On the scapular index as a race character in man / by W.H. Flower and J.G. Garson.

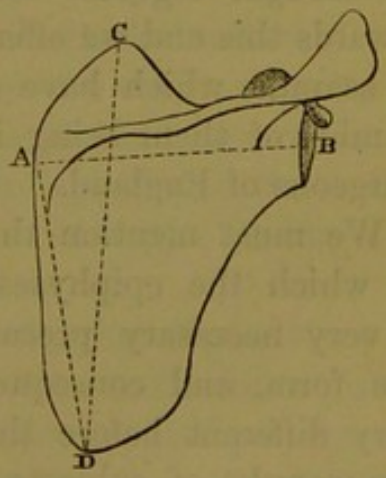
15.

ON THE SCAPULAR INDEX AS A RACE CHARACTER IN MAN.

By W. H. Flower, LL.D., F.R.S., and J. G. Garson, M.D., *Royal College of Surgeons of England.*

In the *Bulletin de la Societe d'Anthropologie de Paris*, tom. i. (3rd series), 1878, page 66, M. Broca has called attention to the form of the scapula in man and a considerable series of mammals, and has, for the first time, formulated the principal differences in the shape of the bone by establishing an index or numerical expression of proportion between its chief diameters—the length and breadth. Besides this, which he calls the scapular index, he has established a second, to show the relative development of the infraspinous plate (post-scapula, *Parker*), this he calls the "indice sous-épineux," or infraspinous index.

The breadth of the bone (AB) is taken from the centre of the posterior or outer border of the glenoid fossa (B), along the base or attached border of the spine, to the point (A) where this line intersects the vertebral border. The length (CD) is the greatest distance between the posterior superior (C) and inferior (D) angles. The infraspinous length is that between A and D.



The general result of the series of measurements made by M. Broca shows that, among the mammalia, man has exceptionally low indices, both scapular and infraspinous. The anthropoid apes, he found, approach man, but between these and the other quadrumana there is a wide interval. In the bats, however, in which the function of the scapula, as a basis for the attachment of the muscles of flight, is totally different from that of animals having a quadrupedal mode of progression, the index is lower even than in man.

With regard to the different races of men, the materials at M. Broca's disposal were not sufficient to establish any very

satisfactory conclusions except in the case of Europeans and Negroes. From an examination of twenty-three skeletons of the former and twenty-four of the latter he has arrived at the following conclusions: that the scapular index in Europeans is 65·91, and the infraspinous index 87·79. In the Negroes, however, the scapular index is 68·16, and the infraspinous index 93·88. In other words, the length of the scapula compared to the breadth in the Negro is less than it is in the European. This, as far as can be judged at present, is a sign of degradation, and is certainly an approach to the form of scapula in the anthropoid apes, as can be seen from the table of measurements and indices of the scapulæ of the chimpanzee, gorilla, and orang-utan.

The necessity of a large series of observations from which to deduce an average is evident, when we examine the individual cases, as many of the Negroes have indices as low as some Europeans, and *vice versa*. The general peculiarities of the race are only developed by an extensive series. As even our largest anatomical collections are still most insufficiently supplied with skeletons, it is only by the combined contributions of various persons having access to different collections that material can be brought together to test the value of this character, and towards this end we offer the following results of measurements of scapulæ which have come under our observation, the greater number of them being in the Museum of the Royal College of Surgeons of England.

We must mention that only scapulæ of fully adult persons, in which the epiphyses were united, have been employed—a very necessary precaution in establishing an average, as the form, and consequently the indices of the scapulæ, are very different before the union of their epiphyses; secondly, the scapulæ of subjects of both sexes have been taken indiscriminately, not only because sexual difference is, as shown by Broca, comparatively little, but because, in some cases, the sex was unknown, and in others the numbers were insufficient to separate them with advantage; finally, both scapulæ of each individual have always been measured, as we find that there is often considerable variation on the two sides of the body. In several of the series, it will be observed that an odd number is

given: this arises from one of the scapulæ being either absent or in such an imperfect condition as not to afford reliable points of mensuration.

We have endeavoured to establish the mean dimensions and indices of European scapulæ from a sufficient number of cases to afford a safe basis of comparison. The 200 specimens measured are mostly from this museum or other anatomical collections in the metropolis, and are partly English and partly —perhaps in largest measure—French; there may be a few of other countries, and perhaps even of other races, accidentally included, but the number of the latter, if there are any, is not sufficient to affect the average. They have not been selected with reference to any particular object as to form, size, &c., but every scapula available has been measured until a number which seemed sufficient for the purpose was obtained.

The general result is, that of the 200 European scapulæ, the average scapular index is 65·20, while the infraspinous index is 89·40. These are the indices of the mean dimensions, which are: breadth (AB), 101·42; length (CD), 155·54; and infraspinous length (AD), 113·46. Comparing these indices with those obtained from the European skeletons in Paris, we find that the general results obtained by Broca and ourselves correspond very closely. M. Broca gives the scapular index of the Europeans as rather higher than the index we obtained, it being in his skeletons 65·91; whereas the infraspinous index obtained from our measurements is higher than his, the latter being 87·79; however, the actual difference in either case is very inconsiderable.

Although possessing a fair aggregate number of skeletons of different nations, unfortunately we have not a sufficient number of any particular race, except of Europeans, and perhaps of Andamanese, to establish satisfactorily its scapular indices. However, trusting that, by the addition of the measurements of those we possess to those in other museums, it may be possible to obtain a sufficient number for this purpose, we subjoin a table containing the number of scapulæ of each race measured, and their scapular and infraspinous indices. The measurements are all taken in millimetres, with the sliding callipers commonly used by us for similar purposes.

TABLE I.

No.	Race.	Scapular Index.	Infraspinous Index.	M. Broca's Measurements.		Remarks on M. Broca's Measurements.
				Scapular Index.	Infraspinous Index.	
1	2 Peruvian Scapulæ, .	57·3	75·1	68·02	91·74	1 skeleton.
2	6 Tasmanian do. .	60·3	81·4			
3	4 Eskimo do. .	61·6	80·5			
4	2 Samoyede do. .	62·1	89·5			
5	2 Papuan do. .	64·5	87·6			
6	2 Bornean do. .	64·8	89·8			
7	2 Lapp do. .	64·8	89·1			
8	200 European do. .	65·2	89·4	65·91	87·79	23 skeletons.
9	6 Bushman do. .	66·7	90·7	60·96	83·18	1 skeleton.
10	2 Ancient Egyptian do.	68·1	93·3			
11	12 Australian do. .	68·9	92·5			
12	21 Andaman do. .	69·8	92·7			
13	2 Tahitian do. .	70·3	95·6			
14	6 Negro do. .	71·7	100·9	68·16	93·88	25 skeletons.

From the cases in which only two scapulæ (those of a single individual) have been measured nothing can be inferred. Of those in which a large number was available, the Andamanese and the Australians, as might be expected, conform with the Negro type. M. Broca has remarked that the two skeletons of the Bushwomen at Paris are separated completely in this respect from the Negro, and enter the Caucasian type, their scapular indices being below 61 in both cases, and the infraspinous index 78·30 in the one and 83·18 in the other. He asks whether this is an individual peculiarity, or whether it will be confirmed as a race character by other observations. Of our three skeletons, the average is 66·7, the highest being 70·7, and the lowest 63·7. The average infraspinous index is 90·7, the highest being 94·0 and the lowest 87·1; so that, although the individual differences are great, the average of the three differ but little from that of Europeans in both measurements. The Tasmanians also, most unexpectedly, differ from the other black races, the average scapular index of the three individuals measured being only 60·6, the maximum 66·0, the minimum 53·7, while the average

infraspinous index is 81·4, the maximum being 90·5 (in the bone in which the scapular index was highest), and the minimum 72·1.

We have also measured the scapulæ of all the adult anthropoid apes in this Museum and in the British Museum. It will be seen that our figures (in the first columns) correspond in the main, very nearly, with those obtained by M. Broca, except in the case of the orang-utan, of which animal we have had the advantage of measuring a considerable series, giving, of course, an average more to be relied upon than the single specimen measured by M. Broca.

TABLE II.

Anthropoid Apes.	Scapular Index.	Infra-spinous Index.	M. Broca's Measurements.		
				Scapular Index.	Infra-spinous Index.
21 Chimpanzee Scapulæ,.	69·9	133·8	Of 5 skeletons	68·52	130·23
16 Gorilla do. .	72·2	132·5	10 do.	70·38	126·05
17 Orang-utan do. .	77·6	103·8	1 do.	69·27	97·46
8 Gibbon do. .	96·5	201·2	7 do.	96·97	198·56