he has held, the following may be mentioned:—When the Royal Society was requested by the Government to study the question of glassworkers' cataract, Parsons was appointed a member of the committee, and was its secretary. He was a member of the Departmental Committee on Sight Tests appointed by the Board of Trade, and served this Department nine years as examiner for the special sight tests examinations for the Mercantile Marine. He was also member of the Departmental Committee on Factory Lighting appointed by the Home Office. During the war, after first acting as Captain in the R.A.M.C., he was promoted to be Colonel in the Army Medical Service as Consulting Ophthalmic Surgeon to the Forces, and still serves the War Office as a member of the Appeal Board for Sandhurst and Woolwich Cadets, and the Air Ministry as a member of the Advisory Medical Council. He was the representative of the Royal College of Surgeons at the Conference called by Scotland Yard to advise on the sight tests for motor drivers.

He is the Chairman of the Committee of the Illuminating Engineering Society to advise the London County Council on the Lighting of Cinemas, and is the representative of the Royal College of Surgeons on the Departmental Committee appointed by the Ministry of Health on the Causes and Prevention of Blindness.

But it is especially his work on more purely ophthalmic lines that has given him his wide-spread reputation. His well-known Pathology of the Eye is alone in its class, and his treatise on Colour Vision is by far the soundest and most scientific work on the subject in the English language, while his Text Book of Ophthalmology is a prime favourite among medical students of the present day.

Last May he was made a Fellow of the Royal Society, and the recent honour of Knighthood conferred on him is one which will gratify everyone who knows him.

**ABSTRACTS**

**I—LIGHTING IN FACTORIES AND WORKSHOPS**


The Committee on lighting in factories and workshops, originally appointed in 1913, has recently issued a second report. The first interim report appeared in 1915 and dealt with the question
of industrial lighting generally, and recommended adoption of
definite regulations in regard to adequate and suitable lighting.
The present report deals at greater length with the details of
what constitutes suitable illumination chiefly with regard to glare,
shadow, and constancy. Glare was defined in the first report so
as to include three phenomena. 1. The effect of looking directly
at a bright light. 2. The effect produced by bright sources of
light towards the edge of the field. 3. The effect produced by
reflection from a shiny surface. As regards suitable shading for
direct sources of light the Committee suggest as a reasonable
compromise to the complicated measurements required to give a
certain candle-power to the square inch that the shade should
be such that no detail of filament or mantle can be seen through it.
So far as glare is concerned only those lights in or near the direct
line of vision need be screened. As regards sources of light not
in the direct line of vision the points to be considered are the
distance and the angle. It is suggested that for the sources of
light in general industrial use 100 feet will be too remote for any
injurious quantity of light to reach the eye. The Committee
recommend the adoption of the following five provisions.

1. Every light source (except one of brightness not exceeding
five candles per square inch) within a distance of 100 feet from any
person employed shall be so shaded from such person that no part
of the filament, mantle or flame is distinguishable through the
shade, unless it be so placed that the angle between the line from
the eye to an unshaded part of a source and a horizontal plane is
not less than 20 degrees, or in the case of any person employed at
a distance of 6 feet or less from the source, not less than 30 degrees.

2. Adequate means shall be taken, either by suitable placing
or screening of the light sources, or by some other effective
method, to prevent direct reflection of the light from a smooth or
polished surface into the eyes of the worker.

3. Adequate means shall be taken to prevent the formation of
shadows which interfere with the safety or efficiency of any person
employed.

4. No light sources which flicker or undergo abrupt changes in
candle-power in such manner as to interfere with the safety or
efficiency of any person employed shall be used for the illumination
of a factory or workshop.

5. That as regards existing installations a reasonable time limit
should be given before the above requirements become operative.

The Committee have also investigated the questions of the
diversity, i.e., the ratio of maximum to minimum illumination; contrasts,
due to difference of surface brightness; colour and composition of the light. They do not, at present feel able to make
any definite recommendations on these points.
An appendix to the report contains extracts from various codes of American States bearing on the above points, and also a summary of the recommendations recently made by the Illuminating Engineering Society in Germany.

The Home Office has supplemented the report by the recent publication of a Welfare Pamphlet on Lighting in Factories and Workshops giving readable explanations of the principles of good lighting and the best means of carrying them out in practice. It is illustrated by photographs and contains in an appendix some information on the measurement of illumination.

An excellent summary of the whole question is contained in the *Illuminating Engineer* for October, 1921.

E. E. H.

### II—AMERICAN SPECIFICATIONS FOR MOTOR HEADLIGHTS

**American specifications for motor headlights.** The *Illuminating Engineer*, Oct., 1921.

Dr. C. H. Sharp presented the interim report of the Committee of the American Illuminating Engineering Society (dated June, 1920) on the above subject to the International Illumination Commission at Paris in July, 1921. The Report covers:—1, Performance on the road; 2, laboratory tests; 3, supplementary regulations for motor-car headlights. The following summary is taken from the *Illuminating Engineer* of October, 1921.

**I. Performance on the Road.**

"For the purpose of test, the intent of the law governing the headlights of motor vehicles other than motor-cycles and tractors is deemed to be complied with if so adjusted, arranged and operated as to meet the following conditions:—

Any pair of headlamps under the conditions of use shall produce a light which, when measured on a level surface on which the vehicle stands at a distance of 200 feet directly in front of the car, and at some point between the said level surface and a point on a level with the centres of the lamps, is not less than 4,800 apparent candle-power.

Any pair of headlamps under the conditions of use shall produce a light which, when measured at a distance of 100 feet directly in front of the car, and at a height of 60 inches above the level surface on which the vehicle stands, does not exceed 2,400 apparent candle-power, nor shall this value be exceeded at a greater height than 60 inches.

Any pair of headlamps under the conditions of use shall produce a light which, when measured at a distance of 100 feet in front...
of the car, and seven feet or more to the left of the axis of the same, and at a height of 60 inches or more above the level surface on which the vehicle stands does not exceed 800 apparent candle-power.

Any pair of headlamps under the conditions of use shall produce a light which, when measured on a level surface on which the vehicle stands at a distance of 100 feet ahead of the car, and at some point between the said level surface and a point on a level with the centres of the lamps and seven feet to the right of the axis of the car, is not less than 1,200 candle-power.

2. Laboratory Tests of Headlighting Devices.

For the purpose of test representative samples of headlights are to be furnished by the State authority to the testing authority, with front glasses of nine inches diameter when practical. Reflectors are to be of 1.25 inches focal length, and as nearly paraboloid as possible, and incandescent lamps are also to be of standard manufacture as approved by the National Bureau of Standards. Each device must bear a distinctive mark, and lamps must bear the manufacturer's normal clear bulb rating. The device, when tested, is to be adjusted in accordance with printed instructions issued by the manufacturer.

The nature of the tests is then prescribed. A pair of testing reflectors mounted similarly to the headlights of a car are set up in a dark room and fitted in turn with lamps of vacuum type, 6-8 volts, 15 scp., and gas-filled type 6-8 volts, 21 scp., adjusted to give their rated candle-power and efficiency. If a testing distance of 100 feet is taken reflectors shall be 28 inches apart; for shorter distances proportionately nearer.

Test (1).—6-point Test of Pair of Samples.

(A) In the median vertical plane parallel to the lamp axis on a level with the lamps, (B) in same plane one degree of an arc below level of lamps, (C) in same plane one degree of an arc above level of lamps, (D) four degrees of arc to the left of this plane and one degree of arc above level, (E) four degrees of arc to right of this plane and level with the lamps, (F) four degrees to left of this plane and two degrees of arc below level of lamps.

For points A and B the candle-power shall not be less than 4,800; for C not more than 2,400; for D not more than 800; for E and F not less than 1,200 at one of these points or some point between them.

Devices must comply with the above requirements in order to be recommended for certification; but if requirement could be secured with a lamp of higher candle-power than the values stated above, this fact shall be notified.”

E. F. H.
III—SCOTOMATA IN CHRONIC GLAUCOMA

Delorme (Clermont-Ferrand).—Scotomata in chronic glaucoma. (Les Scotomes dans le glaucome chronique.) Arch. d'Ophtal., July-August, 1919.

This paper is the result of a prolonged study of the central light-sense and colour-sense and the occurrence and development of scotomata in the visual field in chronic glaucoma. Much space is devoted to references to and quotations from the writings of various observers since Landesberg in 1889 described central and paracentral scotomata as a clinical symptom of glaucoma.

In the examination of 180 glaucomatous eyes Delorme found scotomata in 68. In 2 instances a central scotoma due to macular haemorrhage was present: 25 fields showed the characteristic paracentral scotoma of Bjerrum, crescentic in shape, concave towards the fixation point and continuous above and below with the blind spot of Marriotte. In 4 cases the scotoma was annular (two of these in the two eyes of one individual), the punctum caecum being included in the blind band. In 3 cases a scotoma was present in the temporal part of the field, outside the paracentral area.

Delorme attaches great importance to the typical Bjerrum scotoma in the diagnosis of doubtful cases: he considers it almost pathognomonic of glaucoma.

The paper is illustrated by a number of perimetric charts.

J. B. Lawford.

IV—LENS OPACITY ASSOCIATED WITH THE PRESENCE OF COPPER IN THE EYE


The reviewer when in Jerusalem had an opportunity of seeing several cases in which copper had entered the eye. The natives use inferior caps for their old time shot-guns which not infrequently explode and wound the eye. His experience was that if the copper could not be extracted the eye was rapidly lost
Lens Opacity Associated with the Presence of Copper

from cyclitis or even panophthalmitis. Some years ago he removed an eye containing a piece of brass. It was found embedded in a drop of green pus, showing that some of the copper had become dissolved with the formation of a copper salt. He formed the opinion that copper was very badly tolerated in the eye, far more so than iron. Quite recently he has been able to watch a case for some months in which a bright chip of brass is embedded in the lens. No sign of irritation has been observed, nor does the slight localised cataract show signs of spreading. The cases suggest that copper in the lens is not acted upon, whereas in other portions of the globe it dissolves.

Wirths, working at Rostock, believes that copper in the eye may act upon the lens. Purtscher (Zentralbl. f. Augenheilk., Marz-April, 1918) reported a peculiar change in the lens which he believed was caused by the prolonged presence of copper within the globe. By oblique illumination he observes a grey-white cloud situated in the most anterior layers of the lens. The opacity is central and shows radial tongue-like off-shoots spreading to the periphery. The whole appearance is reminiscent of a sunflower. By transmitted light the lens is perfectly transparent.

Goldzieher had described the same condition, but regarded it as a traumatic cataract. Purtscher has seen two cases of this kind and regards the appearance as pathognomic for the presence of copper in the eye.

Purtscher also observed a peculiar shimmer of the lens figure, but he does not regard this iridescence as in any case characteristic of copper, because it is common in other varieties of cataract.

Kimmel and Hillemann have published cases of a similar character. Nothing is known as to the cause of the appearance in the lens, but it would appear that the metal must have been in the eye for a long period without causing any irritation. Goldzieher's case had a 10 years' history, others extended to a year and a half. The author adds a case of his own. In 1916 a soldier was wounded in both eyes by the explosion of a detonator. Two years later the left eye became inflamed and the peculiar lens opacity described was present. X-ray examination failed to show the shadow of a foreign body, and the giant magnet operation was without result. A small pigmented scar in the limbus and one deeper in the cornea were possibly due to the passage of a foreign body. Wirths thinks that it is probable that the eye contained a piece of copper.

T. Harrison Butler.
V—ILLUMINATION IN OPHTHALMOLOGY


The present paper by Marcel Dufour is preliminary to the publication of his larger work on optics, and deals with the illumination of the eye for inspection purposes and for operative purposes. He believes in the Nernst lamp with a slit as made by Zeiss, but finds it costly and advises the cheaper method of using a low voltage lamp, say, below 16 volts, with a lens to focus the light on a slit, then with an aspherical lens or a spherical lens furnished with a diaphragm, projecting the light on to the spot to be examined. A concave mirror placed behind the lamp so that the filament is about the optical centre of the mirror helps.

He discusses Gullstrand's simple central ophthalmoscopy, mentioning the valuable help he has obtained from the portable Gullstrand and from the larger, stationary one, but finds a useful substitute for this expensive apparatus by using a lamp of low voltage whose light is projected on to a slit by an ordinary spherical lens, then with another lens, fitted with an iris diaphragm, the light from this luminous slit is collected on a small mirror or a small prism with total reflection, the diaphragm being so regulated that the halo is avoided as far as possible. Close to the small prism is placed a 5 mm. diaphragm through which the observer looks.

As regards lamps for operative work, Dufour puts the Sachs lamp to one side as unsatisfactory, while he finds the lamps of the dentists' projectors awkward as the assistant has to change his position so frequently. He speaks of the Zeiss shadowless light with its arc lamp, three mirrors placed at the apices of an equilateral triangle reflecting the light on to three projectors so that the three beams thus obtained converge on the operative field. Realizing, however, that a strong enough current might not be always available and that so much of the light is wasted, Dufour and his friend L. Verain have constructed a skialytic arrangement which they find very useful. The essential feature of this shadow-dissolving arrangement is that of the Fresnel lights used in lighthouses, optique cylindrique à échelons de Fresnel. The source of light used is of small extent, but great intensity, and is so placed that the blaze of light falls upon a group of 50 plane mirrors lining the inner surface of a regular pyramid. In this way the light is cast down on the field of operation, giving no shadows and being capable of orientation in any direction without direct light troubling the surgeons. For general surgery a 100 candle power
lamp is enough. Dufour here again offers a simple substitute for ophthalmic work, four lamps, one at each end of two bars crossing at right angles, with four projectors, each having a spherical mirror, a low voltage lamp of 100 candle power and two spherical lenses joined by a draw-tube. The apparatus can be so regulated by centreing on its axis that the four illuminated fields are super-imposable.

Dufour says the secret all through is the employment of luminous sources of small area, but great intensity and lenses of wide aperture.

The article would have been helped by some illustrations.

W. C. SOUTER.

VI—EYE OPERATIONS PERFORMED AT SHIKARPUR, SIND


Dr. Holland is a medical missionary of wide repute. From his headquarters at Quetta he goes down every year to Shikarpur for a month’s hard gratuitous eye-work, in which he is assisted by relays of medical friends. Thus a staff of two or three surgeons is kept at work throughout. The figures in the title of the paper show what a very busy time they have. There are also some general operations performed, including this year 35 for stone in the bladder.

This year there were 1,203 cataract extractions performed within the month of 29 days, the highest number in any one day being 112. Under the press of work it is not surprising that intra-capsular extraction is the method mostly practised, with its very simple after-treatment. It is employed in about 95 per cent. of the cases, and the proportion would be higher, were it not that some of the operating surgeons have had little previous experience of eye-work. They generally perform their first 20 or 30 extractions with capsulotomy before beginning to extract in the capsule.

Among the 1,203 cases there were 9 septic results, i.e., 0.75 per cent. There were not fewer than 8 choroidal haemorrhages, attributed largely to operating on eyes with plus tension, though in the list of operations given there are included 28 preliminary iridectomies for glaucomatous cataract. This serves to illustrate the relative frequency in India of the more rapidly developing cataracts with semi-fluid swollen cortex, which tend to produce glaucoma through shallowing of the anterior chamber.
In two cases in which the lens had fallen back into the vitreous it was successfully removed on the fifth day, after it had risen again into its place.

As regards other eye-work there is not much to be noted. Subconjunctival injections of normal saline are used for a number of affections, including early pannus, trachoma, early corneal opacities, and, particularly, phlyctenular ulcers. For trachoma the routine treatment is with 1 in 100 hydrarg. perchlor., in some cases after scraping with a sharp spoon.

H. HERBERT.

VII—ESTIMATION OF THE REDUCTION OF WORKING CAPACITY IN HEMIANOPIA

Rasquin, E.—On the estimation of the reduction of working capacity in hemianopia. (Considérations sur l’évaluation de la réduction de capacité de travail dans la hemianopsies.) Arch. Med. belges, November, 1918.

Rasquin, as chief of the ophthalmic service in the Belgian Military Hospital at Havre, has seen a large number of cases of hemianopia following head injuries. In this paper he deals with the question of the calculation of the reduction in earning capacity that is due to hemianopia, and draws up a scheme for the calculation of pensions. The question is one of considerable importance on account of the large number of cases of hemianopia following head injuries that survive. According to Pierre Marie and Chatelain (Bull. et Mém. de l’Acad. de Méd. de France, 1915) 10 per cent. of cranial injuries are affected with hemianopia. The forms of hemianopia met with vary considerably from the classical form, so that for the purposes of this paper Rasquin includes all forms of symmetrical defect of the fields due to lesions of the conducting or recipient apparatus from the level of the chiasma to the cortex; lateral homonymous and heteronymous hemianopia, quadranctic hemianopia, hemianopic scotomata and hemichromatopsia.

Rasquin gives a brief account of the anatomical considerations that determine the nature of the defect, with special reference to the preservation of the macula and the limits of the defect. He then refers to the discussion that took place at Paris at a meeting of the Ophthalmological Society in 1916 on a special report by Morax. Three different methods of reckoning the amount of loss were recommended.

1. Morax, Moreau and Genet estimate the reduction of working capacity due to a typical hemianopia at 36 per cent.; since the temporal part of the field is twice the size of the nasal, each
Reduction of Working Capacity in Hemianopia 87

quadrant of the former is valued at 12 per cent., and of the latter at 6 per cent. Of the remaining healthy field each nasal quadrant is valued at 10 per cent., and each temporal quadrant at 20 per cent.

2. Genet divides the field into tenths. The two eyes give twenty tenths. The ten first tenths are estimated at 30 per cent. (which corresponds to the retinal loss in an ordinary hemianopia); the other ten tenths are valued at 7 per cent. each.

3. Lagrange takes into account the central vision. He starts with the assumption that total blindness is valued at 120 per cent., 60 per cent. for the central vision and 60 per cent. for peripheral vision. He divides each visual field into four sectors formed by two lines intersecting at the point of fixation, one vertical and one horizontal. He assigns the following values to the several quadrants: inferior quadrants 12, 7, 5, 14; superior quadrants 6, 4, 3, 9. Rasquin is not satisfied with any of these systems; the former takes no account of central vision, and the latter sets too high a value on the participation of the macula. To illustrate this latter point Rasquin postulates a case in which the patient has a homonymous hemianopia complicated by the addition of a quadrantic hemianopia with preservation of the macula. On Lagrange’s scheme such a patient would lose 45 per cent., but would, as a matter of fact, be incapable of almost any work.

Rasquin does not consider that the idea that a right-sided hemianopia is worse than a left has any foundation, in fact the left loss gives more trouble in reading.

The present French Guide-barème (Ready reckoner) which has been adopted provisionally by the Belgian Government reckons complete blindness at 100 per cent., but Rasquin considers this too low, and considers that the figure should be 120 per cent. as in Germany. Of this total 100 per cent. should be allocated to peripheral vision, and 20 per cent. to the macula; thus a patient with double hemianopia and loss of macula is estimated at 120 per cent., while if the macula is preserved the figure is reduced to 100 per cent. In reckoning up the different forms of hemianopia certain rules must be borne in mind. A gap in the visual field is more injurious the nearer it is to the point of fixation. Of two defects in the visual field of similar extent and equally near to the fixation point, but one of which is situated in the superior and the other in the inferior part of the field, the former is approximately about half the value of the latter.

The scheme advocated is illustrated by a coloured plate of the visual fields divided into segments in the following way:—1. A vertical line passing through the point of fixation. 2. A curved line in the temporal part of the field cutting off a portion equal to the nasal field and roughly dividing the temporal field into two equal parts. 3. A horizontal line passing through the point of
fixation. In this way the visual field is divided into eight segments, two macular portions, two peripheral nasal portions and four peripheral temporal portions, of which two are superior and two inferior, the internal being the equivalent of the nasal fields. The first part of the sum of two visual fields comprising the nasal part of one eye and the temporal part of the other is reckoned as follows:—6 per cent. for the sum of the two portions corresponding to central vision (3 per cent. for each half). The nasal peripheral field counts for 14 per cent., 5 per cent. being for the upper sector and 9 per cent. for the lower one. The peripheral temporal field is reckoned at 20 per cent., 14 per cent. for the internal segment and 6 per cent. for the external. Just as in reckoning the nasal field in the internal segments the superior part is reckoned at 5 per cent. and the inferior at 9 per cent., while in the external part the superior counts for 2 per cent. and the inferior for 4 per cent. The second half of the sum of the two visual fields counts double:—14 per cent. for the sum of the two macular parts, 10 and 18 per cent. for the nasal sectors, 10, 18, 4 and 8 per cent. for the temporal sectors. Hemipic scotomata can be reckoned up on the same plan, due attention being paid to their extent, situation and proximity to the point of fixation. A bibliography of recent literature on the subject is appended.

E. E. H.

CORRESPONDENCE

A COLLEGE FOR BLIND GIRLS

To the Editor of The British Journal of Ophthalmology

Sir,—May I be allowed to call the attention of my colleagues to the new College for the higher education of blind girls which has recently been opened under the auspices of the National Institute for the Blind. It is situated at Chorley Wood, on the foothills of the Chilterns, some twenty miles from London by road and rail. The building is a fine old mansion standing on high ground on the south border of the wide and beautiful heath which tops that piece of country. The spaciousness of the house, the spread of the grounds with the splendid trees therein, and the openness of the position together make it a place of exceptional interest for a school of this order. It would be difficult to find a place where other senses than sight received so many and such happy impressions.

The College is for the higher education of girls who are totally
ABSTRACTS

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