

of the timber taken transversely exhibit most nearly vertical lines of grain.

The modulus of rupture by transverse stress varies, for yellow pine, from  $R = \frac{3}{2} \frac{Wl}{bd^2} = 10,000$  to 17,000, the highest values being usually obtained from well-seasoned wood. An average value may be taken as  $R = 13,000$  for good timber, which in the formula  $W = C \frac{bd^2}{l}$  gives  $C = 866$  pounds or, practically,  $W = 9000 \frac{bd^2}{l}$  for good yellow pine.

The modulus of rupture varies as irregularly and with as little regard to size or density of the material as does the co-efficient for elasticity.

In the use of such materials, the only safe course for the designing and constructing engineer is evidently to adopt a moderate value of the modulus in proportioning his work, and by careful inspection and test to secure the rejection of all material which is not of good quality.

As has been seen, careful inspection may sometimes lead to the selection of material twenty-five per cent. superior to the average of good timber, and fifty per cent. more valuable than the lower grades such as are often sold in our markets.

The Paper was illustrated by a series of tabulated statements, being the result of experiments made to arrive at the conclusions prescribed in this abstract.

#### BOOKS RECEIVED.

##### MORTUARY CUSTOMS AMONG THE NORTH AMERICAN INDIANS.\*

The primitive manners and customs of the North American Indians are rapidly passing away under influences of civilization and other disturbing elements. In view of this fact, it becomes the duty of all interested in preserving a record of these customs, to labor assiduously, while there is still time, to collect such data as may be obtainable. This seems the more important now, as within the last ten years an almost universal interest has been awakened in ethnologic research, and the desire for more knowledge in this regard is constantly increasing. A wise and liberal government, recognizing the need, has ably seconded the efforts of those engaged in such studies by liberal grants from the public funds; nor is encouragement wanted from the hundreds of scientific societies throughout the civilized globe. The public press, as the mouth-piece of the people, is ever on the alert to scatter broad-cast such items of ethnologic information as its corps of well-trained reporters can secure. To induce further laudable inquiry, and to assist all those who may be willing to engage in the good work, is the object of this preliminary work on the Mortuary customs of the North American Indians, and it is hoped that many more laborers may, through it, be added to the extensive and honorable list of those who have already contributed.

It would appear that the subject chosen should awaken great interest since the peculiar methods followed by different nations, and the great importance attached to burial ceremonies, have formed an almost invariable part of all works relating to the different peoples of our globe; in fact no particular portion of ethnologic research has claimed more attention.

In view of these facts it might seem almost a work of supererogation to continue a further examination of the subject; for nearly every author, in writing of our Indian tribes, makes some mention of burial observances; but these notices are scattered far and wide on the sea of

this special literature, and many of the accounts, unless supported by corroborative evidence, may be considered as entirely unreliable. To bring together and harmonize conflicting statements, and arrange collectively what is known of the subject, has been the writer's task. This volume forms the third of a series, the first of which, entitled "Introduction to the Study of Indian Languages," was written by Major J. W. Powel, the director of the Bureau of Ethnology, Washington; the second being by Col. Garrick Mallery, and entitled, "Introduction to the Study of Sign-Language among the North American Indians."

The following provisional arrangement of burials has been adopted in arranging the facts presented in this work.

1. BY INHUMATION in pits, graves, holes in the ground, mounds, cists, and caves.
2. BY CREMATION, generally on the surface of the earth, occasionally beneath.
3. BY EMBALMENT, or a process of mummifying, the remains being afterwards placed in the earth, caves, mounds or charnel house.
4. BY AERIAL SEPULTURE, the bodies being deposited on scaffolds, or trees, in boxes or canoes.
5. BY AQUATIC BURIAL, beneath the water or in canoes, which were turned adrift.

Major J. W. Powel gives the assurance that to those who are willing to take part in this work by earnest and faithful research, Dr. Yarrow will give full credit for their work in his final publication, and we would suggest that those able and willing to assist should put themselves in communication with the Bureau of Ethnology, Smithsonian Institution, Washington, and request instructions as to the best methods of recording their work.

WE have received the second chapter of a serial article, published in the *Journal of Nervous and Mental Diseases*, and entitled the "Architecture and Mechanism of the Human Brain." Its author, Dr. Spitzka of this city, one of our own contributors, intends in this article to, build up the brain before the reader's eye, as it were, beginning with the simplest foundations and gradually erecting thereon the higher superstructures which are the basis of the intellectual operations. Throughout the chapters thus far issued the writer has interlarded hundreds of interesting and suggestive observations drawn from the fields of Comparative Cerebral Anatomy and Embryology. The style is not the least creditable feature of the work, and especially its preliminary chapter, which is as easy reading as a novel, and the complex features of the structure of the most complete organ in the body becomes the property of the reader almost without effort on his part.

The recent number of the *American Journal of Microscopy* contains, among other articles, the following: *Pelomyxa, Palustris*, and other Rhizopoda, by W. G. Lapham—An improved glass for the collection and examination of Deposits (with drawings): Highest Magnifying Powers, by Allen Y. Moore: Several letters of interest, reports of societies, and useful notes.

We were pleased to see *Nature*, in a recent number, give a handsome recognition of the merits of this journal which we conscientiously indorse.

The *American Monthly Microscopical Journal* for August has also some very useful articles on the preparation and mounting of objects. It gives a New Form of Injecting Apparatus, by Mr. Justin Spaulding: A Useful Culture-Cell, by Dr. George M. Sternberg: Histology of the Foetal Lung. There are also two articles of a series now publishing by this journal, which will prove valuable to microscopists—the Classification of the Protista, by Haeckel (translated), and a description of the "Family Volvocina."

\*Introduction to the Study of Mortuary Customs among the North American Indians. By Dr. H. C. Yarrow, Act. Asst. Surg. U. S. A., Smithsonian Institution, Washington, Bureau of Ethnology. J. W. Powel, Director.