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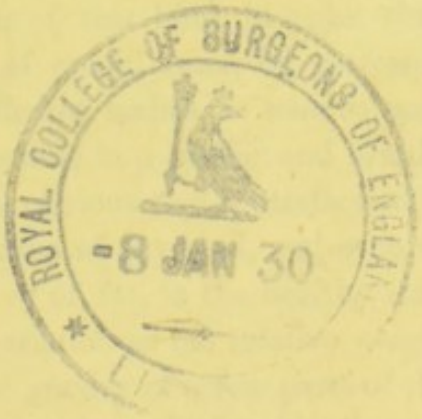

ON THE SPECIFIC GRAVITY OF DIFFERENT SOLID PARTS OF THE HUMAN BODY.

Our attention has lately been directed to this subject, from receiving an inaugural dissertation by Dr Joseph Frick, published at Freiburg in the Breisgau, in 1832, in which a considerable number of original experiments are related.

Experiments of this kind, in order that they may be considered worthy of credit, must be performed upon a very great number of different bodies, as soon as possible after death, and as much as possible in a similar and healthy condition of the organs; for it is obvious that putrefaction, for a very few hours, diseased alteration of any kind, and even a greater or less quantity of fluids, or of fat, in the healthy state, must cause a very considerable variation in the relative weights of the organs.

The specific gravity of a few parts of the body has been mentioned by Soemmering and Meckel, their information being probably derived from Musschenbroek. Some of the numbers assigned by these authorities are quoted by Dr Frick; but this author seems not to have known of the researches of Dr John Davy "On the Specific gravity of different parts of the Human Body," which appeared in 1829, in the 3d volume of the Transactions of the Medico-Chirurgical Society of Edinburgh, and are the most complete of the kind with which we are acquainted.

Dr Davy's experiments were performed much sooner after death, and on a greater variety of bodies, than those of Dr Frick, and are on the whole more suitable for the establishment of the average natural result, as they were made principally on soldiers, or adult males between the ages of 20 and 40; while Dr Frick's experiments were performed on two males, one of 25, the other 56, on a female of 79, and on a child dying a^{t} birth.

A considerable part of Dr Frick's essay is occupied with a description of the kinds of balance he employed in weighing the parts, the specific gravity of which was to be ascertained, and with the construction of a formula for the reduction of the resulting specific weights to one temperature, viz. 16° R. or 68° F.

Many of his experiments were made with the view of ascertaining whether there exists any difference in the specific gravity of corresponding parts, taken from opposite sides of the same body. The results show that some such difference does exist, but they are by no means sufficiently constant to entitle us to found upon them any general conclusion.

We shall not at present follow the author through these details, but arrange in a Table, which we think may be interesting to general readers, the more important results obtained by Davy and Frick. In this Table, those results only which correspond most nearly are stated, and many are omitted in which the differences are such that they must be attributed to accidental circumstances, the consideration of which would be foreign to the immediate and important object of the investigation.

Author's Name.	Part weighed.	Body from which taken.	Specific Gravity.
	Teeth.		
Davy.	Front tooth, undecayed,	Male, aged 34	2.240
...	... Root, . . .	...	1.950
...	... Crown, . . .	...	2.380
...	First molar tooth, slightly carious, . .	Male, 40	2.142
...	... Roots, . . .	...	2.113
...	... Crown, . . .	...	2.313
...	... Enamel, . .	...	2.620
	Bones, Cartilages, and Ligaments.		
...	Petrous portion of temporal bone, . . .	Male, 41	1.852
...	Parietal bone, . .	Male, 34	1.772
Frick.	Frontal bone, . .	Female, 79	1.407
...	Fifth rib, . . .	...	1.164
...	Fourth rib, . .	Child at birth,	1.300
Davy.	Eighth rib, . .	Male, 34	1.383
Frick.	Os pubis, . . .	Female, 79	1.060
...	Clavicle, . . .	...	1.220
...	Ditto, . . .	Child,	1.284
...	Head of humerus, .	Female, 79	1.005
...	Body of humerus, .	...	1.238
...	Ditto, . . .	Child,	1.426
...	Second phal. of middle finger,	Female, 79	1.158
...	Ditto, . . .	Child,	1.100
...	Body of femur, . .	Female, 79	1.253
...	Ditto, . . .	Child,	1.420
...	Lower end of ditto, .	Female, 79	1.086
...	Body of tibia, . .	...	1.417
...	Ditto, . . .	Child,	1.416
...	Cartilaginous heads of femur and humerus,	...	1.043 to 1.051
Davy.	Cartilage of knee joint,	Adult male,	1.073
...	Intervertebral substance, outer part, . .	Male, 23	1.104
..	Central soft part, .	...	1.062
...	Ligament of patella, .	Male, 22	1.104
...	Tendo Achillis, . .	Male, 28	1.080
	Skin, Hair, Nails, Fat, &c.		
Davy.	Cuticle, sole of foot, .	Male, 39	1.190
...	Skin and cuticle, back of thumb, . .	...	1.100
...	Fat, abdom. integuments,	Male, 34	0.942
...	nail of thumb, .	Male, 39	1.197
...	Light and dark brown fine hair, . . .	3 English females, 30 to 40	1.278 to 1.293
...	Grey fine hair, . .	Female, 66, Corfu,	1.290
...	... white fine, . .	Male, 77, do.	1.275
...	Ditto, bleached, . .	Male Ipsariot, exposed 2 years,	1.345
...	Ditto, black, coarse, and		
...	woolly, . .	Hottentot fem-	1.323

Author's Name.	Part weighed.	Body from which taken.	Specific Gravity.
Davy.	Grey reddish-brown, exposed to sun, .	Young fem. Pitcairn's Isl.	1.300
	Muscles.		
...	Left Ventricle of heart,	Male, 34	1048
Frick.	Ventricles of heart, .	Child,	1.028
Davy & Fr.	Biceps brach., Pectoral. maj., Sartorius, Soleus, Gastrocnem., Glut. max.	Child, and males of 20 and 34,	1.053 to 1.058
	Brain and Nerves.		
Soemmering.	Brain, . . .	mean,	1.031
Frick.	Cerebrum, . . .	Male, 25	1.031
Davy.	Do. cortical and medullary matter, . . .	Male, 28, fluid in ventricles,	1.040
Frick.	Medullary matter, .	Male, 25	1.030
...	Cortical substance, .	...	1.021
...	Whole brain, . .	Calf, .	1.016
...	Ditto, . . .	Ox, .	1.036
...	Corpus striatum, .	Male, 25	1.036
...	Thalami nerv. opt. .	...	1.037
...	Cerebellum, . .	...	1.037
Davy.	Ditto, . . .	Male, 28	1.043
	Pons varolii, . .	Male, 34	1.033
Frick.	Ditto, . . .	Male, 25	1.031
...	Medulla oblongata, .	...	1.017
Davy.	Ditto, . . .	Male, 34	1.037
...	Upper part of spinal cord,	Male, 27	1.035
...	Dura mater, . .	...	1.090
Frick.	Ditto, . . .	Male, 25	1.069
...	Sciatic nerve and Crural do.	...	1.047
...	Ditto, . . .	Child,	1.080
Davy.	Ditto, . . .	Male, 22	1.111
	Arteries and Veins.		
Frick.	Ext. coat of abdom. aorta,	Male, 56	1.111
...	Fibrous coat, . .	...	1.078
Dav	Ditto, . . .	Male, 20	1.077
...	Thoracic aorta, . .	Male, 34	1.086
Frick.	Ditto, . . .	Male, 56	1.075
...	Arch of aorta, . .	...	1.078
Davy.	Ditto, . . .	Male, 22	1.080
...	Abdominal aorta, .	Male, 20	1.074
Frick.	Ditto, . . .	Male, 56	1.081
Soemmering.	Arteries, . . .	Mean,	1.030
Frick.	Iliac, popliteal, and ulnar,	Male, 56	1.048
...	Right femoral, . .	...	1.063
...	Left ditto, . . .	...	1.080
Davy.	Upper part of ditto, .	Male, 22	1.071
...	Middle part of ditto, .	...	1.061
Soemmering.	Veins, . . .	...	1.050 to 1.100
Davy.	Abdominal Vena cava,	Male, 26	1.061
Frick.	Superior Vena cava, .	Male, 56	1.055 to 1.065
	Viscera, &c.		
Davy.	Lung, destitute of air,	Male, 29	1.054
...	Ditto, hepatized, .	Male, 28	1.043

Author's Name.	Part weighed.	Body from which taken.	Specific Gravity.
Davy.	Pancreas, . . .	Male, 28	1.047
...	Thyroid gland, . .	Male, 25	1.060
...	Liver, healthy, . .	Male, 27	1.069
...	Do. colour of yellow wax,	Male, 34	1.035
Frick.	Liver, healthy, . .	Child,	1.042
...	Ditto, surface, . .	...	1.065
...	Kidney, . . .	...	1.034
...	Ditto, cortical substance,	...	1.033
...	Ditto, medullary substance,	...	1.036
Davy.	Kidney, . . .	Male, 26	1.050
...	Supra-renal capsule, .	Male, 25	1.048
Frick.	Ditto, right, . .	Child,	1.022
...	Ditto, left, . .	...	1.034
...	Thymus, . . .	...	1.036
...	Spleen, . . .	...	1.052
Soemmering.	Ditto, . . .	Mean,	1.060
Davy.	Ditto, healthy, . .	Males, 25, 26, 34 and 41	1.060 to 1.070
...	Spleen, bright red and hard,	Males, 22 and 28	1.044 to 1.048
...	Do. very large, soft, and putrid, . . .	Male, 20	1.058
...	Œsophagus and intestine, inflamed and ulcerated,	Male, 39	1.040 to 1.044
...	Cardiac portion of stomach,	...	1.048
...	Pyloric ditto, . .	...	1.052
...	Duodenum, . .	...	1,047
...	Corpora cavernosa penis, cellular part, . .	Male, 26	1.086
...	Do. ligamentous covering,	...	1.097
...	Testicle, . . .	...	1.041
Frick.	Ditto, . . .	Child,	1.040
Davy.	Tunica albuginea, T.	Male, 26	1.088
	Eye. &c.		
Frick.	Whole eye, . .	Male, 25	1.021
...	Sclerotic coat of eye, .	Female, 79, and male, 25,	1.090
Davy.	Ditto, . . .	Male, 23	1.091
...	Cornea, . . .	...	1.076
Frick.	Ditto, . . .	Female, 79,	1.049 to 1.103
		and male, 25	1.140 to 1.176
...	Choroid, . . .	...	1.047 to 1.049
			1.110 to 1.174
...	Aqueous humour, .	...	1.005 to 1.024
...	Vitreous humour, .	...	1.002 to 1.006
Davy.	Lens, soft, . . .	Male, 23,	1.100
Frick.	Nucleus of lens, hard and yellow, . . .	Female, 79	1.112
...	Aqueous humour, .	Calf, .	1.003 to 1.006
...	Ditto, . . .	Ox, .	1.006 to 1.008
...	Lens, . . .	Calf, .	1.002 to 1.005
...	Ditto, . . .	Ox, .	1.080