### TABLE III.—Weights of Diseased Brains.

The letter D is inserted when the organs were diseased and were not weighed.

#### MALES.

| No | Age | Occupation       | Wgt. of whole Body | Of Encephalon | Of Cerebrum | Of Cerebellum with Pons Varoli and Medulla Oblong. | Fluid in Ventricles | Fluid beneath Arachnoid | Weight of Heart | Of Liver | Of Spleen | Of Right Kidney | Of Left Kidney | Disease causing Death | Remarks |
|----|-----|------------------|--------------------|----------------|-------------|---------------------------------------------------|--------------------|--------------------------|-----------------|----------|------------|------------------|----------------|----------------------|---------|
| 1  | 22 0| Flesher          |                    | 168            | 52          | 8 46 6                                             | 6 0 5jss           | 11 0                     |                 | 0        | 0          | 6 0              | 5 0            | Clots of blood in the hemispheres, and lymph on the membranes, especially at the base. Duration of disease 10 days. |         |
| 2  | 36 0| Cabinetmaker     |                    | 111            | 45          | 8 39 0                                             | 6 8 3j             | 11 0                     | 34 8 42 8       | 6 12 6 0 | 0          |                 |                | Softening of the grey matter on anterior lobe of cerebrum; pneumonia. |         |
| 3  | 36 0| Shoemaker        |                    | 76             | 35          | 8                                                  | 5j slight          | D                        |                 | 0        | 0          |                 |                | Softening of corpus striatum and cerebellum. Mitral valvular disease; anaemia. |         |
| 4  | 41 0| Blacksmith       |                    | 74             | 44          | 12                                                 |                   |                          |                 | 0        | 0          | 6 0              |                | Clot in substance of left hemisphere; fibrinous masses in spleen; cirrhosis hepatis; mottled kidneys; cerebral disease of 1 month's duration. Fracture of the base of the skull and extravasation; death 14 days after the injury. |         |
| 5  | 51 0| Native of Bombay, of mixed descent | 76 | 35 | 8 | 5j | D | | | | | | | |
| 6  | 60 0| Native of Bombay, of mixed descent | 41 | 8 | 36 8 | 5 0 | | | | | | | |

#### FEMALES.

| No | Age | Occupation | Wgt. of whole Body | Of Encephalon | Of Cerebrum | Of Cerebellum with Pons Varoli and Medulla Oblong. | Fluid in Ventricles | Fluid beneath Arachnoid | Weight of Heart | Of Liver | Of Spleen | Of Right Kidney | Of Left Kidney | Disease causing Death | Remarks |
|----|-----|------------|--------------------|----------------|-------------|---------------------------------------------------|--------------------|--------------------------|-----------------|----------|------------|------------------|----------------|----------------------|---------|
| 1  | 11th 19a |            |                    | 28             | 5j          | 24 11                                             | 3 10j              |                          |                 | 0        | 0          | 3 10j           |                | Phthisis; large tubercular masses imbedded in substance of brain. |         |
| 2  | 19 yrs. |            |                    | 49             | 0           | 11                                                 |                   |                          |                 | 0        | 0          |                 |                | Lymph on surface of hemispheres; turbid serum in ventricles. |         |
| 3  | 50 0   |            |                    | 79             | 37          | 0 31 0                                            | 5 8 3jv            |                          |                 | 0        | 0          | 6 0              |                | Flattening of convolutions, and effusion in ventricles. Patient long bed-ridden and insensible. |         |
| 4  | 60 0   |            |                    | 35             | 37          | 8                                                  |                   |                          |                 | 0        | 0          |                 |                | Fract. of left temporal bone, and effusion; death two days after the injury. |         |
| 5  | 66 0   |            |                    | 79             | 35          | 0                                                  | 3jss consid. 18 0  |                          |                 | 0        | 0          | 6 0              |                | Injury of head and effusion; fracture of leg and thigh; cysts in kidneys; disd. aorta. |         |
Tables IV. and V. exhibiting the ratio of the Encephalon and of the Cerebellum, with the Pons Varolii and Medulla Oblongata, to the weight of the whole body; together with the ratio of the Cerebellum, and Pons Varolii, and Medulla Oblongata, to the Encephalon in the observations previously given.

**TABLE IV.—MALES.**

| Ages, | Ratio of Encephalon to Body | Of Cerebellum, &c. to Body | Of Cerebellum, &c. to Encephalon |
|-------|-----------------------------|---------------------------|----------------------------------|
| Yrs. mo. |                             |                           |                                   |
| 1 11 | 1 to 14:3                   | ...                       | ...                               |
| 3 6  | ...                         | ...                       | 1 to 9:3                         |
| 6 0  | ...                         | 1 to 8:36                 | ...                               |
| 11 0 | 1 to 12:2                   | ...                       | 1 to 7:7                         |
| 17 0 | ...                         | ...                       | 1 to 6:44                        |
| 19 0 | ...                         | ...                       | 1 to 7:8                         |
| 21 0 | ...                         | ...                       |                                 |
| 22 0 | 1 to 39:8                   | ...                       |                                 |
| 23 0 | 1 to 45:1                   | 1 to 276:8                | 1 to 6:0                         |
| 23 0 | 1 to 35:3                   | 1 to 303:1                | 1 to 8:5                         |
| 25 0 | 1 to 39:2                   | ...                       |                                 |
| 26 0 | 1 to 45:2                   | ...                       |                                 |
| 27 0 | 1 to 36:5                   | 1 to 274:2                | 1 to 7:5                         |
| 28 0 | 1 to 32                    | ...                       |                                 |
| 28 0 | 1 to 29:8                   | ...                       |                                 |
| 28 0 | 1 to 35:2                   | ...                       |                                 |
| 29 0 | ...                         | ...                       | 1 to 7:3                         |
| 30 0 | ...                         | ...                       | 1 to 7:4                         |
| 30 0 | 1 to 52:3                   | ...                       |                                 |
| 32 0 | 1 to 34:4                   | 1 to 244:5                | 1 to 7:1                         |
| 32 0 | 1 to 33:8                   | 1 to 296:5                | 1 to 8:7                         |
| 32 0 | 1 to 37:1                   | 1 to 322:1                | 1 to 8:2                         |
| 32 0 | ...                         | ...                       | 1 to 7:1                         |
| 34 0 | 1 to 79:8                   | 1 to 405:1                | 1 to 8:4                         |
| 36 0 | ...                         | ...                       | 1 to 8:6                         |
| 37 0 | 1 to 39:8                   | ...                       |                                 |
| 38 0 | 1 to 49:8                   | ...                       |                                 |
| 38 0 | 1 to 29:8                   | ...                       |                                 |
| 38 0 | 1 to 30:9                   | 1 to 266:6                | 1 to 8:2                         |
| 38 0 | ...                         | ...                       |                                 |
| 40 0 | 1 to 42:2                   | ...                       |                                 |
| 40 0 | ...                         | ...                       | 1 to 7:6                         |
| 40 0 | ...                         | ...                       | 1 to 8:6                         |
| 40 0 | ...                         | ...                       | 1 to 7:7                         |
| 40 0 | ...                         | ...                       | 1 to 7:8                         |
| 42 0 | 1 to 49:7                   | ...                       |                                 |
| 44 0 | ...                         | ...                       | 1 to 8:6                         |
| 44 0 | 1 to 33:7                   | ...                       |                                 |
| 44 0 | 1 to 30:4                   | ...                       |                                 |
| 44 0 | 1 to 36:2                   | ...                       |                                 |
| 47 0 | 1 to 27:8                   | ...                       |                                 |
| 50 0 | ...                         | ...                       | 1 to 8:4                         |
| 51 0 | 1 to 35:8                   | ...                       |                                 |
| 54 0 | 1 to 50:2                   | 1 to 424:7                | 1 to 8:4                         |
| 54 0 | ...                         | ...                       | 1 to 8:4                         |
| 60 0 | 1 to 44:3                   | ...                       | 1 to 8:4                         |
| 60 0 | 1 to 32:9                   | ...                       |                                 |
| 60 0 | 1 to 35:5                   | 1 to 281:6                | 1 to 8:4                         |
| 62 0 | 1 to 32:3                   | ...                       |                                 |
| 65 0 | 1 to 43:1                   | ...                       |                                 |
| 66 0 | ...                         | 1 to 9:0                  | 1 to 8:8                         |
| 80 0 | ...                         | ...                       |                                 |

The average proportion of the Cerebellum, with the Pons Varolii and Medulla Oblongata, to the Encephalon, in 17 males between 25 and 55 years of age, is 1 to 7:93.
### TABLE V.—FEMALES.

| Ages. | Ratio of Encephalon to Body. | Of Cerebellum, &c. to Body. | Of Cerebellum, &c. to Encephalon. |
|-------|------------------------------|-----------------------------|-----------------------------------|
|       | 1 to 5·7                     | 1 to 45·3                   | 1 to 7·9                          |
| 1 Yrs.| 1 to 7·7                     | 1 to 80·                    | 1 to 10·                          |
| 2 Yrs.| 1 to 20·3                    | 1 to 153·6                  | 1 to 7·55                         |
| 3 Yrs.| 1 to 34·5                    | ...                         | 1 to 9·5                          |
| 6 Yrs.| 1 to 44·8                    | ...                         | 1 to 7·3                          |
| 9 Yrs.| 1 to 37·                      | 1 to 361·6                  | 1 to 8·6                          |
| 12 Yrs.| ...                           | ...                         | 1 to 8·16                         |
| 15 Yrs.| 1 to 32·6                    | 1 to 266·6                  |                                  |
| 18 Yrs.| ...                           | ...                         |                                  |
| 21 Yrs.| 1 to 27·                      | 1 to 325·5                  | 1 to 7·6                          |
| 24 Yrs.| 1 to 33·7                    | 1 to 39·9                   | 1 to 8·9                          |
| 27 Yrs.| 1 to 34·6                    | 1 to 29·3                   | 1 to 8·2                          |
| 30 Yrs.| 1 to 38·                      | 1 to 34·6                   | 1 to 8·9                          |
| 33 Yrs.| 1 to 29·9                    | ...                         | 1 to 7·8                          |
| 36 Yrs.| 1 to 45·                      | 1 to 326·                    | 1 to 7·9                          |
| 39 Yrs.| 1 to 35·3                    | 1 to 316·2                  | 1 to 7·9                          |
| 42 Yrs.| 1 to 29·3                    | 1 to 339·1                  | 1 to 7·9                          |
| 45 Yrs.| 1 to 34·6                    | ...                         | 1 to 8·9                          |
| 48 Yrs.| 1 to 44·8                    | ...                         | 1 to 7·9                          |
| 51 Yrs.| 1 to 34·6                    | ...                         | 1 to 8·9                          |
| 54 Yrs.| 1 to 38·                      | ...                         | 1 to 7·8                          |
| 57 Yrs.| 1 to 24·1                    | 1 to 213·3                  | 1 to 7·2                          |
| 60 Yrs.| 1 to 28·5                    | 1 to 219·8                  | 1 to 7·6                          |
| 63 Yrs.| 1 to 30·3                    | 1 to 259·                    | 1 to 7·6                          |
| 66 Yrs.| 1 to 24·8                    | ...                         | 1 to 7·6                          |
| 69 Yrs.| ...                           | ...                         | 1 to 7·8                          |
| 72 Yrs.| ...                           | ...                         | 1 to 7·8                          |
| 75 Yrs.| ...                           | ...                         | 1 to 7·8                          |

The ratio of Cerebellum, with Pons Varolii and Medulla Oblongata, to the Encephalon, in 12 females between 25 and 55 years of age, is 1 to 7·98.
Exhibiting the Weights of the Heaviest and Lightest Encephalon, Cerebrum, and Cerebellum, with the Pons Varolii and Medulla Oblongata, together with their average weights, in MALES, at different periods of life. The calculations contained in this and the following Tables are founded on the whole of the data collected by Dr Reid and myself.

| Ages         | Numbers Weighed | Heaviest | Lightest | Average |
|--------------|-----------------|---------|----------|---------|
|              | Encephalon. | Cerebrum. | Cerebellum. &c. | Encephalon. | Cerebrum. | Cerebellum. &c. | Encephalon. | Cerebrum. | Cerebellum. &c. |
| 9 months.    | 1                  | 1            | 1            | 27 8        | 24 8        | 3 0           | 38 0        | 35 0        | 4 8             |
| 1 to 2 years.| 2                  | 2            | 2            | 39 12       | 35 4        | 4 8           | 42 15 37   | 38 13        | 4 14 3 35      |
| 2 to 5       | 5                  | 5            | 5            | 45 4        | 39 14       | 5 6           | 39 8        | 35 0        | 4 9             |
| 5 to 7       | 4                  | 4            | 4            | 47 10 3    | 41 11       | 6 0           | 40 12       | 36 1        | 4 10            |
| 7 to 10      | 6                  | 6            | 7            | 52 14       | 47 3        | 5 11          | 43 10       | 38 0        | 5 10            |
| 10 to 13     | 4                  | 4            | 3            | 55 0        | 45 0        | 6 2           | 43 10       | 38 0        | 5 10            |
| 13 to 16     | 5                  | 4            | 4            | 50 2        | 44 2        | 6 8           | 40 4        | 34 0        | 5 8             |
| 16 to 20     | 8                  | 7            | 7            | 56 0        | 47 8        | 7 2           | 47 0        | 41 7        | 5 12            |
| 20 to 25     | 16                 | 10           | 11           | 61 2        | 54 0        | 7 2           | 38 0        | 38 0        | 5 4             |
| 25 to 30     | 24                 | 15           | 15           | 56 8        | 49 0        | 7 0           | 40 8        | 35 9        | 5 1             |
| 30 to 40     | 41                 | 28           | 28           | 62 8        | 54 8        | 8 0           | 34 0        | 37 13       | 5 6             |
| 40 to 50     | 44                 | 32           | 32           | 62 12       | 49 0        | 7 10          | 42 2        | 36 6        | 5 8             |
| 50 to 55     | 22                 | 20           | 21           | 59 0        | 51 15       | 8 4           | 39 0        | 39 0        | 4 14            |
| 55 to 60     | 10                 | 8            | 8            | 52 14       | 46 12       | 6 14          | 40 0        | 34 8        | 4 14            |
| 60 to 65     | 18                 | 10           | 12           | 60 4        | 51 13       | 7 4           | 43 8        | 38 4        | 5 4             |
| 70 to 80     | 7                  | 5            | 5            | 54 10       | 48 2        | 6 8           | 42 12       | 40 12       | 5 14            |
| 80 to 90     | 3                  | 3            | 3            | 52 0        | 45 8        | 6 8           | 42 12       | 40 12       | 5 14            |

The average weight of the Encephalon, in 131 males, between 25 and 55 years of age, is 50 oz. 31 3dr. or 50 oz. 25 dr. The extremes between these ages being 62 oz. and 12 dr., or 12 oz. 8 75 dr. above the average.

The average weight of the Encephalon in 19 persons between 10 and 20 years of age is 40 oz. 10 6 dr. and 34 oz.

The average weight of the Encephalon in 95 males between 25 and 55 years of age, 44 oz. 3 4 dr. and 36 oz.

The average weight of the Cerebrum, in 55 males between 25 and 55 years of age, 44 oz. 34 dr. and 36 oz.

The average weight of the Cerebellum, with the Pons Varolii and Medulla Oblongata, 55 and 90 oz. 15 8 dr.

The average weight of Cerebellum only, in 57 males, between 25 and 55 years of age, 5 oz. 8 6 dr.
| Ages            | Numbers Weighed. | Heaviest. | Lightest. | Average. |
|-----------------|------------------|-----------|-----------|----------|
|                 | Enceplialon.    | Cerebrum. | Cerebellum. | Enceplialon. | Cerebrum. | Cerebellum. | Enceplialon. | Cerebrum. | Cerebellum. |
| 1 yr. 9 months. | 1                | 1         | 1         | 30 12\(\frac{1}{2}\) | 26 14\(\frac{1}{2}\) | 3 14     | 32          | 30 5    | 31 15     |
| 2 to 5 years.   | 8                | 4         | 4         | 42 0    | 37 8    | 4 10      | 34 8        | 29 7    | 4 0       |
| 5 to 7 ...      | 4                | 4         | 4         | 43 14   | 38 5    | 5 9       | 37 12       | 32 12   | 5 0       |
| 7 to 10 ...     | 4                | 4         | 4         | 43 8    | 37 6    | 6 2       | ...         | ...     | ...       |
| 10 to 13 ...    | 1                | 1         | 1         | 41 0    | 35 8    | 5 8       | ...         | ...     | ...       |
| 13 to 16 ...    | 1                | 1         | 1         | 43 8    | 37 6    | 6 2       | ...         | ...     | ...       |
| 16 to 20 ...    | 13               | 9         | 9         | 49 12   | 43 8    | 6 8       | 40 14       | 35 13   | 5 1       |
| 20 to 25 ...    | 13               | 10        | 10        | 50 0    | 43 4    | 6 1       | 44 0        | 38 0    | 4 12      |
| 25 to 30 ...    | 13               | 11        | 11        | 50 0    | 43 14   | 6 2       | 39 0        | 35 8    | 4 12      |
| 30 to 40 ...    | 33               | 25        | 25        | 54 0    | 45 2    | 6 8       | 38 0        | 32 12   | 4 4       |
| 40 to 50 ...    | 23               | 18        | 18        | 53 0    | 47 0    | 7 0       | 36 12       | 32 8    | 4 4       |
| 50 to 55 ...    | 5                | 4         | 4         | 48 6    | 42 14   | 5 15      | 43 14       | 38 1    | 4 13      |
| 55 to 60 ...    | 2                | 2         | 2         | 44 0    | 38 12   | 5 4       | 43 4        | 38 2    | 5 2       |
| 60 to 70 ...    | 14               | 14        | 14        | 48 12   | 41 2    | 6 0       | 36 2        | 31 2    | 5 0       |
| 70 to 80 ...    | 2                | 2         | 2         | 46 0    | 40 0    | 6 0       | 39 0        | 34 0    | 5 0       |
| 80 to 90 ...    | 1                | 1         | 1         | 31 1    | 26 12   | 4 5       | ...         | ...     | ...       |
| Total,          | 138              | 115       | 115       | ...     | ...     | ...       | ...         | ...     | ...       |

The average weight of the Encephalon in Females between 25 and 55 years of age, calculated from 74 observations, is 44 oz. 14\(\frac{1}{2}\) drachms, or 2 lb. 12 oz. 14\(\frac{1}{2}\) drachms.

The extremes between these ages, being 54 oz. or 9 oz. 1\(\frac{1}{2}\) dr. above the average, and 36 oz. 12 dr., or 8 oz. 2\(\frac{1}{2}\) dr. below.

Average weight of the Encephalon in 15 females between 10 and 20 years of age, 44 oz. 8\(\frac{1}{8}\) drachms.

Average weight of the Cerebrum in 58 females between 25 and 55 years of age, 39 oz. 3\(\frac{1}{2}\) drachms.

Average weight of the Cerebellum, with Pons Varolii and Medulla Oblongata, in 58 females between 25 and 55 years of age, 5 oz. 10\(\frac{1}{2}\) drachms.

Average weight of the Cerebellum alone in 34 females between 25 and 55 years of age, 4 oz. 12\(\frac{1}{4}\) drachms.
TABLE VIII.
Exhibiting the different Weights of the Encephalon, in Males and Females, between 25 and 55 years of age.

| MALES | FEMALES |
|-------|---------|
| Weights. | Number weighed. | Ratio per cent. | Weights. | Number weighed. | Ratio per cent. |
| oz. oz. dr. | | | oz. oz. | | |
| 34... | 1 | 0.76 | 36 12 to 40 | 9 | 12:2 | 54: |
| 38 | 1 | 0.76 | 40 0 to 45 | 31 | 41:8 | 45:9 |
| 40 to 45 | 9 | 6:8 | 45 0 to 50 | 27 | 36:4 | |
| 45 to 50 | 51 | 38:93 | 50 0 to 55 | 7 | 9:4 | |
| 50 to 55 | 46 | 35:1 | | | |
| 55 to 60 | 19 | 14:5 | | | |
| 60 to 62 | 4 | 3:05 | | | |
| 131 | | | 74 | |

TABLE IX.
Exhibiting the Average Weights of the Encephalon, Cerebrum, and Cerebellum, with the Pons Varolii and Medulla Oblongata, at different ages, in the two sexes.

| AGES | ENCEPHALON | CEREBRUM | CEREBELLUM, WITH PONS VAROLII AND MED. OBLONG. |
|------|-------------|----------|-----------------------------------------------|
|       | Males. | Females. | Males. | Females. | Males. | Females. |
| 2 to 5 | 42 | 15.6 | 37 | 11:5 | 38 | 1:3 | 4 | 14:3:5 | 4 | 3:2 |
| 5 to 7 | 42 | 10:7 | 35 | 8:5 | 40 | 8:5 | 5 | 3:4 | 5 | 10:5 |
| 7 to 10 | 46 | 2:16 | 41 | 4:3 | 42 | 6: | 5 | 15: | 5 | 13: |
| 10 to 16 | 46 | 10:9 | 42 | 4: | 43 | 8: | 6 | 5: | 5 | 11:5 |
| 16 to 20 | 50 | 12:3 | 44 | 13:1: | 43 | 8: | 6 | 5: | 5 | 11:5 |
| 20 to 25 | 52 | 2:1 | 46 | 12:1: | 45 | 10:10 | 6 | 6:4: | 5 | 11:5 |
| 25 to 55 | 50 | 3:1: | 44 | 14:2: | 44 | 3:4 | 6 | 4:0:5 | 5 | 10:2 |
| 55 to 60 | 48 | 1:10 | 43 | 10: | 42 | 8: | 6 | 3: | 5 | 3: |
| 60 to 70 | 48 | 8: | 43 | 3:4 | 43 | 8: | 5 | 13: | 5 | 9: |
| 70 to 80 | 48 | 1:5 | 42 | 11: | 42 | 3: | 5 | 13: | 5 | 8: |

Weight of Encephalon between 25 and 55 years of age—Males 50 | 3:11:25 |
Females 44 | 14:3:3 |

Oz. Dr.
Difference, 5 | 4:95 |
Ratio of Female to Male Encephalon as 1 to 1:11 |
Weight of Cerebrum—Males 44 | 3:4 |
Females 39 | 3:3 |

Difference, 5 | 0:1 |
Ratio of Female to Male Cerebrum as 1 to 1:12 |
Weight of Cerebellum with Pons and Medulla—Males 6 | 4:05 |
Females 5 | 10:5 |

Difference, 9:55 |
Ratio of Female to Male Cerebellum, &c. as 1 to 1:10 |
Weight of Cerebellum only—Males 5 | 3:6 |
Females 4:12:4 |

Difference, 7:2 |
Ratio of Female to Male Cerebellum as 1 to 1:09 |
TABLES X. and XI. exhibiting the proportion of the Weights of the Encephalon and of the Cerebellum, with the Pons Varolii and Medulla Oblongata, to the Weight of the whole Body at different Ages.

### TABLE X.—MALES.

| Ages          | Numbers Weighed | Encephalon to Body | Numbers Weighed | Cerebellum, &c. to Body |
|---------------|-----------------|--------------------|-----------------|-------------------------|
| 9 months      | 1               | 1 to 7·8           | 1               | 1 to 72·9               |
| 1 year & 11 months | 1            | 1 to 14·3          | ...             | ...                     |
| 3 years       | 1               | 1 to 8·             | 1               | 1 to 71·1               |
| 4 to 5 years  | 2               | 1 to 8·9            | 2               | 1 to 80·4               |
| 5 years       | 2               | 1 to 9·7            | 2               | 1 to 74·8               |
| 7 years       | 2               | 1 to 10·3           | 2               | 1 to 87·3               |
| 11 years      | 1               | 1 to 12·2           | ...             | ...                     |
| 13 to 15 years| 3               | 1 to 19·1           | 3               | 1 to 140·8              |
| 18 years      | 1               | 1 to 37·             | 1               | 1 to 322·9              |
| 20 to 25 years| 9               | 1 to 35·2           | 7               | 1 to 301·5              |
| 25 to 30 years| 13              | 1 to 40·4           | 7               | 1 to 295·9              |
| 30 to 40 years| 15              | 1 to 38·3           | 10              | 1 to 298·5              |
| 40 to 50 years| 20              | 1 to 34·8           | 12              | 1 to 212·3              |
| 50 to 55 years| 10              | 1 to 37·8           | 8               | 1 to 317·4              |
| 55 to 60 years| 2               | 1 to 40·2           | 2               | 1 to 341·4              |
| 60 to 70 years| 8               | 1 to 39·7           | 4               | 1 to 365·9              |
| 89 years      | 1               | 1 to 26·2           | 1               | 1 to 22·6               |

Ratio of Encephalon to body in 58 Males between 25 and 55 years of age.....1 to 37·2
Extremes*......1 to 79·8 and 1 to 25·2

Ratio of Cerebellum with Pons Varolii and Medulla Oblongata to body in 44 Males, between 25 and 55 years of age.....1 to 277·1
Extremes*......1 to 424·7 and 1 to 244·5

### TABLE XI.—FEMALES.

| Ages          | Numbers Weighed | Encephalon to Body | Numbers Weighed | Cerebellum, &c. to Body |
|---------------|-----------------|--------------------|-----------------|-------------------------|
| 1 year & 8 months | 1            | 1 to 5·7           | 1               | 1 to 45·3               |
| 2 to 3 years   | 3               | 1 to 8·             | 3               | 1 to 66·1               |
| 3 to 4 years   | 3               | 1 to 8·2            | 3               | 1 to 83·3               |
| 7 to 8 years   | 4               | 1 to 14·8           | 4               | 1 to 116·9              |
| 12 years       | 1               | 1 to 26·1           | 1               | 1 to 194·9              |
| 16 to 20 years | 6               | 1 to 34·5           | 4               | 1 to 268·1              |
| 20 to 25 years | 6               | 1 to 30·9           | 4               | 1 to 298·5              |
| 25 to 30 years | 5               | 1 to 35·9           | 3               | 1 to 306·6              |
| 30 to 40 years | 16              | 1 to 35·5           | 9               | 1 to 289·1              |
| 40 to 50 years | 7               | 1 to 32·2           | 6               | 1 to 284·9              |
| 50 to 55 years | 2               | 1 to 21·1           | 1               | 1 to 293·2              |
| 55 to 60 years | 2               | 1 to 36·5           | 2               | 1 to 307·6              |
| 60 to 70 years | 4               | 1 to 33·2           | 4               | 1 to 274·1              |
| At 75 years    | 1               | 1 to 36·8           | 1               | 1 to 282·6              |
| At 90 years    | 1               | 1 to 51·5           | 1               | 1 to 371·0              |

Average ratio of Encephalon to body in 30 Females between 25 and 55 years of age, 1 to 33·5
Extremes*......1 to 44·8 and 1 to 24·1

Ratio of Cerebellum with Pons Varolii and Medulla Oblongata to body in 19 Females, between 25 and 55 years of age.....1 to 290·7
Extremes*......1 to 326, and 1 to 213·3.

* Table IV.
TABLE XII.

Ratio of the Weight of the Cerebellum, and of the Cerebellum with the Pons Varolii and Medulla Oblongata, to the Encephalon, in the two sexes at different periods of life, in 170 and 278 persons respectively.

### MALES.

| Ages            | Numbers Weighed | Cerebellum to Encephalon | Numbers Weighed | Cerebellum, &c. to Encephalon |
|-----------------|-----------------|--------------------------|-----------------|-------------------------------|
| 4 months        | 1               | 1 to 11.1               | 1               | 1 to 9.16                     |
| 1 year          | 1               | 1 to 9.93               | 1               | 1 to 8.33                     |
| 2½ years        | 1               | 1 to 9.53               | 1               | 1 to 7.99                     |
| 3               | 1               | 1 to 9.87               | 1               | 1 to 8.77                     |
| 3½ ...          | 1               | 1 to 10.29              | 1               | 1 to 9.07                     |
| 4               | 1               | 1 to 9.73               | 1               | 1 to 8.41                     |
| 4½ ...          | 1               | 1 to 11.09              | 1               | 1 to 9.59                     |
| 5 to 7 ...      | 3               | 1 to 9.74               | 4               | 1 to 8.20                     |
| 7 to 10 ...     | 4               | 1 to 9.42               | 6               | 1 to 8.04                     |
| 10 to 13 ...    | 3               | 1 to 9.47               | 3               | 1 to 8.82                     |
| 13 to 16 ...    | 1               | 1 to 9.09               | 4               | 1 to 7.91                     |
| 16 to 20 ...    | 4               | 1 to 9.42               | 7               | 1 to 7.58                     |
| 20 to 25 ...    | 5               | 1 to 9.68               | 10              | 1 to 8.18                     |
| 25 to 55 ...    | 55              | 1 to 9.58               | 95              | 1 to 8.05                     |
| 55 to 90 ...    | 15              | 1 to 9.94               | 28              | 1 to 8.10                     |
|                 |                 |                         | 97              |                               |

### FEMALES.

| Ages              | Numbers Weighed | Cerebellum to Encephalon | Numbers Weighed | Cerebellum, &c. to Encephalon |
|-------------------|-----------------|--------------------------|-----------------|-------------------------------|
| 1 year and 8 months | 1               | 1 to 8.79               | 1               | 1 to 7.94                     |
| 2½ years          | 1               | 1 to 9.30               | 1               | 1 to 8.31                     |
| 2½ ...            | 4               | 1 to 10.00              | 4               | 1 to 8.48                     |
| 3                 | ...             | ...                     | 1               | 1 to 10.28                    |
| 3½ ...            | 1               | 1 to 10.07              | 1               | 1 to 9.33                     |
| 5 and 6 ...       | 2               | 1 to 10.64              | 3               | 1 to 8.71                     |
| 7 and 8 ...       | 3               | 1 to 9.47               | 4               | 1 to 7.88                     |
| 12                | ...             | ...                     | 1               | 1 to 7.10                     |
| 15                |                 |                         | 1               | 1 to 7.45                     |
| 16 to 20 ...      | 6               | 1 to 9.12               | 9               | 1 to 7.97                     |
| 20 to 25 ...      | 4               | 1 to 7.57               | 10              | 1 to 7.25                     |
| 25 to 55 ...      | 34              | 1 to 9.34               | 58              | 1 to 7.87                     |
| 55 to 90 ...      | 15              | 1 to 9.31               | 19              | 1 to 7.90                     |
|                  | 73              |                         | 114             |                               |

Ratio of the several portions of the Encephalon in the two sexes, in persons between 25 and 55 years of age:—

| Section                  | Males (1000) | Females (1000) |
|--------------------------|--------------|----------------|
| Encephalon               | 1000         | 1000           |
| Cerebrum                 | 875·8        | 872·9          |
| Cerebellum               | 104·3        | 107·9          |
| Pons Varolii and Medulla Oblongata | 19·9 | 20·1 |
CONCLUSIONS.

1st. The encephalon in the adult male weighs, on an average, 50 oz. 3 25 dr., or 3 lb. 2 oz. and 3 34 drachms avoirdupois, and exceeds in weight that of the female by 5 oz. 4 95 dr., the latter weighing on an average 44 oz. and 14 3 2 dr. of 2 lb. 12 oz. 14 28 dr.

Of 131 male brains weighed, the heaviest was 62 oz. 12 dr., or 12 oz. 8 75 dr. above the mean; the lightest was 34 oz., or 16 oz. 3 25 dr. below it.

Of 74 female brains, the extremes were 54 oz., or 9 oz. 1 7 dr. above the average, and 36 oz. 12 dr., or 16 oz. 3 2 dr. below it.

Of the male encephala, 8 3 per cent., were under 45 oz. in weight, 74 04 per cent., weighed between 45 and 55 oz., and 17 5 per cent., exceeded 55 oz. in weight.

Of the female encephala, 54 per cent., weighed under 45 oz., 45 9 per cent., were between 45 and 55 oz. in weight, and none exceeded 55 oz.

Note.—A comparison of these averages with those deduced by Dr Reid, will show that they correspond very closely, though the numbers on which the calculations are based are considerably extended. They do not differ, also, very greatly from the conclusions of Sir William Hamilton, Dr Sims, and Dr Clendenning. Sir W. Hamilton estimated the weight of the adult male encephalon at 3 lb. 8 oz. troy, and the female at 3 lb. 4 oz., which are nearly 48 oz. 5 dr., and 43 oz. 15 dr. avoirdupois. On calculating the weights of the brain in the two sexes separately, from the observations published by Dr Sims, I find the male brain, in 54 persons between 20 and 60 years of age, to average 47 oz. 13 dr., and the female brain in 58 persons, 44 oz. and 10 dr. Dr Clendenning states the male brain in persons between 21 and 60 years of age to average 45 85 oz., and the female 41 25 oz. These several averages, together with those deduced by Professor Reid and myself, range between 45 3 oz. and 50 4 oz. for the male, and 41 4 oz. and nearly 45 oz. for the female.

Tiedemann, whose actual observations amount to only 52 (35 males and 17 females), states the weight of the adult European encephalon to vary in the male between 3 lb. 2 oz. and 4 lb. 6 oz. troy, or 41 oz. 12 dr. and 59 oz. 5 dr. avoirdupois, and in the female, between 2 lb. 8 oz. and 3 lb. 11 oz. troy, or 35 oz. 2 dr. and 51 oz. 11 dr. avoirdupois.

The want of accurate information as to the number of observations on which their calculations are based, of the weights employed, and of the ages of the persons, render the statements of the older anatomists as to the weight of the encephalon of little value. Soemmerring states,—"Cerebrum et cerebellum, resecta medulla spinali statim pone nervum lingualem medium ponds sunt librarum duarum ad tres libras; sunt enim alia cerebra pondere

1 Phil. Trans., vol. 127, p. 497.
librarum duarum et unciarum quinque cum dimidia, alia librarum trium et unciarum trium cum tribus quartis. Aliis (referring to the weights of brain assigned by Haller, Elementa Physiologiae, t. 4, p. 10) observata sunt cerebra librae unius cum dimidia, alius pondus librarum quinque superantia, quod posterius vero haud verisimile videtur, nisi forte diverso hexagio res rite interpretari possit." (De corporis humani fabrica, t. 4, f. 38.) He adds, in a note, "In universum quidem Hallerus cerebrum pondere esse librarum quinque autumat, rectius certe quatuor, si de pondere pharmaceutico Germanico sermo est. Certe enim inter plura quam ducenta cerebra a me disquisita nullum inveni quod quatuor sit librarum." From this it appears that Soemmerring employed the German or Nuremberg pound of 5524.8 grains, and the weights which he gives consequently vary between 31 oz. and 41 oz. 14 dr. avoirdupois, much below the estimates of more recent observers; but as he imagined the brain to attain its full development at 3 years of age, and has not specified that the weights referred to were those only of adults, we may infer that he included in his calculation the brains of persons in early life. The estimate of the Wenzels seems more nearly correct:—"Pondus encephali humani, quale id de quinto vitae anno ad summam usque hominis senectutem plerumque invenitur, pondus viginti quatuor millium granorum non superat. * * * Totius cerebri pondus inter viginti et viginti duo millia; cerebri strictius dicti inter octodecem et viginti millia granorum plerumque variat." (De penitiori structura Cerebri Hominis et Brutorum, f. 267.) The weight of the encephalon thus given is from 45 oz. 12 dr. to 50 oz. 5 dr. avoirdupois; and, as including persons in early and advanced life, and of both sexes, is sufficiently exact. The weight of the encephalon is estimated by Portal at 48 oz. 3½ dr. avoirdupois; and by Meckel, if his weight be the German lb., at 43 oz. and 11 dr. avoirdupois. M. Lelut estimates the weight of the encephalon of the male adult at 1320 grammes, or 46 oz. 10 dr. avoirdupois; and M. Parchappe at 1323 grammes, or 46 oz. 11 dr., and that of the female at 1210 grammes, or 42 oz. 11 dr. avoirdupois.

2d, The human encephalon appears ordinarily to attain its maximum of development at from the 20th to the 25th year; throughout the middle period of life it displays little variation, but a very marked decrease in weight obtains in advanced age. This conclusion is uniformly borne out by the weights of the encephalon at different ages in both sexes; nor do the tables afford any support to the opinions of Soemmerring, the Wenzels, and Sir W. Hamilton, that the brain arrives at perfection in or before the 7th year. Though

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1 Gazette Médicale de Paris, 2me serie, t. v., 1837, p. 146.
2 Ibid. See also M. Parchappe's Memoir, t. x., 1842, p. 650, where he gives the weight of the encephalon in males, 1352 grammes; and in females, 1229.
it may occasionally happen that the brain of a person in early life shall be found as heavy as are ordinarily the brains of adults, yet the average of the weights of several brains between 10 and 20 years of age, is uniformly less than that afforded by the brains of persons between 25 and 55 years of age.¹

Note.—The gradual increase in the weight of the encephalon up to adult age, accords with the conclusions of Dr Sims, and with the views of Gall and Spurzheim. Soemmerring, however, from one observation, inferred that the brain attained its full weight at 3 years of age, and the Wenzels at 7. The latter age has also been regarded by Sir W. Hamilton as the probable term of growth of the brain. The present observations further confirm the inference, that contrary to the supposition of the Wenzels and Sir W. Hamilton, the encephalon decreases in weight in advanced life. In reference to Sir W. Hamilton’s observations, it may be remarked that the actual weights of human brains can alone form just data for conclusions; and that it seems scarcely possible that any method of ascertaining the size of the brain from examination of the skull can be free from fallacy²—an objection especially applicable to estimates so formed of the weight of the brain in advanced age, when, as is well known, the ventricular cavities and subarachnoidal cellular tissue often contain much fluid.

3d, The excess of weight of the male over the female encephalon, is observed at an early age, and continues throughout the course of life. This inference is applicable after the commencement of the second year; before that period the data are too imperfect to allow of any conclusions being founded upon them.

4th, The average weight of the cerebrum in adult males, is 44 oz. 3'4 dr., and in females, 39 oz. 3'3 dr.; the cerebrum of the male therefore exceeds in weight that of the female by 5 oz. 0'1 dr.

5th, The cerebellum, with the pons Varolii, and medulla oblongata, averages in adult males, 6 oz. 40'5 dr.; in females, 5 oz. 10'5 dr.—the excess in the male being 9'65 dr.

6th, The cerebellum alone, calculated from Professor Reid’s observations, averages in the adult male 5 oz. 2'6 dr., and in the female 4 oz. 12'4 dr.—the difference being 6'2 dr.

7th, It has been seen that the encephalon may be regarded as attaining its maximum of development at from the 20th to the 25th year, and declines in weight in advanced life. The same law obtains in reference to the development and decline of its several portions. It would, however, appear probable that the cerebellum,

¹ These results accord with Dr Reid’s previous inferences. The decrease in the weight of the encephalon in advanced life, is, it will be observed, much more marked in females than in males.

² Sir W. Hamilton states his observations to have been founded “on inductions from above 60 human brains, and from nearly 300 human skulls of determined sex, the capacity of which, by a method I devised, was taken in sand, and the original weights of the brain thus recovered.”—Monro’s Anatomy of the Brain, 1831.
with the pons Varolii and medulla oblongata, arrive at their full growth somewhat earlier than the cerebral hemispheres. This surmise is supported by the weights of the former portions of the brain between 10 and 20 years of age, exceeding in females their weight in the adult, and being in males very slightly less than their weight in the adult. The results given in the tables are, however, unfavourable to the idea of Sir W. Hamilton, that the cerebellum attains its maximum of development at about the 7th year—an opinion opposed also by the weights of the cerebellum alone, as given by Professor Reid.

8th, The excess which obtains in the weight of the encephalon of the male over that of the female, exists also in each of the several portions of the brain—the cerebrum, the cerebellum, with the pons Varolii and medulla oblongata, and the cerebellum alone, being uniformly heavier in the male than in the female. The excess in the weight of each of these portions of the brain in the male over their weight in the female, maintains a very similar ratio, a fact opposed to the conclusion of Sir W. Hamilton, “that almost the whole difference in the weight of the male and female encephali lies in the brain proper, the cerebella of the two sexes absolutely being nearly equal; the preponderance being rather in favour of the female.”

9th, The relative proportion of the encephalon to the whole body undergoes a gradual decrease from infancy to adult age; and averages in males, at from 25 to 55 years of age, 1 to 37·2, presenting during this period a range of from 1 to 79·98 to 1 to 25·2, according to the state of emaciation or corpulence of the body weighed.

In females the average during adult life is 1 to 33·5, and the extremes 1 to 44·8 and 1 to 24·1. It will be seen that, as before remarked by the Wenzels and Tiedemann, the female brain, though absolutely lighter than that of the male, maintains a higher proportion relatively to the weight of the body.

10th, The proportions, relatively to the whole body, of the cerebellum with the pons Varolii and medulla oblongata, and of the cerebellum alone (as shown by Dr Reid’s observations), also gradually decrease from infancy, and at adult age the former averaged in males 1 to 277·1, presenting the extremes of 1 to 424·7 and 1 to 244·5.

The proportion in adult females is 1 to 290·7, and the extremes 1 to 262·3 and 1 to 213·3.

Tiedemann found the relative proportion of the encephalon to the body in adults as 1 to 35 and 1 to 45, and the extremes 1 to 22 and 1 to 50 to 100.

11th, The proportion which, in the adult, the cerebellum with the pons Varolii and medulla oblongata bear to the whole encephalon is 1 to 7·8, and is nearly the same in the two sexes, being as 1 to 8·057 in the male and 1 to 7·87 in the female.

Dr Reid had been led to infer that the cerebellum with the pons Varolii and medulla oblongata was relatively to the encephalon
heavier, in a somewhat higher proportion, in the female than in the male, being as 1 to 7·9 and 1 to 8·6 respectively. His calculations are, however, founded on the weights of 53 male and 34 female brains, while the present tables include 96 and 58 weights. From my own observations separately, the proportions are as 1 to 7·98 in females, and 1 to 7·93 in males.

12th. The ratio of the weight of the cerebellum alone to that of the whole encephalon, is, in the male, between 25 and 55 years of age, 1 to 9·58, and in the female 1 to 9·34.

13th. The relative proportion of the cerebellum to the cerebrum in adults of the two sexes, as calculated from Dr Reid's data, is in males 1 to 8·37; in females 1 to 8·28. Sir W. Hamilton states, "that the cerebellum in the female is in general considerably larger in proportion to the brain proper than in the male; in the female it is as 1 to 7·6, in the male as 1 to 8·4." The calculations now given show the weights of the cerebellum with the pons Varolii and medulla oblongata, and of the cerebellum alone, to be, relatively to that of the whole encephalon, somewhat higher in females than in males. This inference is not, however, confirmed by the observations of M. Parchappe; and the difference which, from the present data, appears to exist, is much less than was supposed by Sir W. Hamilton. It is, therefore, very questionable how far the excess of weight in females can be regarded as constituting a general rule.

14th. Though the data now published are defective in weights of the whole encephalon and its several portions, in infants and young persons, they render it most probable that the ratio of the cerebellum alone, or with the pons Varolii and medulla oblongata, to the cerebrum and encephalon, undergoes but little change during the whole period of life, after the expiration of the first year. Further observations are required on this point;—the facts at present recorded are, however, opposed to the surmise, that the cerebellum attains its complete state of development at a period much anterior to that of the rest of the brain.

**Article III.——Case of Amputation at the Knee Joint. By George Williamson, M.D., Assistant-Surgeon to the Forces.**

William Lane, 18 years of age, a tailor, enjoyed good health until about the beginning of July 1845. When carrying a child in his arms, his foot slipped into a hole, and his knee came against the bank; but he states, that for some time previous he found this knee weaker than the other. It now began to swell; he had great pain in the joint, for which leeches and blisters were applied, and an abscess formed on the inner side of the knee. He went to London, and was admitted into Guy's Hospital on the 6th of