able. The weight of the brain differed very much according to the age or physical conditions of the person when he died, and there were certain diseases which went to increase the specific gravity. But when the actual capacity of skull was found they had the actual capacity of the brain at the time of health.

There was another very important reason why they laid stress on obtaining the capacity of the crania in preference to the other method. It was because all their museums now contained a number of skulls from different parts of the earth, some of which were very inaccessible to scientific observation, and it was, of course, impossible to ascertain the actual weight of the brains of these people after death.

Then, again, how could they get the capacity of the skull by the weight of the brains in cases where the races had become extinct, such as the Tasmanians, many of the Polynesians, the ancient Britons, and the ancient Irish, and others, specimens of whose skulls they possessed, and by which they could ascertain the capacity of the brain? He supposed he would be expected to say at once whether he attributed any great and direct importance to the weight and age of the brain as an indication of intelligence. Well, he thought it was one of the very many points that had to be considered in this question; but he thought there were a great many other things to be remembered in this view of the question. For instance, many people had large brains and did not know how to use them, and some who knew how to use them did not try to do it. They would see that many of the races that were naturally considered the higher races, and had taken the lead in the civilization of the world, had undoubtedly larger cranial capacities than the peoples who were at the bottom of the ladder of civilization. He would never accept the mere fact of a man's head being large as an indication of superior intelligence, but it was one point to be considered.

The measurement of the skull was not only an important but it was also a difficult work, more difficult in fact than a great many people supposed, and a great many of the uncertain results that had been obtained on this subject were owing to the persons who had taken the matter in hand not having yet discovered the best and most certain method of carrying out the investigation.

A large number of measurements published were only of an approximate value, owing to the numerous fallacies and difficulties experienced in arriving at a satisfactory method of measurement. Nothing, apparently, could be easier than to take a skull and stop the cavities, and pour some fluid into it, and then pour it out and measure it; but they could not do this with the skull, as the bone was very porous and full of minute invisible holes, through which the fluid soaked as it would through a sponge. It was only by making the skull waterproof that they could seek to measure its cavity by a fluid. He had a skull by him which had been so prepared. The large holes had been filled with wax and the skull soaked in melted paraffin, which filled up the minute cavities, and when it was cooled it was as impervious to any fluid as delft. But the materials that had to be used in testing the capacity of the skull must be something solid. Various things, such as shot, grain, etc., had been used. He would pass over the various methods that had been tried and failed, and which would be found recorded in the *Transactions* of the Anthropological Society of Paris, and speak of two methods which, at the present time, meet with the greatest amount of success. One was the method of M. Broca, and the other the method of Mr. Busk. The latter had shown such good reasons for his plan that he thought it particularly safe to try it, and after doing so he had adopted it with some modifications. He filled the skull with mustard seed well shaken, and pressed in with the thumb, and then poured the seed into a long wooden box with glass sides, in which it was well shaken and pressed down. The figures on the glass indicated the spaces filled. This he thought was the most satisfactory way as yet invented, and they could hardly hope for better. He always kept his experimental skull by him when measuring other skulls, in order that he might occasionally go back to it to see if he had gone wrong.

Now, as to the measurement of the skulls of the different races of the human family, a very important point to consider, and a very difficult one, was the sexes, because there was a great difference in the size of the skulls; a much greater difference than there was between men of different races. To get the average of any race they must get a large number of skulls, and he must say their collection was very insufficient at present. According to a comparison between the skulls of sixty-three men of various races, and skulls of twenty-four women, the ratio of the woman's skull to the man's was as 854 to 1,000. The largest no mal skull he had ever measured was as much as 2,075. He knew nothing of its history. It might have been the head of a great philosopher, but unfortunately they were not in the habit of getting the heads of philosophers in their museum. Nearly all the English skulls were those of persons in the lowest ranks of life. It was these they had to compare with the specimens of other races. The smallest head he had measured was 960 centimeters, and that belonged to one of those peculiar people in the center of Ceylon, who were now nearly extinct. The largest average capacity of any human head he had measured was that of a race of long, flat headed people on the west coast of Africa. The Laplanders and Esquimaux, who were a very small people, had very large skulls. The latter gave an average measurement of 1,546. He then came to the English skull, which was nearly the same size—1,542; but, as he had said, they belonged to the lower grades of English skulls. He could not tell them anything about Irish skulls, for there was not a single specimen of the Irish skull in any London museum. The inhabitants of the Canary Islands give a capacity of 1,498; the Japanese, 1,486; the Chinese, 1,424; the modern Italian, 1,475; the ancient Egyptian, 1,464; the true Polynesians, 1,454; negroes of various kinds, 1,377; the Kaffirs, 1,348; Hindoos, 1,306. They then came to the Australian aborigines, who were among the smallest, only giving an average of 1,283. There were two races still below the Australians, namely, the Andamanese, who were a very diminutive people, with a capacity of 1,220, and the Veddahs, of Ceylon, who had an average skull.

The President (Professor Huxley) said he might, without hesitation, offer the best thanks of the Section to Professor Flower for the important and interesting paper he had just read. Persons not ordinarily occupied with scientific pursuits might not be aware of the amount of care that had to be taken when it was desired to do any good in scientific matters in obtaining data, which data would, when obtained, pack into the very smallest possible results. It would be seen what care was required to obtain measurements of the cubical contents of the skulls, and yet the whole of the labor, if Mr. Flower published his paper, as he hoped he would, would go into the space occupied by the three or four rows of figures. There was one very interesting question he wished to put to Mr. Flower—whether it was possible to establish not only a series of absolute measurements of the capacities of the skull, but also some kind of index of capacity in which can be expressed the ratio of capacity of the skull to the stature of the person to whom it belonged; or if it was impossible to obtain that, yet even to obtain such data as would show the relation between the contents of the skull and the length of the part of the skull which was, as it were, the foundation of the skull.

Paper Fiber from Woods and Plants.

According to the experience of the paper manufacturers, De Naeyer & Co., of Belgium, different sources of paper fiber furnish the following percentages:

WOODS.

Common Names.	*Scientific Names.*	*Yield Per Cent.*
Heath	Erica vulgaris	27·14
Filbert trees	Corylus avellana	31·50
Alder	Alnus glutinosa	34·30
Bamboo	Bambusa thonarsu	34·82
White pine	Abies pectinata	34·60
Horse chestnut	Æsculus hippocastanus	38·26
Oak	Quercus robur	29·16
White poplar	Populus alba	35·81
Red pine	Pinus sylvestris rubra	32·28
Elm	Ulmus campestris	31·81
Ash	Fraxinus excelsior	32·28
Black alder	Rhamnus frangula	37·82
Fir	Pinus sylvestris	35·17
Osier	Salix alba	29·50
Canadian poplar	Populus Canadensis	36·88
Beech	Fagus sylvatica	30·90
Pitch pine	Pinus Australis	31·08
Walnut	Juglans reg a	26·52
Willow	Salix alba	37·82
Birch	Betula alba	33·80
Italian poplar	Populus Italica	36·12
Acacia	Robina pseudoacacia	34·10
Lime tree	Tillia Europea	38.16
Rattan	Calamus verus	29.19
Aspen tree	Populus tremula	35·00

HERBACEOUS PLANTS.

Camelina	Camelina sativa	29·16
Bent grass	Ag ostis spica venti	45·82
Buckwheat	Fagopyrum esculentum	30·60
Marsh rush	Scirpus palustris	41·70
Banana	Musa ensete	31·81
Mateva	Hyphœne Thebaica	26·08
Oats	Avena sativa	35·08
New Zealand flax	Phormium tenax	32·71
Asparagus stalks	Asparagus officinalis	32·56
Marsh grass	Glyceria aquatica	38·80
Maize	Zea maïs	40·24
Reed	Phragmites vulgaris	41·57
Canna	Canna	20·29
Rye	Secale cereale	44·12
Giant nettle	Urtica dioica	21·66
Sugar cane	Saccharum officinarum	29·15
Barley	Hordeum vulgare	36·21
Sedge	Carex	33·86
Wheat	Triticum sativum	43·14
Fromenteau	Baldengera Arundinacia	46·17
Blue flag	Enodium cœruleum	40·07
Hop	Humulus lupulus	34·84
Canary grass	Phalari Canariensis	44·16
Wild broom	Spartium scoparium	32·43
Dog's grass	Triticum repens	28·38

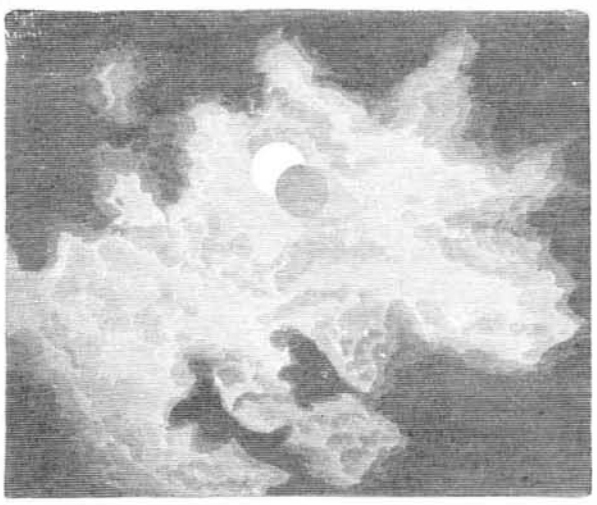
The Whitehead Torpedo in Battle.

Admiral Po ter, U.S.N., has but small regard for the torpedo most approved by European authorities. In his article on torpedo warfare, in the September number of the *North American Review*, he says:

"To show the unreliability of the Whitehead torpedo, I will refer to the engagement between the Peruvian ironclad Huascarand two British men-of-war. The Shah, one of the latter, sent a fish torpedo against the Huascar, which, seeing bubbles of air rising to the surface, avoided the machine, and it ran straight into a harbor near by; there, the compressed air being gradually expended, the torpedo rested quietly alongside a Dutch merchant vessel at anchor, with no power to do harm. The Dutch captain, seeing what he supposed to be a live fish alongside, got out his fishing tackle, but was disgusted at not getting a bite; only after several unsuccessful attempts with a harpoon did he discover the nature of his visitor. The Whitehead may, under certain circumstances, be a destructive instrument, but, owing to its erratic movements, it is liable in the heat of battle to prove dangerous to its friends. The torpedo vessel will, in the end, I am convinced, prove a most effective and certain means of offense, as its movements are at all times under the entire control of its commander, who can select his own time for attack and retreat."

THE RECENT ECLIPSE OF THE SUN.

Our engraving is from a photograph of the eclipse taken July 29 by Mr. J. E. Ender, of Yorkville, Ill. The photograph itself is a beautiful specimen of the art; and although



our engraver has done very well, still the picture does not show the delicate and interesting gradations of light which the original presents.

ASTRONOMICAL NOTES.

BY BERLIN H. WRIGHT.

PENN YAN, N. Y., Saturday, October 5, 1878.

The following calculations are adapted to the latitude of New York city, and are expressed in true or clock time, being for the date given in the caption when not otherwise stated.

PLANETS.

	H.M.		H.M.
Mercury rises	4 54 mo.	Saturn in meridian	11 00 eve.
Venus rises	4 45 mo.	Uranus rises	2 43 mo.
Mars rises	5 34 mo.	Neptune rises	6 45 eve.
Jupiter sets	11 43 eve.	Neptune in meridian	1 34 mo.

FIRST MAGNITUDE STARS, ETC.

	H.M.		H.M.
Alpheratz in meridian	11 03 eve.	Procyon rises	0 19 mo.
Mira (var.) rises	7 27 eve.	Regulus rises	2 22 mo.
Algol (var.) in meridian	2 05 mo.	Spica	invisible.
7 stars (Pleiades) rise	7 13 eve.	Arcturus sets	8 24 eve.
Aldebaran rises	8 32 eve.	Antares sets	7 41 eve.
Capella rises	6 00 eve.	Vega in meridian	5 35 eve.
Rigel rises	10 39 eve.	Altair in meridian	6 47 eve.
Betelgeuse rises	10 24 eve.	Deneb in meridian	7 39 eve.
Sirius rises	0 44 mo.	Fomalhaut in meridian	9 52 eve.

REMARKS.

Saturn will be about 7° south of the moon early in the evening of October 9.

To the amateur telescopist it will be interesting to observe Jupiter's satellites October 9, from 6h. 55m. evening to 10h. 34m. evening. At 6h. 55m. evening the first begins a transit, and with small telescopes seems to disappear at Jupiter's eastern limb, larger ones being able to follow it in its passage across the disk. At 8h. 14m. its shadow also crosses the eastern limb, and follows the course of the satellite, and may be seen with a telescope of very ordinary power and aperture. At 9h. 15m. the satellite emerges from the western limb, and its shadow 1h. 19m. later. At 10h. 34m. evening, his satellites will be disposed as follows: The first is close to the western limb, its apparent motion being from the planet; the second is three times as far east as the first was west, and is approaching the planet; the third is twice as far east as the second, and moving from Jupiter; while the fourth is almost at its greatest distance from the planet east, being about four times the distance of the third and nearly stationary.

Roasted Table Salt in Intermittent Fever.

Les Mondes quotes from a Marseilles medical journal a simple remedy for periodical fevers, which has been used very efficiently for many years by Dr. Brokes in his journeys in Hungary and America.

The directions are to take a handful of powdered white salt, such as is used in kitchens, and roast it in a clean stove (new, if possible) with moderate heat till it becomes of a brown color, like that of roasted coffee. The dose for an adult is a soupspoonful dissolved in a glass of warm water, taken at once. It should be stated that when the fever makes its appearance at intervals of 2, 3, or 4 days, the remedy should be taken fasting, on the morning of the day following the fever. To overcome the thirst excited by the salt, but a small quantity of water should be taken through