slit being exposed to the spark. This comparison of terrestrial spectra enables the errors due to temperature and flexure to be determined, and the difference of velocity of the two stars is given by the displacement of the two stellar spectra minus that of the two terrestrial. Evidently the accuracy will depend very largely upon the precision in setting the two stars in the visual telescope; to secure this it is proposed to attach a small photographic telescope to the guiding telescope, and to photograph the two stars, together with a reticule, which will enable the deviation, if any, to be measured and allowed for. To get the absolute velocity of a star, it must be compared with a star of known velocity, or Orbinsky's method (NATURE, vol. lii. p. 155) of measuring the contraction or dilatation of the whole spectrum may be applied. In the latter case, the absolute velocity could be determined directly, since effects of temperature, &c., would be eliminated.

A NEW STAR IN CENTAURUS.[1]

A NEW star in the constellation Centaurus was found by Mrs. Fleming on December 12, 1895, from an examination of the Draper Memorial photographs. Its approximate position for 1900 is in R.A. 13h. 34·3m., Dec. −31° 8′. Attention was called to it from the peculiarity of the spectrum on a plate taken at Arequipa on July 18, 1895, with the Bache Telescope, exposure 52 mins. The spectrum resembles that of the nebula surrounding 30 Doradus, and also that of the star A.G.C. 20937, and is unlike that of an ordinary nebula or of the new stars in Auriga, Norma, and Carina. This object is very near the nebula N.G.C. 5253, which follows 1·28s., and is north 23″. No trace of it can be found on 55 plates taken from May 21, 1889, to June 14, 1895, inclusive. On July 8, 1895, it appeared on a chart plate, and its magnitude was 7·2. On a plate taken July 10, 1895, its magnitude was also 7·2. On December 16, 1895, a faint photographic image of it, magnitude 10·9, was obtained with the 11-inch Draper Telescope, although it was very low, faint, and near the sun. On this date, and on December 19, it was also seen by Mr. O. C. Wendell with the 15-inch Equatorial as a star of about the eleventh magnitude. An examination with a prism showed that the spectrum was monochromatic, and closely resembled that of the adjacent nebula. Although the spectrum is unlike those of the new stars in Auriga, Norma, and Carina, yet this object is like them in other respects. All were very faint or invisible for several years preceding their first known appearance. They suddenly attained their full brightness and soon began to fade. Like the new stars in Cygnus, Auriga, and Norma, this star appears to have changed into a gaseous nebula.

The star which was photographed in 1887 in the constellation Perseus apparently belongs to the same class. Its approximate position for 1900 was in R.A. 1h. 55·1m., Dec. + 56° 15′. Eight images of it were obtained on the Draper Memorial photographs in 1887, all in exactly the same place. Its photographic spectrum showed the hydrogen lines Hβ, Hγ, Hε, and a line near 4060, bright, and from this property it was discovered by Mrs. Fleming and assumed to be an ordinary variable star of long period. The spectrum is so faint that it is impossible to decide from it whether it should be regarded as a new star of the class of Nova Aurigæ, or as a variable star of long period like *o* Ceti, as the hydrogen lines are bright in both these classes of objects. This star soon faded away and does not appear on 81 photographs taken during the last eight years. It has also been repeatedly looked for in the sky without success. No trace of this star appears on two photographs taken November 3, 1885, and December 21, 1886.

A list of the new stars hitherto discovered is given in the annexed table. Some changes would occur in it, if changes were made in the definition assumed for this class of objects. Early observations of several objects frequently called new stars, but which may have been comets, and whose positions are uncertain, have not been included. The stars T Bootis and U Scorpii have not been included, although they also may be new stars, as only one appearance of each has been noted. The name of the constellation is followed by the right ascension and declination for 1900, and the greatest brightness. The year of appearance is followed by the name of the discoverer; or, in the case of the earlier stars, of the principal observer.

[1] *Harvard College Observatory Circular*, No. 4.

NEW STARS.

Constellation.	R.A. 1900.	Dec. 1900	Mag.	Year.	Discoverer.
	h. m.	° ′			
Cassiopeia	0 19·2	+63 36	−5?	1572	Tycho Brahé
Cygnus	20 14·1	+37 43	3?	1600	Janson
Ophiuchus	17 24·6	−21 24	−4	1604	Kepler
Vulpecula	19 43·5	+27 4	3	1670	Anthelm
Ophiuchus	16 53·9	−12 44	5	1848	Hind
Scorpius	16 11·1	−22 44	7	1860	Auwers
Corona Borealis	15 55·3	+26 12	2	1866	Birmingham
Cygnus	21 37·8	+42 23	3	1876	Schmidt
Andromeda	0 37·2	+40 43	7	1885	Hartwig
Perseus	1 55·1	+56 15	9	1887	Fleming
Auriga	5 25·6	+30 22	4	1891	Anderson
Norma	15 22·2	−50 14	7	1893	Fleming
Carina	11 3·9	−61 24	8	1895	Fleming
Centaurus	13 34·3	−31 8	7	1895	Fleming

THE ETHNOLOGY OF THE BRITISH UPPER CLASSES.

IN "L'Anthropologie," tome v. (1894) Dr. Beddoe has published the results of his work on the cephalic index of the inhabitants of Great Britain and Ireland. Part of his work deals with the cephalic indices of the Cambridge undergraduates, which were placed at his disposal by J. Venn, F.R.S. He has also inquired into their height and weight, classing them in accordance with their place of origin; but he has taken no account of the colour of the eyes of these undergraduates, and so I thought it would be as well to continue his researches, now that there is more material to hand, paying especial regard to the colour of the eyes. It will be seen by a glance at the table appended that it is in a mere fraction of the total number that the eyes are described as "light." This is due to the standard of comparison afforded by the Anthropometrical Committee of the Cambridge Philosophical Society, and is a disadvantage which does not apply to the dark eyes, and it is therefore by confining our attention to the percentages of the dark eyes in the various groups that we get our best results.

I have examined, through the kindness of Dr. Venn, some 1400 more instances since Dr. Beddoe published his results in "L'Anthropologie." In the three special cases of cephalic index, height and weight, where my results are only a continuation of Dr. Beddoe's, I have, in the following table, incorporated his results in mine, so as to gain the advantage of having a larger number of instances to deal with. On glancing at the figures below, one is at first inclined to think that the upper classes of the various races, which have given rise to the present population of Great Britain and Ireland, have entirely fused with one another, as the differences between their respective indices are but small; but the following two points indicate, I think, that the fusion is still incomplete:—

(1) *Stature.*—The Welsh are about ·8 inch shorter than the English, and as much as 1·5 inches shorter than the Scotch. They are also a slighter race, they weigh less, are less strong muscularly, and have a smaller breathing capacity.

The English, again, are about ·7 inch. shorter than the Scotch, weigh about 4 lb. less, and are less strong.

(2) *Colour of Eyes.*—The greatest percentage of dark eyes is to be found in those undergraduates whose origin is in the west and south-west (34·76 per cent.). The smallest among those who come from the east and south-east (18·75 and 15·38 respectively).

The cephalic indices of the various groups do not show much difference. The chief point of interest is the fact that the dark-eyed English have broader and loftier heads than is the case elsewhere in England. This is just the reverse of what Dr. Beddoe found: "L'association," he says (p. 662), "de la couleur brune ou foncée des cheveux avec la dolichocéphalie parait être à peu près générale."

I may perhaps incidentally touch on a curious point, which is possibly due to nothing more than the instrument used, and that is, that one can, on the average, see further with the right eye than with the left. The average difference is fairly constant, and amounts to about two centimetres. Whether it is due to anything beyond external causes, I hardly like to say.

	Cephalic index.		Altitudinal index.		Height.		Weight.		Colour of eyes.			Span of arms, *i.e.* greatest distance between finger-tips.		Sight, *i.e.* greatest distance seen in centimetres.					Strength measured as pull by archer.		Strength measured by squeezing power of hand in pounds.				Breathing capacity, in cubic inches.	
	No. of cases.	Index.	No. of cases.	Index.	No. of cases.	Height in inches.	No. of cases.	Weight in pounds.	No. of cases.	Per cent. dark.	Per cent. medium.	Per cent. light.	No. of cases.	Span in inches.	No. of cases.	Right eye.	No. of cases.	Left eye.	Mean of both eyes.	No. of cases.	Strength in pounds.	No. of cases.	Right hand.	No. of cases.	Left hand.	Mean.	No. of cases.	Cubic inches expired.
North England ...	889	79·26	329	71·59	898	69·04	364	153·85	334	30·24	68·86	0·9	351	71·55	355	61·9	328	60·4	61·65	356	83·7	329	86·5	353	80·6	83·55	356	239·6
Midlands	309	79·1	113	71·63	315	68·84	319	153·4	120	30·83	68·33	0·83	131	71·06	130	57·7	128	55·7	56·7	131	83	122	84	125	77·8	80·9	127	255
West and South-West	207	79·17	99	72·2	207	68·07	207	154·7	98	34·7	64·28	1·02	104	71·4	101	64·0	101	60·2	62·1	104	83·5	98	88·1	97	83·4	85·75	101	262·85
East England	213	79·43	79	71·97	214	68·51	211	152·9	80	18·75	80·0	1·25	85	71·41	87	54·6	87	51·5	53·05	87	79	84	82·8	86	76·6	79·7	89	230
South-East England	59	79·4	28	72·22	60	68·64	58	153·5	26	15·38	84·62	0·0	32	70·8	27	63	31	59·4	61·2	29	77·6	29	83·6	30	80·2	81·9	32	262
South England ...	1125	78·96	398	71·91	1131	68·99	468	151·6	403	31·27	67·49	1·24	467	71·03	445	60·4	451	58·4	59·4	459	81·3	455	84	451	78	81	461	258
Total, England ...	3019	79·104	1046	71·819	3042	68·887	1627	153·1	1061	29·88	69·09	1·04	1175	71·25	1143	60·5	1116	58·3	59·4	1166	82·46	1117	85	1162	79·2	82·1	1164	258·1
Scotland	211	71·972	76	71·09	212	69·53	213	157·1	75	30·66	69·33	0·0	80	71·48	78	59·8	78	56·5	58·2	79	84·5	81	84·6	82	81·6	83·1	81	265
Ireland	189	78·993	88	71·58	188	69·18	188	157·8	81	20·99	79·01	0·0	90	71·48	85	61·6	86	61·1	61·35	88	83·1	85	85·3	84	81·8	83·6	84	259
Wales	128	79·44	55	70·93	128	68·05	128	149·23	55	30·91	63·64	5·45	60	69·68	60	62	59	58·5	60·25	59	82·5	60	82·9	58	77	80	60	249·2
Total, British Isles...	3838	79·08	1265	71·72	3871	68·934	2159	153·67	1273	29·33	69·43	1·1	1405	71·22	1368	60·6	1339	58·38	59·49	1392	82·62	1343	84·9	1386	79·41	82·16	1396	258·2
Dark-eyed English	93	79·93	80	72·46	93	68·7	85	152·9	93	100	0·0	0·0	93	71	89	65·1	89	62	63·5	93	84·1	90	85·8	90	81·7	83·75	89	264

The table in the adjoining column shows, in each case, the number of instances examined, and the averages calculated from them.

R. J. HORTON-SMITH.

THE SMITHSONIAN INSTITUTION.

I.

Promote, as an object of primary importance, *institutions for the increase and diffusion of knowledge*: in proportion as the structure of a government gives force to public opinion, it is essential that public opinion should be enlightened.—GEORGE WASHINGTON, 1796.

I bequeath the whole of my property to the United States of America to found at Washington *an establishment for the increase and diffusion of knowledge among men.*—JAMES SMITHSON, 1826.

Let the trust of James Smithson to the United States of America be faithfully executed by their representatives in Congress: let this result accomplish his object—*the increase and diffusion of knowledge among men.*—JOHN QUINCY ADAMS, 1846.

THE name of the Smithsonian Institution is a household word in America, while in every centre of intellectual activity abroad, it is regarded as the chief exponent of the scientific thought of the people of the United States, thus representing that which is deemed in other lands to be a chief glory of our nation; for, whatever may be thought of American art and literature, or of American instituttons in general, the science of America is everywhere accepted as sound, vigorous, and progressive.

Its activities embrace every branch of human knowledge, for it was the intention of its organisers that art as well as science—the beautiful as well as the true—should receive its fostering care.

The Smithsonian Institution, although it bears the name of a foreigner, has for half a century been one of the most important agencies in the intellectual life of our people. It has been a rallying-point for the workers in every department of scientific and educational work, and the chief agency for the free exchange of books, apparatus of research and of scientific intelligence between this and other countries. Its publications, which include more than two hundred volumes, are to be found in all the important libraries in the world, and some of them, it is safe to say, on the work-table of every scientific investigator. Its great library constitutes an integral and very important part of the national collection at the Capitol, and its museum is the richest in existence in many branches of the natural history and ethnology of the New World. Many wise and enlightened scholars have given their best years to its service, and some of the most eminent men of science to whom our country has given birth, have passed their entire lifetime in working for its success.

The most important service, however, which the Smithsonian Institution has rendered to the nation—intangible, but none the less appreciable—has been its fifty years of constant co-operation with the Government, with public institutions, and with individuals in every enterprise, scientific or educational, which needed its advice, support, or aid from its manifold resources.

Visitors to the city of Washington carry away pleasant memories of the quiet group of buildings among the trees in the Mall, filled with the wonders of nature and art, and the trophies of scientific discovery. Few of them, however, have had the opportunity to visit the administrative offices and laboratories, or to gain any idea of the real significance and value of the work which is being carried on within those walls.

It is probable that no class of the American people appreciates the work of the Institution more fully than the members of Congress. This has been clearly shown by the uniform liberality with which, throughout many successive terms, regardless of changes in the political complexion of the administration, they have supported its policy; by the care with which they disseminate its reports; by the judgment with which they select their representatives upon its Board of Regents, and, above all, by the scrupulous care with which they protect the Institution in its independence of political entanglements. That the Institution has accomplished so much in the past is largely due to the support which it has received from these practical men of

[1] By Dr. G. Brown Goode. This paper was printed for distribution at the Atlanta Exposition, and has since been revised and extended for NATURE. It is based upon the author's essay on "The Smithsonian Institution," printed in 1885, in "The Chautauquan" (vol. v. pp. 275-79), and upon later writings, especially "The Origin of the National Scientific and Educational Institutions of the United States" (Report American Historical Association, 1889, pp. 53-100); "The Genesis of the National Museum" (Smithsonian Report, 1891, ii. pp. 273-380), and the article "Smithsonian Institution" in Johnson's Cyclopædia, new edition (vol. vii. 1895).