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THE

UPPER CANADA JOURNAL,

OF

Medical, Surgical and Physical Science.

ORIGINAL COMMUNICATIONS.

ART. XLVII.—*Estimated comparisons in Normal and Abnormal Anatomy: or data for the prosecution of morbid investigations; by* DR. GOTTLIEB GLUGE, *Professor of Physiology and Pathological Anatomy, in the University of Bruxelles; member of the Royal Academy of Science of Bruxelles, &c. Translated from the German, by* JOSEPH LEIDY, ESQ., M.D., *Philadelphia.*

TABLES OF THE MAGNITUDE AND WEIGHT OF THE ORGANS OF MAN IN THE NORMAL AND ABNORMAL CONDITION.*

THE time is past in which alterations in the magnitude and weight of organs in disease were estimated from their outward appearance alone; and it is no longer satisfactory to compare the heart of an individual with his fist, to determine whether or not it is hypertrophied. The introduction of the scales to aid in the investigations of pathological

* The measurements and weights in this work are given, according to the French decimal system, in metres and grammes. The metre and its technical divisions, reduced into English measurement, are as follows:—

Metre,	39.37100 inches.
Decimetre,	3.93710 "
Centimetre,	39371 "
Millimetre,	03937 "

For ordinary purposes, the metre may be considered to be equal to 40 inches, the decimetre to 4 inches, the centimetre about two-fifths of an inch, and a millimetre about half a line.

The gramme, and its divisions, in troy weight, are as follows:—

Gramme,	15.4440 grains.
Decigramme,	1.5444 "
Centigramme,	1544 "
Milligramme,	0154 "

Or ordinarily, a gramme may be considered to be about fifteen and a half grains, etc.—Trans.

anatomy, though not capable of producing such a revolution as they have done in chemistry, yet they must furnish important results, especially when the observations are numerous, and made at periods of every ten years of the life of individuals of both sexes, as proposed by Quetelet, to whom I am myself particularly indebted for being induced to make such researches.

In order, however, to become familiar with the alterations in size and weight produced in organs by disease, it is necessary to be acquainted with their normal condition in these respects. Nevertheless, to succeed in this is difficult, for I deem it essential that all the important organs in an individual should be healthy, and not merely the one examined; for the reciprocal influence of organs during life is too great to lead to correct results without their general condition being taken into consideration. It is from neglect of this view that the best manuals on anatomy vary so much in their statements of the relative weights of many organs. Thus we find, in the excellent treatise, by Huschke, on the abdominal viscera, the assertion that the liver usually weighs four pounds, and not unfrequently more, and even up to six pounds. These numbers are much too high for the normal condition of that organ.

The only opportunities afforded us to become acquainted with the healthy condition of the organs are in cases of accidental death, suicide, and executed criminals; but even among these we find only a small number to answer the purpose, and therefore, knowledge of this character is to be obtained only after a long series of observations. The first table below will form a commencement towards such a series, and in the appended notes I have described the external appearances of the organs, for I am convinced that but few physicians, or even anatomists, are familiar with many of them in their healthy condition—as, for instance, the liver, the intestinal canal during chylification, &c.; and I find it quite common for normal appearances to be mistaken for morbid ones.

TABLE I.

MEASUREMENT OF THE INTERNAL ORGANS OF THE HEALTHY HUMAN BODY.

	I.	II	III.	IV.	V.
Subject	Male.	Male.	Male.	Male.	Male.
Occupation	Tailor.	Laborer.	Baker.	Servant.	
Cause of death	Executed for murder.	Executed for murder.	Suicide by shooting.	Executed for murder.	Suicide by shooting.
Age	29 years.	21 years.	26 years.	21 years.	33 years.
Height of the body	1. m 6·0	1. m 700	1, m 700	1, m 580	1, m 760
Weight of the body	...	64 Kiloyr	...	54 Kilogr.	60 Kilogr.
Breadth at the shoulders	0, m 352	0. m 345	..	0. m 368	0. m 330
Breadth at the axilla	0, 232	0, 235	...	0,286	0,260
Breadth at the middle of the thorax	0. 262	0, 262	...	0,282	0,255
Distance between the nippies	0, 190	0, 198	...	0,200	0,185
Antero-posterior diameter from the spinous processes to the manubrium sterni	0, 120	0, 130	...	0,122	0,131
Anterio-posterior diameter at the middle of the sternum	0, 188	0, 220	...	0,200	0,190
Circumference of the thorax at the axilla	0, 925	0, 950	...	0,844	0,840
Circumference of the thorax at the middle of the sternum	0, 964	1, 040	...	0.345	0,820
Weight of the left lung distended with air	244,75 gr.	248,37	...	156	553
Weight of the right lung distended with air	279,16	276,61	...	168	600
Diameter of the trachea just before bifurcating in the bronchi	0, m 011	0, m 018	...	0, m 018	0, m 018
Weight of the heart	275,34 gr.	275,34	320	250	320
Length of the ventricles from the origin of the aorta to the apex of the heart	0, m 125	0, m 100	0, m 120	0, m 98	0, m 110
Breadth of the left ventricle at its middle	0, 051	0. 070	0, 114	0,038	0,070
Breadth of the right ventricle	0, 042	0, 044		0,060	0,060
Circumference of the heart at its base	0, 200	0, 245	0,220	0,220	0,240
Circumference of the heart at its middle	0, 244	0, 260	0,250	0,182	0,230
Circumference of the heart near the apex	0, 140	0, 160	0,140	0,120	0,100
Circumference of the aorta at its origin	0, 082	0, 068	0,070	0,064	0,060
Diameter of the aorta at its origin	0. m 030	0, 030	0,031	0,028	
Inner circumference at the orifice of the aorta	...	...	...	0,053	
Circumference of the pulmonary artery	0, 080	0, 068	0,070	0,072	0,074
Inner circumference at the orifice of the pulmonary artery	...	...	...	0,060	
Diameter of the pulmonary artery	0, 033	0, 030	0,028	0,033	
Thickness of the parietes of the left ventricle, inclusive of the columnæ carneæ	0, 020	0, 024	...	0,030	
Thickness of the parietes of the left ventricle exclusive of the columnæ carneæ	0, 016	0, 020	0.015	0,020	0,018
Height of the mitral valve	0, 028	0, 030	0,030	0,020	0,035
Inner circumference of the left ventricle	0, 135	0, 120	0,150	0,090	0,110
Inner circumference of the left auriculo ventricular orifice	0, 092	0, 114	...	0,078	0,080
Height of the semilunar valves of the aorta	0, 020	0, 022	0,018	0,018	0,020
Height of the semilunar valves of the pulmonary artery	0, 020	0, 022	0,018	0,018	0,020
Thickness of the parietes of the right ventricle	0, 007	0, 010	0,005	0,007	0,006
Thickness of the septum of the ventricles	0, 020	0, 020	0,026	0,018	0,032

TABLE I.—*Continued.*

	I.	II.	III.	IV.	V.
Thickness of the parietes of the left auricle	0, 004	0, 004	0,002	0,0025	0,004
Thickness of the parietes of the right auricle	0, 002	0, 003	0,001	0,0015	0,002
Height of the tricuspid valve	0, 025	0, 030	0,025	0,032	0,035
Inner circumference of the right ventricle	0, 175	0, 200	0,145	0,130	0,139
Inner circumference of the right auriculo-ventricular orifice	0, 118	0. 120	...	0,100	0,100
Weight of the liver	1145,32 gr.	1550,70 gr	...	1270	1450
Length of the liver	0, m 150	0, m 178	...	0, m 182	0, m 163
Antero-posterior diameter of the right lobe	0, 110	0, 130	...	0,170	0,115
Antero-posterior diameter of the left lobe	0, 288	0, 261	...	0,260	0,222
Circumference of the right lobe	0, 350	0, 422	...	0,392	0,370
Circumference of the left lobe	0, 210	0, 319	...	0,310	0,240
Weight of the pancreas	76,49 gr.	91,78 gr.	...	72 gr.	
Length of the pancreas	...	...	...	0, m 210	
Weight of the spleen	206,50	214,15	...	158	115
Length of the spleen	0, m 150	0, m 141	...	0, m 150	0, m 999
Breadth of the spleen	0, 088	0, 095	...	0,074	0,050
Circumference of the spleen	0, 190	0, 193	...	0,156	0,150
Weight of both testicles	53,54 gr.	64.84 gr.	...	52 gr.	50 gr.
Weight of the right kidney	122,38	107.08	...	123	140
Weight of the left kidney	122,38	124,38	...	132	140
Length of the right kidney	9,113	0, m 100	...	0, m 101	0, m 110
Length of the left kidney		0, 119	...	0,088	0,110
Breadth of the right kidney at its hilum	0,055	0, 048	...	0,052	0,045
Breadth of the left kidney at its hilum	...	0, 049	...	0,050	0,049
Circumference of the right kidney	0,145	0, 122	...	0,110	0,130
Circumference of the left kidney	...	0, 150	...	0,132	0,120
Thickness of the cortical substance of the right kidney	0,012	0, 009	...	0,011	0,010
Thickness of the cortical substance of the left kidney	...	...	...	0,007	
Thickness or length of the medullary substance of the right kidney	0,021	0, 016	...	0,010	0,017
Thickness or length of the medullary substance of the left kidney	...	...	...	0,018	
Length of the small intestine	...	...	...	7,695	
Inner circumference of the small intestine	...	...	...	0,075	
Length of the large intestine	...	...	...	2,280	
Inner circumference of the colon	...	...	...	0,160	
Weight of the cerebellum	1437 gr.	1336 gr.	...	1112 gr.	1260 gr.
Weight of the pons Varolii	21	21	...	23	155
Weight of the cerebellum	171	171	...	135	
Weight of the spinal cord	...	...	...	25	

Remarks.—The organs were found also to be normal microscopically, with a few deviations to be specified. The individuals one and two were executed on the 9th of February, 1847, and number four on the 25th of October, 1847. Their bodies were received for examination immediately after the execution.

Cases I. and II.—The heart empty, with little fat upon the right ventricle and in the furrows; much fat upon the pericardium. The color of the lungs pale red mixed with little black pigment, with slight adhesions only, without a

trace of tubercles. The liver was yellowish-brown, and exhibited a pale-yellowish reticulated structure, the areolæ of which were filled with a reddish substance. The hepatic cells were 1.40th of a millimetre in diameter, and inclosed granules soluble in ether; from 8 to 10 in case II., but in smaller quantity in case I. The kidneys presented the medullary substance pale red; the cortical substance pale-yellowish, marbled with red, and smooth; the yellow substance appearing net-like, and in bands from one-fourth to 1¼ millimetres broad. The tubuli uriniferi were 6.100th of a millimetre in diameter. The spleen exhibited the malpighian corpuscles filled with a milky liquid.

Cases I., II., and III, present good examples of a fine and powerful development of the muscular system.

Case IV. Both lungs attached by their apex to the ribs, without tubercles, of a red color, with slate gray spots. The left ventricle strongly contracted, very hard; the right ventricle softer, dilated, covered by adipose tissue. The pericardium contained hardly a teaspoonful of liquor pericardii. The liver reddish-brown, in section reticular. The yellow bands of the reticular structure were three-fourths to one millimetre in diameter, and formed rhombic spaces, separated by clear and broad furrows one-fourth of a millimetre broad. The furrows contained the hepatic ducts and vessels. Every rhombic space was perforated by an opening, through which the blood exuded. The cells contained some fat globules. The medullary substance of the right kidney was red, instead of being pale, as in the left kidney. This individual had been ill with typhus fever,* and was restored to health a month before his execution. Some reticulated plaques of peyer near the ileo-cœcal valve appeared to be the remains of the disease. The glandulæ solitariæ were here absent, and their position was indicated by vacant spots in the midst of the intestinal villi. The small and large intestine presented very numerous glandulæ solitariæ in the form of vesicles, of a grayish-white color, elevated above the surface of the pale mucous membrane, almost spherical in form, and from three-fourths to one millimetre in diameter.† Those of the small intestine were

* Typhoid, or enteric fever.—Tr.

† At a later period, I have had an opportunity of examining two other executed criminals, in whom I found the glandulæ peyeri and solitariæ so much developed that they appeared to be in the first stage of typhus; but, instead of being filled with a dry, firm exudation, as in the latter disease, they contain a milky liquid. The glands in the small intestine were equally well developed in both individuals, but, in the large intestine, they were much larger and more numerous in one than the other. This appearance of the intestinal canal, strewed with thousands of vesicles (glandulæ solitariæ,) is, as a nor-

without openings; those of the large intestine sometimes presented a black pigment spot, others were translucent, as if on the point of bursting, and others had an evident opening and were collapsed. Both in the small and large intestines they contained a milky liquid, coagulable by acids, which separated into a serous liquid and small spherical masses, with a granular surface from the 1.120 to the 1.125th of a millimetre in diameter, and not entirely soluble in acetic acid.

The stomach had not been perforated by contact with the contents with which it was filled for twenty-six hours, but the mucous membrane of the cardiac extremity was softened.

Case V. The left lung contained, at the apex, a few tubercles, certainly not more than ten in number, which were not softened. The lungs with a slight adhesion to the costal pleura. The right ventricle of the heart invested with a layer of fat, in many placesten millimetres thick. Liver straw-colored, fatty, the fat being exterior to the hepatic cells. The difference in the weight of the lungs of this individual and those of the executed criminals is explained by the loss of blood in the latter—the result of the execution. This individual also was given to drunkenness, and therefore, cannot be considered as in a normal condition.

The following tables relate to diseases of the heart, kidneys, and liver, and to the cholera. Researches of this kind must lead to important laws or results, for one is readily convinced, from a single glance at the tables, that, between the abnormal increase and decrease in size of the organs, these vary in the normal condition within certain limits, beyond which they do not go. Already, from the few investigations of this kind which have been made, an average is presented indicating the most frequent variations of disease.

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mal condition, quite as constant in the chylification, like the swelling of the malpighian corpuscles of the spleen, and, in giving an opinion upon post-mortem examination—as, for instance, in the cholera—should not be forgotten.

TABLE II.—Measurements of the Organs in Diseases of the Heart.

Maximum weight of the heart, 750 grammes; minimum weight, 150 grammes.

CASE.	I. Obs. 6.	II. Obs. 7.	III. Obs. 8.	IV. Obs. 9.	V. Obs.10	VI. Obs.11	VII. Obs 12	VIII. Obs.13.	IX. Obs.14	X. Obs.15	XI. Obs.16	XII. Obs. 17.	XIII. Obs.18	XIV. Obs.19	XV. Obs. 20.	XVI. Obs. 21.	XVII. Obs.22	XVIII. Obs. 23.
Age	28 yrs.	47 yrs.	50 yrs.	16 yrs.	35 yrs.	37 yrs.	42 yrs.	42 yrs.	61 yrs.	50 yrs.	70 yrs.	72 yrs.	70 yrs.	63 yrs.	38 yrs.	67 yrs.	35 yrs.	44 yrs.
Sex	girl	woman	woman	boy	man	man	man	man	man	man	man	man	man	man	woman	woman	man	man
Height	1, m 430	1,550	1,650	...	...	1,680	1,620	1,650	1,620	1,620	1,700	1,520	1,500	...	1,520	1,480		
Weight of Heart	450 gr.	350	500	400	750	450	330	700	450	500	420	500	150	688,37	...	400	700	700
Length of ventricular portion	0, m 110	0,140	0,120	0,110	0,150	0,120	...	...	0,140	0,120	0,120	0,120	0,080	0,110	0,100	0,130	0,180	0,135
Breadth of right ventricle	0, m 040	0,040	0,056	...	0,150	0,110	...	0,080	0,070	0,100	0,054	...	...	...	...	...	0,140	0,065
Breadth of left ventricle	0,090	0,060	0,095	...		0,050	...	0,070	0,070	0,056	0,042	...	68	0,100	...	0,120	...	0,100
Circumference of Heart near the base	...	0,240	0,320	0,224	...	0,300	...	0,340	0,280	0,300	0,280	0,240	...	...	0,230	...	0,310	
Circumference of Heart at its middle	...	0,230	0,300	0,200	...	0,280	...	0,350	0,275	0,320	0,300	0,230	...	0,300	...	...	0,300	
Circumference of Heart near its apex	...	0,180	0,220	0,150	...	0,200	...	0,250	0,200	0,280	...	0,190	...	...	...	...	0,200	
Inner circumference of the aortic orifice	...	0,064	0,090	0,058	0,130	0,070	0,080	0,064	0,060	0,080	...	0,110 ext. cir. 0,110 idem.						
Diameter of the aorta	...	0,040	0,040	...	...	...	...	0,040	...	0,041	0,050	...	...	...	0,032	...	...	0,035
Inner circumference of the orifice of the pulmonary artery	...	0,090	0,080	0,065	0,090	0,080	0,090	0,100	0,090	0,100	...	0,110	...	...	0,034			
Diameter of the pulmonary artery	...	...	...	...	...	...	...	0,040	...	0,046	0,040	...	...	...	...	...	...	0,035
Thickness of the parietes of the left ventricle of the musculi papillares	0,032	0,028	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0,040
Thickness of the parietes of the left ventricle, without the latter	0,015	0,022	0,018	0,018	0,021	0,018	...	0,020	0,020	0,022	0,013	0,022	0,011	0,036	...	0,016	0,018	0,022
Breadth of the mitral valve	...	0,032	0,030	l. lobe 0,010	0,032	0,032	0,030	0,030	0,030	0,035	...	0,032	...	...	0,019			—
Breadth of the tricuspid valve	...	0,032	0,030	r.0,020	...	...	...	0,028	0,030	0,030								
Inner circumference of the right ventricle	...	0,210	0,200	0,120	0,190	0,140	...	0,200	...	0,250	...	...	...	...	0,160	0,128	...	0,170
Inner circumference of the left ventricle	...	0,100	0,160	0,090	0,230	0,130	...	0,125	...	0,130	...	...	...	...	0,090	0,190	...	0,170
Inner circumference of the right auriculo-ventricular orifice	...	0,232	0,100	...	...	0,100	...	0,060	0,112	0,180	...	0,100	...	...	0,082			
Inner circumference of the left auriculo-ventricular orifice	...	0,200	0,080	0,080	...	0,090	...	0,040	0,090	0,130	...	0,100	...	...	0,033			
Thickness of the wall of the right ventricle	0,006	0,10	0,011	0,006	0,010	0,012	0,006	0,012	0,012	0,007	0,008	0,006	0,004	0,008	0,005	0,007	0,006	0,014
Inner circumference of the right auricle	...	...	0,250	...	...	...	...	0,300	...	...	...	...	...	...	0,185			
Inner circumference of the left auricle	...	...	0,210	...	...	...	...	0,200	...	...	...	...	...	...	0,175			
Thickness of the wall of the left auricle	...	...	0,004	0,004	...	0,004	...	0,004	0,004	...	...	...	...	...	...	...	...	0,006
Thickness of the wall of the right auricle	...	...	0,003	0,001	...	0,001	...	0,005	0,001	...	...	...	...	...	...	...	...	0,002
Thickness of the septum ventriculorum	...	0,022	0,022	...	...	...	...	0,021	0,020	...	...	0,018	...	...	0,011	...	...	0,030
Breadth of the aortic valves	...	0,020	0,030	0,011	0,023	...	0,015	0,020	0,020	0,015								
Breadth of the valves of the pulmonary artery	...	...	0,030	0,020	...	...	...	0,022										
Weight of liver	1400	2450	2650	...	1700	...	1250	1,650	1250	1650	1300	1150	900	...	...	...	...	1725
Weight of kidneys	each 70	r. 200	r. 250	...	r. 140	...	...	both 400	r. 150	...	...	...	r. 150	...	...	...	...	r. 80
		l. 220	...	...	l. 180	...	...		l. 100	...	...	...	...	...	...	...	...	l. 100
Weight of spleen	200	210	300	...	180	...	...	300	150	...	...	150	...	...	...	...	...	295

OBSERVATIONS TO THE TABLE UPON DISEASES OF THE HEART.

Observation 6.—Pericarditis—Hypertrophy of the heart—Atrophy of the kidneys resulting from interlobular inflammation—Cysts.

A maid servant—aged 28 years—was seized a year ago, after rapid turning, with a violent pain in the left side, which disappeared after blood-letting, but strong palpitation of the heart remained. The menstruation was suppressed. Œdema; ascites; albuminous urine; hunger but no digestion; orthopnœa. Percussion indicated a considerable hypertrophy of the heart. The impulse of the latter did not raise the stethoscope, was weak, and not audible at a distance. Both tones were replaced by a plainly audible rasp-like sound in the vicinity of the fifth to the sixth ribs, and over the lower half of the sternum, pulse small. The patient was visited on the 24th of January, 1849. Death 24th February, Autopsy 26th.

In the plenial cavities there was a small quantity of water. Both lungs flesh-colored, almost void of air, but readily inflated; the right one lightly adherent to the costal pleura by its whole surface. Pericardium one millimetre thick, hanging loosely on the heart, containing no liquid exudation; its free and adherent surfaces covered with needle-like, fibrinous, unorganized vegetations. Beneath the latter was a vascular pseudo membrane, consisting of fusiform fibres. The muscular structure of the heart was yellowish gray, and soft, but contained no exudation between the muscular fibres.* The right and left auriculo-ventricular valves somewhat attenuated, and one lobe of the mitral valve a third shorter than the other. The semilunar valves normal, except an atheromatous spot upon one of those of the aorta. The limpid urine contained within the bladder strongly albuminous. The kidneys, with but little blood at their surface, covered with numerous yellowish-white, slightly hard granulations, from one-fourth to one-third of a millimetre in diamater, which, by incission, allowed a whitish liquid to escape. These consisted of tubuli uriniferi,—invested with their epithelia, most of which contained no fat. The granulations were, therefore, not an abnormal product, but the intervening substance was very much altered. Neither blood-vessels nor malpighian corpuscles were visible, but were replaced by elongated, nuclear, and fusiform fibres of organized exudation. The tubuli uriniferi here were also not to be distinguished. This form of renal disease may be compared to the interlobular inflammation of

* The paleness of color and softening of the muscular structure of the heart is no absolute proof of carditis.

the liver. In the broad ligaments of the uterus, there were some pedunculated cysts, containing a clear serous liquid.

Observation 7.—Anasarca, little water in the peritoneal cavity, simple emphysema of the lungs, which had slight adhesions to the ribs.

Observation 8.—The valves of the heart a little thickened, liver very fat and very much enlarged, general dropsy of the thorax, abdomen, and cellular tissue, without albuminous urine.

Observation 9.—Pericarditis adhesiva. Vegetations, and insufficiency of the mitral and aortic valves. Œdema; ascites, catarrh of the kidneys; pneumonia.

A boy—aged 16 years—from sudden fright, was seized with strong palpitation of the heart, which, after treatment, disappeared. Some weeks before his death, it returned violently, from anger. I saw him on the 21st of January. Face injected; pulse quick, weak; impulse of the heart very visible, but weak. Both sounds could not be discriminated. Respiration at the apex of the lungs tubular. Œdema, without albuminous urine. Death on the 22nd of Jan., Autopsy on the 23rd.

Red hepatization of both lobes of the left lung. The lower lobe of the right lung collapsed from pleuritic effusion; the apex of the lung simply emphysematous. The entire surface of the heart had contracted adhesion to the pericardium by areolar tissue not yet perfectly formed, as the fibres had a rough outline, and were furnished with nuclei. The muscular structure of the heart was red and healthy. The left ventricle was hypertrophied. The lobes of the mitral valve had an unequal length; at their free edge were one millimetre thick, and were covered with numerous small, hard, lenticular, red bodies, so that the sac-like dilations had disappeared and a perfect closure of the valve was rendered impossible. The bodies just mentioned were constituted of coagulated fibrine, in which some free fat granules and exudation corpuscles were contained. They were not covered by the endo-cardium, but, nevertheless, appeared to originate or be rooted between its two laminæ. The free edge of the semilunar valves of the aorta were furnished with similar lenticular dentate bodies. The right side of the heart and the left auricle were healthy. Liver granular, yellowish, with much fat in its cells. Kidneys firm and dense; cortical substance reddish-yellow, marbled, whereas the medullary structure was red. The tubuli uriniferi, sometimes thickened by fibrious exudation, contained a great multitude of nuclei the 150th of a millimetre in diameter, which gave to the liquid pressed out of the corti-

cal substance a clouded appearance. The tubuli uriniferi, in some instances, contained a granular precipitate of uric acid.

Observation 10.—Hypertrophy, consequent upon carditis. Relative insufficiency of the aortic valves.

A man—aged 35 years—suffered from rheumatism fourteen years ago; eight years previously had a fall, since which he had violent palpitation of the heart. The sound of the latter by percussion over a considerable space, was feeble. The hand placed below the sternum perceived a very strong purring. The first sound of the heart was replaced by a bellows' sound, accompanied by a friction sound. The bellows' sound was audible over all the large arteries. The second sound was short. The heart's impulse visible. Pulse increased; not intermitting. No œdema at any time, but hoarseness and some dyspnœa. All the functions normal. In this condition I found the patient on the 28th of November, 1848.

He left the hospital, but returned from an increase of dyspnœa, and died almost suddenly on the 30th of March, 1849.

Besides the hypertrophy of the heart, the aorta, at its origin posteriorly formed a sac-like dilatation, which pressed upon the trachea and produced the hoarseness, the larynx being normal in its condition. The otherwise normal aortic valves were relatively insufficient, for, between their edges, a space from one to two millimetres remained, through which water would run, poured in at the aorta. The inner surface of the latter at its commencement, for two fingers' breadth, was rough with calcareous lamellæ, but otherwise was without any coagula. The walls of the aorta, from exudation in its tunics, were from three to four millimetres thick. The musculi papillares of the left ventricle, in the middle eighteen millimetres in diameter, presented interiorly a shining tendinous substance radiating from the centre to the circumference, which was as hard as cartilage, and was composed of coagulated fibrine. Besides the latter, there were exudation granules upon the pale muscular fasciculi of the same ventricle, but the right ventricle was normal. Hydrothorax upon the right side. The left lung pressed back by the enlarged heart.

Observation 11.—The man came into the hospital with stupor and paralysis of one side of the body. He was an habitual drunkard. On examination after death, the mitral and aortic valves were thickened with atheromatous deposits. There was also atheroma in the arteries of the brain, and also much serum under the investing layer of

arachnoid; fatty liver. Eight months previously, he was said to have had an attack of apoplexy, of which no trace was now distinguishable in the brain.

Observation 12, A—Calcification and insufficiency of the mitral and tricuspid valve.

A man, of forty-two years of age, who formerly suffered from rheumatism, succumbed with general dropsy of the areolar tissue of the breast and of the abdomen. The urine had contained only a small quantity of albumen.

No alteration of the pericardium. The lobes of the mitral valve, which were thickened through a fibrinous exudation and a deposit of calcareous matter, were so grown together that the auriculo-ventricular orifice formed only a cleft about twenty millimetres long and ten broad. Their thickness was irregular; in one place it reached to ten millimetres. The lobes of the tricuspid valve also were thickened by a fibrinous exudation (to three millimetres,) and so grown together that a small opening only remained, but there was no calcareous deposit. In this case, neither the right nor the left auriculo-ventricular orifice could be closed. The musculi papillares of the left ventricle were likewise infiltrated with calcareous matter, and only beneath the endocardium of the left auricle were found a few milk-white spots of fibrinous exudation. The liver exhibited a nutmeg-like appearance, consisting externally of elevated tumors, and being brownish-red internally, with inordinate engorgement of the interlobular veins. The hepatic cells contained but little fat. Kidneys strongly hyperœmic; hyperœmia also of the lungs.

As observations upon inflammation of the tricuspid valve are rare, I will give the account of a second case.

Observation 12, B—Inflammation of the musculi papillares, and of the tricuspid valve.

In a woman of fifty years of age, who declared she never had suffered from rheumatism, the left ventricle was hypertrophied; the endocardium of the right was deeply reddened by imbibition, and the tricuspid valve was insufficient, which is very rarely the case; instead of thirty millimetres, it was twenty millimetres broad, and was thickened to one millimetre. Its musculi papillares were condensed and marbled red with yellow, contrasted with the deep red hue of the muscular parietes of the heart. The condensation and change of color depended upon an exudation, consisting of exudation granules mixed with larger fat globules, which enveloped the primitive muscular fibres. There were some milk-white spots beneath the endocardium. The liver presented a lobulated appearance, and

between the lobes, the veins were engorged with blood. Urinary cysts upon the kidneys, the medullary substance of which was brownish-red and the surface was feebly granular. Urine albumenous.

Observation 14.—Chronic pleuritis. Œdema; ascites. Fatty degeneration of the softened kidneys.

Observation 15.—General dropsy.—Simple emphysema of the lungs. Atheroma in the mitral and aortic valves. Granulated fatty liver. Hyperœmia of the kidneys. Injection of the mucous membrane of the stomach and small intestine.

Observation 16.—Granular fatty liver, with numerous mulberry-like calculi in the gall bladder. Spleen covered with a hard, cartilage-like pseudo membrane.

Observation 17.—Liver with the surface resembling nutmegs; without fat. Pneumonia. Hydrothorax. Urinary cysts in the left kidney. Intermittent thirty years previously.

Observation 18.—Liver fatty, softened. Cancer medullaris of the stomach and the omentum majus, which, with the peritoneal covering of the intestine, were filled with hundreds of tumors, from the size of a millet-seed to that of a pea.

Simple emphysema of the lungs, of which the right was adherent by its whole surface to the pleura costalis. Uniform dilation of the aorta throughout its entire course.

(*To be continued.*)

ART. XLIX.—*The Hip-joint—Considerations on its injuries and diseases, deduced from the Anatomy, by* S. J. STRATFORD, M.R.C.S., Eng,. Toronto; *continued from No.* 5.

TUBERCULAR DEPOSIT IN THE COXO-FERMORAL ARTICULATION.

The deposition of tubercular matter in the hip-joint is of frequent occurrence in childhood and adolescence, but it rarely attacks adult or old age. The deposit is without doubt dependent upon a peculiar modification of the constitution—an abnormal condition of the blood, which gives rise to a peculiar effusion from the blood-vessels that has been denominated tubercular deposit. It differs from the blastema of pus, insomuch that the cell development produced from the softened blastema, appears to be far less perfect, and is far more tardy in all the changes which it undergoes.

In the actual production of the disease, without doubt the local hyperœmic action of the capillary vessels, similar to

that which occurs at the outset of inflammatory action, has effect, hence this condition has been set down as a similar process. Besides the positive marks of dissimilarity in the products of this hyperœmia, to surgeons there is a fact of vast importance, that must present itself continually in all these cases, and impress upon him the absolute necessity of making a just and proper diagnosis in all such cases. It is the fact that in pure inflammatory action, such as we have already endeavoured to indicate, be it in the synovial membrane, be it in cartilage, be it in ligament, or even when it occurs in the structure of the bone in connection with the joint, that the results of simple inflammatory action may be arrested, may be cured at the most advanced stages of the disease—possibly in some cases not without deformity; not so, when tubercular deposit has occurred, the character of the complaint will be completely changed; the product deposited in or around the different tissues will be far more difficult to remove, and if removed in one structure may appear in another, and notwithstanding all our efforts, will in the end certainly tend to the destruction of the joint and death of the patient.

The remote cause of this peculiar condition of the system, which leads to the deposit of tubercle in every or any part of the body, must, without doubt, be sought in the positive composition of the blood. Many pathologists have pointed to the imperfect changes which go on during the respiratory action, under certain circumstances, as the causes which produce this condition, and have assigned to the poisoned state of the atmosphere the reason that the respiratory functions were not properly performed; while, others again, maintain the amount of oxygen in the material breathed more than exceeded the normal quantity of carbon that nature required should be present, in order to produce that normal combustion which was required to develope the amount of animal heat necessary to the wants of the system—in fact, that the structures, especially the cell formation of the blood, were used up too rapidly. Again; some physiologists represent to us that the digestive and assimulative functions are at fault—that the materials absorbed were not of the character that assured the perfect formation or the normal condition of the cell formations constantly going on within the blood, and that this deficiency easily accounted for the imperfect development of the morbid products that resulted in this condition of the constitution. It is possible that each and all these causes may have their effect upon the blood, and hence, be a remote cause of this complaint.

There is very little doubt but that the composition of the

atmospheric air has a very great influence upon health and disease in the human constitution—its normal condition of four-fifths nitrogen and one-fifth oxygen supplies to the lungs the necessary stimulus of life; but when adulterated with carbonic acid gas, carbonetted hydrogen, sulphurretted hydrogen, the influence of cess-pools and drains, the poison of influenza or cholera, or the emanations from a variolous or typhus patient, it either poisons the blood or prevents the necessary excretion of carbonic acid gas which it is the duty of the lungs to remove from the system, and which if accumulated in the blood, even by slow degrees, becomes as sure a cause of disease or death as though it had been respired. The material composition of the blood, again, which is constantly varying from the digestion of food is, according to the analysis collected by Mr. Ancell, altered from the normal condition. The cell formations are deficient in number, while the crude material, albumen, abounds, and is found in considerably increased quantity. Fibrine, the result of the perfect development of the cell-formations, is evidently below the normal amount, and appears to be defective in its nature. Elsner and other analysts contend that the fatty principle is also greatly diminished in amount, or is not truly appropriated. Frick declares that the carbonate of lime abounds, but that the plosphate is deficient; while it is maintained by L'Heriteer, that in the earlier stages of this condition, the earthy salts are less than in the normal composition of the blood; all agree that the blood is degraded in quality and composition, and consequently has a far lower degree of vitality than in a healthy state.

It is certain that the blood is continually undergoing a notable change, even the drinking of a quantity of water will produce a change in its density; while the additions continually made to it, of the matters received from the results of the primary or secondary digestions, or the changes produced by the processes of secretion and excretion, all must cause an ever varying change, that may have a beneficial or contrary tendency upon its composition. The consequence is that we can readily understand that the condition of the air, the nature and composition of the diet, the amount of exercise, and also the varying vicissitudes of life, may produce a direct or indirect influence upon the circulating fluid, and may show its effects in each particular disease. The result of the most careful analysis in this condition of constitutional disease termed "tuberculosis," goes to shew that the blood-corpuscles and the fatty principles are evidently

diminished in amount, while the albumen in the blood plainly exceeds the normal quantity. This is the result of the most recent chemical, physiological and pathological researches which science has disclosed to us.

In consequence of the hyperœmic distention of the capillary vessels, which has been set down as a process of inflammation, we have the first local activity in this disease; from the coats of these vessels is effused a protinous compound, differing from the blastema of pus both in its appearance and results. The effused matter is of a yellowish or grayish color. It is at first more or less fluid, and runs freely in the areolar tissue surrounding the blood-vessels and other tissues of the deceased structure; by degrees it hardens, fills up the tissues, and, as soft mortar lying between the stones in masonwork, it encloses all the different structures in a compact mass. This material, which in a healthy condition of the system, having a normal chemical state of the blood, would have been a blastema, that softening would have produced normal pus, is from the peculiar taint or abnormal condition of the mass of the circulating fluid, giving rise to tuberculosis, an unhealthy deposit causing morbid changes, which developed, under these influences, is sure to produce the most grave results. This material may have become firm, and may remain quiet for an indefinite period of time in this condition; it may have surrounded the capillary vessels; it may compress or destroy them, rendering them perfectly impervious to the circulating fluid, and may more or less interfere with and even destroy the nutritive apparatus of some or all the various structures which I previously indicated as forming part of the joint. The effusion which causes, and the changes which take place in the blastema of pus, are generally far more confined and more rapid in their evolutions—no doubt in a vast variety of instances, producing the most grave and terrible results—while the deposit in which tubercle is formed is far more diffused, and that effusion is often continuous in its character, spreading from one structure to another until it involves a whole organ; for example, it is far more tardy in its developments and less easily ejected from the living system; while, from the degraded condition of the constitution, there is seldom but little effort at repair—hence the matter of pus is rapidly formed, and quickly removed from the system, but the material of tubercle may remain dormant for a long time, and cannot be easily removed from the structures in which it has been deposited. These circumstances, we believe, constitute the local morbid influences, the true malignancy of the effects of tuberculosis.

The tubercular deposit may be located in any or every structure of the joint. It may be effused into sub-synovial tissues among the capillary vessels; it may transude the basement membrane into the cavity of the joint, and may be located among the epithelial structures. It may be deposited around the nutritive apparatus of the cartilage which covers the head of the thigh-bone, or lines the cotyloid cavity; and it may exist separately or combined either on the surface of the cartilage in connection with synovial membrane, or in its apparatus in proximity with the bone—when in the latter position it commonly occurs largely deposited in the head and neck of the bone itself.—It may surround the fibrous texture of the ligament, and possibly in a very partial manner, and in very minute quantities, insinuate itself between the fibres which compose this structure. In each of these structures the deposit will be influenced by the peculiar nutritive apparatus around which it is deposited, for it cannot be located in cartilage, and, but in a very trifling degree, in the substance of the ligament, at the same time it will be submitted to the peculiar laws which governs its own progress and development. I have said that this pseudo-plasmata may be poured out upon the surface of the joint and within its cavity, in a fluid form like fibrine or blastema, and it soon becomes more or less firm: now the abnormal condition of this product is so far shown, that we never find that it becomes organized, so as to form false membrane; although extremely slow as are the changes which progress in it, there is not power to form new blood-vessels—consequently a healthy conservative action is not one of its attributes. The synovial membrane, in consequence of this hyperœmic condition of the capillary vessels, and the deposit of tubercular matter, slowly degenerates into a pulpy substance, soft, and of a whitish or light gray color. This is plainly visible to the naked eye; while the synovial secretion is perverted in character, thicker or more opaque than natural.

After a time this pseudo-plasmata begins to soften and liquify, and in it we find imperfectly developed cells, and cyto-blasts, mixed with some granular matter, and possibly with globules of olein; and calcareous salts, not unfrequently by an admixture of pavement and synovial epithelium, may be distinguished in the mass. These materials form a kind of emulsion, and take on the appearance of healthy pus. The mere presence of this tubercular matter becomes a source of irritation not only to the lining membrane of the joint, but to every structure in which it is deposited; irritative action is set up around the deposit, and

the synovial membrane slowly degenerates while it is bathed in the non-laudable pus. This irritation will certainly cause ulceration of the basement membrane, which has long since been denuded of its epithelial structure; and when that has been accomplished, the capillary vessels in the sub-synovial structure and the nutritive apparatus of the cartilage will surely participate in it; the substance of the cartilage has ere this felt the morbid influence, so also will the structure of the ligament over which the synovial membrane is reflected.

After a time the matter contained within the joint increases by slow degrees, so that ulceration of the ligaments of the hip-joint take place, the quasi-purulent matter will escape—it may burrow down among the muscles of the hip, and may at last find an exit by an external opening, and all the tubercular deposit may be removed from the part: such a fortunate conclusion, however, seldom happens, for in most instances the other structures of the joint are affected by a similiar deposit. Should the whole of the tubercular matter have been removed, and the constitutional diathesis have been changed, without doubt ulceration and destruction of the hip-joint will be pretty certain to occur, but under these circumstances the more fortunate changes that result from inflammatory action may demonstrate themselves; and the patient may get off with an anchylosed joint or consequitive dislocation.

The symptoms which this condition of the synovial membrane present, differs somewhat from those which are exhibited in ordinary synovitis—a slight blow, a strain, or twist, will occasionally give rise to an hyperæmic condition of the capillary vessels. The joint slowly swells, and has its motion more or less impaired, but there is little or no pain present; the rapid swelling and certain pain of synovitis is absent, and when swelling does occur it lacks the indications of true fluctuation, the part is soft doughy and somewhat elastic—while the manipulation and pressure upon the parts, presents very little increase of pain.—This indolent condition of the hip-joint may continue for months, for by slow degrees the matter softens, and the formation of pus may occur, and be evacuated by ulceration; this new condition will, in the first place, be attended with a diminution of the pain and distention of the joint, in short time to be followed by the usual characteristic aggravation of all the symptoms both local and constitutional, which invariably results from the external progress of matter and the increased destruction of the joint. In consequence of the slow progress of this disease in the hip-joint the whole of the

limb undergoes a condition of atrophy, the bones as well as the muscle grow weak, pale, small and flabby, the adipose tissues disappear, and the lower portion of the limbs, take on a condition of passive conjestion and œdema. One of the most marked and distinctive symptoms of this complaint is, that the lymphatic glands in the groin become enlarged, and are evidently affected with tubercular deposit. Such a condition of the glands may undoubtedly occur, when any of the structures of the joint are the seat of this disease, and as such it is a marked symptom of tubercular deposit in the hip-joint; when it occurs at an early stage, it appears to me a symptom that will serve to confirm our diagnosis of the complaint above any other that can be presented of this disease. A species of irritative inflammation will often extend up the lymphatic vessel to its next lymphatic gland; from the seat of the disease within the hip-joint, active inflammatory action may result, and good laudable pus be formed, but this is not usually the case. The same condition of constitution which gives rise to the original tubercular deposit, now causes a similiar condition of things to happen in and around the lymphatic gland—the gland feels soft and is not very prone to take on the condition of softening and the formation of matter—hence these glandular swellings may be stationary for a very considerable period. When this condition of the lymphatic glands accompanies the low chronic irritation of the hip-joint, we may set it down as a pretty certain index of the nature of the complaint.

The tubercular matter may have been deposited around the nutritive apparatus of the cartilage, at the same time that it is in connection with the capillary vessels of the synovial structure; as a matter of necessity each of these structures will participate in the irritation produced, and will not fail to develope the symptoms and results I have so fully detailed. The irritative action will spread to the cartilage, an increased supply of fluid, producing softening and solution of the fibrous element will be the necessary result—destruction and disintegration of the cartilage cell formation will also happen—so that the ulcerative action will also surely destroy the whole structure. We cannot, I think, if we understand the structure of cartilage and the character of its nutritive apparatus be misled into an idea that this tubercular deposit exists within the cartilage, it is merely deposited around the lowly vitallized fibrous material, and the solution and absorption of the cartilage is solely dependent upon the abnormal amount of fluid presented to it—the tuberc

lar deposit or the primary hyperœmic condition of the blood-vessels causing an interruption of the healthy nutritive action, which should take place in the part. The consequences, then, which will arise from the deposit of tubercular matter around the cartilage, upon its free surface, will be pretty surely accompanied with a similar condition of the synovial apparatus and its structure, and cannot be distinguished from it by the symptoms; this, however, must be of comparatively little consequences, as it must be obvious to all, that when the primary deposit affects the ampullæ of the cartilage, that the subsequent changes and results which will take place must assuredly involve parts in such close connection as the cartilage and synovial membrane. Hence, in this variety of disease we shall expect to find all the symptoms and results which have been already fully detailed, as symptomatic of the affection when it has originated in the synovial membrane.

Should the nutritive apparatus of the cartilage, in connection with the bone, either in the head of the femur, or in the cotyloid cavity of the hip-joint, be the location of the deposit, we shall generally find that a similar condition exists in the structure of the bone itself, or will subsequently be developed in it. The tubercular matter is deposited in the cancelli, which especially constitutes the articulating extremity of the bones, and it may also exist in the Haversian canals of the harder laminæ of the bone.—This effusion of tubercular matter into the cancellated structure of the bone fills all these parts, compresses and destroys the vascular apparatus; in the first instance, however, the hyperœmic condition of the blood-vessels afford an increased amount of nutritive fluid; to the canaliculi and lacunæ, the true nutritive apparatus of the bone, and this acting in the same manner as it does while under the influence of inflammatory action, dissolves the calcareous matter of the bone, softens and dissolves the fibrous element also. In the process of the softening of tubercular matter in bone, we often find two conditions exemplified at the same time. Thus you will find the cancellated structure of bone completely filled with this morbid material, in which case the vascular apparatus has been completely compressed and destroyed, it will then happen that the tubercular matter remains firm and consolidated within the cancelli; but at other points, when the condition of the blood-vessel still remains pervious, that ulcerative action may so surround and isolate the dead parts, as, by and by, more or less perfectly to separate them from the living tissues—in

fact, to produce caries of the bone for a considerable extent; at the same time the nutritive apparatus of the cartilage, which is in connection with the bone, must necessarily participate in this condition—even was it not already implicated by the deposit. The deceased condition of the nutritive apparatus of the cartilage necessarily causes softening, solution and destruction of the cartilage; and when this condition is more or less perfectly accomplished the disease will extend to the synovial structure, and will ultimately end in the softening of the tubercular matter, the formation of the non laudable pus, and by its finding its way into the joint; where in all probability it will excite great and intense irritation, that ultimately ends in a condition of ulceration and destruction of the joint, causing solution of the capsular ligament and discharge of the purulent contents of the joint, by means of external openings, and the establishment of sinuses.

This condition of tubercular deposit in the hip-joint, be it in the nutritive apparatus of the cartilage or in the neighbouring bone, is accompanied with a dull aching pain in the part—slight swelling and very trifling impairment of function, in this respect it often stimulates chronic disease of the cartilage, and is only to be distinguished from it by the condition of the patient's constitution, or the appearance of enlarged glands in the groin, plainly affected with tubercular deposit. The whole joint, as well as the bone, may appear enlarged, in consequence of the hyperœmic condition of the vessels and the deposit of tubercular matter. The progress of this condition is often extremely slow, and the appearance of increase in the size of the joint is often augmented by the atrophied condition of the limb; the joint is now plainly large, weak, and deformed, and will often exhibit many large blue veins coursing along upon the hip, or in its immediate neighbourhood.

The swelling around the joint is in the areolar tissue, rather than into its cavity—it is not caused by the effusion of serum, but by the infiltration of a more solid material it; is not the sudden swelling of synovitis, but the work of weeks, having come on by very slow degrees. By degrees these symptoms increase, the swelling is augmented, the pain is greater, the sleep is disturbed with spasmodic twitches of the limb; all the constitutional symptoms are aggravated, at first of an inflammatory type, afterwards partaking more of irritative fever, and finally terminating in confirmed hectic.

The cartilage and synovial structure may have been removed; while in the bone, we shall occasionally find

necrosis combined with caries to exist, but then there is no effort to repair; it may be that the inflammation, suppuration and ulceration which had commenced around the cartilage, and within the bone, will now extend to every structure of the joint, destroying all with a degree of rapidity proportioned to the depressed and degraded condition of the constitution, and the nature of the deceased structures; producing changes which will certainly eventuate in the loss of the limb, if it does not terminate in the destruction of the life of the patient.

Again: the tubercular deposit may have its seat among the ligaments of the hip-joint, and in the areolar tissue that surrounds them; here all the changes may occur external to the joint. The blastema which has been effused by the hypercœmic condition of the capillary vessels, may soften, may develope the granular matter and cyloblasts of this degraded condition of inflammatory action; the non laudable pus may make its way among the muscles and find an exit by the skin; in such cases, however, a numerous amount of sinuses generally maintain a vitiated discharge, often kept up by a degree of disorganization in the ligaments as well as by the morbid deposit of tubercular matter still present in the part—in all these cases there is no effort at repair, hence there is no inclination in the sinuses to heal.

It is also probable that the irritative influence without and surrounding the fibrous structure of the ligament, may extend to the tissues within the joint; the necessary consequence will be, that the whole joint will be involved in one common disease, and the changes and results will follow in all probability the progress which I have so often indicated, ending in consequitive dislocation, and it is more than probable in the death of the patient.

The various grades in the melancholy progress of this disease must evidently depend upon the situation and extent of the deposit; when it primarily influences the synovial membrane, the charges above recorded generally progress with greater rapidity than when the morbid deposit is further removed from that structure; still as sure and certain is the result, as when all the parts are simultaneously affected. We can easily understand that when the deposit of tubercular matter is very extensive, an intensity of action may be developed that shall obscure the slow changes that would otherwise result, and death might speedily occur from the acute and extensive irritative action which may present itself.

It is possible that when the deposit is not very extensive we may occasionally observe some attempt at repair in those parts which have been the seat of the diseased blastema; the usual changes which have been explained may have occurred; nature by these means may have removed the morbid product from the animal economy, and an attempt at the reproduction of bone in cartilage may have been the result, and the disease may terminate in anchylosis. Bone may have been deposited in the fibrous membrane, around the new location of the head of the femur, when that bone has been placed in the tyroid hole, or on the dorsum of the ilium, the dislocation having resulted from the disintegration and destruction of the joint.

In all these cases the complete removal of the morbid blastema must surely have occurred; for no joint can be cured even in such altered conditions, without these circumstances shall have happened; and these changes cannot occur without the formation of pus, and the necessary destruction of the joint, or an alteration of its normal structure and functions in a greater or less degree. These favorable terminations, however, very rarely happen; for it must be remembered that if the deposit is not very extensive in the first instance, it may be consequitive, and hence a further deposition may be progressive in the several tissues still unaffected; and, what is more, the result of the constitutional dyscracie may influence all the changes in the deceased joint, and render the processes, which in a healthy constitution would have been those of repair, a source of further degeneration and destruction; consequently we are pretty sure to find the most grave results of articular disease to be developed in the joint in this complaint, even under the most favorable circumstances. In almost all these cases, consequitive dislocation of the hip-joint will result if the patient's constitution has stamina to allow of it—if from the irritation of the local cause, death before the advent of that event does not take place. In most of these cases of dislocation of the joint, we cannot hope for the cessation of the deceased action, for in this instance it must be remembered that the tubercular deposit may be the cause of the permanent irritation of the bony structure, even after all the other tissue of the joint have been removed; and that this disease in the articulating extremities of the hip-joint will subside only after its complete removal, and when we are well aware that the deposit and the necessary changes that take place in and around the joint are dependent upon the peculiar state of the constitution which has already been pointed out, what assurance have we that the

same morbid deposit may not still be progressing in these parts, which would necessarily render futile all our hopes of change for the better. Indeed, the amount of cases which recover from this variety of disease, I believe, are very few: the cases of cure in diseases of the hip-joint arising from inflammation being not unfrequently produced as instances of recovery from this disease, while I apprehend that the result of the deposit of tubercular matter in the hip-joint, although the cases are not so numerous or so striking, are as assuredly fatal, as the same deposit in the texture of the lungs which gives rise to phthisis pulmonalis; indeed it must be remembered that these two diseases spring from the same source, and not unfrequently co-exist at the same time.

Among the symptoms which indicate this disease in the hip-joint, the very first in point of importance must be derived from the appearance and age of the patient, and from the positive condition of the constitution; if it presents the signs of a scrofulous diathesis, we shall, as a matter of necessity, be led to calculate that the disease is dependent upon tubercular deposit; at all events, our fears and suspicions will certainly be aroused, to watch the accompanying symptoms with considerable attention. The peculiarities of this condition of constitution, accompanied with the local symptoms I have already detailed, will, I think, serve to mark with considerable accuracy the nature and character of this disease, and enable us to distinguish it from either of the affections which may originate in the synovial membrane, the cartilage, or the ligaments of this joint as dependent upon pure inflammatory action. From these facts, we must be fully alive to the necessity of accuracy in our diagnosis in these diseases of the hip-joint, and I think can now appreciate the advantages to be derived from a more perfect knowledge of the structure function and nutrition of each individual tissue; especially, as we may observe, that it will afford pretty certain data, from which to deduce the symptoms, and to prognosticate the results in such cases.

From our knowledge of the causes, constitutional and local, which have produced this disease of the hip-joint, we can anticipate but little benefit from the powers of art, as curative means in the removal of this disease; in most cases the deposit of tubercular matter has been slow and unheeded, and perhaps the deposit has occurred to a very great extent ere the patient makes any complaint, or experiences any but the most indirect symptoms; but when once located, I fear that it is beyond the power of medicine to

cause its removal; changes only of the most tedious and fatal character, will alone suffice to produce so desirable a result.

The influence of medicine upon the constitutional diathesis may, undoubtedly, afford us faint hopes, provided its operations and effects shall be prior to the deposit of the blastema; but how seldom can we anticipate this complaint, or ward off its effects by such means? Truly it is a most lamentable state of things, and all we can do is to palliate and relieve the symptoms as they occur. The employment of perfect rest, the use of occasional local bleeding and blistering, may have their wonted advantages when there are symptoms of vascular activity present; but this relief will be but temporary in its character, and may have to be often repeated.

Often as we watch the progress of this fatal disease, the utter feeling of our own nature may lead us to hope that the tubercular deposit is not extensive, and that the separation of the diseased surfaces may alleviate the compaint; it might even prompt us to recommend excision of the head and neck of the thigh-bone; this certainly would be but a dernier, resort not likely to be successful; for if we have been correct in our diagnosis, and have a just appreciation of the disease, we shall surely be convinced of the inutility of such means, and depend upon it, the fallacy will certainly become manifest; for unless the deposit has been extremely limited, and confined altogether to the portion of the bone removed, the further progress of the complaint cannot be obviated even by this painful operation.

Our attention should be particularly called to the condition, of the patient's constitution—from the symptoms and history we shall trace the existence of that peculiar diathesis which is at the bottom of all the trouble. This condition as I have before shown, has been presumed to depend upon a morbid state of the assimulating processes, a deficiency either in the powers of digestion, or a malarrangement of its products; and among them an apparent demand for an increased supply of the oliaginous elements has been presumed to exist. It has also been said that this vitiated condition of the digestive apparatus has failed to afford a necessary pabulum, either in the shape of albumen, or of oil for the cell formations in the blood—that the supply is not equal to the demand, and hence their degraded and deficient condition.

This condition of constitution should be quickly pointed out, and means taken to rectify so dangerous a state, bearing fully in mind that while it exists, any part of

the body is liable to the deposit of tubercle; that the least morbid excitement of any structure—a blow, a fall, the influence of cold—may, by exciting hyperœmic activity of the vessels, possibly give rise to the deposit; and when once it has become located, we must be fully aware that the constitution possesses no means for its removal, except through the changes peculiar to its nature; that these changes are surely distinctive of the part in which it is located, and in very many instances are evidently incompatible with life itself. To correct this condition of constitution, the cod liver oil is very largely employed at the present day, and when used in the early states of that condition of constitution we are speaking of, it will sometimes act like a charm, consequently should always be employed unless some peculiar idiosyncracy forbids its use. Chalybeats, fresh air, sea bathing, and all the hygienic means that have been recommended in the scrofulous diathesis, should certainly be employed to ward off the effects of tuberculosis, or to arrest its progress, when there is any premonitory symptoms present. Such means as these will often be advisable in the advent of this complaint in the hip-joint; by this time, however, we shall be fully able to appreciate the advantages to be derived from such a course, and shall feel convinced that it is only in the commencement of the disease in the hip-joint, that we can expect to derive any permanent benefit from their use.

(To be continued.)

BOOKS RECEIVED FOR REVIEW.

The British and Foreign Medico-Chirurgical Review or Quarterly Review of Practical Medicine and Surgery, No. XXV., January, 1854: New York, republished by S. S. & W. Wood, Pearl Street; price three dollars per annum, payable in advance. The reprint of this long celebrated Review, does a credit to the New York Press; each number contains 250 pages: the price at which it is offered is so extremely low that no intelligent physician should be without it.

REVIEW.

A TREATISE ON VENEREAL DISEASES.—By A. Vidal, (*de cassis*) *Surgeon of the Venereal Hospital of Paris: Author of the traite de Pathologie externe et de Medicine Operatoire &c. &c., with coloured plates: translated and edited by* George C. Blackman, M. D. *Fellow of the Royal Medical and Chirurgical Society of London: formerly one of the Physicians to the Eastern and Northern Dispensaries New York, published by S. S. & W. Wood,* 261 *Pearl St., N. Y.* 1854, *folio* 499. *Toronto, H. Rowsell.*

The above is the title of a new work on the venereal disease that has just issued from the New York press, at the hands of the enterprizing publishers Messrs. Wood & Co. The work is got up in excellent typographical style; and the coloured engravings are certainly life-like representations of the different varieties of the disease treated of, so that they cannot fail to present to the mind of the inexperienced practitioner, or the student of medicine, a ready means of recognising the complaint whenever he happens to meet with it in practice.

From the earliest records of the venereal disease, its history and symptoms have been clothed in great obscurity and confusion; many authors have, even in our day, built up systems intended to explain the several facts which form a part of the complaint, but the next work that has issued from the press has invariably demolished their foundation and razed their superstructure; under these circumstances there is without doubt a wide scope left for the profound observer, who shall duly collect the facts, and practically apply them; such appears to have been the object and intention of M. Vidal. He remarks in the preface that "From the time the venereal diseases were first somewhat carefully studied, it has been admitted that shortly after the application of the virus, certain lesions are generally produced on the parts contaminated; these are the *primitive venereal accidents.* Again, there are certain other morbid conditions, which are ordinarily observed subsequently to the above; these are the *consequitive venereal accidents.* Under this, by no means modern division, these affections may be advantageously studied. I have adopted it, believing it to be the most rational and the best adapted to the purposes of in-

struction, and not serving as a basis of any particular system." Such is the mode that Mr. Vidal proposes to follow in his considerations of these diseases.

Placed in a most extended field for observation and study of the venereal disease, the coadjutor and rival of M. Record, at the l'hospital du midi, an hospital in Paris which is solely appropriated to the treatment of these complaints, it was natural to expect that the author should profit by the noble advantages which were thereby offered for his consideration; and the work in question, which is now submitted to the medical profession, is offered as a result of his observations and reflections.

In the introduction M. Vidal gives a short history of the opinions upon and of the progress of the disease; he then enters upon the consideration of the nature of the syphilitic virus. From time immemorial the contagious character of the poison has been but too plainly demonstrated; this demonstration, however, only amounts to an evidence of its effects, for its specific character, its identical cause, has as yet eluded the researches of the organic chemist and the microscopist—which, seeing the great facility of its reproduction, and the tenacity with which it maintains its position in the constitution of any individual submitted to its influence, is certainly a most remarkable fact. That this contagious principle, whatsoever it may be, may be is communicable by inoculation is certain; that every such experiment has not succeeded is true, but to our mind this does not invalidate the facts; for it must be remembered that one positive demonstration properly interpreted must be superior to a vast amount of negative evidence. It is certain that the pus of a chancre inserted on the point of a lancet beneath the epidermis has given rise to the same form of ulceration, and that the product of this disease possessed the same property of reproduction as the original cause. M. Vidal says (page 19)—"The syphilitic virus has ordinarily for its vehicle a thin, sero-sanious, mal-assimulated pus, in which organic detritus is more or less apparent. But pus the most laudable, muco-pus, may also be the means of conveying the virus, and it would seem to possess no influence in modifying its nature. The virus may exist only in the morbid secretions, but it has not been proved that it may not change the normal secretions. It unites with the blood, and then undergoes certain modifications, by which it becomes intimately blended with it."

Seeing that the infectious nature of the venereal diseases has been proved, it has been asked if there is more than one kind of virus. Hunter contended there was but one, and

explained the differences of its effects by the variety of the tissues influenced, that when applied to the skin or external surface, a chancre was produced, but when the mucous membrane was affected, that gonorrhœ, or blennorrhœ, as M. Vidal calls it, was the result. Since his time Beng, Bell and Hermandez, have maintained that the nature of the virus was different in the two cases, and could only produce their like, a gonorrhœa causing a clap, or a chancre a sore; that gonorrhœa was a simple inflammation of a mucous membrane from some irritating cause, while the chancre was the true venereal disease. Again, M.M. Lagneau and Bearme have advocated a whole virus and a demi-virus; while Carmichael has declared that there were four different kinds of virus; that each produced different and distinct symptoms, and that each variety of the primary accidents was invariably followed by peculiar and distinct consequitive results. M. Vidal makes the following remarks upon this subject (page 22); "I repeat, the lesions which sometimes follow a suspicious connection, are sometimes of such different forms and so varied in their results, that we cannot be surprized that they should have been attributed to a different cause. But, thus far, we have arrived only at hypothesis, as we have studied under the influence of theory only. The experiments lately made to prove the inoculability of secondary accidents, or to show that the system may arrive at such a point of saturation as to resist all kinds of syphilitic action, or that chancres may be communicated to animals, have renewed the questions, whether the virus is of different strength, whether it is modified by the blood, or in passing through various organs, or from one individual to another, or from one kind of animal to another; and indeed, if the virus is not changed by the different conditions of the organism with which it is brought in contact. Finally, it has been asked, are the different products due to the seed or to the soil." We apprehend that the solution of these vexed questions will have to be solved by patient observation and clinical investigation. At the present moment we have several cases of secondary syphilis under our care, and these would seem to mark the identity of the venereal disease, whether originating in gonorrhœa or chancre. We will give the details of one of them. A man of about 55 years of age contracted a gonorrhœa, as he himself believed, and was assured by his medical adviser that he was cured, all but a slight gleet, which alone remained, he never had any, not even the slightest secondary symptoms, nor even a bubo. His wife, a woman of about 60 years of age, was affected with a slight sore upon the

labia, which was soon cured by the ordinary means, black-wash and alterative mercurial preparations—in about six or eight weeks afterwards she complained of severe fever, pain in her head and limbs, sore throat, a patchy superficial ulceration of the mucous membrane of the throat, a scaly eruption (lepra syphilitica) appeared all over the body ; she neglected to apply for assistance until the disease had considerably advanced. Iritis and nodes demonstrated themselves. She was now compelled to ask advice, and was treated with alterative mercurial pills and decoction of sarsaparilla, which was persevered in, until she thought she was quite well. A considerable time afterwards, being greatly afflicted in her family affairs, her general health again suffered ; iritis, nodes and sore throat again returned, but was apparently cured by the same means; continued family affliction by misfortunes that influenced her children, again induced symptoms of a low degraded state of constitution, under which the old woman sank. Within three months from the death of his wife, the old man again married to a healthy middle aged woman. In less than six months from the time of the marriage, the second wife was afflicted with an eruption precisely similar to that of the first, ushered in with sore throat and, ebrile symptoms. Upon being questioned she confessed to having had the primary symptoms, but that they soon got well by the use of a slight stimulating lotion. The woman became pregnant, and about the sixth month miscarried. The secondary syphilitic symptoms readily yielded to the hydriodate of potass and a decoction of sarsaparilla ; but the most curious part of the matter is that the old man solemnly declares that he has contracted no fresh disease, since the time of his first accident; and although he has had a slight persistent gleety discharge from the urethra, he believed himself perfectly well, as this never gave him the slightest inconvenience.

Here then we have clearly a similarity of effects produced by the same poison ; we have like consequitive symptoms following upon a sore, in the genitals, in which the cause of infection is evidently absorbed into the blood, and manifests itself in several tissues supplied by the circulating fluid ; indicating the presence of that infecting cause, whatsoever it may be, first in the throat, then in the skin, afterwards in the eye and in the bones—while in the old man the presence of the disease alone manifested itself in the mucous membrane of the urethra. In his case the positive cause of the disease never entered the blood, consequently he was not troubled with secondary symptoms. Surely these facts go strongly to prove that in the case of the man

the infectious cause, be it a peculiar leven or a parasite either of the animal or vegetable kingdom, which had taken up its abode among the epethelial cell formations of the mucous membrane, and remained located in this situation, while in the case of the women the cause was evidently absorbed into the blood and constituted as distinct a condition of blood-poisoning as gout or rheumatism. The effect of the poison upon the general constitution of the women, gave distinct evidence of that peculiar dyscratic condition of the system, which is commonly produced in connection with secondary syphilis; while the old man to this day is hale, fresh coloured, and perfectly healthy. The evidence here adduced is certainly strong as to the identity of the poison. If space would permit we could adduce four other cases which have precisely the same tendency, and as in this case, show, that the mucous membrane of the urethra or some other neighbouring structure, was the continued location in which the poison rested—that as it was without the circulating system it was comparatively harmless to the man, while it certainly caused the disease in those with whom he had connection; such a fact has been long known as occurring in the vagina among women, in whom the poison might lie torpid and unnoticed, but was sure to excite the disease in any other person who was submitted to its influence.

The modes in which the virus may be communicated are various; the largest amount of infections are doubtless the result of sexual intercourse, but the disease may originate in the mucous membrane of the lips, of the nose, of the mouth or of the eyes—being the result of the application of the poison to the affected textures. Infection may also result from implication of the denuded skin in similar results, while lactation is by no means an unfrequent source. It is clear that the contagion may be communicated by accidental contact of the virus, by means of an infected seat in a necessary, or by infected clothes; the story of the young girl being infected after having disguised herself in the clothes of a man who had the disease, she contracted syphilis from putting on his breeches. The gonorrhœal matter applied to the conjunctiva of the eye, will surely produce the disease in that structure. A remarkable case of this description occurred under my observation not long since. A stage driver in the western country had contracted gonorrhœa; he long had had a slight irritation of his eye-lids, when he was advised by an old woman to wash his eyes with his urine, he followed the prescription and got a severe attack of acute conjunctivitis. While laboring

under the disease, he wiped his eyes on the bar-room towel; many boarders and servants in the hotel did the same, and ten or eleven persons were affected with the disease. Two of the persons so affected became blind of both eyes. The severity of the disease caused sloughing of the cornea. Three individuals lost one of their eyes from a similar cause, while all the others had the disease with considerable severity; circumstances that clearly indicated the infectious nature of the virus, and its identity of action when applied to a similar structure.

The action of the virus is two-fold, local and constitutional; it may evidently be local, producing its effect upon the part to which it is applied, either to the mucous membrane or to the skin. When to the former, the irritating cause produces a rapid discharge of the epithelial structures—both those which are intended as organic defence to the structure, and those which are the organs for forming the mucous secretion; and it is clearly shown that this irritation will continue as long as the cause remains in the part, that this may be the case even after the patient believes he is well, or that nothing but a simple gleet remains. If the virus is applied to a part of the skin which is extremely tender, or where it happens to be abraded, then a pustule is developed, a certain amount of ulcerative action results, leaving a chancre behind it. There is no doubt but under these circumstances the cause of the disease may be absorbed into the blood, taken up by the lymphatics and carried into the circulating current, and will produce sooner or later a condition of poisoning which will clearly evince itself by means of the secondary symptoms. The distance of time between the *primitive accident* as it is called, and the *consequitive symptoms* varies considerably in different individuals, whatsoever that period may be it is termed the *period of incubation* and the operation of the cause has been likened to the action of a ferment; it may be shown that that the complaint may be to all appearances cured, that the contagious property of the virus may remain for a time dormant, but may again be called into activity and demonstrate its effects when circumstances favour the reproduction of the disease in the shape of tertionary symptoms. It has been lately maintained that a person having passed through primary and consequitive stages of the venereal disease, is as it were acclimatized to the poison, so that he cannot be re-infected by the virus—a pleasant condition that certainly, when we can show that the cause of the infection must still be operating in the constitution to degrade and debilitate the system, as is evidenced by his

appearance, and that it will undoubtedly affect his progeny, years after he believes that he is free from the disease. Under the idea that the venereal disease may be rendered more mild, and this prophylactic condition arrived at, it has been recommended to employ inoculation; such treatment has not met with many advocates either in England or on the continent of America; we look upon it as a most dangerous experiment, a premium upon vice, and certainly required by none but the veriest debauchee. Even should this happy state of exemption from the primary symptoms be arrived at by these means, what guarantee have we that the poison which has been already introduced into the system shall cease its effects, for in most cases we can plainly perceive that it continues to depress and degrade the system to the latest hour of existence; it must then be a diabolical spirit that would seek to render universal such a condition of things; thereby expecting to extinguish the venereal disease; for if it could be accomplished under such circumstances, it could only be by the deterioration of the constitution and degradation of the race submitted to its influence.

Experiments on animals have been largely employed, to show that the venereal disease can be communicated to them; that primary sores may have been produced by the inoculation is undoubted, but that they were venereal in the true sense of the word it would be difficult to show, for as a matter of necessity, no secondary symptoms would demonstrate themselves in these cases; hence we must be permitted to doubt the contagious character of the virus, and its power of poisoning the blood, as well as of irritating the surface to which it has been applied.

We may consider the contagious nature of the primary symptoms of syphilis to be proved without the shadow of a doubt; but with regard to the infectious nature of secondary symptoms, these have long been clothed in obscurity and doubt. This question, viewed with regard to public or private considerations, is of the utmost importance to society, and deserves the most attentive consideration of the medical practitioner; he will meet with it frequently in ordinary practice, and may possibly be called upon for an opinion before a court of justice on the subject. The earlier writers upon syphilis had the most absurd notions upon this subject, believing that the disease might be communicated even by the breath of an infected individual. The fallacy of such opinions having been fully demonstrated; as generally happens in such cases, opinion has run into the opposite extreme, and the transmissibility of secondary

syphilis has been denied. That the virus in the blood of an infected individual is able to communicate the disease is nearly certain from the results of inoculation of the secondary results of syphilis, and is very fully shown in secondary sysphilis as it occurs in infants—on this point M. Vidal makes the following remarks, (page 50,) "But a grave and incontestible fact here presents itself, that of the infection of the child in its mother's womb, a fact admitted by all syphilographers. It is unquestionable that a woman, having had neither chancre nor bubo, but that form of syphilis only which is asserted can no longer be infectious, may give birth to syphilitic children which may infect their nurses, while the latter in turn may communicate the disease to their families. This is the same syphilis that should have disappeared with the catrization of the last chancre, but which here re-appears and recommences its ravages. The principle of contagion may therefore exist elsewhere than in the pus of chancre, and in other than the primary ulceration." As confirmatory of the above facts, we may instance a case that occurred in our own practice. We were called to see a sick child, and found it labouring under all the symptoms of secondary syphilis, snuffles, patchy excoriations covered with crust, about the fundament and genital organs, with every mark of a degraded constitution ; upon enquiry we learned that the mother—a fine, florid, healthy looking Irishwoman—had been married four years, had already had two miscarriages, and was very anxious to preserve the life of this child. We immediately questioned her as to the length of time since she had been troubled with primary syphilitic symptoms ; she most positively denied ever having had the smallest indication of such a disease. We of course doubted her statement until we saw the father ; he bore in his countenance and constitution the marks of an evident dyscricie. Upon enquiry he declared that it was more than five years since he had received the infection, that he had had secondary symptoms, but thought that he was entirely cured, as he had not observed any symptoms since his marriage. Here then we have an infant affected with the symptoms of secondary syphilis apparently not by the blood of the mother, but by the influence of the father ; it is a most extraordinary fact that the diseased infant should have been developed in the womb without contaminating the mother, and that a similar process should have been going on at intervals for years, as is evidenced by the previous miscarriages to which the woman had been subjected. It would also appear that the diseased condition of the husband, or the influence upon the fœtus

was slowly diminishing, as this child had arrived at maturity, and lived for six weeks after it was born.

The translator, Dr. Blackman, in illustration of the contagious nature of secondary syphilis, quotes some cases from Mr. Langston Parker, one of which we will subjoin. "A gentleman contracted a superficial primary sore, which healed without leaving a mark or induration behind it. Being apparently in good health, he married. Three or four months after his marriage, he perceived on his body numerous red, smooth, elevated blotches: very shortly afterwards his wife broke out with an eruption of a similar character, and the hair came rapidly off both patients. In this state they were sent to me. Neither had any primary disease, and the lady had never had the slightest irritation in the genito-urinary organs. I examined them both frequently and carefully, and am positive the wife had never suffered from sore excoriation or discharge." If Mr. Parker's interpretation of this fact is correct, the lady was infected by the secondary symptoms of the husband, but we should be inclined to suspect that some of the primary symptoms still lingered about the man, and that the woman possibly had not observed the sore which infected her.

From what we can glean from a careful consideration of the above facts, we think that it is shown that the poison of syphilis is an entity, a cause which, applied to the external living structures of the human body or introduced into the blood, will produce its like, will multiply in quantity, and that a fractional portion will be sufficient to contaminate the whole system; that when introduced into the blood, like other poisons, such as gout or rheumatism, for example, it may accumulate in certain tissues and structures of the body, and there produce its effects, as evidenced by the secondary symptoms. That in both conditions the poison is the same, is communicable to individuals; but that the difference consists in the peculiarity of position—when on the mucous surface the poison is concentrated, but when in the blood it is minutely sub-divided, hence the difficulty of producing infection from the secondary syphilitic accidents. Without doubt the medical profession upon this continent are greatly indebted to the labours of Dr. Blackman, for this excellent translation of M. Vidal's elaborate treatise on the venereal diseases; and we cannot terminate our observations, without at once expressing our belief that no professional man desirous of being "*up*" on the subject of syphilis will fail to study in the work of M. Vidal the latest and most approved ideas on this intricate and obscure disease. We most cordially recommend it to the consideration of our readers.

EDITORIAL DEPARTMENT.

DR. GLUGE'S TABLES.

We look upon the data offered by Dr. Gluge's researches of so much importance to the correct study of pathological anatomy, that we have presumed to place his tables of the weights and magnitude of the organs in man in their normal and abnormal condition among our original contributions; their importance must be obvious to all, and their advantages necessary to every medical practitioner; hence they claim the most conspicuous location we can offer them. We maintain that the desultory and unsatisfactory manner in which the results of morbid examinations are commonly expressed, by the most scientific amongst us, must shew that the approximative data offered in such cases are very far from the truth; and even when justly represented in detail, cannot be clearly comprehended by the reader. To say that an organ is enlarged, or that it is atrophied and diminished in size, pre-supposes a proper normal data, from which to deduct or superadd our comparisons. Such data can only be derived from careful examination and appreciation of the normal structure. In such an attempt Dr. Gluge has set us a noble example which requires to be more generally followed out; so that, by a methodical comparison by weight and measure, the morbid anatomist will have a far better chance to appreciate abnormal structure than can be given by the simple application of the senses. It is by a logical method of expressing ourselves that we can alone give them truth, or the reader confidence in the description; hence we feel satisfied that no apology is necessary to the subscribers for our innovation. The pioneer to all certain knowledge of normal anatomical structure is comparison; it is an instrument of great power, not only in the hands of the pathologist, but also in those of the philosophic generalizer of anatomical facts, which may be gathered from a survey of the whole animal kingdom. We learn to know an hypertrophied heart when we are made acquainted

with the size and contour of its normal shape, but so irregular is this in the various individuals presented to our observation, that it is only by prolonged observation and truly estimated data, that we can arrive at a standard of the healthy condition. With such data before him, the general practitioner who has but little experience in morbid examinations may attain a precision of expression and a truthfulness of detail that could not otherwise be arrived at; and we feel convinced that the facility of estimating the facts will serve to encourage a more extended examination into the causes of death and disease than is now prevalent among us, while it will enable us the more fully to comprehend the description of such diseases.

The scalpel has already made us acquainted with the general appearances of the several structures of the animal body; weight and measurement must now confirm such facts; while with the assistance of the microscope we investigate the infinietssimal portions of the animal tissues; for it is on the field of the microscope that we shall alone be able to appreciate the abnormal changes that occur in the minute parts; hence its constant employment will be required to assist our investigations; and it must be remembered that it is only by constant study and application to such important data, that we can obtain sufficient aptitude to appreciate them; therefore no medical man should be without his microscope—without it at the present day, he cannot pretend to practise the science of medicine or surgery with any degree of satisfaction to himself or justice to the patients—without this powerful instrument, which, like the telescope to the astronomer, enables him to see into space far beyond the ken of the human eye, so will the microscope advance the vision of the practised physician to realms inappreciable to the unaided organ of sight; and while it adds to his knowledge, must increase his power of understanding and curing disease. With these powerful means at our disposal, we trust that we are on the threshold of a new era in the progress of pathological investigation; that with the measure and the balance, aided by the microscope and organic chemistry, we shall soon be enabled to form a correct estimate of disease and to give its detail with logical accuracy.

DR. BEAUMONT'S CASE OF ANEURISM.

"At a meeting of the Officers of the Toronto General Hospital, convened at the request of Dr. Beaumont, to take into consideration the best course to be adopted to correct certain erroneous statements published in the Upper Canada Medical Journal by Dr. Stratford, the following correspondence was read:

'Yonge St., Toronto, Jan. 17, 1854.

'SIR,

'I was present at your very interesting Lecture on Monday last, and I have the notes of it, given me by one of the students. I am desirous of publishing it in the Medical Journal, as there is so great an interest excited by the case. Now I have thought it my duty to mention this fact to you, as I most certainly do not desire to annoy or offend in the slightest degree, but as a public Journalist I conceive that so important a case cannot be passed by in silence; indeed, were you disposed, I should like to publish your ideas upon the matter, rather than trust to the notes of a medical student, fearing that your sentiments might be inadvertently mis-interpreted.

'I remain, Sir, your ob't. S't.

'S. J. STRATFORD.
'Ed. U. C. M. J.

'Dr. Beaumont, &c., Toronto.'

"In reply to the above letter Dr. Beaumont wrote to Dr. Stratford, stating, 'that he could not consent to the publication of the Clinical Lecture on Traumatic Carotid Aneurism from notes taken by a student, unless such notes and the proof should first be corrected by Dr. Beaumont, and which he was willing to do, if such notes were tolerably accurate.'

'Two or three weeks after this a proof sheet was sent to Dr. Beaumont for correction, in the heading of which it was stated that the lecture in question was given from memory; whereupon the following letter from Dr. Beaumont was written.

'TORONTO, Feb. 21, 1854.

'SIR,

"I had stated that I should be willing to correct the notes of a Clinical Lecture which I gave on a case of Traumatic Carotid Aneurism, '*if such notes were tolerably accurate.*'

'The proof which you have sent me contains a great deal *which I did not say*, and gives very incorrectly and imperfectly parts of the lecture, as well as the quotations from Guthrie.

'The editorial remarks in reference to myself, which you have thought proper to make, preclude the possibility of any further communication with you.

'Your ob't. ser't.

'W. B. BEAUMONT.

'To Dr. Stratford,

'Editor of the Upper Canada Medical Journal.'

"When it was resolved,

'That the medical officers of the Toronto General Hospital express their surprise and regret that after the receipt of the above letter, Dr. Stratford should have published the lecture in question—and that a copy of this resolution be sent to the Upper Canada Medical Journal for publication.'

"It was also resolved,

'That Drs. Herrick, Hodder and Aikin be requested to furnish a copy of the above resolution to the said Journal, and see to its publication.—Carried.

(Signed,) 'C. WIDMER, *Chairman.*'

"Toronto, G. H., March 10, 1854."

We cannot have the least objection to publish the resolutions which the medical officers of the Toronto General Hospital have sent to us for insertion in the Medical Journal. With regard to the "*erroneous statements*" made in Dr. Beaumont's lecture, it cannot be supposed from the correspondence, nor is it assumed by the resolutions, that they were wilfully given. It is a pity Dr. Beaumont did not give the whole of the correspondence for publication; if he had, we think that the expression of opinion would have been different from what it was; had the letter been published that accompanied the proof we sent to Dr. Beaumont, it would have been made perfectly clear that any erroneous statements might easily have been corrected. It may be seen that in our remarks upon the lecture, we stated that "*if the report was not verbatim in itself, we trusted that the detail was given in a proper and truthful spirit;*" we can conscientiously say that such was our intention. But, setting all previous declarations at rest, we are still desirous of making any corrections in the lecture that may be contrary to the *truth;* indeed, we sincerely desire it, and should be infinitely obliged to Dr. Beaumont to afford us an opportunity.

Upon mature consideration, we had sufficient reasons for

not sending the student's notes as we had intended; but in the name of common sense we would ask, why Dr. Beaumont could not as easily have corrected the one report as the other? With regard to the quotations from Mr. Guthrie's work being incorrect, that is easily accounted for by Dr. Beaumont withholding the book after it had been lent to us by Dr. Widmer. The reason that Dr. Beaumont would not correct the proof was evidently dependent upon the remarks which we were so unfortunate from the nature of the circumstances to be obliged to make, when explaining the reason that we could not be permitted to see the aneurismal tumor even after we had solicited the favour. We should have considered it most ungenerous to have suppressed the statement in the proof we sent to Dr. Beaumont, and then to have inserted it in the Journal; we could not have been guilty of such dishonesty. But if we have erred in the transaction, it has not been for want of openness, candour and truth; as Dr. Beaumont himself must confess.

As a Churchman, we are really surprized that Dr. Hodder, and some other of the medical professors of Trinity College, should continue so unmercifully to persecute us; it is both unjust and ungenerous on their parts. That Dr. Hodder could have acted so rigorously as he has done in this matter, has increased our astonishment; for if he only recollects how strenuously we defended Dr. Beaumont from statements which were falsely made against him, he must feel that other persons were liable to condemnation as well as ourselves—and that he can now come forward to defend Dr. Beaumont's manner of attending at the Toronto General Hospital, when he himself went before the Hospital trustees to complain against Dr. Beaumont, Dr. Herrick, and Dr. King, for not doing their duty in this matter, is marvellous: indeed this is a curious world we live in, *not inconsistent*, certainly!! Time and space prevent our further comment, but we propose to return to this matter at a future period.

INSPECTORSHIP OF ANATOMY.

It will be observed by the following extract from the *Official Gazette*, that Mr. F. W. WRIGHT, of Queen Street, has been appointed Inspector of Anatomy for the City of Toronto, and that he has issued the accompanying notice to all whom it may concern, to which we desire to give all the publicity in our power.

SECRETARY'S OFFICE,
QUEBEC, March 11, 1854.

FREDERICK WILLIAM WRIGHT, of the City of Toronto, Gentleman, to be Inspector of Anatomy for the City of Toronto, under the Act 7 Vic. ch. 5.

PUBLIC NOTICE.

Having been appointed Inspector of Anatomy for the city of Toronto, agreeable to Act 7 Vic. ch. 5, Notice is hereby given to all Coroners, Superintendents, Governors, and others in charge of all public charitable Institutions receiving pecuniary aid from the Provincial Government, that all bodies of persons found dead or dying in such Institutions unclaimed by *bona fide* friends or relations, shall be delivered to persons duly qualified by law to receive the same: that immediate notice of the said death shall be given to the Inspector of Anatomy of the said city of Toronto, by the aforesaid Coroners, Superintendents, Governors, or others having charge of such Institutions: that no Coroner, Superintendent, Governor, or others having charge of such Institutions shall deliver up such unclaimed bodies, except upon the written order of the Inspector of Anatomy of the city of Toronto. And it is hereby required that all public teachers of Anatomy or Surgery, or private medical practitioners, having more than three pupils, and wishing to take the benefit of this act, shall appear before one of her Majesty's Justices of the Peace and the Inspector of Anatomy, and shall give security himself in the sum of twenty pounds, with two good and sufficient sureties in the sum of ten pounds each, for the decent interment of the bodies after they have served the purposes required; and upon due fulfilment of these conditions, the Inspector of Anatomy of the city of Toronto will be ready to conform to the provisions of the said Act.

FREDERICK WILLIAM WRIGHT.

Queen St., Toronto, March 21, 1854.

SELECTED MATTER.

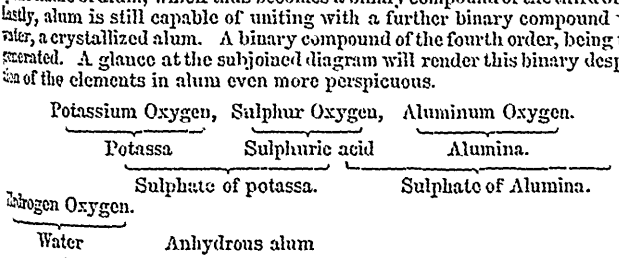
A COURSE OF LECTURES ON ORGANIC CHEMISTRY.

Delivered in the Laboratory of the Royal Institution of Great Britain, by Dr A. W. Hofmann, F.R.S., Professor at the Royal College of Chemistry.

Lecture VI.

Gentlemen—

Upon examining closely into the mode of combination exhibited by mineral substances, it is not difficult to perceive that in respect to most of them, a binary disposition of the constituent elements prevails. This binary arrangement may be traced even in those mineral compounds which are remarkable for the variety of their elements, and for the complex nature of their composition. Potassa alumina, sulphuric acid and water are binary substances, and are generally distinguished as binary compounds of the first order, inasmuch as they contain the smallest number of elements capable of forming a compound; viz. two. Both potassa and alumina combine with sulphuric acid—two salts, sulphate of alumina and sulphate of potassa, being produced. These are binary compounds consisting of binary substances, or binary compounds of the second order. Combination again takes place between sulphate of potassa and sulphate of alumina, the result being the substance well known by the name of alum, which thus becomes a binary compound of the third order. Lastly, alum is still capable of uniting with a further binary compound with water, a crystallized alum. A binary compound of the fourth order, being thus generated. A glance at the subjoined diagram will render this binary desposition of the elements in alum even more perspicuous.



Chemists endeavour to represent even in their chemical formula this binary disposition of the elements, which they assume in mineral compounds, and the assumption of which, as you readily perceive, is chiefly based upon the binary modes of producing these compounds. Instead of representing the composition of alum simply by the formula $K Al_2 S_4 H_{24} O_{30}$ they endeavour to represent the supposed arrangement of the elements in alum, the chemical construction of the alum (if I may use the expression), by the term

$$KO, SO_3; Al_2 O_3 3 SO^3; 24 HO.$$

In organic substances this binary plan of combination is less perceptible. Still it obtains in a great many of them is obvious enough. I need only remind you of the numerous class of organic salts, consisting simply of an organic acid and an organic alkaloid, and which in their deportment closely imitate the character of mineral salts. Let us again take as example the compounds which have repeatedly served us as illustrations. The salt resulting from the combination of benzoic acid and aniline is, in all its bearings, a binary compound.

It is proved to be such both by the manner in which it is formed, and by the manner in which it is decomposed. On adding hydrochloric acid (a strong mineral acid) to this salt, benzoic acid is separated; addition of an alkali, of potassa for example, separates the base, the aniline. From this deportment it would be evident that benzoic acid and aniline are the proximate constituents of benozate of aniline, even if the constitution of this compound was not indicated by the manner in which it is formed.

What, however, it may be asked, is the constitution of benzoic acid and aniline itself?

In a previous lecture we have determined the composition of these substances by analysis; we have likewise established their equivalents or their formulæ, and found them to be respectively $C_{14} H_6 O_4$ and $C_{12} H_7 N$.

Now are the elements of these substances bound up, as it were, into a single whole, or is it possible to trace still farther the mode of combination, which as you have seen characterizes the mineral compounds? Chemists were long of opinion, that most organic bodies were simply formed by the juxta-position of their carbon, hydrogen, nitrogen and oxygen, without any farther subdivision; and that this very absence of binary construction constituted one of the distinguishing characters of organic substances.

The progress of science has led to a different result. A more intimate study of a great many compounds has proved that their deportment may be best explained by assuming in them certain groups of elements held together by peculiar attachments. Organic substances thus are no longer believed to consist simply of carbon, hydrogen, nitrogen and oxygen, but of several molecular groups, composed of carbon and hydrogen, of carbon and nitrogen, &c., which represent in these substances, as it were, the elementary constituents of mineral bodies.

These molecular groups are generally designated by the term organic radicals, which I have no doubt is more or less familiar to you.

The character of these organic radicals vary very considerably; some of them imitate the deportment of the non-metallic substances, of hydrogen, chlorine, &c.; others present in their behaviour great analogy to the metals.

Most of these radicals are known only in combination; their existence is chiefly inferred from the manner in which substances are acted upon by other bodies, several are known in the free state.

I must not omit to mention that there is still a very considerable number of organic compounds in which, hitherto, no radical has been traced, the molecular constitution of which is as yet perfectly unknown. This evidently arises from the fact of these substances not having as yet been sufficiently studied. If we glance at the gradual, but steadily progressive manner in which light has been thrown upon the constitution of a large number of substances, the nature of which was perfectly dark and unintelligible but a short time ago, there is every reason to hope that the continued exertions of chemists will soon trace the constitution even of these bodies, the molecular arrangement of which has not been revealed up to the present moment.—Without, however, dwelling any longer upon the general characters of organic radicals, which must remain more or less unintelligible to you so long as you are unacquainted with the individual compounds which might serve as illustrations, let us proceed at once to the study of the simplest organic radical which is known: viz., that of cyanogen.

Cyanogen consists of carbon and nitrogen, it contains two equivalents of the former and one equivalent of the latter element. Its composition is represented by the formula $C_2 N$.

The preparation of cyanogen is very simple. You will understand it at once if I remind you of one of the processes for making oxygen, which consists in heating oxide of mercury.

Under the influence of heat this compound splits into mercury and oxygen.

The substance which serves for the preparation of cyanogen is cyanide of mercury, a beautiful salt which crystallizes in long white needles. On heating this salt in a retort, or simply in a tube provided with a delivery tube, it is decomposed.

You observe that mercury is sublimed into the upper part of the tube, while a colorless transparent gas is obtained, which we collect over mercury. This gas is cyanogen. Mercury and cyanogen are not the only products of this decomposition. However carefully the process may be carried out, there remains invariably in the retort a certain quantity of a brown powder, the analysis of which has led to the result, that it has exactly the same composition as cyanogen itself, from which its properties differ very strikingly. This brown body which I must dismiss for the present, but which I may have to notice again, is known by the name of para-cyanogen.

The properties of cyanogen are very marked and characteristic. Cyanogen, as you observe, is transparent and colorless; it has a peculiar, very pungent but not disagreeable odour; it produces lachrymation. It is inflammable, burning with a beautiful violet-colored flame, which is very characteristic, and may be exhibited simply by lighting the gas in a cylinder, or, more effectually by burning it from an ordinary burner, fixed upon a little gas holder, consisting of a common Woolf's bottle, into which we allow mercury to flow from a funnel globe, provided with a stop cock.

It is the carbon alone which combines with the oxygen in this combustion, producing carbonic acid. This may be readily detected by pouring lime water (the well known test for C O_2) into one of the cylinders in which the cyanogen has burnt, nearly the whole of the nitrogen escapes in the free state.

Cyanogen is much heavier than atmospheric air, it sp. gr. being 1.86.

It then may be decanted from one vessel into another, exactly like carbonic acid. If a burning candle be placed at the bottom of a cylinder into which we decant the gas, the cyanogen is lighted as soon as the gas reaches the flame, and a slight explosion takes place, owing to the atmospheric air, with which the cyanogen becomes mixed.

Cyanogen is one of the gases which may be reduced to the liquid state by a diminution of the temperature and by increase of pressure.

The common method of liquifying cyanogen consists in disengaging it under pressure in strong sealed tubes. This experiment was first made by Mr. Faraday, and I hold in my hands a tube of this kind for which I am indebted to his kindness.

The longer limb in which the cyanide of mercury was heated contains the mercury and the para-cyanogen; while in the shorter one, which plunges into a freezing mixture, the cyanogen is liquified. At very low temperatures, the liquid cyanogen actually solidifies into a beautiful crystalline mass.

The behaviour of cyanogen when coming into contact with other bodies, deserves your particular attention. A few experiments will readily convince you, that it imitates, in a striking manner, the properties of a group of elements, known by the collective term of halogens, and which embraces chlorine, iodine and bromine. These elements are more or less soluble in water and alcohol.

These liquids also dissolve cyanogen, as may be made obvious by forcing a small quantity of water and alcohol into tubes filled with this gas and inverted over mercury.

It is owing to this solubility in water that chemists are compelled to collect this gas over mercury.

Like chlorine, bromine and iodine, cyanogren combines directly with the metals. For the purpose of comparison I will heat a little ball of potassium in iodine vapour and another in a current of cyanogen issuing from the same little gas holder from which the cyanogen was burnt. You observe that the combination takes place in both cases with equal intensity. Not less similar are

the compounds produced by these combinations. In both these processes we obtain white salts, specimens of which prepared by other processes are contained in these bottles. Both salts (called by chemists respectively iodide and cyanide of potassium) exhibit the same crystalline form; they are generally cubes, but they frequently present octohedral surfaces. Both are extremely soluble in water, producing, while dissolving, a considerable degree of cold.

On adding nitrate of silver to these solutions, there is formed in both cases a white amorphous precipitate, respectively of iodide of silver and cyanide of silver, perfectly insoluble in dilute acids. These silver precipitates are both decomposed by sulphuretted hydrogen; the silver is converted into the black sulphide of silver, while iodine and cyanogen combine with hydrogen, producing two acids, which you know is hydriodic and hydrocyanic acids, which also present a remarkable analogy in their properties.

There is no difficulty in tracing the analogy of cyanogen with chlorine, bromine and iodine in many other directions. You recollect that these elements are readily absorbed by the alkalies. Chlorine when absorbed by a dilute solution of potash, furnishes a compound well known as *eau de javelle*, which is valued as a powerful disinfecting agent. The reaction which takes place under these circumstances produces two compounds, chloride of potassium and a compound of potassium with both oxygen and chlorine, namely, oxychloride of potassium, or better known by the name of hypochlorite of potassa.

$$\begin{array}{c|c} & K\,O \\ \hline Cl\,K & O\,Cl \end{array}$$

Now cyanogen is absorbed with the same facility by potassa, and the result is likewise perfectly analogous. One atom of potassa is decomposed under the influence of two equivalents of cyanogen; there are formed cyanide of potassium, and oxide of cyanogen (cyanic acid), which, uniting with an excess of potassa, produces oxycyanide of potassium, or cyanate of potassa.

These several combinations and reactions are so analogous that we may actually forget that cyanogen is a compound body. Chemists have agreed to represent the formula of cyanogen $C^2\,N$ by the symbol Cy., whereby the analogy is rendered even more conspicuous, as will be obvious by a glance at the subjoined diagrams, which exhibit the compounds and reactions which I have quoted.

Iodine	I	Cyanogen,.....	Cy.
Iodide of potassium...	K I	Cyanide of potassium...	K Cy.
" silver.....	Ag I	" silver.....	Ag Cy.
Hydriodic acid.....	H I.	Hydrocyanic	H Cy.

Action of chlorine upon potassa—

$$2\,K\,O + 2\,Cl = K\,Cl + K\,O,\ Cl\,O.$$

Action of cyanogen upon potassa—

$$2\,K\,O + 2\,Cy. = K\,Cy. + K\,O,\ Cy.\,O.$$

It would be easy to quote a number of additional facts to illustrate that point more fully, but one more may be sufficient. It is well known that chlorine, bromine and iodine form compounds with one another. By introducing iodine into chlorine gas, a yellow crystalline compound is formed, which is the chloride of iodine. In a similar manner cyanogen combines with chlorine, bromine and iodine, forming a series of very remarkable compounds, which are obtained with more or less facility. For the purpose of illustration it may be sufficient to prepare the iodide of cyanogen, which is readily produced by introducing powdered iodine into a hot solution of cyanide of mercury.

The iodine combines both with the mercury and with the cyanogen, magnificent needles of iodide of cyanogen subliming into the neck of the flask, into which, in order to avoid loss, an adapter has been fixed; whilst scarlet iodide of mercury remains behind.

From all these experiments it is evident that cyanogen is the very type of an *organic radical*.

Cyanogen forms an almost unlimited number of compounds and products of decomposition, which belong to the most interesting substances of organic chemistry.

I greatly regret that the limited time at my disposal will permit me to notice briefly only some of the most important of them.

Our attention is immediately fixed by hydrocyanic or prussic acid. A method of preparing this acid from cyanide of silver has been already indicated.

Instead of cyanide of silver, however, chemists generally use cyanide of mercury, which is readily affected by sulphuretted hydrogen.

By introducing this cyanide of mercury into a long glass tube, and passing a slow current of sulphuretted hydrogen over it, the mercury compound is blackened, while the pure hydrocyanic acid is evolved in the form of gas, and may be condensed in a tube surrounded by a frigorific mixture. I have arranged the apparatus which is generally employed in making this experiment; but I refrain from actually performing it on account of the great danger which attends this operation, unless exclusive attention is paid to it. The hydrocyanic acid as furnished by this process is anhydrous. It is an exceedingly volatile liquid, boiling at a temperature far below that of the animal body. The vapour has a penetrating odour, somewhat similar to that of bitter almonds; it burns with a pale violet flame, $C\,O^2$ and $H\,O$ being produced while the nitrogen is set free, as in the combustion of cyanogen.

Hydrocyanic is one of the most powerful poisons known, and must be handled with the greatest precaution, especially when in the anhydrous state.

I have here prepared an experiment which exhibits the instantaneous rapidity with which the vapour of this compound, when inhaled, destroys animal life.

Anhydrous hydrocyanic acid is but rarely prepared. It is generally obtained with water; this poison, like so many others, affords an excellent remedial agent when given in small doses, and properly diluted. Dilute hydrocyanic acid is often procured from cyanide of potassium, which when distilled with sulphuric acid forms sulphate of potassa and hydrocyanic acid.

Far more frequently, however, this acid is obtained from a salt, of which cyanide of potassium is a constituent, and which manufactured as it is on an immense scale for the purposes of the dyer, is the cheapest source from which this acid can be procured. This salt is ferrocyanide of potassium, better known to the commercial world as "yellow prussiate of potash," to the formation and properties of which I shall have to call your attention bye and bye.

The operation is performed in a retort provided with a good condenser, the receiver being surrounded by ice cold water. The action of sulphuric acid upon ferrocyanide of potassium is rather complicated. The simplest view which can be taken of it is to consider ferrocyanide of potassium as a double salt, the cyanide of potassium and the cyanide of iron, and to assume that cyanide of potassium is decomposed by sulphuric acid in exactly the same manner as if it was free, while the cyanide of iron is not acted upon. This explanation, however, is not absolutely correct. To pharmaceutists it is of great importance to know exactly the strength of an acid which is to be employed for medicinal purposes.

Many directions have been given for obtaining acids of a definite strength, which vary only in the proportions of the substance used in the operation.

It is, however, very difficult to obtain a definite acid by any one of these methods, and the best plan is always to determine the strength of a given acid by an actual analysis and to dilute it accordingly. This analysis is exceedingly simple.

All we have to do is to precipitate a known weight or volume of the acid with an excess of nitrate of silver; cyanide of silver is thus produced, which is collected in a filter, washed and weighed.

From the weight of the precipitate, the amount of hydrocyanic acid is calculated without difficulty.

Dilute hydrocyanic acid cannot be preserved very long, especially when perfectly pure; the colorless transparent liquid soon becomes brown, and ultimately quite opaque.

The changes which occur under these circumstances are very complicated and scarcely sufficiently understood. It has been observed, that the addition of a few drops of a mineral acid, as of hydrochloric acid, renders the hydrocyanic acid more stable.

In its chemical relations hydrocyanic acid closely resembles hydrochloric, hydrobromic, hydriodic acids.

When treated with metallic oxides, the hydrogen of the acid combines with the oxygen of the base to form water, while the cyanogen unites with the metal, a cyanide being produced.

Of the cyanides, the cyanide of potassium is the most interesting, together with the cyanide of mercury.

The former is but seldom prepared by saturating hydrocyanic with potassa. This mode is never adopted except in the rare event of this salt being required in a state of absolute purity. It is generally extracted from the commercial yellow prussiate of potash, by a process which was suggested by Liebig, when this salt became of great importance in electro-plating.

Cyanide of potassium forms a soluble salt with cyanide of silver, which is obtained by adding cyanide of potassium to nitrate of silver, until the precipitate produced in the commencement is redissolved again. This salt is readily decomposed by the electric current, and furnishes a beautiful bright silver surface. It silvers even without the aid of electricity, but the layer of silver deposited is exceedingly thin. Since this important application, cyanide of potassium, which but a few years ago was a curiosity of the laboratory, is manufactured by tons, and it is not uninteresting to observe, that the service which chemists have rendered to the arts by discovering cheap and easy processes of producing cyanide of potassium, have been amply repaid by the introduction into the laboratory of this excellent reagent, which may now be employed for a great variety of processes for which it never could have been used, unless a great industrial application had reduced its cost of production. The use of cyanide of mercury is chiefly confined to the laboratory; as you have seen at the commencement of this lecture, it is employed in preparing cyanogen.

Cyanide of mercury is usually produced by treating oxide of mercury with dilute hydrocyanic acid, in which it is easily soluble. On evaporation, beautiful white needles of cyanide of mercury are deposited.

In the next lecture we shall consider the study of the cyanogen series.

CHLOROFORM IN HYPOCHONDRIASIS.

At the meeting of the College of Physicians in Ireland, in June, Professor Osborne stated that he had lately, in two cases, opportunities of observing a peculiar effect of chloroform taken into the stomach, in controlling the depressing and saddening feelings belonging to hypochondriasis. Considering that state to be produced by a depraved sensibility of the stomach or colon, and frequently of both, he was led to the internal employment of

chloroform, which being promptly volatilized at the temperature of the stomach and before long being decomposed by the process of digestion, ought to be expected to act as a local anæsthetic, even though the dose should not be sufficient to produce any change in the functions of the brain.

The first patient who presented the conditions requisite for this experiment was a married woman, and a mother, aged 33, of a querulous disposition, as well marked by her countenance, and who had been on a former occasion under his care, and that of another practitioner, complaining of a variety of pains in the abdominal region; and she, although relieved, still persevered in the belief that she still had some internal disease. She now appeared to labour under spinal neuralgia. After this had yielded to the application of nitrate of silver to the spine, and some other remedies, she still continued to feel an indescribable sensation of depression, and of internal annoyance, no longer to be referred to the spinal nerves—no cause for it could be detected. The appetite was good, and the action of the bowels regular. In two days after taking ten drops of chloroform thrice daily, she *began, for the first time, to acknowledge that she was better,* and in a few days afterwards was free from complaint. The second case was that of a caretaker in the Linenhall, aged 29. He complained of the deepest dejection of spirits, and of an uncontrollable aversion to any exertion. His countenance expressed sadness and moroseness. All the functions were in a healthy state, except that the heart's action became tumultuous when excited by either emotion or exercise; but no organic disease could be detected. He stated that he had not been addicted to excess of ary kind, and that there was no cause for his lowness of spirits. He got valerianate of zinc, and also pills to regulate his bowels; but, although the heart's action became steadier, yet the depression and inward sensation continued the same. After taking twenty drops of chloroform thrice daily for two days, *he began to confess* what he never did before, *that he was better.* His sleep being still unsatisfactory and disturbed by disagreable dreams, he was ordered to take forty drops at bedtime. He now stated that he slept with a pleasing dream of seeing his brother, who had gone to America. During the two following nights he took the same dose; and although the sleep was interrupted by the disturbance attendant on a man in a dying state in the same ward, yet when he did sleep his dreams were pleasant, being usually that he was enjoying the company of the most agreable of his friends. He was dismissed with a marked improvement in his countenance, and *acknowledging that he was better.*

These cases are selected as being nearly free from complication. It must, however, be recollected, that there are several other uses to which chloroform may be applied in affections of the stomach and intestinal tube, but this appears to be one of the greatest value, insomuch as no other medicine can be named which in this respect seems to come into competition with it.—How far the effect is permanent and capable of completely removing the sensation of hypochondriasis, or in what degree it may require to be resumed or repeated, Dr. Osborne as yet has not been able to determine; neither did he think it necessary before this association to clear himself from the absurdity of bringing it forward as a universal *nepenthes.*

With regard to the mode of administering chloroform internally—as its specific gravity is nearly 1-5, and it is insoluble in water, it must, when swallowed, soon settle at the bottom of the fluids in the stomach; and although it is votallized, yet being covered, and under pressure, it may remain in contact sufficiently long to irritate the stomach at the part of the contact, as was proved to take place in the case of camphor by Orfila.

Hence, then, it is desirable that it should be diffused or diluted before it is taken. In aqueous mixtures, even when shaken up, it soon falls, so that it cannot be equally measured out, and its pungency is annoying even to the mouth. In gum Arabic mucilage it soon collects in larger globules at the bottom of the bottle, covered with a white powder of arabine which it has precipitated. To obviate this inconvenience, it has been proposed to give it

suspended in syrup, but to make a syrup of the same specific gravity 1009 grains of sugar to the ounce of water would be required, while that of the Pharmacopœia contains only 874 grains; besides, chloroform has a heavy sweet taste which renders the addition of syrup peculiarly objectionable.—The menstruum which Dr. Osborne used in the above and other cases was the decoction of Irish moss (carrageen). With this chloroform forms a uniform mixture, and in the proportion of ten drops to the ounce they remain for an indefinite time without seperation taking place. The taste of the mixture is sweet like that of a heavy syrup, to relieve which it may be well to add a few drops of some aromatic or bitter tincture. Another mode of avoiding the pungency of chloroform, is by giving it in combination with tinctures, as it is soluble in alcohol, and remains dissolved even in proof spirit. The following is a specimen of this kind of formula, and is peculiarly grateful to the taste, and susceptible of various additions and alterations, according to the requirements of the individual cases—Chloroform, and tincture of ginger, of each half an ounce; aromatic spirit of ammonia, two drachms. Mix. Twenty-five drops to be taken thrice daily in a wineglassful of milk.—*Dublin Quarterly Journal.*

AMPUTATION OF THE LARGE ARTICULATIONS

By W. H. Van Buren, M.D., Surgeon to the N. Y. Hospital.

Compound Comminuted Fracture of the Femur, near the great Trochanter, with extensive Laceration of the soft Parts; Amputation at the Hip-joint; Death. Eliza Reid, æt. 9, was admitted into the Hospital on the 5th of July, two hours after being run over by a railroad car, which had produced a compound comminuted fracture of the femur, and extensive laceration of the anterior portion of the thigh; the wound extending from two inches below Poupart's ligament to the knee-joint. No pulsation could be felt in the artery. There was a considerable vomiting before admission. Reaction having taken place, a consultation was called, and amputation of the hip-joint advised; Drs. Cheesman, Buck, and Markoe being present. At 10 o'clock, the patient being placed under the influence of ether, the operation was performed, by antero-posterior flaps, and the wound brought together as rapidly as the safety of the patient would admit. Very little blood was lost during the operation. The patient vomited during the administration of the ether, ejecting some half-digested food, which had been taken before the accident. The shock of the operation was excessive, but in two hours after the patient had completely rallied, under the careful use of stimulants, and, all circumstances being considered, passed a favorable night. The condition of the patient appeared promising until the morning of the 7th, when the pulse began to grow more feeble and frequent, and slight delirium was noticed. From this time she sank gradually, and died at two o'clock, P. M., forty-six hours after the injury, and forty-two hours after the operation.

The fatal issue in this case was attributable mainly to the excessive depression of the powers of life, which always follow railroad injuries. The child rallied from the fearful injuries she had received, and also rallied well after the operation; but sank in the effort of reparation. *A post mortem* examination showed union already partially effected in the stump, and no internal injuries were detected. The mode of operating adopted in this case was that which had been already performed by the attending surgeon, in a case followed by recovery; the posterior flap being made by an incision carried from without inwards.