That is to say, anophthalmia accompanies deformities of the brain oftener than microphthalmia. In short, anophthalmia and microphthalmia are due to the same cause, and anophthalmia is a more advanced stage of the deformity than microphthalmia.

In four cases (No. 2, 13, 26, and 27) we see great dilatation of blood-vessels in the brain. This phenomenon is, of course, a result of our manipulation of the eggs and it is accompanied by some deformity of the brain. Moreover, two of these cases have abnormalities of the eye (the one has microphthalmia and the other anophthalmia); but we cannot conclude from this dilatation of blood-vessels that all abnormalities of the eye are due to inflammatory processes of eye itself or of the tissues surrounding it, because in most of the cases there was no dilatation of blood-vessels in the brain.

By many authors various kinds of chemical substances have been used in their experiments on the origin of monsters. The present experiments on chick embryos demonstrate, however, that besides chemical substances we must recognize certain physical factors (stirring of the albumen or change of the pressure in the eggs, etc.) as causes of abnormal development of embryos. From these observations I draw the following conclusion:

At the beginning of the developing of the embryo, any factor, either chemical or physical, which can disturb the normal condition of the blastoderm itself or its circumference, may bring about an abnormal differentiation of the embryo. If such disturbance of the normal condition is too great, development of the embryo may be entirely arrested. But if development is still possible, some deformity of the embryo may result, especially terata of the head and abnormalities of the eye varying according to the degree of the disturbance.

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THE NOTATION OF AXES OF CYLINDERS

Systems in Vogue in the British Isles with Recommendation

BY

J. GRAY CLEGG,

MANCHESTER

It appears to me that now a suitable opportunity is presented of investigating the systems of designating the axes of cylinders at

present in vogue in this country, and how far the recommendations of the International Congress held at Naples in 1909 have been adopted.

At the previous International Congress in 1904, at Lucerne, a Committee was appointed to investigate the various methods of notation and to recommend one for universal acceptance. The Committee consisted of Messrs. Charpentier (Nancy), Dimmer (Graz), Eperon (Lausanne), Hess (Würzburg), Jessop (London), Nuel (Liège), and Reymond (Turin).

It will be observed that the late energetic and distinguished ophthalmologist, Mr. Jessop (whose loss we all so much deplore), was one of the members, and I have with me his original notes and diagrams of the various schemes considered by the Committee. I need not go into a detailed description of them and their relative advantages.

The Committee's report was as follows:

"The Committee, having carefully considered the various methods at present in use, have unanimously come to the following conclusions:

1. That the meridians of astigmatism should be measured and represented as the observer looks at the patient.

2. That the best and most practical method to measure and represent the axes is in the lower semi-circle as in a trial frame.

The numbering of the axes should start from the middle line of the face in each eye, and proceed downwards and temporalwards. The zero would therefore lie at the nasal end of the semi-circle, and 180° at the temporal end; 90° would be below, and mid-way between these points.

The method has the merit of simplicity as in noting an axis only the number of degrees found need be stated. It also fulfils the important point that the usually symmetrical meridians of ocular astigmatism are represented by the same number."

When, however, the report came up for discussion, Mr. Jessop, on behalf of the Commission, said that the question as to whether the direction of the axis notation should be on the superior or on the inferior semi-circle was of secondary importance, and after hearing various speakers and their views, he submitted the following propositions:

1. That the meridians of astigmatism should be measured and represented as the observer looks at the patient.

2. That the best and most practical method is to measure and denote the axis on the superior semi-circle.

3. The measurements in each eye should start from zero on nasal side to 180° at the temporal, 90° being represented above and in the centre.

Then various views were expressed by members of the Congress showing marked differences of opinions as to the best method. The original recommendations of the Committee were supported by Mackay (Edinburgh), Rowan (Glasgow), and others. On the proposition of Landolt the Congress accepted the original report with the modification, however, that the sequence of degrees should proceed on the superior semi-circle from the nose to the temporal side. He was supported by Freytag (Munich), Grossmann (Liverpool), Pagenstecher (Wiesbaden), Menacho (Barcelona), Blaauw (Buffalo), and Essad (Constantinople).

N.B.—This diagram is shown inverted (by error) in the Transactions of the International Congress, 1909, on page 609.

The chief argument in favour of the use of the superior semi-circle was, that in questions concerning torsion of the globe the upper end of the vertical diameter of the cornea is in mind, but I consider that utility in practice should outweigh even this sound scientific view, for as Mackay said at the Congress, at Naples, “the majority of my compatriots employ trial frames with the meridians marked below the eyes.”

A statement of the decision of the Congress was presented to the Ophthalmological Society of the United Kingdom by Mr. Jessop in June, 1909, and it appears in Vol. XXIX of its *Transactions*.

It is interesting to note that at the same Naples Congress two papers were read on this very subject. One by Percival of Newcastle, advocating the system (No. 2 of Jessop's), but with the semicircle below, now known as the “Standard.” The other is by Ed. Pergens of Maesuyck, Belgium. He considered the matter historically, and after reviewing several methods he concluded that the best is one suggested by J. Zachariah Laurence in 1864

in an article entitled "An Instrument for Measuring the Axis of Astigmatism," which appeared in the *Ophthalmic Review*.

Pergens says that no error is possible by this system, for it matters not whether the axis is regarded from the point of view of the observer or the patient.

Green, in 1867, made a modification in Laurence's diagram, substituting - and + thus $-|+$. This same system was published by Snellen in 1868, as new. It has been and is still in use at the Manchester Royal Eye Hospital and the Manchester Royal Infirmary.

I am, however, more concerned with the present state of affairs, and the possibility of attaining uniformity in practice than with a discussion of the various methods of designating axes and their relative advantages.

I have, therefore, communicated with some 168 hospitals in Great Britain and Ireland, which I assumed have ophthalmic departments, and have received a copy of the prescription forms of 126. A few of them shew no numeral system, but 121 I have been able to classify. I have arranged them into 11 groups.

The first nine count degrees from 0 to 180, the last two from 0 to 90 only. The first three alone show symmetry, and although A employs a circle, and B and C an inferior and superior semicircle respectively, an angle on any of the three would have the same inclination. I have, for convenience, designated this group "Contra-International." The sequence of numbers is clock-wise in the right eye, and anti-clock-wise in the left.

The next group (D E F) employs circle, inferior and superior semicircle. It is asymmetrical and is counter clock-wise for each eye. Again, an angle on any of the three would have the same number. This is the "Standard" system. G and H are asymmetrical, but the sequence is clock-wise. I have called it "Contra-Standard."

I stands by itself, for it counts angles clock-wise and anti-clock-wise.

J and K only employ angles counting to 90°. In J the zero is in the vertical meridian, but in K in the horizontal. In both these systems some signs, other than the mere degree number, are required. In J + and - are used, indicating from above down to the right of the patient's face, or to the left, respectively. K also requires an indication in addition to the number of the angle, such as T (temporal), N (nasal), or E (external), I (internal).

I am informed this system was, for a time, in use in some parts of the British Army in France, "do" or "di," being added to the figure, meaning so many degrees "down and out" or "down and in."

It will be observed that in no hospital in the United Kingdom

	R.	L.	No. of Hospitals.	
Contra- International.	A		47	
	B		18	
	C		5	70
Standard.	D		11	
	E		14	
	F		8	33
Contra- Standard.	G		2	
	M		2	4
Standard Contra-Standard.	I		1	1
J			2	2
K			11	11
Total.			<u>121</u>	

Contra-International	...	70
Standard	...	33
Other Systems	...	18
		<u>121</u>

→ indicates
direction of degrees
0 to 180.

International ... None.

and Ireland is the International system in vogue. Further, that what I have designated "Contra-International" by far holds the premier place, and that it has an absolute majority over all other systems combined, viz. 70 against 51.

When this paper was first written, a year ago, it appeared to me that here was an opportunity of obtaining uniformity of practice, at any rate in the British Isles. I then considered that an effort should be made to get all British ophthalmic hospitals to adopt the contra-international mode, as it would bring about the least possible disturbance; fifty-one institutions only would have to change their systems, leaving 70 practically unchanged.

There are now, however, other factors to be considered. The relationship of the United States of America has been intimate, and is likely to become so still more.

In the American edition of "Fuchs's Ophthalmology," Duane states that the prevailing system there is the standard (Fig. F.) although with the axis number appearing on the upper semicircle.

Again, the Standard (Fig. E.) is now, I believe, the only one in use in the British Army, and in the optical trade no other system is employed. Prescriptions are always converted into Standard notation before they are actually made up. The Standard has the great advantage that the degree number is the same for both eyes, and therefore, in ordering, merely the strength and the axis number is required. Prescriptions by telegram are thus simplified. It is purely mathematical. The Standard system certainly does not conform with the anatomical idea of symmetry, but such theoretical considerations will have to be waived if the easiest path to uniformity in this country and America is to be taken.

The subject is one which the newly formed Council of British Ophthalmologists ought to consider, and with the weight of its prestige induce uniformity in all institutions, at any rate, in the United Kingdom. The only difference being that here it is usual to think of the numbers in the lower semicircle, whereas in America the upper is used.

IODINE IN INFLAMMATION OF THE EYE

BY

RICHARD KERRY, M.D.,

OCULIST TO THE WESTERN AND CHILDREN'S MEMORIAL HOSPITALS, MONTREAL

THE hypodermic use of iodine in inflammatory conditions of the eye, has, in the writer's experience, yielded consistently satisfactory results for a number of years past, particularly in septic iritis and in tuberculosis of the eye. The drug apparently acts by dispersing inflammatory foci, thus producing relief from pain which is a great boon to the patient, and which alone would justify its use, quite independently of its curative effect.

The cases detailed below show some interesting and important results and are here recorded to illustrate what may be accomplished by the use of iodine hypodermically.