TABLE E.

Teeth.	First appearance.													
	Boys—Ages.							Girls—Ages.						
	5	6	7	8	9	10	11	5	6	7	8	9	10	11
Upper Molars	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Lower Molars	Inv.	14-1	3-1	5-1	Inv.	—	—	Inv.	7-1	8-1	Inv.	—	—	—
Upper Central Incisors	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Lower do.	—	3-1	17-1	77-1	20-1	Inv.	Inv.	—	—	30-1	60-1	Inv.	—	—
Upper Lateral Incisors	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Lower do.	—	—	Inv.	Inv.	Inv.	Inv.	Inv.	—	—	Inv.	50-1	20-1	11-1	—
Upper First Premolars	—	—	—	Eq. nos.	3-1	5-1	3-1	—	—	—	Eq. nos.	5-1	2-1	2-1
Lower do.	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Upper Second Premolars	—	—	—	—	2-1	7-1	4-1	—	—	—	—	6-1	Eq. nos.	5-1
Lower do.	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Upper Canines	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Lower do.	—	—	—	—	Inv.	Inv.	Inv.	—	—	—	—	—	Inv.	Inv.
Upper Second Molars	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Lower do.	—	—	—	—	—	Inv.	—	—	—	—	—	—	—	Inv.

Inv. Invariable. Eq. nos. Equal numbers.

N.B.—This table has been made to show the priority of the teeth of the upper and lower jaw in each series. Ex.—In boys of five years the lower molars invariably appear first. In boys of six years the same teeth appear first in the ratio of fourteen to one.

TABLE F.—Number of Variations in each Age.

Boys.			Girls.		
Number.	Year.	Variation.	Number.	Year.	Variation.
34	5th	1	35	5th	3
126	6th	8	122	6th	7
172	7th	21	172	7th	19
222	8th	28	199	8th	34
176	9th	39	170	9th	41
154	10th	44	140	10th	54
67	11th	33	88	11th	53
10	12th	9	16	12th	13

CASE OF DETACHMENT OF THE RETINA, WITH CHOLESTERINE IN THE SUBRETINAL FLUID.

By L. WERNER, M.B., B.Ch.,

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A. E., a healthy looking lad, aged 8, was admitted to the Infirmary, under the care of Mr. Swanzy, on the 8th of February last, complaining of blindness of the left eye. His family-history was good, with the exception of one brother, who is idiotic; but none of the family have ever suffered from eye-disease. The boy himself had always enjoyed good health up to March, 1884, when he was confined to his bed for three or four days with a bad headache. In July following, while climbing over a ditch, he received a blow from a broken branch on the left eye. The "white" of the eye, it would appear, was torn on the nasal side, and there was a little bleeding. The sight was affected immediately after the injury, but, according to the mother's statement, it recovered in a few days. From this time, nothing wrong was noticed until Christmas, when the boy accidentally discovered that he could not see if the right eye were covered. In January last, Dr. Warnock of Trillick (to whom I am indebted for many points in the history of the case) treated him for a severe pain in the left eyebrow and temple. The eye was neither congested nor painful at the time, but the pupil was somewhat dilated.

The following was the condition on admission. Perception of light was completely wanting; the anterior chamber was shallow; the pupil, which corresponded in size with that of the other eye, did not react to light, although contracting consensually and on convergence. By good daylight, a shining greyish reflection was visible in the interior of the eye. There was no perceptible difference in the intra-ocular tension of the two eyes; but in each it was, if anything,

slightly below the average normal tension. Viewed by focal illumination, the grey appearance of the pupil was seen to be due to an infinite number of minute sparkling crystals, apparently held in suspension by some substance which seemed to float in the vitreous humour when the eye was moved. The separate particles appeared, at first, to have no motion, except that which was imparted to them by the mass in which they were imbedded; but on closer observation, when the eye, after having been moved in various directions, came to rest, some of the crystals could be seen falling slowly towards the inferior part of the globe, while others remained suspended opposite the pupil. When the pupil had been fully dilated by atropine, it was found that the retina was very extensively detached, and that the crystals were situated, not in the vitreous humour, but between the choroid and the retina (that is, in the subretinal fluid), for the latter, although still transparent, could be distinctly seen in front of the sparkling mass. Several of the retinal vessels had a curved arrangement, with their concavity directed forwards, owing to the close apposition of the retina to the posterior surface of the lens. The temporal portion was completely detached, and stretched across, behind the lens, to the inner side of the eye, where it dipped back towards the fundus, the edge of the fold forming a bright line directed from above, downwards and inwards (as seen on a large scale in Fig. 1).

Fig. 1. Showing the retina as seen by focal illumination through the dilated pupil, the eye being rotated upwards and inwards.

The nasal side of the retina was also detached, and similar crystals shone through it, and towards the upper part it presented two narrow folds running antero-posteriorly.

Some of the above details were hidden behind the inner side of the iris; and hence, in order to see them, the eye required to be rotated well inwards, and the light thrown in very obliquely. The fundus was, of course, invisible with the ophthalmoscope, and the

above described appearances were not at all so well seen by reflected light as by focal illumination.

Fig. 2 represents my idea of the probable relation of parts, the retina remaining attached near the ciliary region, and around the optic papilla.

Fig. 2. An imaginary horizontal meridional section of the eye.—T. Temporal portion of retina. N. Nasal portion of retina. C. Cholesterol in sub-retinal fluid. F. Fold produced by retina doubling back on itself (represented in Fig. 1).

The right eye was, in every respect, healthy, with normal vision. The heart and circulation were normal, and the urine contained neither albumen nor sugar.

The case had been sent up from the country on account of a suspicion that it might be one of malignant growth. Mr. Swanzy, however, did not think the signs of the existence of such a growth sufficiently marked to make removal of the globe necessary. The patient was, therefore, sent home without hopes of recovery of vision in the eye, but with the prospect of its retaining its shape and tolerably normal appearance.

Von Gräfe states (*Archiv für Ophth.*, vol. ii, part 2, p. 319) that cholesterol has been seen during life in almost every part of the human eye; and, on examining the records of such cases, I find this statement amply verified, for it has been observed in every position with the exception of the conjunctiva, cornea, and sclerotic. The cases in which it occurs may be arranged under two heads; namely, in eyes otherwise normal, and in diseased eyes.

In normal eyes, the condition called *synchysis scintillans*, or *syntheropie* (Sichel), in which cholesterol and tyrosin crystals are suspended in a fluid vitreous humour, usually occurs in old people, and frequently with normal vision. In a case of *synchysis*, microscopically examined by Poncet, he found cholesterol, tyrosin, and spiculated phosphatic masses (Gräfe und Sämisich, vol. iv, p. 697). Again, in healthy optic papillæ, cholesterol crystals are occasionally seen ophthalmoscopically, as first pointed out by Mauthner.

In diseased eyes, cholesterol is found: 1. in the anterior chamber, and attached to the anterior surface of the iris. According to De Wecker (Gräfe und Sämisich, Band v, part 4, p. 697), in order that this should take place, there must be an abnormal communication between the vitreous humour and the anterior chamber; but in a specimen, kindly lent me by Dr. Redmond, in which the anterior chamber was full of cholesterol, this communication could not have existed, for the pupil was completely occluded by an exudation, glueing the iris to the anterior surface of the lens. 2. It is found in cataractous lenses and their capsules, and developed in capsules after the extraction of the lens. A singular instance is recorded by Dr. Diaz Rocafault, where, during the absorption of a soft cataract which had been needled, cholesterol appeared in the anterior chamber, and increased in quantity after repeated dissections. 3. It occurs in the hyaloid fossa and in the vitreous humour. Sometimes, the crystals in the vitreous humour are free; at others, they coexist with opacities, to which they may adhere. 4. It has been found in the retina, between the retina and choroid, and, in one case, between the choroid and sclerotic (Strawbridge, *Trans. American Ophth. Soc.*, 1875, p. 306). The latter was a remarkable case. The eye had been lost from traumatic irido-cyclitis, and cholesterol was found in the anterior chamber, on the anterior surface of the iris, in the shrunken lens, in the vitreous humour, and, lastly, between the choroid and sclerotic. There was also a formation of bone around the optic nerve and in the ciliary region. 5. Tweedy (*Lancet*, vol. ii, 1873, p. 519) has seen cholesterol crystals on the optic papilla, ophthalmoscopically, after optic neuritis, and also in a case of retinitis pigmentosa. 6. Finally, von Gräfe mentions (*Archiv für Ophth.*, Band viii, part 2, p. 359) an instance in which the lacrymal sac was greatly distended by a dark brown fluid containing abundance of cholesterol.

A satisfactory explanation of the occurrence of cholesterol in the eye is still wanting. Two theories of its origin have been put forward: one, that it is due to fatty degeneration; the other, that it

is the result of a hæmorrhage. Poncet attributes *synchysis scintillans*, in the aged, to a fatty degeneration of the vitreous body, analogous to atheroma of the arteries, and states that, in the young, it is associated with liver-disease, especially gall-stones. Gräfe believed that the existence of the cholesterol in the lacrymal sac was due to a hæmorrhage which had undergone chemical changes; and this is rendered plausible by the fact that, under the microscope, numerous small granules were seen—some orange-yellow, others of a dark reddish colour, which, when acted on by reagents, behaved in the same manner as hæmoglobin.

The above case possesses special interest, on account of its extreme rarity. With the exception of a single case recorded by von Gräfe (*Archiv*, vol. ii, part 2, p. 319), I am aware of no other instance similar to it. Previously to Gräfe's description, cholesterol had, indeed, been occasionally seen in the subretinal fluid, in pathological sections; but he was the first to have the opportunity of ophthalmoscopically demonstrating its existence, in this situation, in the living eye. In von Gräfe's case, although there was a complete funnel-shaped detachment of the retina, the optic papilla was still visible, and the red reflex could still be obtained in certain positions; whereas, in the case which I have described, the reflex was entirely absent, and the fundus completely obscured.

MORTALITY IN ENGLAND AND WALES, AND IN LONDON, DURING THE LAST THREE DECENNIAL PERIODS.

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THE science of vital statistics is of recent growth. Parish registers of marriages, christenings, and burials, appear to have had their origin in England in 1538, and the parish clerks of London commenced to make weekly returns from the 21st December, 1592. Those who have studied these curious returns right up to the year 1849, with an interruption between the years 1592-97, as preserved in the records of the City of London Grocers' Company, must feel convinced that in olden times, although the importance of vital statistics was recognised, as we also know from the ancient and modern histories of many countries, yet there was no system observed to collect the information and preserve it in records sufficiently accurate to be of any use in comparison of statistics of all times. The works of statisticians like Dr. Heberden and Captain Cant, though known to have been comprehensive in the last century, cannot stand their tests in correctness and precision of figures in our times. The total mortality in communities from all, as well as several causes, came to be determined in this country since the year 1838, when the institution of the Registrar-General's Office and the registration of death-certificates came into existence by the laws of the country. It is this institution, I believe, that gave birth to the science of vital statistics among civilised nations, under the auspices of the late lamented Dr. Farr. Since its first formation, the system of publishing records of statistics has much improved. But I think our Government would do a lasting national service, were they to make the publication of the statistics since the year 1840 complete and uniform, to afford comparison, and to enable us to judge of the merits and advantages of sanitation; of the changes in our methods of living, food, drink, and dress; of the benefits of the utilisation of steam-power, electricity, and other physical forces; and of the influences of the fashions and customs of society.

The accompanying Tables I and II are constructed from the figures in the Decennial Reports of the Registrar-General. The death-rates throughout these tables are calculated as per million living, to avoid the frequent repetition of decimals.

The population of England and Wales is principally urban. According to the last census, there were 771 urban districts with a population of more than 3,000 persons, whose aggregate population was 17,285,026, while the remaining rural population was 8,683,286. The total area of England and Wales is 37,319,221 acres. The total area of Registration London is 78,080, with a population of 3,814,571. Under these circumstances, the comparison of figures in these two tables becomes an instructive study. The aggregation of large populations in small areas frequently means a keener struggle for existence, overcrowding, neglect of sanitation, with their natural resultants, shortening of the period of individual lives, and increase in the rate of mortality. The national vital statistics have always been looked upon in certain quarters with suspicion; but, on comparing the hosts of figures in the two tables, one is compelled to recognise