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## *A Clinical Study of Three Hundred and Fifty-Four Cases of Foreign Bodies Situated on and in the Cornea.*

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THE following study of this type of common, yet by no means insignificant, cases has been made by the writer in the belief that it may (as it has to him) prove of interest, not only to the ophthalmic surgeon who is more often called upon to treat them, but to the general practitioner who frequently has to assume the charge and care of this one of the most ordinary of eye affections.

Without attempting to study the literature of the subject, with which he is fairly well conversant, he has, through the kindness of one of his friends and assistants, Dr. Samuel J. Gittleson, of this city, made an analysis of three hundred and fifty-four cases, that he has personally seen at Wills Eye Hospital, thus offering a sufficient number of instances for some important and useful generalizations. These analytical tables, with their conclusions, he here presents in brief, as expressive of his individual findings, and without a word of comment upon the more extended and better work of others in the same direction, he offers the following findings as his contribution to the subject. This he does with the hope that others who may be better equipped than he, may help to bring the subject-matter, as here given, to a fixed certainty.

Table I, showing the occupations of the patients, divides itself into thirty-nine classes. Of these, it soon will be seen by careful study, the greatest percentages, as might be expected, exist amongst those whose business exposes them to flying pieces of metal, stone and dirt.

TABLE I.  
OCCUPATION OF CASES.

Machinists, . . . . .	72	Engineers, . . . . .	7
Laborers, . . . . .	33	Operators, . . . . .	7
Blacksmiths, . . . . .	23	No occupation (children), . . . . .	6
Stone Cutters, . . . . .	21	Plumbers, . . . . .	6
Houseworkers, . . . . .	19	Buttonmakers, . . . . .	5
Carpenters, . . . . .	16	Conductors, . . . . .	5
Drivers, . . . . .	14	Trimmers, . . . . .	5
Schoolchildren, . . . . .	12	Clerks, . . . . .	4
Sheet Iron makers, . . . . .	12	Grinders, . . . . .	4
Boiler makers, . . . . .	11	Moulders, . . . . .	4
Mechanics, . . . . .	9	Sailors, . . . . .	4
No occupation (adults), . . . . .	9	Weavers, . . . . .	4
Brakemen, . . . . .	8	Cooks, . . . . .	3
Brass fitters, . . . . .	7	Glass workers, . . . . .	3

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Last makers, . . . . .	3	Music Teachers, . . . . .	2
Pipe fitters, . . . . .	3	Bootmakers, . . . . .	1
Printers, . . . . .	3	Confectioners, . . . . .	1
Barbers, . . . . .	2	Milliners, . . . . .	1
Bar tenders, . . . . .	2	Sawyers, . . . . .	1
Lawyers, . . . . .	2	Total number of cases. . . . .	354

Here it will be seen that machinists, who comprise more than twenty per cent. of the cases are closely followed by ordinary day laborers with over nine per cent., blacksmiths with nearly six per cent., and stone cutters almost six per cent. As the exposure-series of occupation lessen, so in direct proportion do the number of cases.

Table II which shows the average number of males and females affected,

TABLE II.

SEX OF CASES.	NUMBER OF CASES.
Males,	321.
Females,	33.
Total No. of cases,	354.

is of great interest as graphically illustrating the vast preponderance of males over females; the proportion between the two being almost ten times greater for the males.

To attempt to throw additional light upon the assertion of previous investigation--that by reason of preponderant right-handness, etc., the left cornea is the one that is the more frequently injured,—Table III has been constructed.

TABLE III.

CORNEA INJURED.	NUMBER OF CASES.
Right,	153.
Left,	201.
Total No. of cases,	354.

A glance at this shows that the left cornea, as proved by Cohn, Ottinger and others, has been the one that is more frequently affected; the injury to the left cornea having occurred in four-sevenths of the total number of cases.

Study of the position of the foreign body upon the corneal membrane gave rise to Table IV.

TABLE IV.

POSIT'N OF FOREIGN BODY.	NO. OF CASES
Up and in,	34.
Up and out,	16.
Down and in,	162.
Down and out,	91.
Central,	51.
Total No. of cases,	354.

This distinctly shows that nearly one half of the foreign bodies were situated down and in ; the next point of election being down and out, then central, followed by up and in and up and out.

Thinking that a study of the seasons when the greatest and the least number of cases appeared at the clinical service, might be of some interest to the practical clinician, the writer has arranged Table V.

TABLE V.

SEASON OF YEAR.	NUMBER OF CASES.
Spring,	77.
Summer,	155.
Autumn,	23.
Winter,	99.
Total No. of cases,	354.

As was to be expected, the summer months gave the largest proportion of cases. Curiously, these were followed by the winter months ; the spring and autumn months coming last.

The conclusions that these tables teach us may be summarized as follows :

1. Occupations, such as those of machinists, day laborers, blacksmiths, stone cutters, etc., where there is the greatest exposure to small and dense flying objects, as chips of metal and bits of stone, give the greatest number of patients with foreign bodies situated on and in the corneal membrane.

2. As their various occupations subject males to greater risks of injury to the cornea than is the case with females, the former furnish by far the greatest number of patients with foreign bodies situated on and in the corneal membrane.

3. Probably by reason of preponderant right-handedness and on account of the angle at which the escaping particle is driven off the broken substance, the left cornea is in the majority of instances the one which is the most frequently injured by the receipt of a foreign body on or in its tissue.

4. By reason of reflex action operating to suddenly close the eyelids and roll the eye-ball upwards and outwards, when the corneal membrane is struck by some foreign object, in association at times, with an immediate hypersecretion of tears which would necessarily carry any foreign substance, which has not penetrated the membrane down and in towards the canaliculi, the lower inner corneal quadrant is the portion of the cornea which is usually injured by the stroke of a foreign body on or in its substance.

5. Probably by reason of more constant out-of-door living and employ-

ment and the prevalence of dry and dusty weather during this season, the summer time of the year gives the greatest number of cases of injury to the cornea from foreign substances situated on or in its membrane. The crisp, clear atmosphere of winter, as contrasted with the rainy season of spring and the dampness and slush of fall which render fewer the number of flying particles in the air, affords possibly one of the most important reasons why the number of cases of injury to the cornea from foreign substances situated on or in its membrane, is greater during this season than it is during the other two seasons.

