was observed that this area was the seat of lesions of chronic eczema. As is well known, the rash of chicken-pox occasionally favours irritated surfaces of the skin, but to a much less extent than that of small-pox.

2. *What was the character of the lesions of the rash, regarded generally?* In these last words lies the corrective observation to that of the facial lesions. Chicken-pox spots on the comparatively coarse skin of the face of an adult, judging from hundreds of cases, often give rise to difficulty and are apt to mislead. On the contrary, on the fine skin of the thorax and abdomen the truth is usually displayed to demonstration. It was so in this case. In the folds of the flank there lay lesions elongated, having crinkled outlines, with flaccid envelopes, containing scanty fluid, measuring about 8 mm. by 4 mm. Rolled in a fold of the skin picked up between the finger and thumb they were palpably superficial; their long axes were seen to lie parallel with the direction of the natural creases of the skin. A noteworthy observation was that on the left shin were two frank vesicles, freshly distended, and faintly yet unmistakably umbilicated; this was verified with a powerful electric torch and magnifying lens. No hair was visible at the centre of these slight umbilicated vesicles as sometimes happens, nor was the phenomenon due, as is also sometimes the case, to a pseudo-umbilication arising from the pellicle of a burst pustule falling in. Such umbilication as was present was occurring during the height of vesiculation as in variola, and was apparently due to the same cause—namely, the incomplete severance of strands of connective tissue crossing the cavity of the vesicle and tying it across interiorly.

3. *What constitutional signs and symptoms were present?* especially what had been the degree of prostration before the rash came out? Nil, was the answer to all of this.

4. *To what extent and at what rate had maturation progressed?* This is a most useful point of cross-examination, especially apt to be helpful to diffident and inexperienced clinicians. This rash came on a Monday; it was observed on Wednesday and Thursday. By that time it was fully vesicular on the legs—unusual, but not entirely unknown, in small-pox; and in various localities of the skin development had progressed to the point of pustulation. Could that have happened in a case of small-pox with a well developed rash? It is unlikely; and the further development of the rash would emphasize this point.

Consider: the development of the rash of small-pox may be diagrammatically shown thus:

Day.	
1)	—— Papular.
2)	
3)	—— Vesicular.
4)	
5)	
6)	—— Pustular.
7)	
8)	

And yet we have full vesiculation and even pustulation on the third and fourth days of this case. A well developed rash of small-pox very rarely develops to this extent in this period of time.

The Diagnosis.

How, then, do we stand in respect of the evidence derived under these four heads? No. 1 points strongly in favour of chicken-pox; so do Nos. 2, 3, and 4. There is hardly any evidence against it. Verdict for chicken-pox; that diagnosis, indeed, being unquestionable and undeniable.

It happened that in this case there was still further evidence, if any had been needed. But it was evidence that it is unwise to be in the habit of relying on. It is very strong if present, and gives, as it were, the help of a crutch to weak muscles; but if it be habitually relied on, woe betide the clinician who finds himself completely deprived of it. He is then at a great loss. This lad, as was testified by his mother and himself, had undergone primary vaccination at the age of 15, four years previously; and the four scars on his arm testified to his variolous immunity.