From the frequency with which *Toxoplasma* antibodies are found in the general population it is obvious that man can be readily infected, though strangely little is known of how this comes about. It is, therefore, not surprising that people who handle toxoplasms in the laboratory sometimes develop toxoplasmosis. Indeed, it is strange that this does not happen even more frequently. Perhaps the explanation may be that many people already have antibodies to *Toxoplasma*, due to natural subclinical infection, before they start to work with the organism. It is certainly striking that of the laboratory workers, whose cases are summarized in Table II, all except two were known to have been previously devoid of antibody. In one patient only (Case 17) was antibody known to have been previously present (dye test 1:64). This patient, in contrast to patient 10 who also squirted *Toxoplasma*-containing peritoneal exudate into the eye, had only a local manifestation, conjunctivitis. The dye test titre fell from 1:256 to the previous level of 1:64 in a very short period of three weeks. In most cases antibodies rose to high titres. In six of the patients they accompanied the isolation of the parasite and point to the specificity of the antibody tests. Of course, it does not follow that infection will lead to illness. H. E. (Case 6) developed high titre antibodies after he was bitten by an infected rabbit, but he was not ill. A. A. van S. (Case 18) had enlarged glands from which toxoplasms were isolated, but was afebrile and did not feel ill. E. H. (Case 14) had tonsillitis and salpingitis, but these were regarded as coincidental. There was only

TABLE II

Case No.	Case Reported by	Initials of Patient	Year of Infection	Incubation Period	Duration of Illness	Probable Cause of Infection	Headache	Fever	Lymphadenopathy	Rash	Ocular Involvement	Respiratory Involvement	Myocarditis	Encephalitis and Other C.N.S. Disturbances	Highest Dye Test Titre	Highest C.F.T. Titre	Isolation of <i>Toxoplasma</i>
1	Ström (1951)	A.N.S.	1949	3 days	1 month	Needle prick with <i>Toxoplasma</i> for 18 days	0	+	+	0	Conjunctivitis	0	0	0	1:2,000	..	Not attempted
2	Ström (1951)	I.O.	1949	Unknown	At least 6 months	Worked with <i>Toxoplasma</i> for 2 years	+	+	+	+	Conjunctivitis	0	+	Meningo-encephalitis	1:4,000	..	Unsuccessful. C.S.F., sputum, gland
3	Sexton <i>et al.</i> (1953)	V.F.	1951	..	10 days	Unknown, worked with <i>Toxoplasma</i> for 2 years	..	+	0	+	Conjunctivitis	Moist rales	+	Irrational convulsions	1:256	..	From blood, C.S.F., brain, spleen, and liver
4	Brown and Jacobs (1956)	L.J.	1951	..	2 months	Worked with <i>Toxoplasma</i> for 4 years. Splash in the face	+	+	+	+	0	0	0	0	1:4,096	1:80	Unsuccessful. Muscle biopsy and bone marrow
5	Wettingfield <i>et al.</i> (1956)	..	1954	..	1 month	Unknown, worked with <i>Toxoplasma</i> for a year	+	+	+	+	0	Cough	0	0	1:1,000	++	From inguinal lymph node and blood
6	Sabin <i>et al.</i> (1952)	H.E.	1949	Asymptomatic	..	Rabbit bite	0	0	0	0	0	0	0	0	1:16,000	1:125	Not attempted
7	Alm (1949)	..	1949	Unknown	Several days	Worked with <i>Toxoplasma</i> for 1 month	..	..	..	..	..	..	..	..	1:4,000	..	Unsuccessful. Blood to chick embryos
8	Beverley <i>et al.</i> (1955)	S.C.M.	1953	9 days	3 weeks	Needle prick	+	+	+	0	0	0	0	0	1:4,200	1:16	Not attempted
9	Sabin (1950)	O.H.	1950	Unknown	1 month	Unknown	..	..	..	..	..	..	..	..	..	..	From blood
10	Hormann (1955)	Prague W.M.	1953	3 days till conjunctivitis, 10 days till general illness	Discharged from hospital on 52nd day. Enlarged glands for months after	Splash on face and eye	+	+	+	+	Swelling of eyelid, conjunctivitis	Broncho-pneumonia	0	Meningo-encephalitis	1:1,000	++	Not attempted
11	Mohr (1953)	Case 1	..	Unknown	2 weeks followed by relapse after 2 months	Unknown, worked with <i>Toxoplasma</i> for 4 weeks	+	..	..	..	..	..	..	..	1:100	++ West-phal	..
12	Mohr (1953)	.. 2	..	..	Unknown, doubtful, relapse after 3 months	Unknown	+	..	..	..	..	Pneumothorax	..	..	Positive	..	..
13	Mohr (1953)	.. 3	..	..	Unknown, relapse after 3 months	Unknown, worked with <i>Toxoplasma</i> for 3 weeks	+	+	..	..	..	..	..	..	1:200	..	..
14	Thalhammer (1954)	E.H.	1953	Asymptomatic	..	Unknown, worked with <i>Toxoplasma</i> for 2 years	..	..	..	..	..	Coincidental tonsillitis	..	..	1:262,334	..	..
15	Rawal (1959)	B.D.	1955	Unknown	4 months	Worked with <i>Toxoplasma</i> for 1 year	+	+	+	0	0	0	0	0	1:600	1:40	..
16	Wright (1957)	..	1955	9 days	28 days	Needle prick	..	+	+	0	Swelling of eyelids, conjunctivitis	Pneumonitis	0	0	1:4,096	1:32	From blood, lymph node
17	Straub (1955)	K.	..	3 ..	5 ..	Splash in both eyes	..	..	..	..	..	..	0	0	1:256	..	Not attempted
18	van Soestbergen (1957)	A.A. van S.	1952	8 ..	Never really ill. Enlarged glands for several weeks	Needle prick	0	0	+	+	0	0	0	0	1:1,000	1:128	From subclavicular gland

one fatality in the reported cases (V.F., Case 3). In the other cases the duration of the illness varied from seven days to four months.

The commonest signs and symptoms were headache and malaise (nine cases) and lymphadenopathy (eight cases). In six cases a rash was reported. Three had encephalitic signs and two myocarditis. Two patients, in addition to the two who squirted *Toxoplasma*-containing material in their eyes, developed conjunctivitis.

In many cases the mode of infection was unknown. Four, however (Cases 1, 8, 16, and 18), were due to a needle prick. Cases 10 and 17 were due to a splash on the face and Case 4 may well have been due to a similar cause. Case 2 was thought to have contracted the illness in pipetting.

The cases in which the actual date of infection was known afford an excellent opportunity of assessing the incubation period. This varied from three days (two cases of splashes in the eye) to three to nine days (needle pricks).

Following the indications given by the therapeutic trials on experimental animals of Sabin and Warren (1942) six of the patients (Cases 1, 2, 3, 8, 10, 12) were treated with sulphonamides. Later patients (Cases 5, 15, 16) were given a combination of a sulphonamide and "daraprim" as first suggested by the work of Eyles and Coleman (1955). There are not enough cases to assess the value of therapy. All that can be said is that Case 8 was free from fever five days after the start of sulphonamide treatment; Case 3, on the other hand, died in spite of it. Cases 5 and 15 improved after treatment with sulphonamide and "daraprim." Case 16 was free of fever 36 hours after the start of treatment. Cases 11 and 13 were treated with aureomycin. Eyles (1956) reports that enormous doses of this drug, much larger than can be attained in man, are required to produce a favourable result in infected mice. It was used in addition to sulphadiazine in the patient in Case 3, who died, and also unsuccessful-

fully in the case reported by Kass, Andrus, Adams, Turner, and Feldman (1952).

Three morals can be drawn. First, as with all dangerous organisms, great care should be taken to avoid contamination. A particular risk, and one likely to increase as more laboratories do it, is found in the performance of the dye test (Sabin and Feldman, 1948). Second, as far as possible, only persons who already have *Toxoplasma* antibodies should be employed on this work. Third, attention should be directed to the development of an effective vaccine for the protection of laboratory workers.

Summary

The writer reports the course of his own laboratory infection with *Toxoplasma* and reviews 17 others.

Headache, malaise, and lymphadenopathy were the commonest symptoms and signs.

The need for care when working with *Toxoplasma* is stressed.

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