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To determine if there is a change in the lateral phoria taken through the 7A lens power in one instance and the contact lens power in the other instance at both 20' and 16"

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To determine if there is a change in the lateral phoria taken through the 7A lens power in one instance and the contact lens power in the other instance at both 20' and 16"

Abstract

The purpose of this study was to determine if there was a significant difference in the magnitude of the lateral phoria whether taken through the 7A lens power or the contact lens power at both 20' and 16".

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Thesis

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TO DETERMINE IF THERE IS A CHANGE IN
THE LATERAL PHORIA TAKEN THROUGH THE
7A LENS POWER IN ONE INSTANCE AND THE
CONTACT LENS POWER IN THE OTHER IN-
STANCE AT BOTH 20' AND 16".

CLINICAL YEAR THESIS

MAY 1962

By

John Burt

And

George Lynn

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We also wish to thank the persons who patiently cooperated with us by serving as subjects for this study.

PURPOSE

The purpose of this study was to determine if there was a significant difference in the magnitude of the lateral phoria whether taken through the 7A lens power or the contact lens power at both 20' and 16".

PROCEDURE

Each of the 16 subjects were present for two sittings. At one of these sittings the subject's 7A (best visual acuity) was determined. Tests run prior to the reduction of plus for best visual acuity included the clock dial test for cylinder, red-green, and J.C.C. Phorias were then taken at 20' and 16" in that order. At the time of the other sitting the subjects were wearing contact lenses, and phorias through the contact lenses were taken at 20' and then at 16". Before the phoria findings through the 7A finding were taken, the subject had worn conventional spectacle lenses for at least three days. Before the phoria findings were taken with the subject wearing his contact lenses, these lenses had been worn until the subject had achieved full wearing time.

A far and near interpupillary distance was determined for each subject and the phoropter adjusted accordingly.

I. Phoria measurements taken through the 7A, 7A \ominus +1.00, and 7A \ominus -1.00.

A. Phoria measurements at 20'.

Target used was a horizontal row of 20/20 Snellen letters.

The phoropter was adjusted for the subjects far P.D. A set of Risley prisms were placed before each eye; 3 to 4 prism diopters base down vertical dissociating prism before the left eye, and the measuring prism before the right eye.

1. With the 7A finding in the phoropter, excessive base-in prism was introduced before the right eye and reduced or base-out prism introduced until alignment. This procedure was repeated three successive times.
2. With the 7A combined with +1.00 in the phoropter, the same technique was followed as above.

PROCEDURE (cont.)

3. With the 7A combined with -1.00 in the phoropter, the same technique was followed as before.

B. Phoria measurements at 16".

Target used was a reduced Snellen chart on the reading rod at 16". The phoropter was adjusted for the subject's near P.D. The dissociating vertical prism before the left eye was increased to 10 to 12 prism diopters base-down.

1. With the 7A combined with -1.00 still in the phoropter, excessive base-in prism was introduced before the right eye and reduced or base-out prism introduced until alignment. This procedure was repeated three times in succession.
2. With the 7A in the phoropter, the same technique was followed as before.
3. With the 7A combined with $+1.00$ in the phoropter, the same technique was followed as before.

In changing from technique A to technique B above, the patient was either occluded or under dissociation.

- II. Phoria measurements taken through the contact lenses, the contact lenses combined with $+1.00$, and the contact lenses combined with -1.00 were taken in exactly the same manner as A and B above.
- III. A 7A value was also determined with the subject wearing his contact lenses. This 7A finding was determined in exactly the same manner as the original 7A used in Part I.

FAR PHORIAS

SUBJECTS	20' PHORIA				
	Phoria Findings	Avg. Find.	Avg. of 3 Find.	Diff.	(Diff.) ²
<u>K. A.</u> Age: 27 P.D.: 67/63					
Contacts: O.D. -.87					
O.S. -.87	1so, 0, 1/2so	1/2so			
Contacts = + 1.00	1xo, 0, 0	1/2xo	-2 1/2		
Contacts = - 1.00	6 1/2so, 7 1/2so, 8so	7 1/2so			
7A: O.D. - 1.25 -.25 X 168				1/2	1/4
O.S. - 1.00 -.75 X 180	1so, 1so, 1so	1so			
7A = + 1.00	0, 1so, 1so	1/2so	-2		
7A = - 1.00	6so, 4so, 5so	5so			
7A Thru O.D. pl -.25 X 70					
Contacts: O.S. +.25 -.25 X 105					
<hr/>					
<u>S. H.</u> Age: 20 P.D.: 60/56					
Contacts: O.D. -2.75					
O.S. -3.00	3xo, 3xo, 2 1/2xo	3xo			
Contacts = +1.00	3 1/2xo, 3 1/2xo, 3xo	3 1/2xo	+2 1/2		
Contacts = -1.00	1xo, 0, 0	1/2xo			
7A: O.D. -2.75				+2	4
O.S. -3.25 -.25 X 180	3xo, 2xo, 1xo	2xo			
7A = +1.00	2xo, 2xo, 1xo	1 1/2xo	+1/2		
7A = -1.00	0, 2so, 3so	1 1/2so			
7A Thru O.D. +.50 -.50 X 70					
Contacts: O.S. +.50 -.50 X 95					
<hr/>					
<u>K. M.</u> Age: 20 P.D.: 60/56					
Contacts: O.D. -.75					
O.S. -.25	1xo, 1/2xo, 0	1/2xo			
Contacts = +1.00	0, 1so, 1/2so	1/2so	-1		
Contacts = -1.00	3 1/2so, 3 1/2so, 4so	3 1/2so			
7A: O.D. -1.00 -.50 X 120				1/2	1/4
O.S. +.25 -1.25 X 55	1xo, 2xo, 2xo	1 1/2xo			
7A = +1.00	0, 1xo, 2xo	1xo	-1/2		
7A = -1.00	4so, 5so, 5so	4 1/2so			
7A Thru O.D. +.75 -.50 X 75					
Contacts: O.S. +.25 -.50 X 85					
<hr/>					
<u>D. T.</u> Age: 29 P.D.: 65/61					
Contacts: O.D. -2.25					
O.S. -3.75	0, 1/2so, 1so	1/2so			
Contacts = +1.00	1xo, 1xo, 1xo	1xo	-1/2		
Contacts = -1.00	1 1/2so, 1 1/2so, 1so	1 1/2so			
7A: O.D. -2.00 -.25 X 12				0	0
O.S. -1.75 -.75 X 138	0, 0, 0	0			
7A = +1.00	1/2so, 1/2so, 1so	1/2so	-1/2		
7A = -1.00	1so, 1/2so, 1so	1so			
7A Thru O.D. +.75 -.75 X 83					
Contacts: O.S. +1.00 -.50 X 100					

FAR PHORIAS

SUBJECTS	20' PHORIA			
	Phoria Findings	Avg. Find.	Avg. of 3 Find.	Diff. (Diff.) ²
<u>"J" B. Age: 23 P.D.: 68/64</u>				
Contacts: O.D. +.50				
O.S. +.50	3½xio, 4xio, 4xio	4xio		
Contacts ⊖ +1.00	4½xio, 5xio, 4½xio	4½xio	+4	
Contacts ⊖ -1.00	4xio, 4xio, 4xio	4xio		
7A: O.D. +.25 -.50 X 125				+1 1
O.S. +.25 -1.25 X 5	2xio, 3xio, 2½xio	2½xio		
7A ⊖ +1.00	4xio, 4xio, 4xio	4xio	+3	
7A ⊖ -1.00	1½xio, 2xio, 2xio	2xio		
7A Thru O.D. +.50 -.75 X 65				
Contacts: O.S. +.75 -.12 X 80				
<hr/>				
<u>L. D. Age: 23 P.D.: 61/57</u>				
Contacts: O.D. -2.25				
O.S. -2.50	3xio, 2½xio, 2xio	2½xio		
Contacts ⊖ +1.00	2xio, 2xio, 2xio	2xio	+1	
Contacts ⊖ -1.00	0, 2so, 1so	1so		
7A: O.D. -1.25 -.50 X 175				-1 1
O.S. -1.25 -1.50 X 180	1½xio, 2xio, 2xio	2xio		
7A ⊖ +1.00	1½xio, 2½xio, 3xio	2½xio	+2	
7A ⊖ -1.00	1xio, 1xio, ½xio	1xio		
7A Thru O.D. +.50 -.25 X 110				
Contacts: O.S. +.50 -.25 X 120				
<hr/>				
<u>G. B. Age: 23 P.D.: 62/59</u>				
Contacts: O.D. -1.75				
O.S. -1.75	7so, 4so, 16so	8½so		
Contacts ⊖ +1.00	6so, 6so, 6so	6so	-10½	
Contacts ⊖ -1.00	17so, 17so, 17so	17so		
7A: O.D. -1.75				0 0
O.S. -1.75	8so, 8so, 8so	8so		
7A ⊖ +1.00	9so, 8so, 7so	8so	-10½	
7A ⊖ -1.00	15so, 15so, 14so	15so		
7A Thru O.D. pl				
Contacts: O.S. +.25				
<hr/>				
<u>C. L. Age: 22 P.D.: 61/59</u>				
Contacts: O.D. +6.50				
O.S. -.50	0, 1xio, 1xio	1xio		
Contacts ⊖ +1.00	1xio, 1xio, 1xio	1xio	+½	
Contacts ⊖ -1.00	1xio, 0, 0	0		
7A: O.D. +5.50 -.75 X 180				+4 16
O.S. -.75 -.50 X 90	4so, 4so, 4so	4so		
7A ⊖ +1.00	3so, 3so, 4so	3so	-3½	
7A ⊖ -1.00	4so, 4so, 4so	4so		
7A Thru O.D. pl -.50 X 90				
Contacts: O.S. pl -.50 X 90				

FAR PHORIAS

SUBJECTS	20' PHORIA			
	Phoria Findings	Avg. Find.	Avg. of 3 Find.	Diff. (Diff.) ²
<u>M. F.</u> Age: 25 P.D.: 68/64				
Contacts: O.D. +.25				
O.S. -1.50	0,0,1xo	0		
Contacts \subset +1.00	0,1so,1xo	0	0	
Contacts \subset -1.00	0,0,1so	0		
7A: O.D. +1.00 -1.25 X 5				-1 1
O.S. -1.00	1xo,1xo,1xo	1xo		
7A \subset +1.00	2xo,1xo,1xo	1xo	+1	
7A \subset -1.00	1xo,1xo,1xo	1xo		
7A Thru O.D. +.25 -.50 X 75				
Contacts: O.S. +.50 -.50 X 75				
<hr/>				
<u>S. T.</u> Age: 20 P.D.: 63/60				
Contacts: O.D. -1.37				
O.S. -.62	4xo,4xo,2xo	3xo		
Contacts \subset +1.00	4xo,4xo,4xo	4xo	+3 $\frac{1}{2}$	
Contacts \subset -1.00	4xo,4xo,3xo	3 $\frac{1}{2}$ xo		
7A: O.D. -.75 -.50 X 175				+3 9
O.S. -1.00 -1.50 X 180	1xo,1xo,1xo	1xo		
7A \subset +1.00	2xo,1xo,1xo	1 $\frac{1}{2}$ xo	+ $\frac{1}{2}$	
7A \subset -1.00	1so,1so,1so	1so		
7A Thru O.D. +.50				
Contacts: O.S. -.50				
<hr/>				
<u>J. B.</u> Age: 30 P.D.: 70/66				
Contacts: O.D. +1.25				
O.S. +1.75	3so,5so,6so	4 $\frac{1}{2}$ so		
Contacts \subset +1.00	3so,3so,3so	3so	-5 $\frac{1}{2}$	
Contacts \subset -1.00	6so,9so,12so	9so		
7A: O.D. +1.00 -1.00 X 170				-1 $\frac{1}{2}$ 2 $\frac{1}{2}$
O.S. +1.50 -1.00 X 170	5so,4so,5so	4 $\frac{1}{2}$ so		
7A \subset +1.00	3so,4so,3so	3 $\frac{1}{2}$ so	-4	
7A \subset -1.00	4so,4so,4so	4so		
7A Thru O.D. +.25 -.50 X 100				
Contacts: O.S. +.75 -.75 X 90				
<hr/>				
<u>D. B.</u> Age: 22 P.D.: 64/60				
Contacts: O.D. -1.75				
O.S. -1.75	0, $\frac{1}{2}$ xo, 0	0		
Contacts \subset +1.00	0, $\frac{1}{2}$ xo, $\frac{1}{2}$ so	0	-3	
Contacts \subset -1.00	8so, 8 $\frac{1}{2}$ so, 9so	8 $\frac{1}{2}$ so		
7A: O.D. -1.00 -.50 X 125				+2 4
O.S. -1.50 -.50 X 15	5so,5so,5so	5so		
7A \subset +1.00	3so,3so,3so	3so	-5	
7A \subset -1.00	7so,7so,6so	6 $\frac{1}{2}$ so		
7A Thru O.D. +.25 -.50 X 100				
Contacts: O.S. +.75 -.75 X 90				

FAR PHORIAS

SUBJECTS	20' PHORIA				2
	Phoria Findings	Avg. Find.	Avg. of 3 Find.	Diff.	
<u>R. D.</u> Age: 22 P.D.: 63/60					
Contacts: O.D. -1.87					
O.S. -2.00	2so, 2so, 2so	2so			
Contacts ⊖ +1.00	2so, 2so, 2so	2so	-2		
Contacts ⊖ -1.00	2so, 2so, 2so	2so			
7A: O.D. -2.00 -.25 X 90				+2½	6¼
O.S. -2.00 -.25 X 180	4so, 4so, 4so	4so			
7A ⊖ +1.00	4so, 4so, 4so	4so	-4½		
7A ⊖ -1.00	6so, 6so, 6so	6so			
7A Thru O.D. +.75 -.25 X 90					
Contacts: O.S. +.75 -.25 X 90					
<hr/>					
<u>B. H.</u> Age: 30 P.D.: 63/59					
Contacts: O.D. -3.50					
O.S. -2.75	3xo, 2xo, 2xo	2½xo			
Contacts ⊖ +1.00	3xo, 2xo, 2xo	2½xo	+2½		
Contacts ⊖ -1.00	3xo, 2xo, 2xo	2½xo			
7A: O.D. -3.25				-1	1
O.S. -3.00	4xo, 4xo, 4xo	4xo			
7A ⊖ +1.00	3xo, 4xo, 3xo	3½xo	+3½		
7A ⊖ -1.00	4xo, 3xo, 4xo	3½xo			
7A Thru O.D. -.25 -.50 X 160					
Contacts: O.S. +1.75 -.75 X 90					
<hr/>					
<u>J. B.</u> Age: 24 P.D.: 64/62					
Contacts: O.D. -2.75					
O.S. -2.25	1so, 1so, 1so	1so			
Contacts ⊖ +1.00	1so, 1so, 1so	1so	-1		
Contacts ⊖ -1.00	1so, 1so, 2so	1½so			
7A: O.D. -3.00 -.50 X 5				-1	1
O.S. -2.75 -.25 X 165	1so, 1so, 0	½so			
7A ⊖ +1.00	2xo, 2xo, 2xo	2xo	0		
7A ⊖ -1.00	2so, 2so, 1so	1½so			
7A Thru O.D. +.25 -.25 X 90					
Contacts: O.S. pl -.50 X 135					
<hr/>					
<u>B. S.</u> Age: 21 P.D.: 66/64					
Contacts: O.D. -5.00					
O.S. -3.75	2xo, 2xo, 2xo	2xo			
Contacts ⊖ +1.00	2xo, 2xo, 2xo	2xo	+1½		
Contacts ⊖ -1.00	1xo, 1xo, 1xo	1xo			
7A: O.D. -5.00				-1½	2¼
O.S. -4.25	2xo, 3xo, 3xo	2½xo			
7A ⊖ +1.00	3xo, 3xo, 3xo	3xo	+3		
7A ⊖ -1.00	3xo, 3xo, 3xo	3xo			
7A Thru O.D. pl					
Contacts: O.S. pl					

NEAR PHORIAS

SUBJECTS	16" PHORIA			
	Phoria Findings	Avg. Find.	Avg. of 3 Find.	Diff. (Diff.) ²
<u>K. A.</u> Age: 27 P.D.: 67/63				
Contacts: O.D. -.87				
O.S. -.87	4so,4so,3so	3½so		
Contacts ⊖ +1.00	1so,1so,½so	1so	-3½	
Contacts ⊖ -1.00	6so,6so,6so	6so		
7A: O.D. -1.25 -.25 X 168			-3	9
O.S. -1.00 -.75 X 180	0,1so,1so	½so		
7A ⊖ +1.00	4xo,4xo,4xo	4xo	-½	
7A ⊖ -1.00	4so,5so,4so	4½so		
7A Thru O.D. pl -.25 X 70				
Contacts: O.S. +.25 -.25 X 105				
<hr/>				
<u>S. H.</u> Age: 20 P.D.: 60/56				
Contacts: O.D. -2.75				
O.S. -3.00	3½xo,3xo,2½xo	3xo		
Contacts ⊖ +1.00	6xo,5½xo,5xo	5½xo	+3	
Contacts ⊖ -1.00	0,1xo,0	½xo		
7A: O.D. -2.75			+1	1
O.S. -3.25 -.25 X 180	1xo,1xo,3xo	1½xo		
7A ⊖ +1.00	3xo,4xo,3xo	3½xo	+2	
7A ⊖ -1.00	3xo,0,0	1xo		
7A Thru O.D. +.50 -.50 X 70				
Contacts: O.S. +.50 -.50 X 95				
<hr/>				
<u>K. M.</u> Age: 20 P.D.: 60/56				
Contacts: O.D. -.75				
O.S. -.25	0,0,½xo	0		
Contacts ⊖ +1.00	1½xo,2xo,2xo	2xo	+1	
Contacts ⊖ -1.00	1½xo,½xo,½so	½xo		
7A: O.D. -1.00 -.50 X 120			-2½	6¼
O.S. +.25 -1.25 X 55	3xo,3xo,3xo	3xo		
7A ⊖ +1.00	5xo,5xo,5xo	5xo	+3½	
7A ⊖ -1.00	3xo,3xo,2xo	2½xo		
7A Thru O.D. +.75 -.50 X 75				
Contacts: O.S. +.25 -.50 X 85				
<hr/>				
<u>D. T.</u> Age: 29 P.D.: 65/61				
Contacts: O.D. -2.25				
O.S. -3.75	3xo,3½xo,3½xo	3½xo		
Contacts ⊖ +1.00	5½xo,5xo,5½xo	5½xo	+4	
Contacts ⊖ -1.00	3xo,2xo,2xo	2½xo		
7A: O.D. -2.00 -.25 X 12			-1½	2¼
O.S. -1.75 -.75 X 138	6xo,6xo,5xo	5½xo		
7A ⊖ +1.00	8xo,8xo,9xo	8½xo	+5½	
7A ⊖ -1.00	4xo,2xo,3xo	3xo		
7A Thru O.D. +.75 -.75 X 83				
Contacts: O.S. +1.00 -.50 X 100				

NEAR PHORIAS

SUBJECTS	16" PHORIA				
	Phoria Findings	Avg. Find.	Avg. of 3 Find.	Diff.	(Diff.) ²
<u>"J" B.</u> Age: 23 P.D.: 68/64					
Contacts: O.D. +.50					
O.S. +.50	14xo, 14xo, 14 $\frac{1}{2}$ xo	14xo			
Contacts \ominus +1.00	16xo, 16xo, 16 $\frac{1}{2}$ xo	16xo	+14		
Contacts \ominus -1.00	11 $\frac{1}{2}$ xo, 12xo, 13xo	12xo			
7A: O.D. +.25 -.50 X 125				+1	1
O.S. +.25 -1.25 X 5	16xo, 16xo, 16xo	16xo			
7A \ominus +1.00	12 $\frac{1}{2}$ xo, 12 $\frac{1}{2}$ xo, 12 $\frac{1}{2}$ xo	12 $\frac{1}{2}$ xo	+13		
7A \ominus -1.00	10xo, 10 $\frac{1}{2}$ xo, 10xo	10xo			
7A Thru O.D. +.50 -.75 X 65					
Contacts: O.S. +.75 -.12 X 80					
<hr/>					
<u>L. D.</u> Age: 23 P.D.: 61/57					
Contacts: O.D. -2.25					
O.S. -2.50	5xo, 5xo, 5xo	5xo			
Contacts \ominus +1.00	2xo, 2xo, 1 $\frac{1}{2}$ xo	2xo	+2		
Contacts \ominus -1.00	1so, 1 $\frac{1}{2}$ so, 1so	1so			
7A: O.D. -1.25 -.50 X 175				-3 $\frac{1}{2}$	12 $\frac{1}{4}$
O.S. -1.25 -1.50 X 180	8xo, 8 $\frac{1}{2}$ xo, 8xo	8xo			
7A \ominus +1.00	5xo, 5 $\frac{1}{2}$ xo, 5 $\frac{1}{2}$ xo	5 $\frac{1}{2}$ xo	+5 $\frac{1}{2}$		
7A \ominus -1.00	3xo, 2xo, 2 $\frac{1}{2}$ xo	2 $\frac{1}{2}$ xo			
7A Thru O.D. +.50 -.25 X 110					
Contacts: O.S. +.50 -.25 X 120					
<hr/>					
<u>G. B.</u> Age: 23 P.D.: 62/59					
Contacts: O.D. -1.75					
O.S. -1.75	14so, 10so, 13so	12so			
Contacts \ominus +1.00	8so, 6so, 10so	8so	-13 $\frac{1}{2}$		
Contacts \ominus -1.00	19so, 20so, 20so	20so			
7A: O.D. -1.75				+2	4
O.S. -1.75	18so, 18so, 17so	18so			
7A \ominus +1.00	8so, 8so, 8so	8so	-15 $\frac{1}{2}$		
7A \ominus -1.00	21so, 21so, 21so	21so			
7A Thru O.D. pl					
Contacts: O.S. +.25					
<hr/>					
<u>C. L.</u> Age: 22 P.D.: 61/59					
Contacts: O.D. +6.50					
O.S. -.50	8xo, 8xo, 8xo	8xo			
Contacts \ominus +1.00	11xo, 11xo, 11xo	11xo	+9 $\frac{1}{2}$		
Contacts \ominus -1.00	8xo, 10xo, 10xo	9xo			
7A: O.D. +5.50 -.75 X 180				+5 $\frac{1}{2}$	30 $\frac{1}{4}$
O.S. -.75 -.50 X 90	4xo, 4xo, 5xo	4xo			
7A \ominus +1.00	4xo, 4xo, 4xo	4xo	+4		
7A \ominus -1.00	3xo, 4xo, 5xo	4xo			
7A Thru O.D. pl -.50 X 90					
Contacts: O.S. pl -.50 X 90					

NEAR PHORIAS

SUBJECTS	16" PHORIA				
	Phoria Findings	Avg. Find.	Avg. of 3 Find.	Diff.	(Diff.) ²
<u>M. F.</u> Age: 25 P.D.: 68/64					
Contacts: O.D. +.25					
O.S. -1.50	4xo, 5xo, 6xo	5xo			
Contacts ⊃ +1.00	8xo, 8xo, 10xo	8½xo	+5		
Contacts ⊂ -1.00	0, 3xo, 1xo	1xo			
7A: O.D. +1.00 -1.25 X 5				-4½	20¼
O.S. -1.00	8xo, 10xo, 10xo	9xo			
7A ⊃ +1.00	10xo, 12xo, 13xo	11½xo	+9½		
7A ⊂ -1.00	8xo, 8xo, 8xo	8xo			
7A Thru O.D. +.25 -.50 X 75					
Contacts: O.S. +.50 -.50 X 75					
<hr/>					
<u>S. T.</u> Age: 20 P.D.: 63/60					
Contacts: O.D. -1.37					
O.S. -.62	8xo, 8xo, 7xo	7½xo			
Contacts ⊃ +1.00	8xo, 8xo, 9xo	8xo	+7½		
Contacts ⊂ -1.00	6xo, 6xo, 8xo	6½xo			
7A: O.D. -.75 -.50 X 175				+2½	6¼
O.S. -1.00 -1.50 X 180	3xo, 5xo, 6xo	4½xo			
7A ⊃ +1.00	7½xo, 7½xo, 7½xo	7½xo	+5		
7A ⊂ -1.00	1xo, 4xo, 6xo	3½xo			
7A Thru O.D. +.50					
Contacts: O.S. -.50					
<hr/>					
<u>J. B.</u> Age: 30 P.D.: 70/66					
Contacts: O.D. +1.25					
O.S. +1.75	4so, 4so, 4so	4so			
Contacts ⊃ +1.00	1so, 1so, 1so	1so	-5		
Contacts ⊂ -1.00	12so, 9so, 12so	10½so			
7A: O.D. +1.00 -1.00 X 170				-1½	2¼
O.S. +1.50 -1.00 X 170	4so, 3so, 3so	3½so			
7A ⊃ +1.00	0, 0, 0	0	-3½		
7A ⊂ -1.00	8so, 6so, 5so	6½so			
7A Thru O.D. +.25 -.50 X 100					
Contacts: O.S. +.75 -.75 X 90					
<hr/>					
<u>D. B.</u> Age: 22 P.D.: 64/60					
Contacts: O.D. -1.75					
O.S. -1.75	3½so, 2½so, 3so	3so			
Contacts ⊃ +1.00	3xo, 2½xo, 2xo	2½xo	-2		
Contacts ⊂ -1.00	5so, 5so, 5so	5so			
7A: O.D. -1.00 -.50 X 125				-1½	2¼
O.S. -1.50 -.50 X 15	1so, 1so, 1so	1so			
7A ⊃ +1.00	2xo, 2xo, 3xo	2½xo	-½		
7A ⊂ -1.00	3so, 3so, 3so	3so			
7A Thru O.D. +.25 -.50 X 100					
Contacts: O.S. +.75 -.75 X 90					

NEAR PHORIAS

SUBJECTS	16" PHORIA				2
	Phoria Findings	Avg. Find.	Avg. of 3 Find.	Diff.	
<u>R. D.</u> Age: 22 P.D.: 63/60					
Contacts: O.D. -1.87					
O.S. -2.00	2xo, 2xo, 4xo	2½xo			
Contacts ⊃ +1.00	4xo, 5xo, 6xo	5xo	+4		
Contacts ⊂ -1.00	4xo, 4xo, 4xo	4xo			
7A: O.D. -2.00 -.25 X 90				-6	36
O.S. -2.00 -.25 X 180	11xo, 10xo, 10xo	10½xo			
7A ⊃ +1.00	8xo, 8xo, 8xo	8xo	+10		
7A ⊂ -1.00	11xo, 11xo, 11xo	11xo			
7A Thru O.D. +.75 -.25 X 90					
Contacts: O.S. +.75 -.25 X 90					
<hr/>					
<u>B. H.</u> Age: 30 P.D.: 63/59					
Contacts: O.D. -3.50					
O.S. -2.75	9xo, 10xo, 10xo	9½xo			
Contacts ⊃ +1.00	13xo, 12xo, 12xo	12½xo	+10		
Contacts ⊂ -1.00	7xo, 8xo, 9xo	8xo			
7A: O.D. -3.25				-8	64
O.S. -3.00	18xo, 18xo, 18xo	18xo			
7A ⊃ +1.00	18xo, 18xo, 18xo	18xo	+18		
7A ⊂ -1.00	18xo, 18xo, 16xo	17½xo			
7A Thru O.D. -.25 -.50 X 160					
Contacts: O.S. +1.75 -.75 X 90					
<hr/>					
<u>J. B.</u> Age: 24 P.D.: 64/62					
Contacts: O.D. -2.75					
O.S. -2.25	8so, 7so, 4so	6½so			
Contacts ⊃ +1.00	0, 1xo, 2xo	1xo	-4		
Contacts ⊂ -1.00	5so, 7so, 8so	6½so			
7A: O.D. -3.00 -.50 X 5				+2½	6¼
O.S. -2.75 -.25 X 165	6so, 5so, 4so	5so			
7A ⊃ +1.00	0, 2xo, 3xo	1½xo	-6½		
7A ⊂ -1.00	18so, 14so, 14so	15½so			
7A Thru O.D. +.25 -.25 X 90					
Contacts: O.S. pl -.50 X 135					
<hr/>					
<u>B. S.</u> Age: 21 P.D.: 66/64					
Contacts: O.D. -5.00					
O.S. -3.75	5xo, 5½xo, 6xo	5½xo			
Contacts ⊃ +1.00	8xo, 9xo, 9xo	8½xo	+6		
Contacts ⊂ -1.00	5xo, 4½xo, 4xo	4½xo			
7A: O.D. -5.00				-5½	30¼
O.S. -4.25	15xo, 15xo, 15xo	15xo			
7A ⊃ +1.00	10xo, 10xo, 10xo	10xo	+11½		
7A ⊂ -1.00	9xo, 9xo, 9xo	9xo			
7A Thru O.D. pl					
Contacts: O.S. pl					

TABLE I

SUBJECTS	20' DIFFERENCES	16" DIFFERENCES
K. A.	$-\frac{1}{2}$	-3
S. H.	+2	+1
K. M.	$-\frac{1}{2}$	$-2\frac{1}{2}$
D. T.	0	$-1\frac{1}{2}$
"J" B.	+1	+1
L. D.	-1	$-3\frac{1}{2}$
G. B.	0	+2
C. L.	+4	$+5\frac{1}{2}$
M. F.	-1	$-4\frac{1}{2}$
S. T.	+3	$+2\frac{1}{2}$
J. B.	$-1\frac{1}{2}$	$-1\frac{1}{2}$
D. B.	+2	$-1\frac{1}{2}$
R. D.	$+2\frac{1}{2}$	-6
B. H.	-1	-8
J. B.	-1	$+2\frac{1}{2}$
B. S.	$-1\frac{1}{2}$	$-5\frac{1}{2}$
Σ	+6.50	-23.00
Mean Difference	+6.50/16 = +0.406	-23.00/16 = -1.44

TABLE II

SUBJECTS	MEAN DIFF. - 20' DIFF.	(MEAN DIFF.- 20' DIFF.) ²	MEAN DIFF. - 16" DIFF.	(MEAN DIFF.-16" DIFF.) ²
K.A.	+ .406 - (- .5) = + .906	0.821	-1.44 - (-3.0) = +1.560	2.434
S.H.	+ .406 - (+2.0) = -1.59	2.541	-1.44 - (+1.0) = -2.44	5.954
K.M.	+ .406 - (- .5) = + .906	0.821	-1.44 - (-2.5) = +1.06	1.124
D.T.	+ .406 - (0) = + .406	0.165	-1.44 - (-1.5) = +0.06	0.004
"J"B.	+ .406 - (+1.0) = -.594	0.353	-1.44 - (+1.0) = -2.44	5.954
L.D.	+ .406 - (-1.0) = +1.406	1.977	-1.44 - (-3.5) = +2.06	4.244
G.B.	+ .406 - (0) = + .406	0.165	-1.44 - (+2.0) = -3.44	11.834
C.L.	+ .406 - (+4.0) = -3.594	12.917	-1.44 - (+5.5) = -6.94	48.164
M.F.	+ .406 - (-1.0) = +1.406	1.977	-1.44 - (-4.5) = +3.06	9.364
S.T.	+ .406 - (+3.0) = -2.954	8.726	-1.44 - (+2.5) = -3.94	15.524
J.B.	+ .406 - (-1.5) = +1.906	3.633	-1.44 - (-1.5) = +0.06	0.004
D.B.	+ .406 - (+2.0) = -1.594	2.541	-1.44 - (-1.5) = +0.06	0.004
R.D.	+ .406 - (+2.5) = -2.094	4.385	-1.44 - (-6.0) = +4.56	20.794
B.H.	+ .406 - (-1.0) = +1.406	1.977	-1.44 - (-8.0) = +6.56	43.034
J.B.	+ .406 - (-1.0) = +1.406	1.977	-1.44 - (+2.5) = -3.94	15.524
B.S.	+ .406 - (-1.5) = +1.906	3.633	-1.44 - (-5.5) = +4.06	16.484
Σ		48.609		200.444

$\frac{\Sigma}{N-1}$	$48.609/15 = 3.241$	$200.444/15 = 13.363$
$\sqrt{\frac{\Sigma}{N-1}}$	1.80	3.66

TABLE III

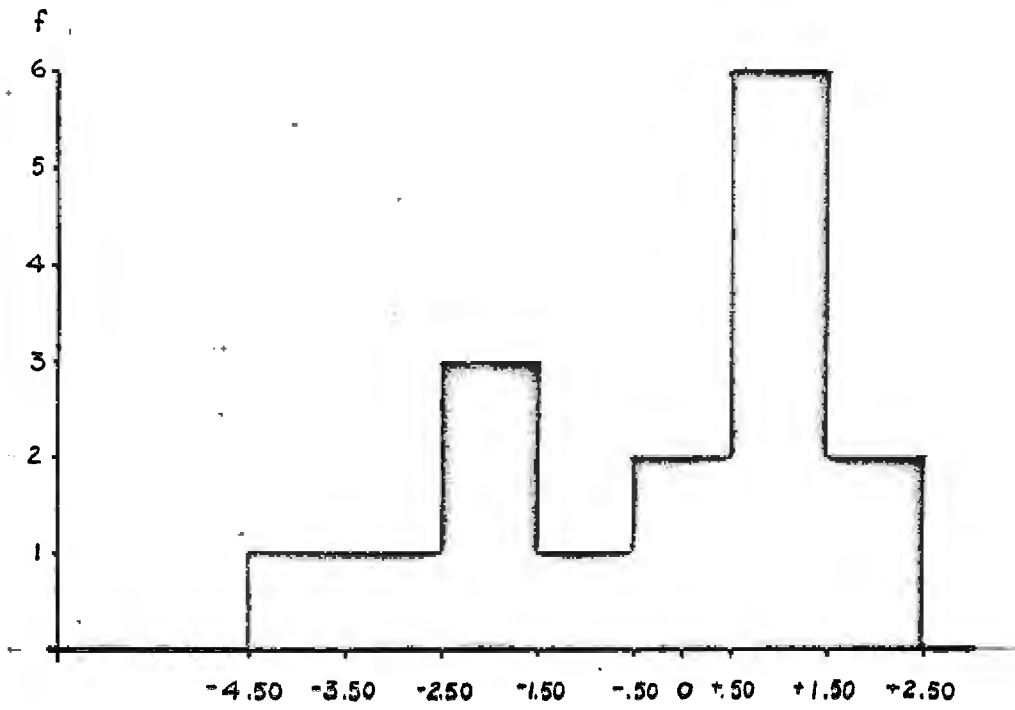
SUBJECTS	AVG. SPH. 7A WITHOUT CONTACTS	AVG. SPH. 7A Thru CONTACTS	DIFF.	AVG. RESIDUAL ASTIGMATISM
K. A.	-1.25	pl	+1.25	-.25
S. H.	-3.00	+25	+3.25	-.50
K. M.	-.75	+25	+1.00	-.50
D. T.	-2.12	+50	+2.62	-.62
"J" B.	-.12	+37	+50	-.37
L. D.	-1.75	+37	+2.12	-.25
G. B.	-1.75	+12	+1.87	0
C. L.	+2.25	-.25	-2.00	-.50
M. F.	-.25	+12	+37	-.50
S. T.	-1.37	pl	+1.37	0
J. B.	+.75	+12	-.62	-.62
D. B.	-1.50	+12	+1.62	-.62
R. D.	-2.12	+62	+2.75	-.25
B. H.	-3.12	+50	+3.62	-.62
J. B.	-3.00	-.12	+2.87	-.37
B. S.	-4.62	pl	+4.62	0
Σ	-23.72	+2.97	+27.21	-5.97
$\frac{\Sigma}{N}$	$-23.72/16 = -1.48$	$+2.97/16 = +.19$	$+27.21/16 = +1.70$	$-5.97/16 = -.37$

-2.50 dist. stim.
-1.50 lens stim.
-4.00
2 cm. dist.
eye to inst.
-3.70
-1.50 (Lo)
-2.20 accom. stim.

-2.50 dist. stim.
+0.25 lens stim.
-2.25
2cm. dist.
eye to inst.
-2.16
+0.25 (Lo)
-2.41 accom. stim.

GRAPH A

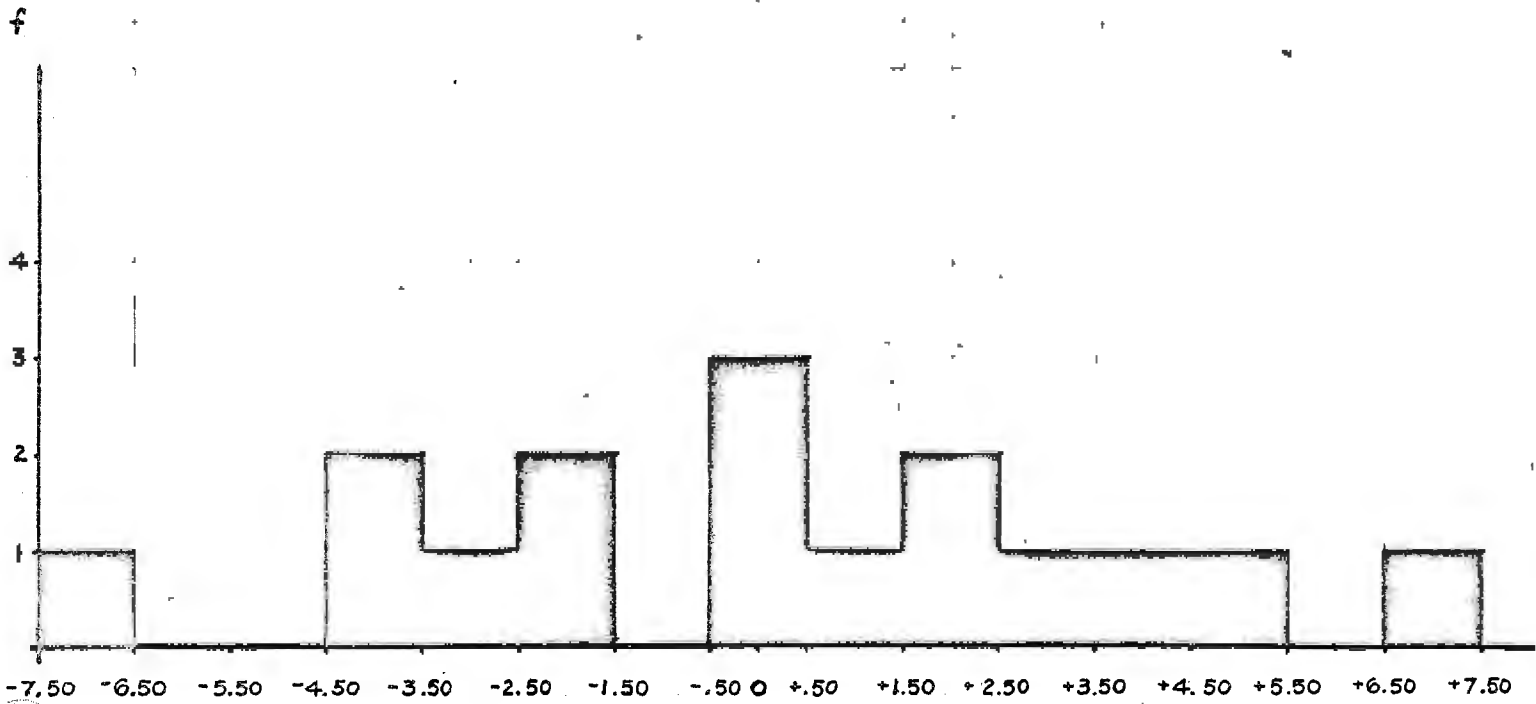
MEAN DIFFERENCE - 20' DIFFERENCES



MEAN DIFFERENCE : +.406

GRAPH B

MEAN DIFFERENCE - 16" DIFFERENCES



MEAN DIFFERENCE : -1.44

DISCUSSION

The mean difference found at far or 20' distance between the phoria taken through the 7A lens power and the phoria taken through the contact lens power is shown in Table I. It was found to be approximately 0.5 prism diopters in esophoria.

The mean difference at near or 16" distance was determined in the same manner as above and is also shown in Table I. This mean difference was found to be approximately 1.5 prism diopters in esophoria.

The standard deviation was calculated for both far and near phoria findings and appears in Table II. These values are 1.8 for the far findings and 3.66 for the near findings.

Table III shows calculations to determine if there was a change in accommodative stimulus at near through the 7A lens power with the contact lenses as compared to that through the 7A lens power without the contact lenses which would account for the trend toward increased esophoria at near through the contact lenses. The average spherical equivalents for both were determined and the mean difference obtained as shown. The accommodative stimulus was found to be less for the 7A lens power without the contact lenses than for the 7A lens power with the contact lenses.

The value of the difference between the mean difference and the far and near phoria differences was plotted as a bar graph or histogram and a slight skew to the plus side or esophoria side can be noted at far while the near phoria is distributed equally around zero on the graph indicating slight esophoria at far and esophoria at near.

DISCUSSION

In determining the 7A through the contact lenses residual astigmatism was measured in almost every case. The average value was -0.37 D.

CONCLUSION

From Table I and II we can conclude that there is little or no change in the far phoria taken through contact lenses alone as compared to that taken through conventional spectacles. Our findings indicated a very slight trend toward increased exophoria through the contact lenses of about 0.5 prism diopters over the phoria taken through the 7A lens power in the phoropter.

Also from these tables we can conclude that there is a trend toward more esophoria at near in the phorias taken through the contact lenses as compared to the phorias taken through the 7A lens power in the phoropter.

The stimulus to accommodation at 16" through either lens power in Table III seems to have little or no influence in increasing the amount of esophoria found at near through the contact lenses.

The average amount of residual astigmatism of -0.37 D that we measured compares favorably with that amount reported by Javal and other investigators.