placed on the eyes. Ophthalmologists have come to comprehend, too, that near-sightedness, or myopia, is not only a retrograde step in refraction, and an annoyance to those who are near-sighted, from the necessity of wearing glasses to obtain sharp vision, but that it is actually a disease of the eye which frequently induces changes in the tissues of the eyeballs which after a time may render all near use of the eyes impossible and in graver cases lead to partial or even to total blindness.

Numerous statistics have been recorded which show conclusively that if scholars are permitted to continue their near work without regard to some compulsory correction of their ocular defects, or attempts to improve the conditions under which they study, myopia will increase rapidly from the lower to the higher schools. While in the lower classes of primary schools myopia has been recorded as occurring in about 10 per cent. of the pupils, and hypermetropia in 80 per cent.—the remaining 10 per cent. possessing normal eyes—in the advanced classes in high schools and in colleges, it has been found that the myopia has increased to 20 per cent., while the hypermetropia has decreased to 75 per cent.

Statistics also show that if children with defective eyes are weeded out of schools and their eyes carefully corrected by glasses, that the increase of myopia is checked and the retrogression of the eyes is greatly diminished. In view of these facts, a determined effort has been made by ophthalmologists within the past twenty years to make an examination of the eyes of all students obligatory, and in a number of cities in this country all the pupils in the public schools are subjected to some kind of an examination to determine at least the degree of visual acuity of each scholar. A much more careful test is made of the ocular condition of scholars in private schools, especially in this city, but so far as we are aware, the University of Pennsylvania is the only institution conferring a degree in which such examinations are made systematically.

Of the value of such tests there can be no doubt, as statistics will testify, for even though the examinations had demonstrated to but a dozen students that their eyes were defective, the importance of such tests could not be questioned; but when it is appreciated that 30.34 per cent. of the students who were examined had defective vision in one or both eyes, all doubts as to their propriety must be dispelled. Eight hundred and eighty-three students were examined in all. Of these, 940 were students in the college department, 148 in the medical, 51 in the dental, 51 in the law and 3 in the veterinary department.

Of this total, 14.70 per cent. were noted as being myopic, while the remaining 85.30 per cent. were either hypermetropic or emmetropic.

In the comparison which was made to ascertain the influence of age and study on the refraction, it was found that among 638 students in the two lower classes, 87.25 per cent. were hypermetropic and 12.75 per cent. were myopic, while 361 students in the upper classes, 80.25 per cent. were hypermetropic and 19.75 were myopic.

Five per cent. more of myopia was found in the professional department in scholars of a similar age than in the college department, this being doubtless accounted for by the fact that most of the scholars in the college come from private or city schools, where the eyes are properly protected, while the scholars in the professional schools come frequently from rural communities, where accurate refraction is impossible and the care of the eyes neglected. The average age of all the scholars examined was 21.4 years, and the statistics showed an increase of about 2.5 per cent. of myopia for each year during the four years of college life.

Of the students examined, 609 had full visual acuity in each eye, 94 had full visual acuity in but one eye, while 180 had subnormal vision in both. In this latter class, 180 students, possessing subnormal vision in both eyes, were thus under a decided disadvantage in the performance of certain forms of class-room work, irrespective of any possible ill effects to the eyes from uncorrected strain, while in the 94 students who possessed normal vision in but one eye, the student was perceptibly handicapped in the proper use of all scientific instruments. Three hundred and three students wore glasses; of these, 217 were hypermetropic and 86 myopic. Eighty-seven complained of headache. Of this number, 47 wore glasses and 40 did not. Of those complaining of headache, 7.59 per cent. had subnormal vision, while the remaining 92.41 per cent. had full visual acuity, and on this account did not suspect their eyes of being at fault.

Of the 883 students examined, 58, or 6.68 per cent., had spinal curvature or scoliosis, and this condition was found 48 times among hypermetropes and 10 times among myopes. Of the total number of students with spinal curvature, the vision of one eye was perceptibly lower than its fellow in 12.79 per cent., supporting the inference of many ophthalmologists that ocular errors may be responsible in many cases for this abnormality.

The figures which have just been given are only a few which have been compiled from the statistics deducted from the examinations, but they serve, in our opinion, to indicate the importance of including careful ocular tests as a part of the physical examination of every student, and to show the value of the advice which is offered regarding the correction of existing errors. As weak eyes are often associated with a physical condition which is below par, suitable exercise of a general nature is also insisted on for those who are so handicapped, and a determined effort is made by the department to enable such students to profit as much as is possible by their college careers. Violent exercises are forbidden myopes, and the endeavor is made in this class of subjects particularly to develop the chest and to impart a correct standing posture for the avoidance of scoliosis.

THE DANGER OF DUST AS A CAUSE OF TUBERCULOSIS

IN DOMESTIC HOUSEHOLDS, CLUBS, HOTELS, SCHOOLS AND CERTAIN OTHER ESTABLISHMENTS.

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In a previous paper 1 I traversed to some extent the ground indicated by this contribution, but, as probably few Americans will see that paper in print, I take the liberty of borrowing from it to some extent as affording a text and illustration of what follows.

There is agreement among authorities that the sputum expectorated by consumptives, and becoming dried and powdered, constitutes the principal means by which the tuberculous infection is extended; the precise manner in which the recipient acquires it—whether by inhalation, ingestion or inoculation—being of secondary importance, but that pathogenic lodgment must necessarily

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1. Read before the Mississippi Valley Medical Association, Hot Springs, Ark., Nov. 6-8, 1906.
mobile matters is found in hangings, curtains, upholstered furniture, etc.

It is through the crude, old-time attempts at so-called cleaning in such places that the chief sanitary offense is given, and direct danger to health and life arises, and in illustration a glance at some experiences, personal to the writer, may perhaps be permitted here.

INSANITARY METHODS IN PUBLIC PLACES.

Some years ago in St. Louis an athletic club for men was formed, a special appeal being made to the younger men to join for the sake of their health, the widely announced aim of the organization being the upbuilding, development and strengthening of the body by all manly games, athletic sports and exercises. The response was encouraging and a membership mounting into the thousands was secured.

A large building was hired for a club house and elaborately furnished in the conventional way, even the dining room floor being heavily carpeted, as were also a large number of sleeping rooms intended for members and guests. The institution was well patronized, and carpets, etc., soon began to show evidence of use and wear.

As a member I occasionally found it convenient to take breakfast there, and on such occasions was too often confronted by the unpleasant fact that the domestic ordering of the club had not been completed before it was opened for business. In short, the sweeping of carpets and dusting of furniture went on alongside of tables where meals were being served.

Respectful representation to the management against this practice availed nothing, and this was followed by emphatic protest and vigorous remonstrance, which was received with equal unconcern. This disparity between the loudly trumpeted purposes of the club and this confirmed dangerous feature of its housekeeping, being too glaring for reconciliation, resignation of membership was the only recourse remaining, and this was quickly put into effect.

The paradox was thus presented of an institution catering especially to a younger generation, conducted by average business men, and ostensibly established for the promotion of physical health, employing through dull ignorance or perversely inattentive methods of internal management which in disease-producing influence must largely defeat its avowed objects and subject its heedless or unsuspecting patrons to most serious peril—one hand practically undoing the work of the other.

That such a situation is not exceptional, personal experience and observation has confirmed in another club of one thousand members, made up of business and professional men, the women and children of their families being also admitted to its social privileges.

Here the same antiquated and pernicious methods are adhered to, the establishment scarcely ever being opened clean and in order, but confusion, dirt and danger prevailing on the principal floor sometimes until an advanced hour in the morning. Successful business men compose its board of directors, but the reign of ignorance respecting such a simple health proposition is as absolute as it was in the same institution a quarter of a century ago.

Without specifying particulars, the same conclusion has been reached with respect to hotels, office buildings and business concerns where extensive carpeting is in evidence. The twin scepters of the domicile, broom and duster, seem to be undisputed and securely holding their place.
INSANITARY METHODS IN THE HOME.

The limitations of time and circumstance do not permit any extended notice of the morbid developments observed among employees in atmospheres of daily domestic dust. In those places, however, in which medical scrutiny has been exercised longest and most closely the confident statement can be made that, while many contributory influences are involved, yet the pleurisies, pneumonias, bronchial catarrhs and cases of tonsillitis and influenza occurring among patrons and help find there a sufficient explanation in the local conditions, and undoubtedly these ailments prepare the way for the tuberculous infection that easily and commonly follows.

This infection is spoken of by some as a disease prone to originate in the poorer quarters of a city, but its presence there, I am persuaded, is due to the fact that many wage-carriers in clubs, hotels and like places are drawn from homes in such localities. Medical observation shows that after a time physical deterioration takes place among those employees most exposed to dust, and this is usually evidenced by coughs and other evidence of respiratory ailment.

That insidious peril from such cause can lurk in the often luxurious furnishings of places of the kind mentioned is hardly thought of by those most liable to be affected, but the contention that they are real and formidable scedings places for tuberculosis can, I believe, be established as truth on sufficient examination by any one so disposed.

MODERN METHODS OF CLEANING.

If so much be conceded, the question then recurs as to the necessary measures of prevention, and it will readily be seen that these require the total banishment of broom and duster or any other implement or device by which dust is set at rest. If carpetings are to be retained, the adoption of mechanical appliances must follow, by the use of which no flying matter will be allowed to escape, this, if necessary, to be supplemented by the wiping of exposed surfaces and furniture with soft cloths.

The use of the vacuum or pneumatic method of cleaning in every hotel, club, office building, theater, church, school and business establishment should be made compulsory by law. This provision as a sanitary adjunct has become just as necessary a part of the house equipment as are those similarly supplied for heating, for ventilation, for fire protection or fire escape.

As to changes needed in ordinary methods in private houses to meet the demands of wholesome living as framed in the light of to-day, that is a domain concerning which others must speak, but it would appear that amendment in this direction is a very necessary part of the movement toward better health. This, however, is a phase of the problem that, first and last, lodges itself with the housekeepers of all civilized lands, and on them must rest the responsibility for its final and rightful determination.

The city mentioned in which are situated the clubs, etc., whose delinquencies in a certain respect have been pointed out, is said to be the most representative of all American municipalities, in the sense that the different races and nationalities composing its population are more evenly blended than in any other place of nearly the same size; hence, sanitary faults existing there would probably be found present in other cities also. The indoor dust problem, therefore, becomes one of more than local importance and must concern peoples and populations everywhere who may be liable to fall under the influence of similar unwholesome conditions, becoming in fact national, if not international, in scope.

It has been written of ancient peoples that, in times of great public stress or sore calamity, they would seek the altars of their respective religions and anxiously demand of the priests, wherein they had offended the gods, in order that, by suitable sacrifice or offerings, atonement might be made for transgressions, and the offended deity be thus placated and no longer visit on them his wrath. And the people of to-day, here and elsewhere, may well ask wherein they have offended when it is remembered that one-tenth of all deaths occurring in civilized lands are due to tuberculosis, and besit themselves to the work of expiation for manifold transgressions of the plain laws of health which entail such a heavy punishment.

SUMMARY.

1. Efforts toward the eradication of human tuberculosis will fail which do not take full account of household dust as a factor in the dissemination of that disease.

2. Scientific tests have shown that the seeds of pulmonary tuberculosis, harbored within doors in the dried state, are capable of retaining their effective vitality for prolonged periods of time.

3. Any method or procedure employed in inhabited buildings which causes dust to be disseminated must be considered as tending to spread the seeds of consumption.

4. Hotels, clubs, theaters, office buildings, shops, churches and business establishments generally should be required by law to introduce and operate dustless methods of cleaning; this part of their mechanical equipment being as necessary as provision similarly made for warming, ventilation and for fire protection and fire escape. The employment of dustless methods in private residences is urged as being equally imperative for the control and suppression of all forms of tuberculous disease.

THE VALUE OF SULPHATES IN CARBOLIC-ACID POISONING.*

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HISTORICAL DATA.

The treatment of phenol poisoning by sulphates dates from the observation of Baumann, in 1876, that a considerable proportion of the phenol is excreted in the urine as the practically harmless phenol-sulphonic (sulphocarbolic) acid, C10H6(OH)SO3H, or, rather, as the salts of this acid with the urine bases. Baumann suggested that this constitutes a natural mechanism for the disinfection of phenol. Since only a part of the phenol is excreted in this form, it seems reasonable to suppose that the quantity of sulphate at the disposal of the body was not sufficient to combine with all the phenol, and that the efficiency of the mechanism could, therefore, be increased by the administration of sulphates. Baumann tested this suggestion on two dogs, painting the phenol on the skin. The result was in agreement with the theory, although it was not sufficiently rigorous to be conclusive. Sonnenburg, reported favorably

*This is the second of a series of studies on the treatment of phenol poisoning. The first paper, on the value of alcohol, by T. W. Clarke and E. D. Brown, appeared in THE JOURNAL, March 17, 1906. From the Pharmacological Laboratory of Western Reserve University.