VOLUME 2.

CONGENITAL MORBUS CORDIS

WITH SPECIAL REFERENCE

TO

SEPTAL DEFECTS

AND

PULMONARY STENOSIS.

-o-o-o-o-

By
R. D. Miller, M.B., Ch.B.

C O N T E N T S.

VOLUME 2.

Part 4.

-o-o-

CLASSIFICATION OF CASES.

1.	Maladie de Roger	With dilatation conus right ventricle.
2.	Maladie de Roger	
3.	Maladie de Roger	
4.	Maladie de Roger	
5.	Maladie de Roger	With dilatation pulmonary stem.
6.	Maladie de Roger	
7.	Maladie de Roger	Unclassified.
8.	Maladie de Roger	
9.	Maladie de Roger	
10.	Pulmonary stenosis	- ventricular septum closed.
11.	Pulmonary stenosis	- ventricular septum patent.
12.	Pulmonary stenosis	- auricular septum open, ventricular septum closed.
13.	Fallot's Tetralogy.	
14.	Conus Stenosis	- ventricular septal defect.
15.	Large auricular septal patency.	

CASE No. I. DIAGNOSIS Maladie de Roger; dilatation of the conus of the right ventricle.

NAME Allen, Edna SEX F. DATE OF BIRTH II-6-'2I.

AGE FIRST NOTICED Aet. 6.

HIST. FAM. Nil.

HIST. PREV Rheumatic fever aet. 5, ill I4 days.

COMPLAINT. Nil.

EXAMINATION.

		Average		
Height	49·5	48·9	*Physique*	Rather over average.
Weight	55·0	52·6	*Intelligence*	" " "
Colouring	Good.			

HEART. *Impuls.* Fourth *Space.* 5·25 *CMS.*

	1	2	1	*Character*	*Max. Int.*	*Conduct.*
Thrill						2,3&4 space at edge of sternum.
Bruits.—						
Mitral.				Clear.		
Pulm.				Pulm. 2 normal.		
Aortic.				Clear.		
Precord.				Rough & rasping.	3&4 space, edge off sternum.	Whole length of sternum; faint in back; not in neck.

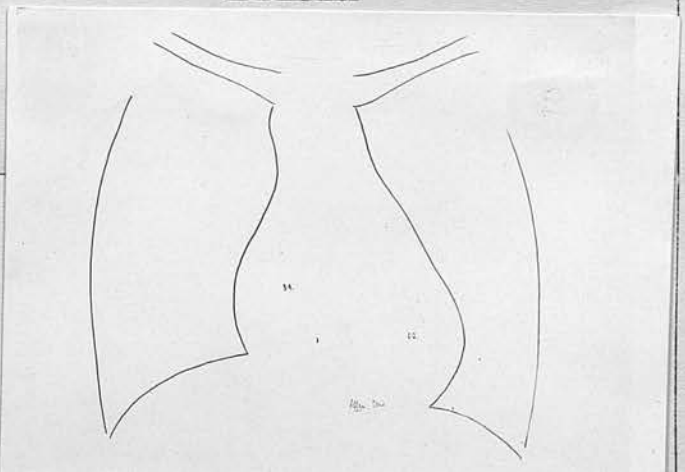
B.P. Refused, cried.

Response to Effort. Poor, dyspnoeic but not cyanotic.

Effect of Alterat. Posit.)
Effect of Alterat. Resp.) Nil.

X RAY. Plate I. Apparent right sided enlargement and convexity of the heart border in the region of the conus of the right ventricle.

Plate I.



E.C. Not taken.

Case No. 1. ALLAN.

A girl age ten, whose parents until school medical examination at the age of six was carried out, had no idea that anything was the matter. She complained of nothing, perhaps breathless a little on exertion, but able to play and run about like other boys and girls. She is over normal height and weight for her years, her general physique is good, rather over the average, her colour is normal, and in her other organs she is completely healthy, yet she typifies the classical picture of Maladie de Roger.

Heart. Thrill - Felt over the second, third and fourth spaces at the edge of the sternum, too marked to enable one to designate a more exact maximum point.

Bruit - Almost holosystolic with maximal intensity over the third and fourth left spaces, close to the sternal margin; heard faintly in the back, but not in the neck, or under the left clavicle. The pulmonary second sound is normal.

X-Ray - A big heart 10.1 mm. in transverse diameter, quite proportionate to the size of the chest but of a shape suggestive of Roger's disease. There is, however, a definite bulge in the region of the conus of the right ventricle, or pulmonary valve.

Note: - The question of why in some cases of Maladie de Roger one should meet with an accentuated pulmonary second sound whilst in others it is normal, in both of which types there is enlargement of the pulmonary arc, is of interest. It is

Case No. 1. Allan (cont'd.)

thought that in the former the pulmonary stem is dilated whilst in others it is the conus of the right ventricle which gives rise to the bulge in the left cardiac margin. The question could be answered by the administration of barium and examination in the antero posterior and left oblique views. Unfortunately in some cases, of which number this is one, the apprehension of the patient and parental anxiety, precludes this being carried out.

CASE No. 2. DIAGNOSIS Maladie de Roger; dilatation of the conus of the right ventricle.

NAME Leighton, Margaret SEX F. DATE OF BIRTH 3-9-'22.

AGE FIRST NOTICED Aet. 2-3.

HIST. FAM. Father supposed to have V. D. H.; nil else.

HIST. PREV. Pneumonia twice; recurrent attacks of bronchitis.

COMPLAINT. Breathless on exertion, goes blue on exertion & cold.

EXAMINATION.

		Average		
Height	44	45·1	*Physique*	Rather frail.
Weight	39	44·4	*Intelligence*	Under average.
Colouring	"Bluish"			

HEART. *Impuls.* Fifth *Space.* 7·0 *CMS.*

	1	2	1	*Character*	*Max. Int.*	*Conduct.*
Thrill	≈		≈	Rough	2,3,4 spaces. max. at 4th.	
Bruits.—						
Mitral.				Clear.		
Pulm.				Pulm. 2nd. normal.		
Aortic.				Clear.		
Precord.	≈		≈	Rough.	3rd. left, sternal edge.	All over precordium; more transversly than vert. In back & both sides of neck.

B.P. 92/60.

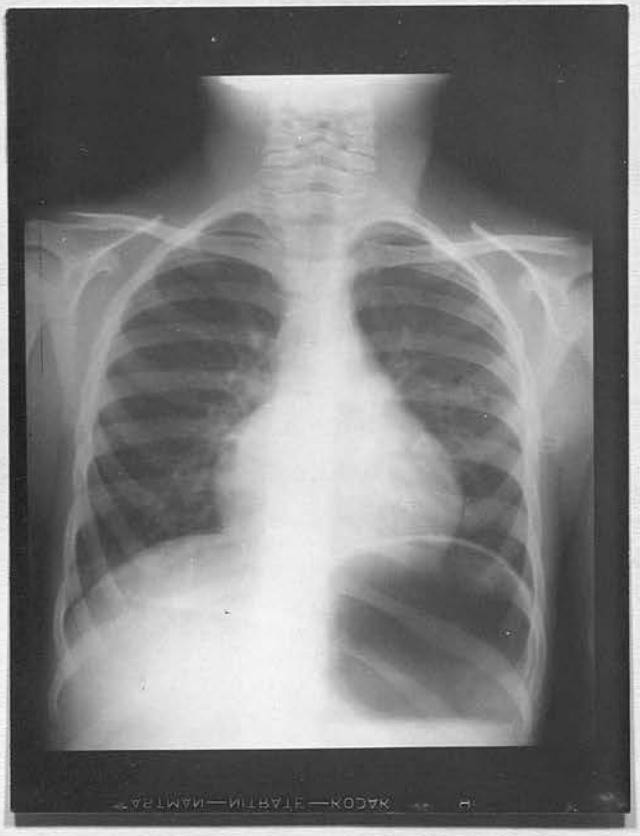
Response to Effort. Poor, dyspnoeic but not cyanotic.

Effect of Alterat. Posit. / *Effect of Alterat. Resp.* Nil.

X RAY. Plate 2. Large globular heart; small aortic shadow; "fullness" of the pulmonary arc.
Note lower level of the left ventricle below the diaphragmatic shadow.

E.C. Not taken.

Plate 2.



Case No. 2. LEIGHTON.

Compare this girl with the previous case (Allan); in all essentials similar. True a child of much frailer build, but she has twice had pneumonia and is subject to chest colds. At the time of examination she was suffering from a mild attack of bronchitis, quite sufficient to produce "Blaeness" of her mucus membranes.

Heart. Thrill - Here again felt maximally at the second, third and fourth intercostal spaces.

Bruit - Very loud and harsh, and heard most easily at the third space. Higher than with Allan, and also heard in the back. The pulmonary second sound is normal.

X-Ray - A large globular heart. The exposure was .75 sec. and shows the double shadow of systole and diastole. There is a convexity in the region of the conus of the right ventricle.

Note: - The systolic murmur was heard on either side of the neck. As suggested on page 85, this is of no consequence when dealing with a child of such sparse build.

CASE No. 3. DIAGNOSIS Maladie de Roger; dilatation of the conus of the right ventricle.

NAME Wallace, Gladys SEX F. DATE OF BIRTH 1915.

AGE FIRST NOTICED Aet. 2 months.

HIST. FAM. Nil.

HIST. PREV. Scarlet fever, whooping cough, measles, chicken pox; ? meningismus aet. 2.

COMPLAINT. Nil.

EXAMINATION.

		Average		
Height	65·0	61·75	*Physique*	Good.
Weight	116·0	113·0	*Intelligence*	Slightly under average.

Colouring Good; alteration in colour never been noticed even in winter.

HEART. *Impuls.* 5th. *Space.* 5·5 *CMS.*

	1	2	1	*Character*	*Max. Int.*	*Conduct.*
Thrill				Faint	4th. left sp. close to sternum.	
Bruits.—						
Mitral.				Clear.		
Pulm.				Pulm. 2nd. normal.		
Aortic.				Clear.		
Precord.				Rough.	5th. rib 2cms. from sternum.	Left interscapular region; left axilla, right axilla & precordium.

B.P. 106/66

Response to Effort. Good.

Effect of Alterat. Posit.)
) Nil.
Effect of Alterat. Resp.)

X RAY. Plate 3. A tall thin globular heartwith convexity of the upper left cardiac margin.

E.C. Plate 4. A normal graph showing no right axis deviation.

Plate 3.

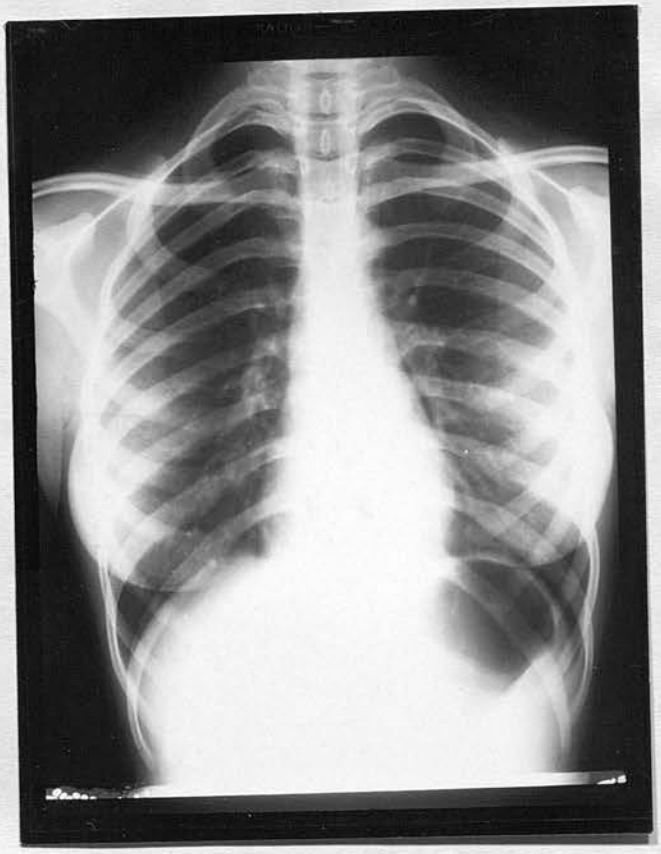
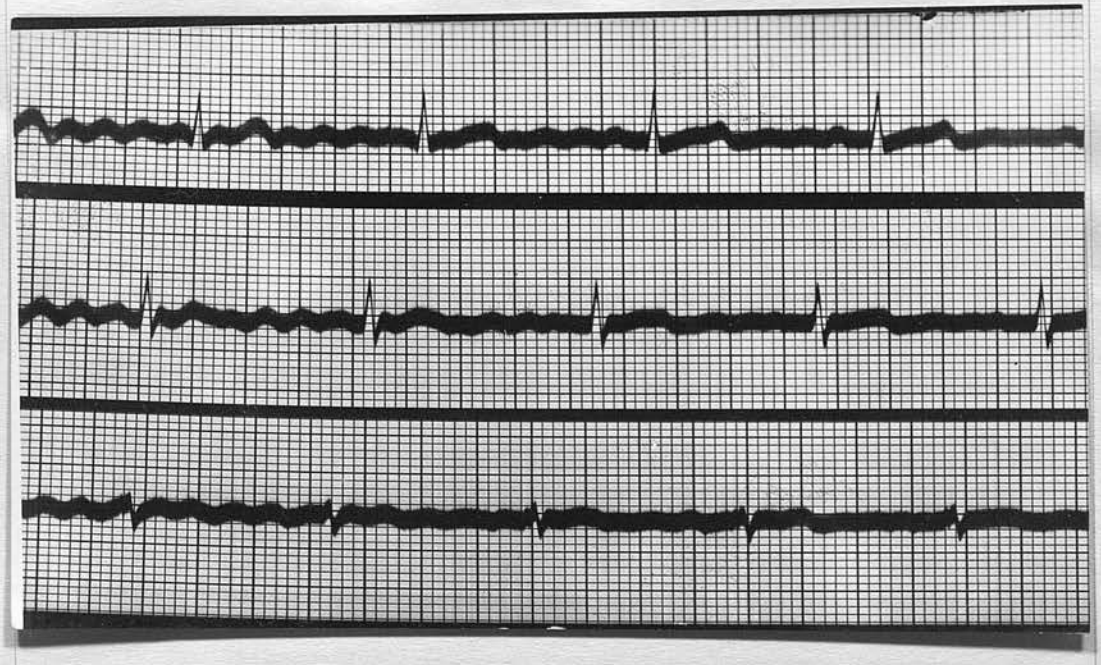


Plate 4.



Case No. 3. WALLACE.

Here one sees the exemplification of the text-book picture of Maladie de Roger. A girl, who apart from certain normally met with children's ailments, excluding a doubtful diagnosis of meningitis at the age of two, is now a healthy, well built girl, able to play tennis and do her own work as do other men and women. Not even a minimal degree of cyanosis has ever been noticed. Her height and weight are over the average, and her complaint - Nil.

Heart. Thrill - Present at the fourth left space.

Bruit - Rough and rasping over the entire precordium, with maximal intensity at the fifth rib, 2 cms. from the edge of the sternum. It is heard in either axilla, but better in the left than the right, and in the left interscapular region. The pulmonary second sound is normal.

B. P. - 106/66

Response to Effort - Good.

X-Ray - Heart assuming typical golbular appearance, commonly associated with the lesion, together with a convexity in the region of the conus of the right ventricle.

E. C. - No right axis deviation, together with large T waves.

Note: - The low point of maximal intensity of the thrill and murmur, viz fourth space, and the fifth rib. Further the absence of any right ventricular preponderance in the presence of a globular appearance of the heart.

CASE No. 4. DIAGNOSIS Maladie de Roger; dilatation of the conus of the right ventricle.

NAME Markham, Frank SEX M. DATE OF BIRTH 22-5-1926.

AGE FIRST NOTICED Aet. 6 weeks.

HIST. FAM. Nil.

HIST. PREV. Appendicectomy aet. 3½ years; recurrent bronchitis.

COMPLAINT. Nil.

EXAMINATION.

		Average		
Height	43·0	41·4	*Physique*	Good.
Weight	40·0	38·7	*Intelligence*	Average.

Colouring Nothing abnormal.

HEART. *Impuls.* 5th. *Space.* 7·0 *CMS.*

	1	2	1	*Character*	*Max. Int.*	*Conduct.*
Thrill				Palpable	3rd. sp. ½" from sternum	
Bruits.—						
Mitral.				Clear.		
Pulm.				Pulm. 2nd. faint but sharp & clear.		
Aortic.				Clear.		
Precord.				Harsh & rough.	3rd. left space.	Axilla, back, both sides of the neck & upwards towards the left clavicle.

B.P. No result.

Response to Effort. Good.

Effect of Alterat. Posit.)
) Nil.
Effect of Alterat. Resp.)

X RAY.

Plate 5. Aheart showing the typical globular appearance associated with Maladie de Roger.

Plate 6. Taken with a slight degree of obliquity; it shows a bulging "pulmonary arc" which is due to dilatation of the conus of the right ventricle.

E.C.

Plate 5.

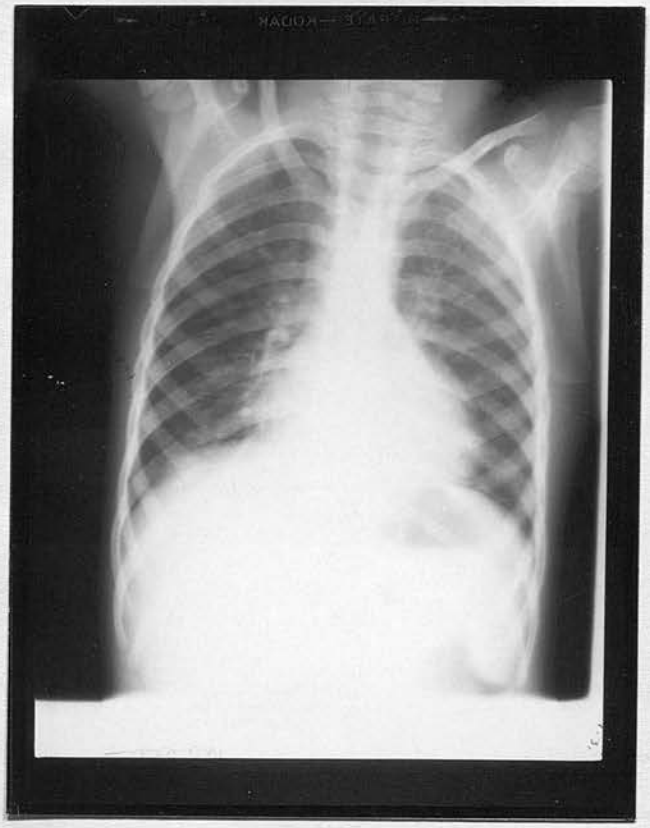
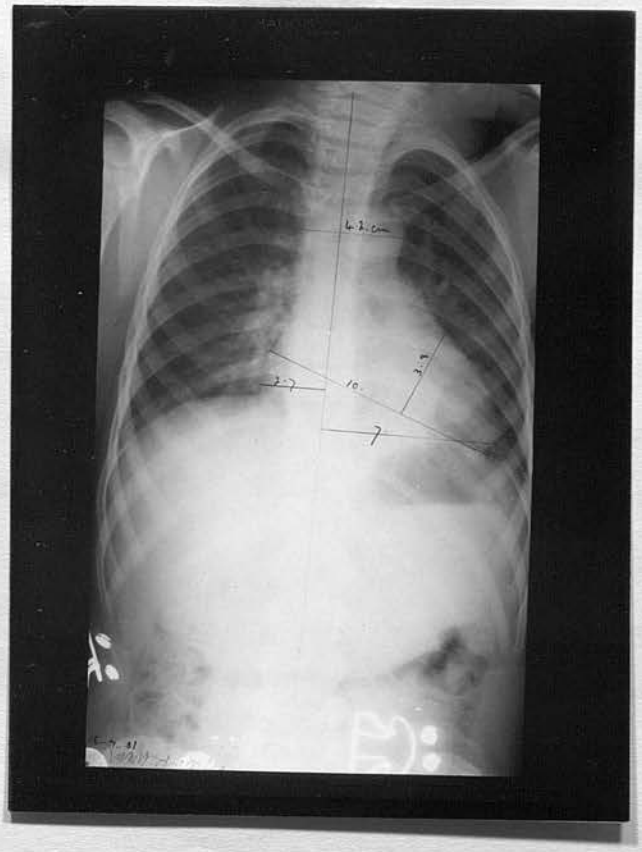


Plate 6.



Case No. 4. MARKHAM.

Here again one sees a case of Maladie de Roger. The murmur is typical, running right up to the second sound, with its maximal intensity at the third left space, and conducted in the expected manner of transversely to the left axilla, and to the back.

The points of interest are :-

1) Its audition under the left clavicle.

2) In the neck.

3) The X-Ray appearance.

1) One must be careful in stating that murmurs, heard under the left clavicle indicate pulmonary stenosis, especially in the presence of a ventricular septal leak, and in the absence of cyanosis. If these two conditions are present, then certainly at unfavourable times, e.g. cold and exertion, cyanosis will be present, at least to a degree greater than has been noticed in this boy, who has repeatedly been seen while suffering from severe bronchitis. Further, such an association would not permit of an uneventful and unanxious anaesthetic such as this boy underwent, and it is felt that one cannot make a diagnosis of this association of anomolies in the absence of a minor degree of cyanosis and dyspnoea.

A murmur of this intensity originating at the base of the interventricular septum may be carried

Case No. 4. Markham (cont'd.)

up the adjacent pulmonary artery, which lies more superficially than the aorta, and be heard over a short distance up to the left clavicle.

2) The remarks made above with regard to the care necessary before postulating rechtlage of the aorta or aortic disease, apply here, and certainly if deviation to the right of the aorta were superadded to pulmonary stenosis and interventricular septal leak, cyanosis would most certainly be present.

3) The radiological appearances are undoubtedly striking. Plate 5 was taken truly antero-posterior, although he was leaning rather to the left, and in it one sees a big rounded right heart. In Plate 6 taken with a certain degree of obliquity, a pulmonary arc is seen. Unfortunately the right anterior oblique view was unsuccessful, owing to his nervousness, because of which he would not remain in the set position. Does this bulge indicate a true enlargement of the pulmonary artery? - it is thought not. The condition is met with too frequently in children not showing clinical signs of pulmonary stenosis, and in the writer's view is due to a passive enlargement of the conus of the right ventricle.

The diagnosis thus rests between pure Maladie de Roger, with enlargement of the conus of the right

Case No. 4. Markham, (cont'd.)

ventricle, and pure Pulmonary Stenosis without septal leak. It is difficult to give a definite opinion, but in view of his general physique, the clearness of the pulmonary second sound, and the audition of the murmur in the back, the former diagnosis has been made.

CASE No. 5. DIAGNOSIS Maladie de Roger; dilatation of the pulmonary artery.

NAME Powell, Percy SEX M. DATE OF BIRTH 28-5-1924.

AGE FIRST NOTICED Since pneumonia aet. 4.months.

HIST. FAM. Nil.

HIST. PREV. Pneumonia aet. 4 months & 6 years; whooping cough. Takes cold easily; plays but gets quickly short of breath.

COMPLAINT. Nil.

EXAMINATION.

		Average		
Height	47·0	43·0	*Physique*	Good.
Weight	55·5	41·3	*Intelligence*	Average.
Colouring	Pale.			

HEART. *Impuls.* 1 2 — 5th. *Space.* 1 — 6·0 *CMS.*

	Character	*Max. Int.*	*Conduct.*
Thrill	Marked.	2nd. left sp.	
Bruits.—			
Mitral.	Clear.		
Pulm.	Pulm. 2nd. sound much accentuated. Rough.	2nd. left sp.	Ant. fold left axilla & in back; not under left clavicle. Also over precordium.
Aortic.			
Precord.			

B.P. ~~128~~ 128/80.

Response to Effort. Easily becomes dyspnoeic.

Effect of Alterat. Posit.)
) Nil.
Effect of Alterat. Resp.)

X RAY.

Plate. 7. Showing the classical picture of Maladie de Roger; a convex pulmonary arc is seen.

Plate 8. Shows the aortic and pulmonary "beds" indicating that the pulmonary arc seen on Plate 7 is due to enlargement of the pulmonary artery.

E.C.

Not taken.

Plate 7.

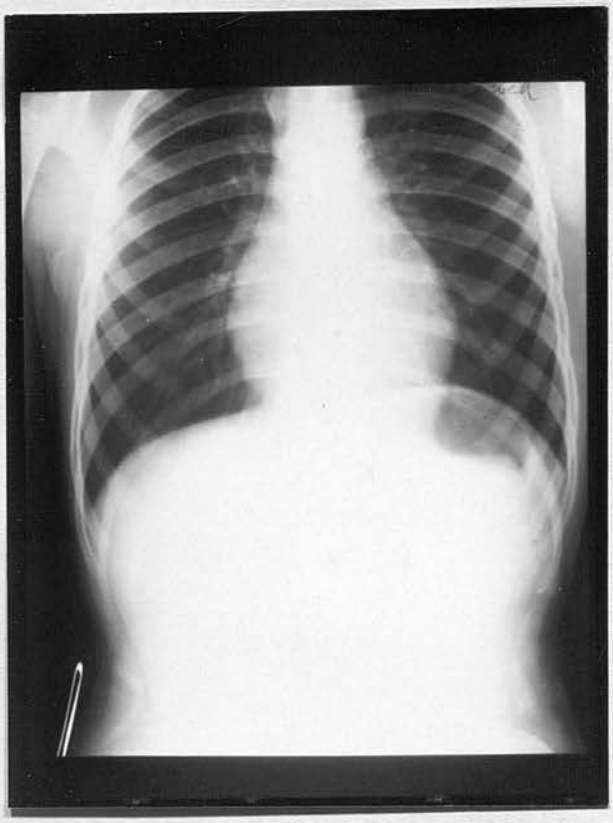
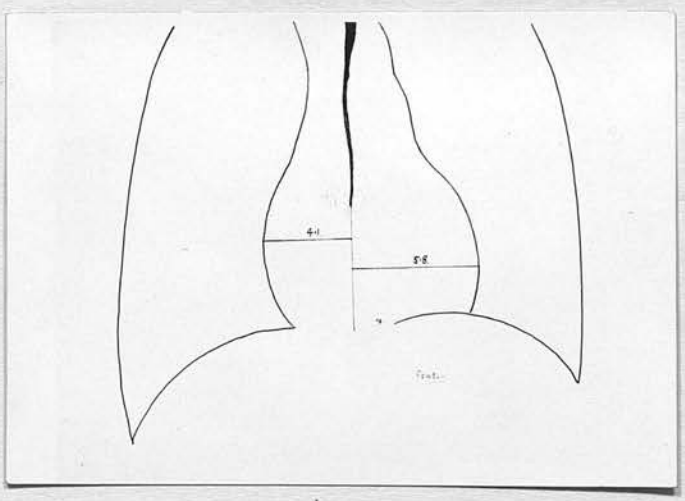


Plate 8.



Case No. 5. POWELL.

A boy well over the average height and weight; though he plays about he gets easily tired and short of breath. He has had repeated attacks of bronchitis and shows a very minor degree of peripheral cyanosis and clubbing.

Heart. Thrill - Palpable over the entire precordium but maximally at the second left space.

Bruit - A rough systolic bruit heard maximally at the second left space and carried out from there to the left axilla but not up under the left clavicle nor in the neck. It is heard in the back. The pulmonary second sound is loud.

X-Ray - This shows the typical globular appearance associated with Maladie de Roger. Opposite to the site of the pulmonary artery can be seen an indentation of the oesophagus caused by dilatation of the pulmonary stem.

Accentuation of pulmonary second sound. The conditions causing this accentuation are :-

1. Any condition giving rise to dilatation of the pulmonary artery.
   (a) Left auriculo ventricular obstruction.
   (b) Obstruction in the lung itself, e.g. pneumonia, emphysema etc.
   (c) Patency of the ductus arteriosus.
   (d) Any condition causing the right heart to beat more forcibly than normal, e.g. toxic goitre, anaemia, low grade pulmonary stenosis, some cases of Maladie de Roger.

Case No. 5. Powell (cont'd.)

(e) Abnormalities of the right ventricular infundibulum.

Diagnosis - Maladie de Roger with dilatation of the pulmonary stem.

CASE No. 6. DIAGNOSIS Maladie de Roger; dilatation of the pulmonary artery.

NAME Latus, Ena SEX F. DATE OF BIRTH 2-6-1925.

AGE FIRST NOTICED Aet. II months.

HIST. FAM. Nil.

HIST. PREV. Measles; bronchitis since baby.
Easily fatigued & short of breath on exertion.

COMPLAINT. None except above.

EXAMINATION.

		Average		
Height	39·2	41·1	*Physique*	Chubby firm child.
Weight	39·0	37·5	*Intelligence*	Average.
Colouring	Normal.			

HEART. *Impuls.* 5th. *Space.* 5·0 *CMS.*

	1	2	1	*Character*	*Max. Int.*	*Conduct.*
Thrill	----------			Nil.		
Bruits.—						
Mitral.	|	|	|	Clear.		
Pulm.	|	†	|	Pulmonary 2nd. sound accentuated.		
Aortic.	|	|	|	Clear.		
Precord.	≈		≈	Smooth & high pitched.	4th. sp. edge of sternum.	Transversly to left axilla& back but not under clavicle.

B.P. Impossible to take.

Response to Effort. Not attempted.

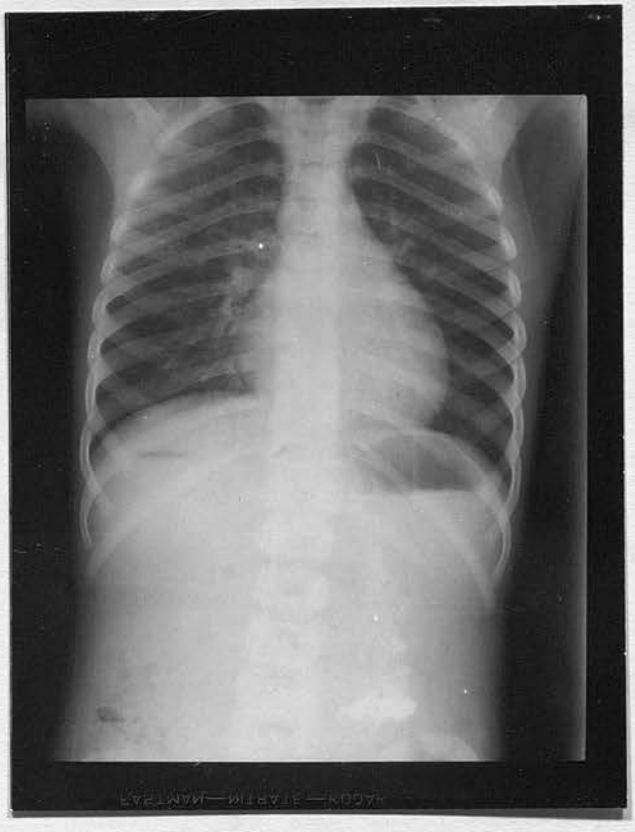
Effect of Alterat. Posit.)
) Nil.
Effect of Alterat. Resp.)

X RAY. Plate 9. A globular heart; the left side appears to be enlarged; there is nothing on clinical exam. ~~dilatation of~~ ~~it is due to a great~~ to sustain this belief. The enlargemt is due to dilatation of the pulmonary artery and of the conus of the right ventricle.

E.C.

Not taken.

Plate 9.



Case No. 6. LATUS.

A further case of Maladie de Roger, showing an unusual site of maximal intensity of the bruit. She is active, a well built chubby child but easily fatigued, and short of breath on exertion. (Mothers frequently exaggerate these effects of exercise when they know there is some cardiac abnormality) She is over weight, though rather under the average height.

Heart. Thrill - None.

Bruit - A smooth, high pitched prolonged bruit, heard when upright maximally in the fourth space close to the sternum. When prone it moves out to a point 3 cms. from the mid line. It is conducted transversely and to the back. The pulmonary second sound is accentuated and the mitral second clear.

X-Ray - The classical globular heart, with distinct convexity of the "pulmonary" region.

Note: - 1) The low site of the murmur.
2) The accentuated pulmonary second sound, heard in so many cases of Maladie de Roger, combined with convexity in the region of the pulmonary valve and indicative of early dilatation of the pulmonary artery.

CASE No. 7. DIAGNOSIS Maladie de Roger, unclassified.

NAME Frisby, Cecily SEX F. DATE OF BIRTH 24—3— '20

AGE FIRST NOTICED Aet. 10.

HIST. FAM. Nil.

HIST. PREV. Delicate baby, difficulty with feeding; measles.

COMPLAINT. None whatever; never missed one day's school.

EXAMINATION.

		Average		
Height	53.0	52.8	*Physique*	Very much above average.
Weight	79.0	63.9	*Intelligence*	" " " "
Colouring	Normal.			

HEART. *Impuls.* 5th. *Space.* 6.0 *CMS.*

	1	2	1	*Character*	*Max. Int.*	*Conduct.*
Thrill					Marked.	3-4th. left sp.	
Bruits.—						
Mitral.				Clear.		
Pulm.		+		Pulm. 2nd. sound accentuated.		
Aortic.						
Precord.					High pitch.	4th. sp. edge of sternum.	Transversly; in back & right carotids.

B.P. 102/66.

Response to Effort. Good.

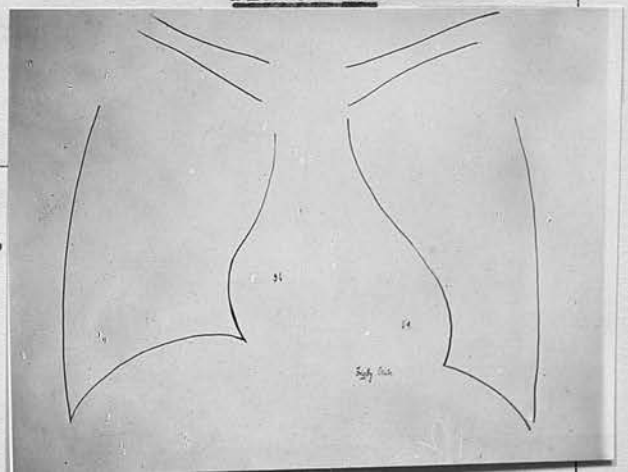
Effect of Alterat. Posit. } Nil.

Effect of Alterat. Resp. }

X RAY.

Plate IO. This is not characteristic; there is no real enlargement of the right ventricle but the "pulmonary" margin suggests an abnormal prominence.

Plate IO.



E.C.

Not taken.

Case No. 7. FRISBY.

A case departing only in minor details from the typical examples of Maladie de Roger, given above. A child aged 11 who has had no complaint whatever, never havingbeen away from school for half a day on account of illness, who jumps and swims without inconvenience and whose mother suspected nothing until the lesion was revealed at school medical examination in the Spring of the present year. Her standard of physique and intelligence is well above the average and her colouring normal.

Heart. Thrill - A marked thrill in the third and fourth spaces, 3 cms. from the mid line.

Bruit - A murmur systolic in time, and continuing well through systole, high pitched but not loud, and heard maximally at the fourth left space at the edge of the sternum. A systolic murmur is also heard in the carotids on the right side and in the back but not under the left clavicle; the bruit is unaltered by respiration. The pulmonary second sound is accentuated and the mitral second sound normal.

X-Ray - A heart not enlarged and in normal proportion to the width of the chest, with a suggestion of fullness over the pulmonary arc.

Note: - Murmur in carotid arteries of the right side:- without evidence of left sided enlargement and in the absence of other signs of pathological site or condition of the aorta or its valves this must

Case No. 7. Frisby (cont'd.)

be disregarded - c.f. page 115.

The case has not been classified because the fulness of the pulmonary arc is not sufficiently definite to allow of a categorical statement that the pulmonary artery is enlarged. Oblique X-rays were not possible because of the nervousness of the child.

CASE No. 8. DIAGNOSIS Maladie de Roger, unclassified.

NAME Briggs, Ena SEX F. DATE OF BIRTH 5-5-1920.

AGE FIRST NOTICED School med. exam.

HIST. FAM. Pat. grandfather died aet. 65 from "heart disease".

HIST. PREV. Measles, chicken pox, recurrent attacks of bronchitis.

COMPLAINT. Short of breath but runs about and plays.

EXAMINATION.

		Average		
Height	51.0	51.2	*Physique*	Good.
Weight	59.5	59.8	*Intelligence*	Average.

Colouring High but considered normal.

HEART. *Impuls.* 4th. *Space.* 5.5 *CMS.*

	1 2 1	*Character*	*Max. Int.*	*Conduct.*
Thrill	----------	None palpable.		
Bruits.—				
Mitral.	| | |	Clear.		
Pulm.	| + |	Pulm. 2nd. sound [illegible] accentuated.		
Aortic.	| | |			
Precord.	≈ | ≈	Rough.	4th. rib edge of sternum.	Out to apex & left axilla & back.

B.P. 112/ diastolic not audible.

Response to Effort. Not attempted.

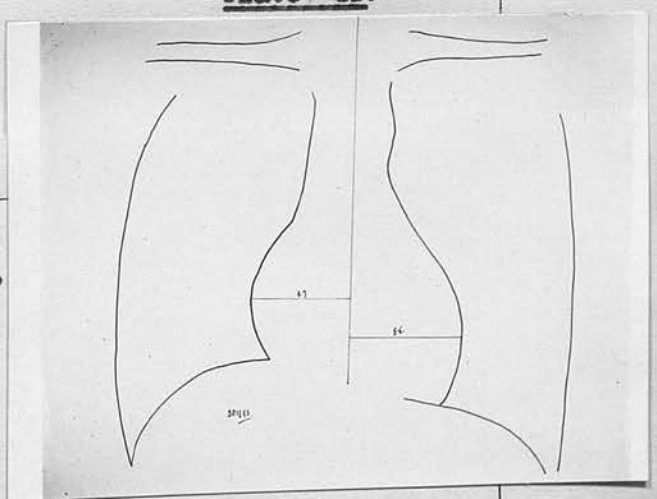
Effect of Alterat. Posit.)
) Nil.
Effect of Alterat. Resp.)

Red Blood Cell count 5,120, 000.

X RAY.

Plate II. Again shows typical globular heart.

Plate II.



E.C.

Not taken.

Case No. 8. BRIGGS.

This girl was perfectly able to run about, though apt to be short of breath, according to her mother, on sudden exertion.

Heart. Thrill - None felt.

Bruit - All the way down the left sternal margin, with maximal intensity at the fourth rib, close to the breast bone, and also in the back. The pulmonary second sound is accentuated.

X-Ray - She has the classical picture of Maladie de Roger. There is no visible enlargement of the pulmonary arc.

Blood Count - Though over 5,000,000 quite within normal proportions for a child of this age.

Note: - The absence of thrill is not necessarily of consequence. Its incidence is discussed on page 85.

The accentuation of the pulmonary second sound in Maladie de Roger without radiological indication of enlargement of the pulmonary arc prevents one from determining which of the previous two groups this case should be placed under.

CASE No. 9. DIAGNOSIS Maladie de Roger, unclassified.

NAME Brown, Betty SEX F. DATE OF BIRTH 24-12-1925.

AGE FIRST NOTICED Aet. 3.

HIST. FAM. Nil.

HIST. PREV. Scarlet fever aet. 4 years.

COMPLAINT. Nil.

EXAMINATION.

		Average		
Height	41.5	41.4	*Physique*	Rather delicate.
Weight	35.5	37.5	*Intelligence*	Average.

Colouring Normal; during attack of bronchitis in 1931 child is reported to have been cyanosed.

HEART. *Impuls.* 5th. *Space.* 5.0 *CMS.*

	1	2	1	*Character*	*Max. Int.*	*Conduct.*
Thrill					Faint.	3 - 4th. sp. 2½ cms. mid. line.	
Bruits.—						
Mitral.				Clear.		
Pulm.				Pulm. 2nd. sound normal.		
Aortic.				Harsh, 3—4 sp. holosystolic.	Both axillae, more left than right, in back, not in neck.	
Precord.	|||				

B.P. Cant take.

Response to Effort. Not attempted.

Effect of Alterat. Posit.)
Effect of Alterat. Resp.) Nil.

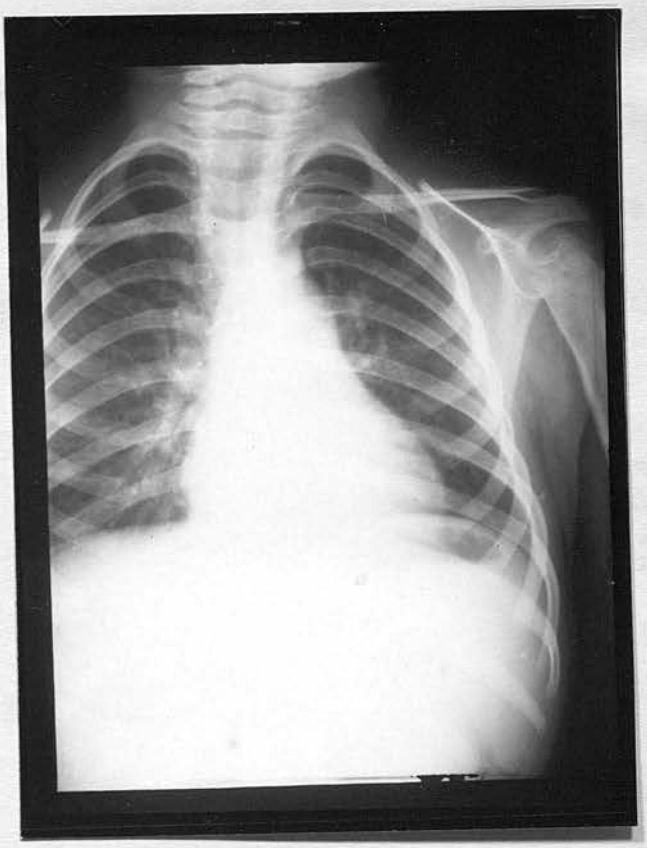
X RAY.

Plate I2. This plate was unfortunately taken obliquely. The breadth of the aorta is therefore exaggerated. There is however [redacted] enlargement of the right ventricle.

E.C.

Not taken.

Plate 12.



Case No. 9. BROWN.

A child rather delicate and under weight but bright and intelligent. She does not show the same response to effort as the previous cases, becoming easily dyspnoeic but never having paroxysmal attacks thereof. She was noticeably blue during an attack of bronchitis during the Spring of 1931, but no such discolouration was noted on three examinations, on two of which occasions the temperature of the atmosphere was low.

Heart. Thrill - A faint thrill in the third and fourth spaces, 2½ cms. from the mid line.

Bruit - Harsh holosystolic murmur, maximally at the third and fourth spaces 2½ cms. from the mid line. Heard in both axillae, more so in the left, faintly in the back, and not in the neck. The mitral second sound was clear and sharp.

X-Ray - A short fat heart in a scoliotic chest.

The point of interest here lies in the typical auscultatory signs of Maladie de Roger in the absence of the classical radiological appearances.

CASE No. 10. DIAGNOSIS Pulmonary obstruction (low grade); ventricular septum closed.

NAME Smith, Arnold SEX M. DATE OF BIRTH 18.7.1925.

AGE FIRST NOTICED Aet. 3½ years.

HIST. FAM. Maternal uncle, weak heart.

HIST. PREV. Whooping cough, measles, mumps. Active but easily tired and dyspnoeic.

COMPLAINT. None.

EXAMINATION.

		Average	
Height	39.0	39.2	*Physique*
Weight	34.0	35.9	*Intelligence*

Colouring Normally a high colour; goes blue on exertion or exposure to cold.

HEART. *Impuls.* 5th. *Space.* 5.5 *CMS.*

	1	2	1	*Character*	*Max. Int.*	*Conduct.*
Thrill				Marked.	2nd. sp. 2½ cms. from mid line.	
Bruits.—						
Mitral.				Clear.		
Pulm.		faint.		Pulmonary 2nd. sd. faint, almost inaudible Pulm. Ist. rough.	2nd. left space.	Towards left clavicle, left axilla, both sides of the neck.
Aortic.						
Precord.						

B.P. Not audible.

Response to Effort. Not attempted.

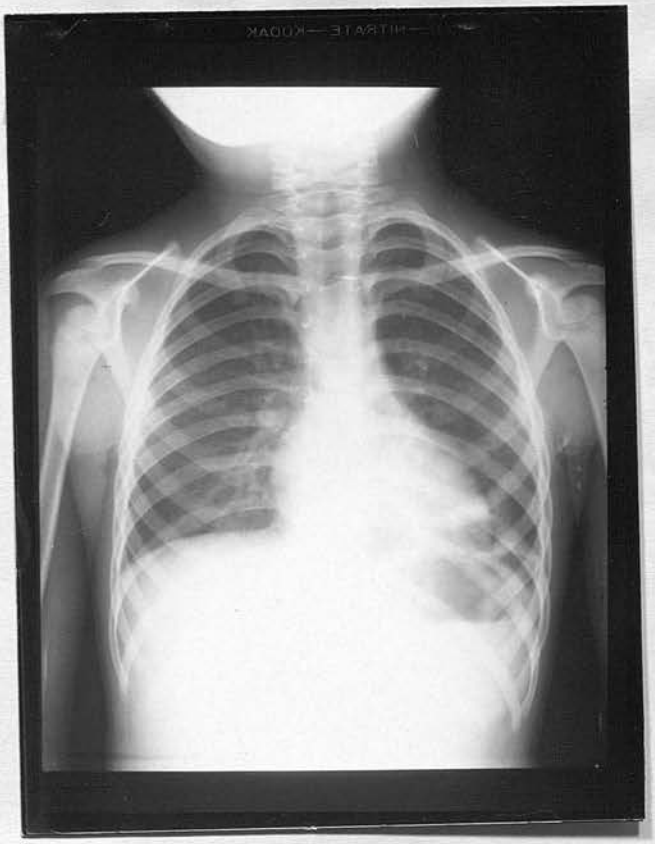
Effect of Alterat. Posit.)
) Nil.
Effect of Alterat. Resp.)

X RAY. Plate 13. This plate is not typical; the right ventricle is enlarged and the aorta is small. There does not appear to be any enlargement in the region of the pulmonary artery.

E.C.

Not taken.

Plate 13.



Case No. 10. SMITH.

A case which superficially suggests Maladie de Roger, but on closer examination suggests a different diagnosis.

His previous history is uneventful, except that his mother states that he becomes very easily tired and short of breath, though by nature an active boy. On examination his colour was noted to be high, but thought not to be abnormal; he is said to turn blue on exertion or exposure to cold. He is rather under the average height and weight for his age.

Heart. Thrill - Marked, and felt maximally at the second left space 2½ cms. from the mid line.

Bruit - A rough systolic bruit, heard with its point of maximal intensity over the second left space and conducted from there towards the left clavicle, to the left axilla and up both sides of the neck. The pulmonary second sound is faint, being almost inaudible.

X-Ray - The radiograph is not typical; the right ventricle is enlarged and there does not appear to be any enlargement in the region of the pulmonary artery.

E. C. - Permission to have this taken was refused.

Note: - The point of difficulty here is decision as to whether one is dealing with 1) Maladie de Roger; the main points against this diagnosis are the faintness of the pulmonary second sound and the high site of the bruit, and the absence of any murmur in the back and the faintness of the

Case No. 10. Smith (cont'd.)

murmur in the lower part of the precordium.
2) Low grade pulmonary stenosis with a closed ventricular septum. Supporting this diagnosis is the extreme faintness of the pulmonary second sound, the concavity of the "pulmonary arc", the site of the murmur and the presence of a thrill.

A murmur heard over the second left space and accompanied by a weak pulmonary second sound, especially when conducted upwards and outwards, even in the absence of cyanosis and clubbing, is highly suggestive of a pulmonary stenosis of inflammatory origin, with a closed ventricular septum.

CASE No. II. DIAGNOSIS Pulmonary stenosis (inflammatory type) with small ventricular septal leak.

NAME Tomlinson, Lily SEX F. DATE OF BIRTH 15-5-1922.

AGE FIRST NOTICED At birth, finger nails blue.

HIST. FAM. Paternal grandfather died from a "weak heart".

HIST. PREV. Measles, whooping cough, chicken pox. Becomes blue on exertion or exposure to cold.

COMPLAINT. None.

EXAMINATION.

		Average		
Height	43.5	47.5	*Physique*	Under average; "delicate" & Rather "old looking".
Weight	38.5	49.4	*Intelligence*	Just started school.

Colouring Pale, purplish mucous membranes; peripheral cyanosis & a minor degree of clubbing.

HEART. *Impuls.* 1 2 — 4th. *Space.* 1 — 5.5 *CMS.*

	Character	*Max. Int.*	*Conduct.*
Thrill	Faint.	3rd. left rib 3cms. mid line.	
Bruits.—			
Mitral.	Clear.		
Pulm.	Pulmonary 2nd. sound masked by syst. bruit. Pulm. Ist. sd.		
Aortic.	Rough & rasping. Holosystolic.	3rd. rib, 3 cms. mid line.	Left clavicle, axilla, faint in back. Not in neck.
Precord.			

Bruit is louder at the 2nd. than at the 3rd. space.

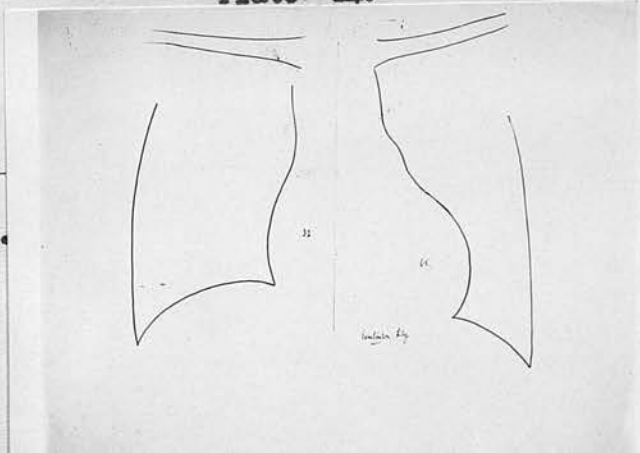
B.P. Not audible.

Response to Effort. Not attempted.

Effect of Alterat. Posit.) *Effect of Alterat. Resp.*) Nil.

X RAY. Plate I4. A prominent "pulmonary arc" probably due to dilatation of the conus of the right ventricle. The right ventricle is more prominent than normal. The aortic shadow is broad and deviated to the right.

Plate I4.



E.C. Not taken.

Case No. 11. TOMLINSON.

This case is inserted, because it illustrates in the face of a similar X-ray picture to Markham's (Case No. 4) a different condition clinically. She also shows a bruit as heard typically in Maladie de Roger, again with its maximal intensity at the third left space, also along the whole of the sternum. The X-ray picture is very similar, except for the greater breadth of the aortic shadow. Wherein lies the difference? Whereas Markham was over average height and weight, this girl, though having suffered from no serious illness in her earlier life, was under the average in both respects, a delicate, rather "old-looking" child, and with a definite cyanotic tint to her mucus membranes. Further, the murmur as heard over her pulmonic area was of very much louder intensity than was the case with Markham, and was, though not at the point of maximal intensity of the murmur, yet louder at the second than at the fourth space, and the thrill was felt further out (3 cms.) from the mid line than is usual with thrill of purely septal origin. Finally, her red cell count, higher than is normal in children of her age.

To no other cause than her cardiac condition could be assigned her poor physical development, and her colouring. Reviewing the causes of dilatation of the pulmonary arc, as given in case 5 , one can come

Case No. 11. Tomlinson (cont'd.)

to no other conclusion than that one is dealing with a case of pulmonary stenosis of an inflammatory type with a small leak of the interventricular septum.

CASE No. 12. DIAGNOSIS Pulmonary obstruction with a defect of the auricular septum.

NAME Copeland, Thomas SEX M. DATE OF BIRTH 2-10-1920.

AGE FIRST NOTICED Not known.

HIST. FAM. Not known, orphan in "home".

HIST. PREV. Nil since advent into home.

COMPLAINT. Runs about but breathless, & blue in cold weather.

EXAMINATION.

		Average		
Height	48.0	52.7	*Physique*	Under developed.
Weight	53.7	64.6	*Intelligence*	Normal.
Colouring	peripheral cyanosis.			

HEART. *Impuls.* 4th. *Space.* 6.5 *CMS.*

	1	2	1	*Character*	*Max. Int.*	*Conduct.*
Thrill				Faint; felt on ventral decubitus. 2nd. left sp.		
Bruits.—						
Mitral.				Clear.		
Pulm.				Pulmonary 2nd. sd. faint. Pulm. Ist. sound.		
Aortic.				Harsh & high pitched.	2nd. left space.	Left nipple, left clavicle; not in back or neck.
Precord.						

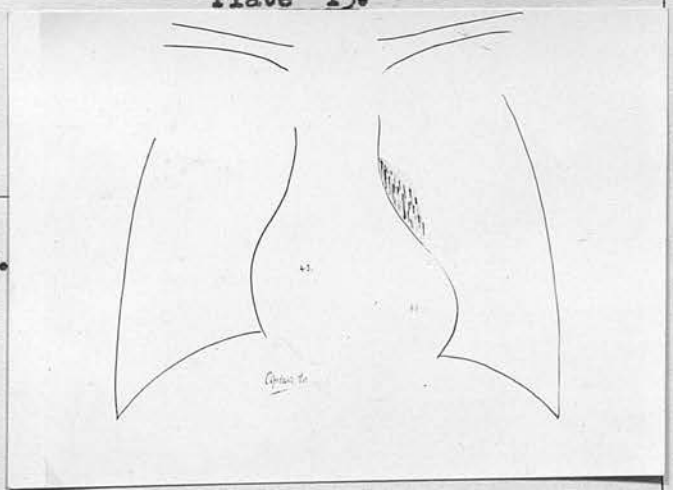
B.P. Not audible.

Response to Effort. Poor.

Effect of Alterat. Posit. / *Effect of Alterat. Resp.* Nil.

X RAY. Plate 15. Aconcave upper left cardiac margin, a prominent right auricle and an enlarged aortic shadow. The heart is showing the early signs of "Coeur en Sabot".

Plate 15.



E.C. Not taken.

Case No. 12. COPELAND.

The early history of this boy is unknown, as he is an orphan, at present under the care of a Catholic Home. Since his advent into the "home" it has been noticed with what readiness he becomes breathless and how his cyanosis is exaggerated on exposure to exertion, emotion or low temperatures. On examination he was mildly cyanosed.

Heart. Thrill - Felt on ventral decubitus at the second left space.

Bruit - Harsh, high pitched bruit over the second left space and conducted from there up to the left clavicle. It was also heard towards the left nipple; it was not heard in the vessels of the neck or in the back. The pulmonary second sound was faint.

X-Ray - Concavity in the region of the pulmonary arc and right sided enlargement suggestive of right auricular dilatation. The aortic shadow is broad but not displaced and probably incorporates the superior vena cava.

Diagnosis - Interauricular septal defect with low grade narrowing of the pulmonary valve.

CASE NO. 13. DIAGNOSIS Fallot's Tetralogy.

NAME Gladding, John SEX M. DATE OF BIRTH 25-10-1927

AGE FIRST NOTICED Blue at birth.

HIST. FAM. Nil.

HIST. PREV. Measles, wh ooping cough.

COMPLAINT. Paroxysmal dyspnoea, bilious attacks.

EXAMINATION.

		Average		
Height	58.5	56.2	*Physique*	Thin & overgrown.
Weight	68.0	76.5	*Intelligence*	Good.

Colouring Dark blue colouration of skin & mucous membranes.

Blood Count:- R.B.C. 9,470,000.

HEART. *Impuls.* 5th. *Space.* 6.0 *CMS.*

	1	2	1	*Character*	*Max. Int.*	*Conduct.*
Thrill	----	----	----	None felt.		
Bruits.—						
Mitral.	|	|	|	Clear.		
Pulm.	|||	|	|	Pulm. 2nd. sound scarcely audible. Pulm. Ist. sound.		
Aortic.				Rough but not loud.	3rd. left sp. 3.5 cms mid line.	Left clavicle, left axilla, not in back.
Precord.						

B.P. Cant determine.

Response to Effort. Not attempted.

Effect of Alterat. Posit. On left lateral position, bruit maximal at the 2nd. left space.

Effect of Alterat. Resp. Nil.

X RAY. Plate 16. A hollow pulmonary arc; enlargement of the right auricle & a broad deviated aorta. The barium is seen to be delayed opposite to the aortic arch.
Plates 17—18. These both show interruption of the barium in the oesophagus at the level of the aortic arch. There is no pressure on the oesophagus by the pulmonary artery. This is better seen on superimposition of the two negat--ives when the gullet below this level is seen to be not pressed on.
Plate 19. This shows great enlargement of the right auricle without pressure on the oesophagus.

E.C. Plate 20. This plate shows right ventricular preponderance without other abnormality.

Plate 16.

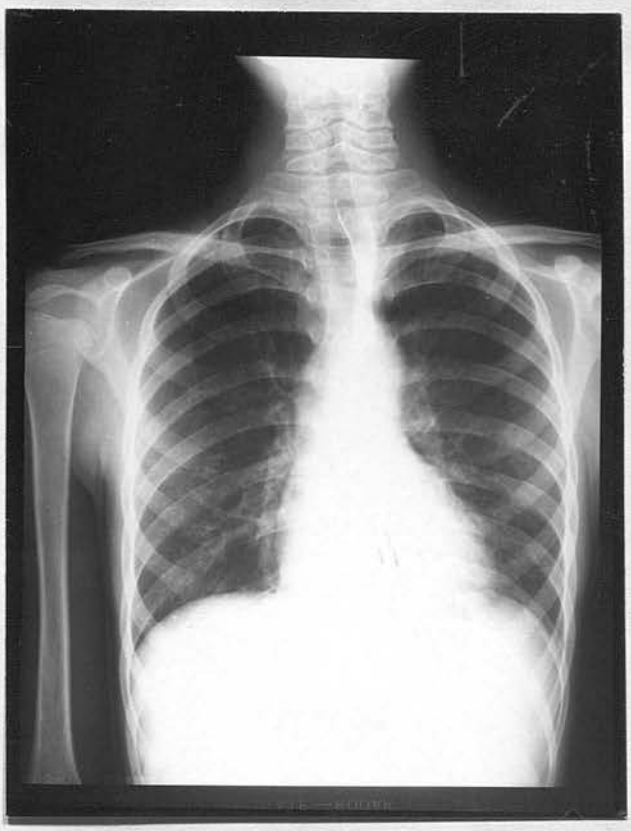


Plate 17.

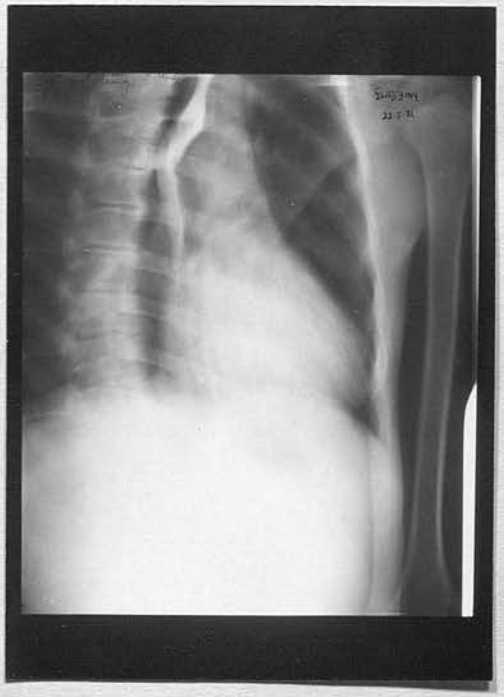


Plate 18.

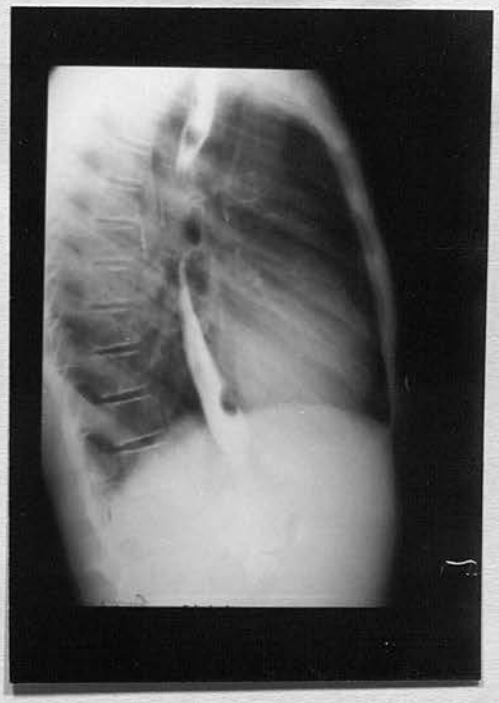


Plate 19.

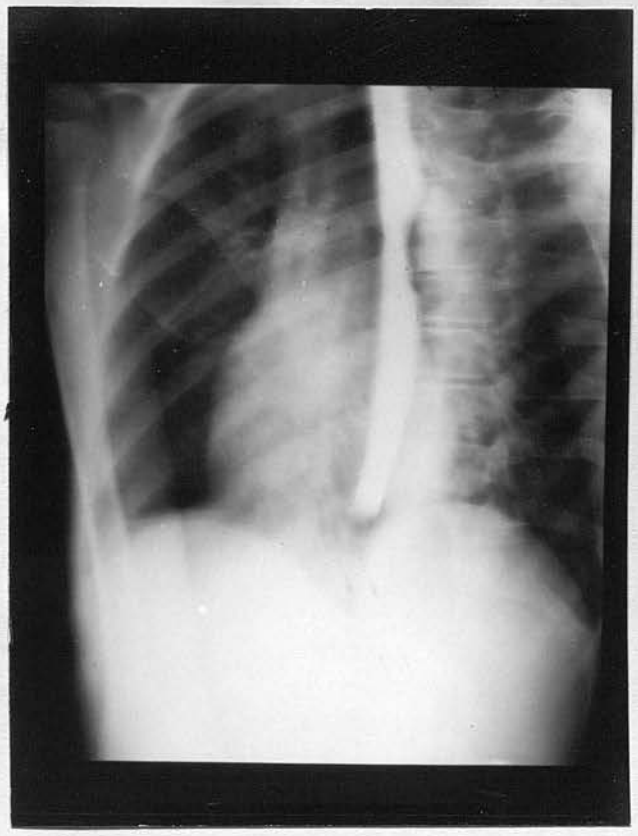
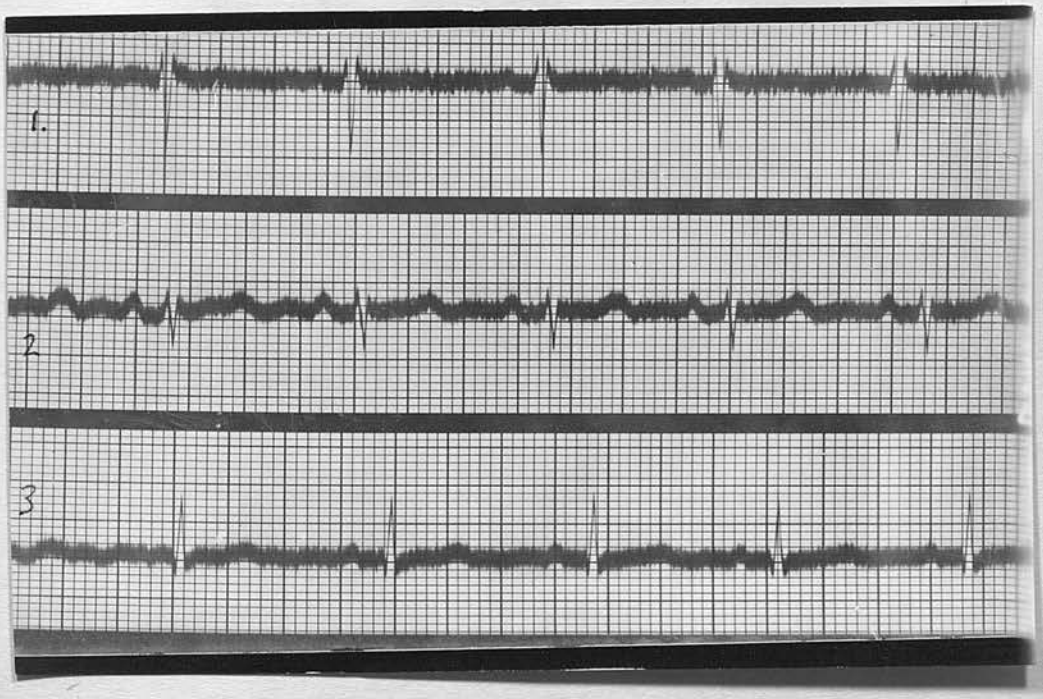


Plate 20.



Case No. 13. GLADDING.

This boy, aged 13 at the time of examination, had been peculiarly free from other illnesses throughout his life. He was born blue and his cyanosis has become more pronounced and permanent as he has grown older. He is thin and overgrown, being 2·3" taller and 8·5 lbs. lighter than is the average for his age. He is remarkably acute mentally and full of optimism for his future.

Heart. Thrill - None felt.

Bruit - A rough but not loud systolic murmur heard over the third left space, 3.5 cms. from the middle line. The second sound at the pulmonary area was faint, being scarcely audible. The pulmonary systolic murmur was heard clearly under the left clavicle and in the left axilla but not in the neck nor in the back. Axillary pulsation was marked.

B. P. - Inconclusive.

Blood Count - R.B.C. 9,470.000.

E. C. - Right axis deviation; no exaggeration of the P waves.

X-Ray, 1.A.P. - Not a very big heart, the right transverse diameter measuring 4 cms. and the left diameter 7 cms, but bigger than is usual with a boy of this age. The aortic-clavicular gap measured 20 mm. and with such a short heart a breadth of 11 cms. and a H./L.Q. of 1 - 1.9 cannot be considered necessarily abnormal. The right auricular pulsations were more pronounced than normal, but no undue enlargement of this chamber was noticed, although it is considered to be

Case No. 13. Gladding (cont'd.)

dilated in a minor degree. The aorta is large with a definite tendency to displacement to the right side. There is marked hollowing in the region of the pulmonary arc.

2. 1st oblique position. This shows the great enlargement of the aorta pressing on the oesophagus. No pressure from the right branch of the pulmonary artery is seen. The faint outline of the left auricle is visible at a lower level.

3. 2nd oblique position. This view again shows in an exaggerated manner, due to the direction of the rays, the aortic enlargement. Of interest is the very great enlargement backwards of the right auricle, which was not obvious on A.P. view, and the freedom from pressure of the oesophagus by this chamber.

Discussion - There can be little doubt that the major defect is an obstructive lesion at the pulmonic outlet. Is there any indication of the state of the ventricular septum? It is felt that, were his septum entire, the right ventricular enlargement would be more marked; further a thrill would more probably have been felt. Moreover, the degree and permanency of the cyanosis is greater than is to be expected in a pure obstructive pulmonary lesion without a venous arterial shunt. The great enlargement of the aorta indicates a deviation to the right of its origin, probably coming to lie over the ventricular septum, not over the right ventricle itself as it would were one dealing with a complete developmental imperforation of the pulmonary valve, which is further precluded by the subclavicular propagation of the murmur. There is nothing to indicate the

Case No. 13. Gladding (cont'd.)

state of the interauricular septum except that were it patent, the discrepancy as noted between the size of the aorta and the pulmonary artery could not be so marked.

Diagnosis - Pulmonary obstruction (incomplete) with wide ventricular septal defect and right auricular hypertrophy.

CASE No. 14. DIAGNOSIS Comus stenosis with ventricular septal defect.

NAME Taylor, George SEX M. DATE OF BIRTH 17-10-1922.

AGE FIRST NOTICED Aet. 10 months; intermittently blue before then.

HIST. FAM. Mother mentally deficient.

HIST. PREV. Recurrent bronchitis; "fits" on exposure to cold & paroxysmal attacks of dyspnoea.

COMPLAINT. Dyspnoea & weakness.

EXAMINATION.

		Average		
Height	42.0	47.8	*Physique*	Very undersized.
Weight	39.0	51.0	*Intelligence*	Mentally deficient.

Colouring Extreme degree of cyanosis & clubbing; almost black on cold day.

Blood Count:- 13,470,000. &9,280,000. c.f. Vol.I. p.112.

HEART. *Impuls.* 5th. *Space.* 6.0 *CMS.*

	1	2	1	*Character*	*Max. Int.*	*Conduct.*
Thrill					Faint.	5th. left sp. near apex.	
Bruits.—						
Mitral.				Clear.		
Pulm.				†††	Pulm. 2nd. sd. much accentuated. Pulm. Ist. sd. Rat		
Aortic.				Musical.	2nd. left space.	Left clavicle & faint over right carotids.
Precord.						

B.P. Not audible.

Response to Effort. Not attempted.

Effect of Alterat. Posit. / *Effect of Alterat. Resp.* Nil.

X RAY. Plate 20A. A.P. A prominent pulmonary margin due to a dilatation of the comus of the right ventricle, enlargement of the right ventricle & a broadened aortic shadow which is deviated to the right.

Plate 21. R.A.O. A broad aorta; the posterior mediastinum is seen to be normal in the region of the bifurcation of the trachea. The right auricle is enlarged.

E.C.

Not taken.

Plate 20a.

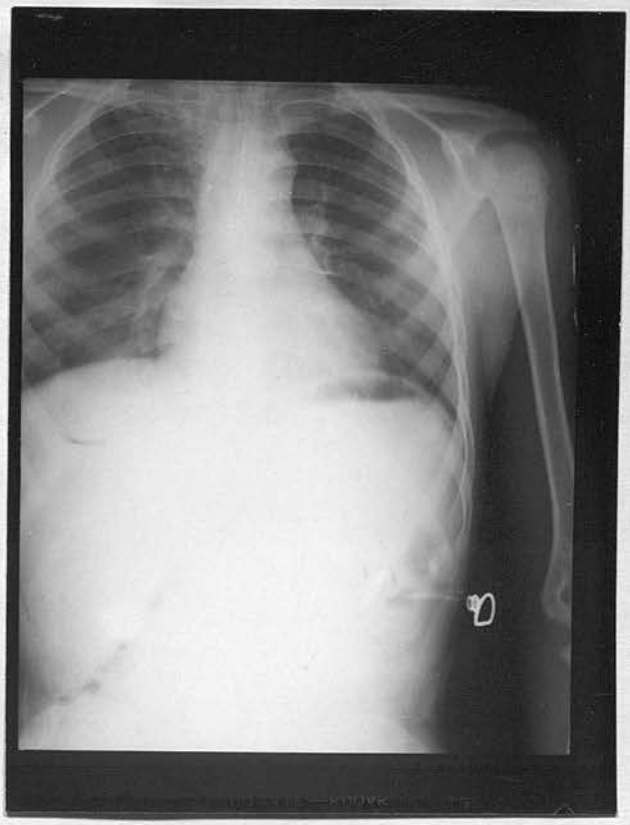
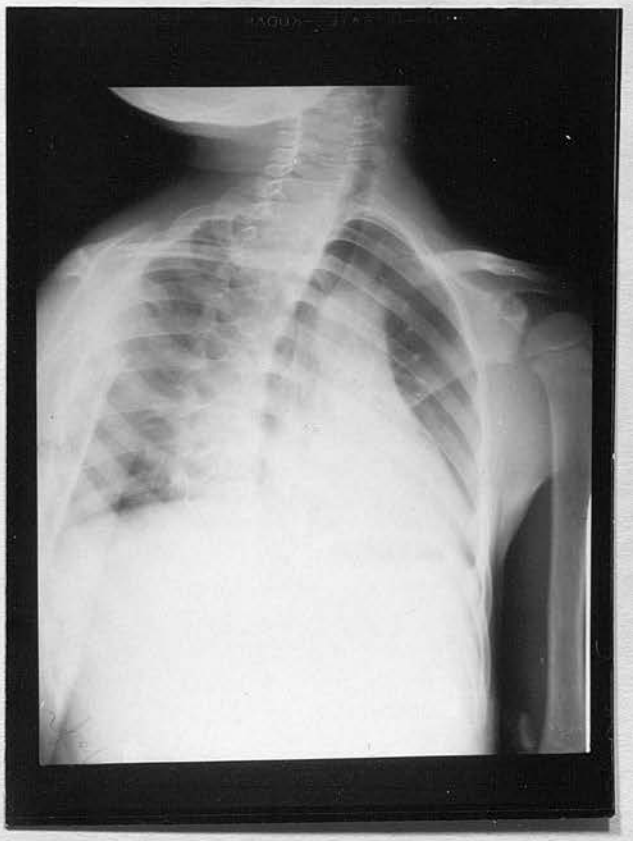


Plate 21.



Case No. 14. TAYLOR.

Persistent cyanosis was first noticed here at the age of 10½ months but had been intermittent prior to that date. His previous history has been uneventful apart from repeated attacks of bronchitis. He is under weight and undersized and is mentally deficient. His cyanosis and clubbing are extreme and the slightest degree of exertion is accompanied by incapacitating dyspnoea.

Heart. Thrill - Faint, at the fifth interspace near to the apex.

Bruit - A faint musical systolic bruit accompanied by an accentuated second sound is heard over the pulmonary area in the second left space. The bruit is carried faintly up to the left clavicle and is heard over the right side of the neck. The pulmonary and aortic sounds are distinct and pure.

X-Ray. A.P. - Apart from the size of the aorta there is little characteristic about this film.

1st oblique position. The area immediately below and posterior to the bifurcation of the trachea is seen to be clear, contra-indicating enlargement of the right branch of the pulmonary artery.

Diagnosis - This is particularly difficult. The localisation of the bruit is suggestive of a pulmonary valve lesion. The accentuation of the pulmonic second sound in the absence of any enlargement of the pulmonary artery is seemingly paradoxical. A developmental

Case No. 14. Taylor (cont'd.)

hypoplasia or atresia of the conus of the right ventricle surmounted by a healthy pulmonary valve would produce the above clinical signs and the low localisation of the thrill and the high degree of cyanosis would support this thesis in the presence of an inter-ventricular septal defect.

CASE No. 15. DIAGNOSIS Large auricular septal patency.

NAME Wright, Elsie SEX F. DATE OF BIRTH 25-I-1899.

AGE FIRST NOTICED Unknown by patient

? a... sub...

HIST. FAM. Nil.

HIST. PREV. Pleurisy aet. 12; pneumonia aet. 22.

COMPLAINT. Dyspnoea on exertion.

EXAMINATION. *Average*

Height --- --- *Physique*

Weight 118 lbs.- *Intelligence*

Colouring Medium degree of peripheral cyanosis; clubbing present but not extreme.

Blood Count:- 9,250,000.

HEART. *Impuls.* 5th. *Space.* 6.0 *CMS.*

1 2 1 *Character* *Max. Int.* *Conduct.*

Thrill None felt.

Bruits.—

Mitral. Clear.

Pulm. Pulm. 2nd. sd. clear but not exaggerated.

Aortic.

Precord. I-5-'31.) 5th. space Localised.
I5-5'31.) 3cms. mid
Soft & line.
faint.

B.P. 160/90. — very nervous.

Response to Effort. Not attempted.

Effect of Alterat. Posit.)
) Nil.
Effect of Alterat. Resp.)

X RAY. Plate 22. A very large pulmonary artery; a small left ventricle; a dilated right auricle & a small aortic shadow to the right. To the left of the sternum is seen a shadow which bears more resemblance to the ductus arteriosus than the aorta. There is however no clinical sign of patency of the ductus arteriosus.

Plate 23. The small aorta is seen. Below that & at the level of the 5th. - 6th. dorsal vertebra immediately inferior to the bifurcation of the trachea is the enlarged right branch of the pulmonary artery.

E.C.

Not taken.

Plate 22.

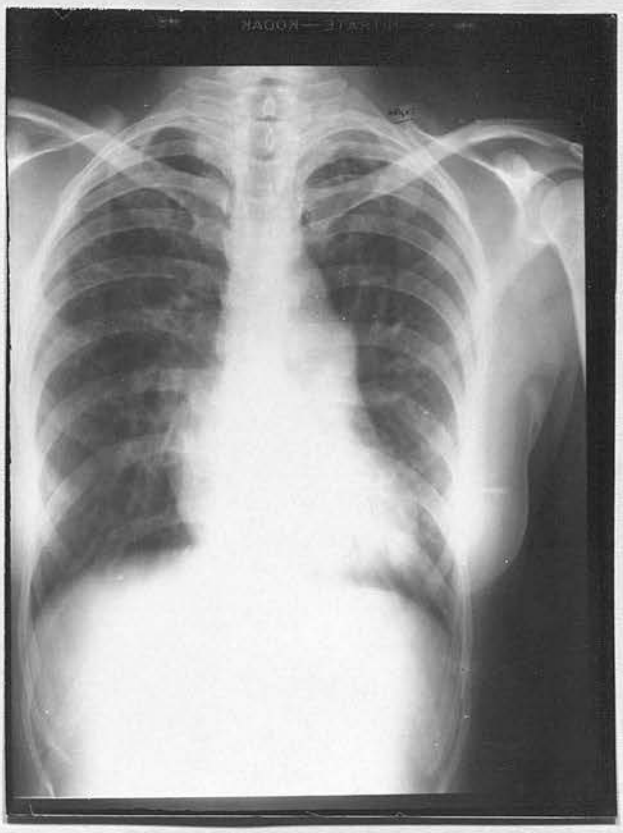


Plate 23.

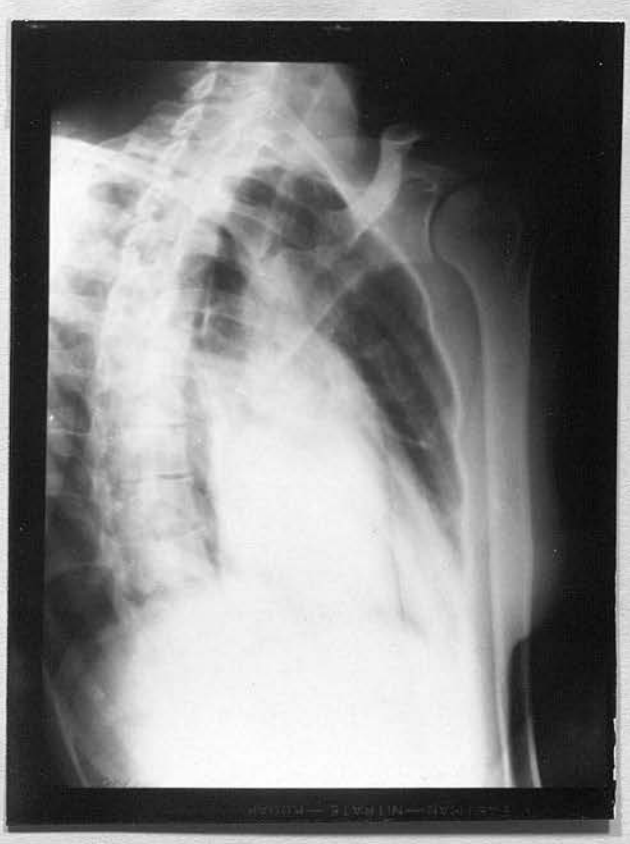


Plate 24.

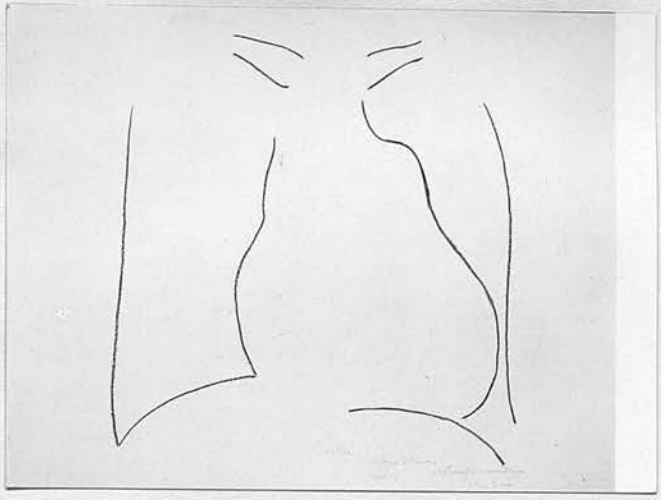
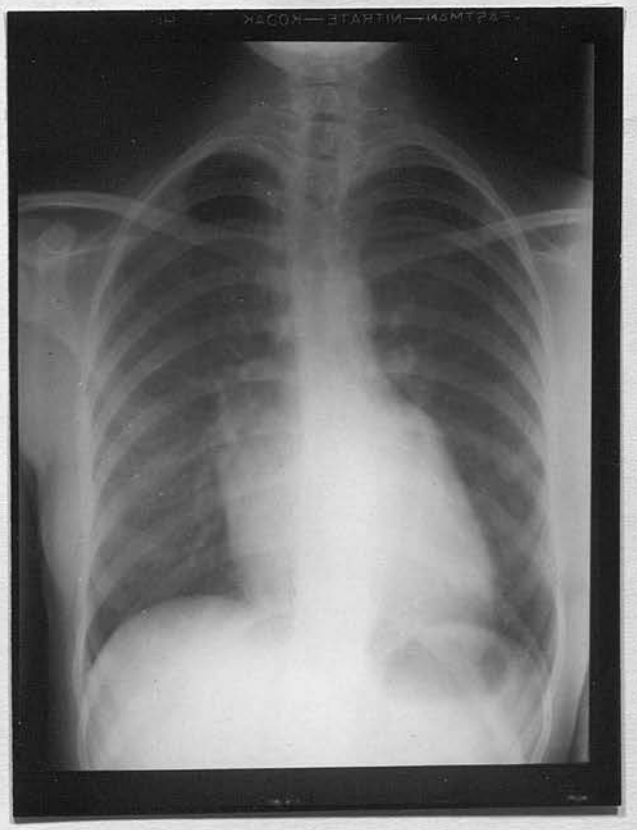


Plate 25.



Case No. 15. WRIGHT.

For the opportunity of examining this patient the writer is indebted to the courtesy of Dr. Lavine, Physician to the Hull Royal Infirmary. Her previous history is incomplete because of the lack of definiteness on the part of the patient. She has had pleurisy and pneumonia, the survival of both of which is worthy of note. She admits that she is breathless on the least exertion, her physique is good, she shows a high degree of peripheral cyanosis, and her facies is purplish, but her discolouration is not of the same grade as in the preceding two cases. Clubbing is not marked.

Heart. Thrill - None felt.

Bruit - At the level of the 5th space, 3 cms. from the mid line was heard a localised bruit. On 1.5.31. a soft systolic murmur was accompanied by a murmur lasting throughout diastole. On 15.5.31. the diastolic bruit was replaced by a short presystolic murmur. The bruit accompanies but does not replace the heart sounds. The first and second sounds at the mitral area are distinct, and at the pulmonary area are clear though faint.

B. P. - 160/90. - High, but she was extremely nervous on examination. Polycythemia persisting to the age of 32 is commonly accompanied by a raised blood pressure.

X-Ray - A.P. A heart showing enlargement of the right auricle, and superior vena cava, on the left side a large pulmonary arc and the aortic

Case No. 15. Wright (cont'd.)

shadow are seen. (Plate 22.)

R.A.O. The barium is interrupted in its course in the oesophagus at the level of the fifth dorsal vertebra. The outlines of the posterior cardiac shadow in this region are rather blurred, but the main blur occupies the area of the level of the second rib in front, and the fifth dorsal vertebra behind, and suggests enlargement of the pulmonary artery (right branch). (Plate 23.)

Diagnosis. This case demonstrates an example of pure auricular septal defect. The points of importance in the radiological picture are the enlargement of the right auricle, and the pulmonary artery, and the small size of the aorta. Clinically, of the utmost importance is the alteration in the character of the souffle, also the clear pulmonary and mitral valve sounds. The build of the patient is not characteristic nor the appearance of the aortic knuckle which one would not have expected to be visible. The alteration in the rythm of the murmur on different occasions has been noted before and its presence together with the radiological picture permits of no other diagnosis.

S U M M A R Y.

1. Forty-two cases of congenital morbus cordis are reported with detailed observations on 15 selected cases.

2. The supposed rarity and extreme gravity of the lesion is doubted, it being shown how the clinical signs may be out of all proportion to the anatomical changes present.

3. Etiology:- A familial tendency to congenital heart disease is admitted - rare cases being reported from the literature and one from the writer's experience. It is not thought that there is any significant tendency to parental transmission of acquired organic morbus cordis. Syphilis is undoubtedly a causal factor but not to the extent believed by the French writers. The effect of alcohol is theoretical and the incidence of consanguinity is estimated to be little higher than that of the whole population. The frequent co-existence of visceral and cardiac anomalies, and the types of certain congenital cardiac defects suggest that many are developmental in their inception.

4. The physical standard, apart from the cyanotic group and the graver anomalies, is little affected nor is the standard of response to education. Comparisons are made with consecutive series of normal children and sufferers from morbus cordis of rheumatic origin.

5. The theories of the causation of cyanosis are reviewed, its etiology being seen to be dependent on certain "determining factors", namely the degree of shunt present, the efficiency of pulmonary oxygenation and oxygen reduction in the tissue capillaries.

6. The importance of cardioradiology is stressed. A description of the normal cardiac shadow and the respective merits of teleoradiography, percussion and palpation in determining the size of the heart are given. It is shown that the conception of increase in the heart size is arbitrary, it being affected by the position of the heart in the thorax, the shape of the heart and its relationship to the chest size. The radiographical appearance of the pulmonary artery in its relationship to the oesophagus is described.

7. Defects of the auricular septum are common and in the majority of instances "silent". Closure of the septum is described as occurring at any date from two weeks to two years after birth, 83.8% closing by the end of the first 10 weeks, and 5.7% being still patent at the end of the first year. The foramen ovale is the common site of patency, defects of the upper and lower parts being rare and complicated by other anomalies in adjacent cardiac structures. With gross defect cyanosis may be present, one case of which is described (Case No.15, vol.2, p.50), and physical and mental development be seriously interfered

with. In the major number it is clinically silent and only demonstrable on X-ray examination.

8. Maladie de Roger is, apart from defect of the auricular septum, the commonest of congenital cardiac lesions. The site of election is at the base of the interventricular septum, but may occur elsewhere. In 80% of cases the site of maximal intensity of the bruit lies between the third and fourth intercostal space; it is harsh and high pitched and is conducted transversely and to the back. Thrill is not constant, being absent in two cases in the present series of 9. The radiological picture is characteristic, namely the globular appearance of the heart. The appearance of the conus of the right ventricle and of the pulmonary stem is described, the former is thought ~~always~~ frequently to be dilated and in many cases the pulmonary artery also. The diagnostic point is thought to depend on the X-ray picture, and the intensity of the pulmonary second sound; a dilated "pulmonary arc" with an accentuation of the pulmonary second sound being indicative of a dilatation of the pulmonary stem, whilst a similar radiological appearance when associated with a normal pulmonary second sound, suggests dilatation of the conus of the right ventricle. Cyanosis is rare, but may occur as either a temporary or a terminal feature. The bruit is to be diagnosed from exocardial and other systolic murmurs of unknown

origin, mitral and aortic stenosis and Eisenmenger's Syndrome.

9. "Pulmonary stenosis". The more fitting name of Pulmonary Obstruction is given, it being believed that the clinical signs of pulmonary stenosis and atresia, whether developmental or inflammatory in origin, and the effect on the cardiac septa, are solely determined by the degree and date of obstruction at the pulmonary valve. The condition is classified and described according to this conception.

a) Pulmonary obstruction with closed cardiac septa is held to be in all instances inflammatory in origin. The pulmonary artery is small or very rarely dilated. The characteristic clinical signs are those of cardiac right side enlargement, a systolic bruit heard over the pulmonary valve and carried up towards the left clavicle and in 50% of cases thrill.

b) Fallot's Tetralogy comprises the largest group of defects as associated with obstruction at the pulmonary valve. Cyanosis is persistent, a count of 13,470,000 being reported; the incidence of thrill varies from 9.1% to 16.5% of cases. The radiological picture is characteristic, namely, a concavity of the upper left cardiac margin an enlarged right heart surmounted by an aorta whose shadow is broad and extends unduly to the right. The freedom of the oesophagus from pressure by the pulmonary artery and its increased liability to

pressure from the dilated aorta is shown. The auscultatory features are described and the insignificance of a carotid bruit is stressed.

c) A description of the various types of pulmonary imperforation is given.

10. Prognosis is held to depend on :-

(1) The local mechanical effects of the lesion.

(2) The pathological conditions to which the subject is more liable by reason of the cardiac defect, viz: bacterial endocarditis in about 33.4% of cases, pulmonary tuberculosis, bronchitis, bronchopneumonia and paradoxical embolism.

(3) The response of the individual to certain physiological events such as pregnancy and puberty.

11. Treatment of Congenital Morbus Cordis is threefold.

a) To prevent intermarriage of and procreation from those persons whose type is believed to favour the incidence of congenital heart disease - alcoholics, syphlitics and congenital syphlitics, blood relations, mental defectives etc; parental acquired heart disease is not thought to play a part.

b) To guard the patient against any condition which might raise the pressure of the lesser circulation and to keep him within the limits of his cardiac reserve force.

c) To have recourse to the free use of oxygen and

warmth in emergency.

Recent advances in surgical treatment of congenital valvular defects and the intra-arterial and intravenous use of oxygen are referred to.

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