To give a few instances in the Ojebway tongue: nanan, 5; nanominag, 5 globubar, animate objects, as turnips, seeds, etc.; nanonag, 5 boats or canoes; nanoshk, 5 breadths of cloth; and nanoshkin, 5 bags full (nūshkin meaning full); nanosag, 5 things of wood; nanwabik, 5 things of metal. In the Zimshian language (Brit. Columbia) guel means one if the object is neŭter, gaul, if masculine or feminine, gouuz-gŭn, when the thing is long like a tree or pencil, ga'at, if a fish or animal is spoken of, gŭmmet, if applied to a canoe; the other numerals change in the same way.

It is interesting to note that in the Ainu, the aboriginal language of Japan, a distinction is made in the numeral according as the object spoken of is animate or inanimate, thus: shinen, one person; shinep, one thing; tun, two persons; tup, two things.

Sault Ste. Marie, Ontario, June 22.

BLACK KNOT.

BULLETIN No. 40 of the New York State Experiment Station at Geneva (Peter Collier, director) contains a valuable summary of our present knowledge concerning this pest, from which the following is abstracted: —

The "Black Knot" is a disease of plums and cherries, which causes the formation of a hard, rough, black, wart-like surface on an enlarged or distorted outgrowth of the bark. The following statements, furnished by Mr. P. Groom Brandow of Athens, Green County, N.Y., indicate the former extent and value of the plum industry in that region and its total devastation by the Black Knot.

He states that, beginning at Cedar Hill, about four miles below Albany, the plum district included a belt about three miles on each side of the river and extended southward about thirty-six miles to Germantown. He began setting plums for a commercial orchard in 1861, and at one time had six thousand trees. Two of his neighbors each had about two thousand trees, and most of the farmers went into the business to a greater or less extent. It was no uncommon thing for a steamer to carry from one hundred to five hundred barrels of plums to New York at one trip. For four days' picking in one week he received $1,980. In 1884 he netted $8,000 from his plums, and the next year he rooted out over five thousand trees on account of the Black Knot. From twenty-five hundred young trees two to three years old, left at that time, he thinks he has not yet realized over $250.

It was formerly believed that Black Knot was produced by some gall insect, and it is not strange that this opinion prevailed on account of the gall-like character of the knots and the fact that they are frequently infested by insects. Some believed it to be the work of the curculio, others thought that it was not the curculio, but some other insect or cause that produced the knots. But several years ago Dr. W. G. Farlow published, in the first annual report of the Bussey Institute, the results of his investigations, which proved conclusively that the Black Knot is caused solely by a parasitic fungus which grows within the bark, and which is now known to science by the name of Plowrightia morbosa. It is recognized as growing on cultivated cherries, and also on the wild red or yellow plum, the Chicasaw plum, the choke-cherry, the wild red cherry, and the wild black cherry. It is commonly most destructive to the plum, but also seriously attacks the cherry.

The external appearance of the mature form of the Black Knot is generally well known. It appears at this stage as a rough, wart-like excrescence, or distorted outgrowth, from the bark of twigs and branches, and in severe cases may extend along the trunk for several feet. The first outward sign of the formation of a new knot is seen in a swelling of the tissue within the bark either in the fall or during the growing season of the tree. The swelling increases till the bark is ruptured, and over the surface thus exposed the fungus sends out numerous threads (hypæ), which produce a velvety appearance and are of an olive-green color. Microscopic examination of the velvety surface reveals multitudes of newly formed and forming spores borne on these upright threads. These spores (conidia) are called summer spores. When full grown they drop off from the supporting threads, and when carried by winds, insects, or other agencies, to another host-plant, under favorable conditions they may start growth and form a new centre of disease, from which in time other trees may also be infested, and thus spread the disease from tree to tree and neighborhood to neighborhood.

The best way to deal with thoroughly infested trees is to cut them down and burn them at once, thus insuring the destruction of the spores before they spread the disease any further. Trees not badly infested may be treated by cutting off affected branches some distance below the knot. This operation is best performed in the fall immediately after the foliage drops, because the winter spores are not formed at that time and consequently there is less danger of their being disseminated in the operation, and also because the work can be done more thoroughly when there are no leaves to hide the knot. The summer spores must also be taken care of in their season. As soon as there is any indications of the formation of a new knot, in the spring or during the summer, the branch on which it occurs should be cut and burned. The first outbreak will probably be noticed about the middle of May.

It is important to note that if a branch containing the knot be cut from the tree and thrown on the ground, the spores will ripen in due time just the same. Therefore the practice of collecting carefully and burning every knot cannot be too strongly urged.

The bulletins of the Massachusetts Experiment Station contain some experiments in the application of various substances for the purpose of destroying the knot. Kerosene, turpentine, linseed oil, sulphate of copper, and a mixture of red oxide of iron and linseed oil are mentioned among the substances tried. These seem to be effective in destroying warts to which they are applied to saturation, but care must be used with the turpentine and kerosene or the entire branch will be killed.

LETTERS TO THE EDITOR.

*** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

The editor will be glad to publish any queries consonant with the character of the journal.

On request in advance, one hundred copies of the number containing his communication will be furnished free to any correspondent.

A Plea for the Study of Psychology.

THE perusal of a report, written by a member of the visiting committee of one of our universities, induced me to write these lines. In the course of the report, the remark is made that the study of psychology is difficult, and therefore few students take the study. The importance and advantage derived from studying a subject are to be considered more than its difficulty. Its usefulness is determined by its educational value; and surely there is no subject of study more useful and beneficial than psychology; for all persons who deal with people require a knowledge of this subject.

Since psychology has been taken out of the field of metaphysics, and has entered the domain of the natural sciences, it has developed marvellously. The accuracy and stability it has attained are proportionate to its development. Biology has brought about this change. The former position psychology occupied was not so much to determine the relation and connection between mind and organism as to determine the science of pure thought. But now psychologists have studied the brain, anatomists have dissected the cerebral lobes, chemists have analyzed the different substances of the nerves and brain, and its size, weight, shape, and specific gravity have been taken into account for the sole purpose of determining psychical phenomena; also the laws of development have been applied to the phenomena of the human mind. The study of animal instinct, the growth of children, the customs, habits, and beliefs of early tribes and races, the study of defectives, the study of the brain and the senses and the logical connections of ideas, have all received their share of attention. There is no psychical phenomenon and no act of human conduct which does not come within the province of psychology. The sciences of ethics, of theology, of law, of jurisprudence, of history, of medicine, of pedagogy, and of politics presume a knowledge of the workings of the human mind. For who, unless competent to analyze correctly and justly the feelings, desires, and motives that prompt action, would desire to determine the motives that underlie human conduct or pass upon the laws of right and wrong. How much more humane would a person be in his judgment upon the acts and conduct of another if he knew the causes of them. How many mistakes would be avoided in the training and education of the young, if parents and teachers were more conversant with the principles of psychology. How much more accurate could judges be in dispensing justice, if they were less dependent upon their personal experience, and knew more about the principles of psycology. What material aid could lawyers give in establishing the truth, if they were well versed in the study of psychology. How many grave blunders could be avoided, if statesmen and legislators understood more thoroughly the spirit of the times and the popular mind.

That the larger portion of professional men know little, if anything, about psychology cannot be denied, and if they do know something about the study, their knowledge is either founded on their personal experience and on common maxims, or it is derived from some book written from some particular standpoint. Most of such knowledge is incorrect and wrong, and it is one of the objects of psychology to correct these false notions.

In conclusion, I will quote John Stuart Mill, who has given an excellent statement of the reasons why psychology should be studied. He says: "Psychology, in truth, is simply the knowledge of the laws of human nature. If there is anything that deserves to be studied by man, it is his own nature and that of his fellow-men; and if it is worth studying at all, it is worth studying scientifically so as to reach the fundamental laws which underlie and govern all the rest. There are certain observed laws of our thoughts and our feelings, which rest upon experimental evidence, and, once seized, are a clue to the interpretation of much that we are conscious of in ourselves, and observe in one another. Such, for example, are the laws of association. Psychology, so far as it consists of such laws, is as positive and certain a science as chemistry, and fit to be taught as such."

FRANKLIN A. BECHER.

Milwaukee, Wis.

Ball-Lightning.

DURING a severe thunderstorm yesterday the phenomenon of ball-lightning was seen in this village. An inspection of the locality shows that the ball was located between a telephone wire and a conductor-pipe about three feet distant, and was doubtless of the nature of an electrical brush preceding the disruptive discharge. It was of a reddish color, and exploded with a report like a musket; but did no damage, nor was it attended by any smell perceptible to those who saw it, although they were distant not more than five feet. M. A. VEEDER.

Lyons, N. Y., June 28.

BOOK-REVIEWS.

Animal Coloration. By FRANK E. BEDDARD. 8°. New York, Macmillan & Co.

IN the opinion of the writer the most concise and useful treatise upon the important subject of animal coloration has very recently appeared from the presses of Macmillan & Co. Its author, Mr. Frank E. Beddard, F.R.S., is especially favorably known in this country, among morphologists, through his numerous and admirable publications which have appeared in connection with his duties as prosector to the Zoological Society of London. That position, coupled with the fact that Mr. Beddard has made extensive collections of materials to illustrate his "Davis Lectures" on the subject of which his present volume treats, is ample evidence that he was peculiarly well fitted to deal with the subject. The work, a small octavo of some 300 pages, is gotten up with all that exquisite taste and style which has long ago made the house of the Macmillans so justly famous. Many excellent wood-cuts and several beautiful, colored lithographic plates illustrate its pages, they being especially devoted to giving striking examples of "protective coloration" among animals, as well as "protective mimicry," "sexual coloration," "warning coloration," "coloration as affected by environment," and numerous kindred topics. Completing the volume, we find a well-digested "General Index," and an "Index of Authors' Names." Among the latter we note those of many laborers in this country, and it is gratifying to see that America's work along such lines is upon the constant increase, and from year to year meets with enhanced favor. Our author, in his "Introductory," clearly defines the distinction between "Color" and "Coloration," the former being the actual tints which are found in animals, the latter simply referring to their arrangement or pattern. Of course, the terms become synonymous in uni-tinted animals. "The colours of animals are due either solely to the presence of definite pigments in the skin, or, in the case of transparent animals, to pigment in the tissues lying beneath the skin; or, they are partly caused by optical effects due to the scattering, diffraction, or unequal refraction of the light rays." Other matters more or less remotely bearing upon this part of the subject are briefly, though ably, dealt with, nothing of importance having been overlooked. Mr. Beddard has not remained satisfied with drawing upon any special class or group of animals for illustration, but has carried his investigations into all nature, touching in the most brilliant manner upon the significance of the colors and coloration of "deep sea forms," "cave animals," and indeed plant and animal growths from all parts of the globe. Nor has he omitted to discuss the theories of various other authorities than those advanced by himself; in short, the entire subject covered by this highly inviting field of research seems to be brought fully up to date, and in many instances the book even extends our knowledge. Biologists everywhere will thank Mr. Beddard for this contribution, and its modest price ($3.50) will constitute no real barrier to its soon appearing upon the shelves of every working naturalist in the United States.

R. W. SHUFELDT.

Takoma, D.C.

AMONG THE PUBLISHERS.

A NEW work on astronomy, entitled in "Starry Realms," has recently come from the press of J. B. Lippincott Company. The object of the work is to give the general reader some sketches of specially interesting matters relating to the heavenly bodies. The opening chapters are devoted to the more important relations of the sun to the earth, in which the author illustrates the different functions which the sun performs. The moon's history, and the phenomena attendant upon the lunar world, the planets, the meteors, the stars, are also ably considered. The work is embellished with ten full-page illustrations, and others in the text.

— Beginning with the July number, the magazine hitherto known as *Babyhood* will bear the name of *The Mother's Nursery Guide*, which expresses its purpose more fully and clearly than did the old appellation. There is no other change discernable in the essential features of the magazine, which looks back upon a