1885. The disinfecting-chamber is a room ten by twelve feet, and seven feet high. It is made fairly tight, and has one window, on which is a thermometer so arranged as to be read from the outside. A hole two inches in diameter in the door admits a rubber hose, which discharges superheated steam from a boiler on a steamboat. The temperature of the room can by this means be raised in seven minutes to 230° F. It may easily be raised to 250° F. or more, but is generally brought to 230° F., and maintained at that point for twenty minutes. The articles to be disinfected are hung about the room loosely, and when removed, which is done as soon as the heat will permit, are found to be perfectly dry, not even the polish on freshly laundered shirts being damaged or changed. Boots, trunks, valises, and all other articles made of leather, are quickly destroyed by the high temperature, and should not be subjected to this process. Wood-work and paint are also damaged, and articles which are joined by cement fall apart. This process can be quickly applied, easily managed, and is without appreciable cost. Its trustworthiness as a disinfectant has already been established. Dr. Durgin describes the experience of the Boston board of health with the disinfection of rags in bales by means of superheated steam admitted to the interior of the bales through perforated hollow screws. In the first trial of this method a pyrometer indicated the temperature of the steam after it escaped from the bale to be 300° F. Bacteriologists had already shown that disease-germs of the greatest resisting power had been sterilized within the bale of rags which passed through this process. The evidence seemed sufficient to establish the claim that this process was effectual in its power to disinfect bales of rags. Subsequent tests showed that the rags might be intensely hot in one place, while in another they were perfectly cold. In one of these trials the moist heat used was at 300° F., and the time of exposure was four minutes. In some parts of the bales, after being removed from the steam-boxes, the intense heat could not be borne by the hand a moment, while at other points the rags were found to be cold. A still further test was made with steam at 500° F., and the time of exposure increased to eight minutes. Three bales were examined after being thus treated, and the cold places were found as before. Dr. Durgin was informed by the overseer of the process that a large number of bales had been set on fire by this intense heat, and that water had been required to extinguish them. The conclusions drawn by Dr. Durgin from these experiments are that the moist heat passing from the centre to the surface of a bale of rags must encounter knots or bunches of rags varying in degrees of density and of resistance to the penetration of heat; that while the temperature of the principal part of the bale is raised to a degree far above what is required for disinfection, other parts of the bale are found to be wholly unaffected by the heat. That anthrax bacilli have been killed and metals melted at 240° F. within bales of rags subjected to this process are facts not inconsistent with the experiences in Boston, and do not prove the disinfection of the whole bale. The degree of heat, the amount of pressure, and the time necessary for moist heat to penetrate and raise the temperature of *all* parts of a bale of rags to a degree necessary for disinfection without burning the rags, have not yet been declared.

Ethik als Grundwissenschaft der Pädagogik: ein Lehrbuch für Seminaristen, Studierende und Lehrer. Von Dr. MAX JAHN. Leipzig, 1887.

BOTH theoretically and practically the two foundation-stones of a system of education are psychology and ethics, — the one to set forth the nature of the mental activities, the other to expound the actual and ideal tendencies of human action. The systems of education that are prominent in its history derive an important characteristic from the kind and amount of attention they give to one or other of these underlying sciences. The history of educational methods similarly shows a recognition of this twofold origin in all stages: it may be as the education of the State or of the army, and that of the Church or the home. To-day our education has taken on a scientific tone: this advance was conditioned upon the scientific development of psychology and ethics. Any system of education that shall have the slightest chance of gaining a hearing in the future must take full account of the modern aspects of psychology and ethics; and any teacher anxious to command success must have within himself the power to healthily unfold these two sides of human character.

Dr. Jahn's handbook is intended to present a convenient sketch of the natural basis of a moral education. It is an excellent example of the useful kind of a book which a German teacher can produce. It is admirable as much for what it does not do as for what it does. The danger in all such books is to deal in meaningless generalities, to drift into long casuistical discussions, to neglect the important moral aspect of little habits, and in general urging the teacher to present to the child an ideal from which its healthy instincts revolt as from something artificial and pitiable.

The first section treats of the self-regarding and the social instincts and feelings. These furnish the material upon which a moral education is to be built. They present themselves in the earliest days of life; they are the deepest elements in human nature; a child in whom they are weak is defective quite as much as one born without eyes. The development of these instincts is the beginning of a moral education. That is essentially a wrong method that allows the child to act as whim directs, excusing it on the ground of ignorance, and then suddenly deciding to begin its moral training, and subjecting it to an internal revolution, — quite as wrong as that other current method that begins at once to appeal to the child with high motives and far-reaching theoretical considerations, and is satisfied with the consciousness that the child is learning what is the *maximum bonum*, while constantly neglecting to exercise the little virtues. A moral training that keeps pace with the emotional susceptibilities as founded upon the growth of mind and body utilizes each element when it is at its best, and produces that firm tissue in which morality is embedded as a habit.

Passing from the consideration of morality as conditioned upon the psycho-physical organism, the main ethical conceptions and ideas that inspire the acts of mankind are described, ingenious distinctions are drawn, and suggestive hints are given, which any good teacher can illustrate and enlarge upon for himself.

It is not sufficient to feel what is right or to know what is good: the deep emotion and the high ideal find their true purpose in action. Weakness of will is a greater source of crime than lack of sympathy. That breach between knowing and doing — which Socrates could scarcely realize — is to-day a widely current source of break-down. The will needs to be trained by action: the daily occasions which call for the exercise of emotional kindness must find to hand a habit that does them without effort. Thus the will-power is left free for the larger occasions of life, on the same principle that allows us to walk and talk at once, because our automaton does the former, leaving the higher centres free for mental work.

The moral will realizes itself in the social government and customs of families, of tribes, of nations. The altruistic feelings here find an appropriate field of action, and the good man becomes a good father and a good citizen. The relations of life are diverse, but a common idea of final good runs through them all. Again: these relations are the result of a development; they are connected with a history which explains their defects, and shows the dear price paid for their virtues. It is in this way that Dr. Jahn understands the educational function of ethics. What is new about it is more in the spirit in which the position is upheld, and in the order and proportion in which the several points are emphasized. It is a book well adapted to present needs, and will doubtless find wide use in Germany. Would that we could substitute some such work as this for the dry compends of mental and moral science that we put in the hands of normal-school students.

NOTES AND NEWS.

AT the last session of Congress a considerable sum was appropriated for the purpose of the establishment of several stations throughout the country for the distribution of fish by the United States Fish Commission, similar to the central station situated in Washington. The law provided that these stations should only be established in places where sufficient protection is afforded by law to the fisheries. For the purpose of investigating these conditions, and of making some observations relative to the propagation and distribution of young fish, Col. M. McDonald of the commission

will make an extended trip through the North-west. He will visit Denver, and will probably establish there a station for the breeding of trout, then proceeding to the Columbia River, where he will investigate the nature of the protection afforded by the State of Oregon and Washington Territory to its fisheries. If his investigations are satisfactory, he will take immediate steps toward the establishment of several propagating and distributing stations along this river.

— The following schedule shows the location of the vessels of the United States Coast Survey and the officers ordered to them: the 'Bache' and the 'Eagre' are continuing the hydrographic work on the approaches to Vineyard Sound, Mass.; naval cadets G. R. Evans and H. A. Bispham have been ordered to the 'Eagre;' naval cadet G. R. Slocum and ensign J. H. Oliver have been assigned to the 'McArthur,' now working off the coast of Washington Territory; naval cadets C. S. Stansworth and J. E. Shindel have been ordered to the 'Blake,' Long Island Sound; ensigns W. B. Fletcher and M. Johnson, and naval cadet Joseph Strauss, have been detached from the 'Endeavor,' and ordered to the 'Gedney' off the coast of Maine; naval cadet Robert L. Russell has been assigned to the 'Scorcesby' on the coast of North Carolina; Lieut.-Commander W. H. Brownson, United States hydrographic inspector, is now in Portsmouth, inspecting the new launch building at that place for the Coast Survey.

— The increasing interest which is felt in anthropological science is shown by the number of treatises now in course of preparation by eminent writers on different branches of this science. The Marquis of Nadaillac has in hand a work to be entitled 'Mœurs et Monuments des Temps Préhistoriques.' Professor de Quatrefages is busy with the second part of his 'Introduction to the Study of the Human Races.' This will be followed by a volume on the black races, by Dr. Hamy; by one on the yellow races, by J. Montano; and by a third on the red races, by Lucien Biart. Prof. G. J. Romanes is engaged on a work on mental evolution in man, and Mr. C. Staniland Wake is preparing one on the law of marriage. Mr. Gladstone's forthcoming volume on the greater gods of Olympos is shown, by the portions already published, to have an important scientific as well as literary character.

— A geological survey has recently been established in the State of Arkansas, and Mr. John C. Branner has been appointed director. The prime object of the Legislature was to develop the economic resources of the State; and no provision has been made for work in botany or zoölogy. The annual appropriation is ten thousand dollars.

— Oliver P. Jenkins, M.A., M.S., professor of biology in De Pauw University, and Barton W. Evermann, M.S., professor of natural science in the Indiana State Normal School, have gone to Guaymas, Mex., on a zoölogical collecting-trip for the museums of De Pauw University, the Indiana State Normal School, and the Indiana University.

— Dr. Charles Rau, curator of the archæological department of the National Museum at Washington, died a few days ago at Philadelphia. The excellent arrangement of the large prehistoric collections at Washington is due to the deceased, who devoted most of his time and work to their study. His numerous writings on American archæology, contained in the annual reports of the Smithsonian Institution and in foreign and American journals, and his recent work, 'Prehistoric Fishing in Europe and North America,' will always be appreciated by scientists, and secure him a prominent place among American archæologists.

LETTERS TO THE EDITOR.

**** *The attention of scientific men is called to the advantages of the correspondence columns of* SCIENCE *for placing promptly on record brief preliminary notices of their investigations. Twenty copies of the number containing his communication will be furnished free to any correspondent on request.*

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

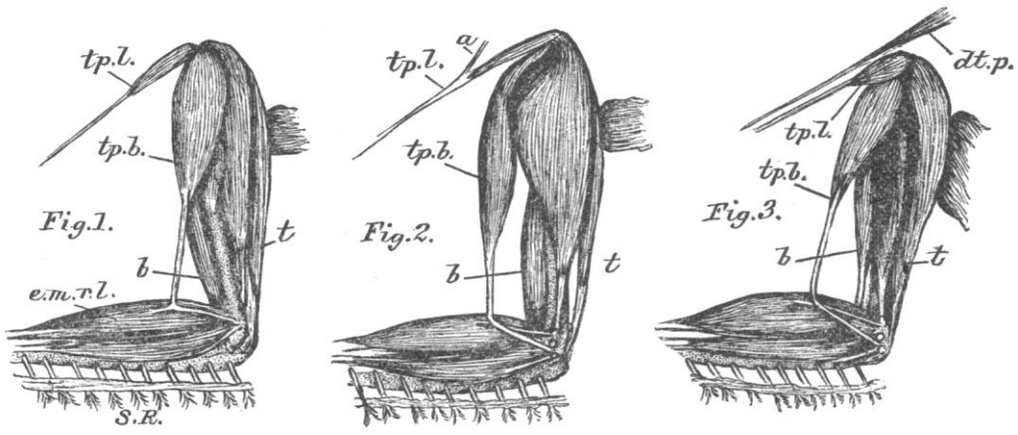
Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.

The Dermo-Tensor Patagii Muscle.

CIRCUMSTANCES over which I had no control were responsible for my forwarding recently the wrong drawings which appeared in my letter to *Science* last month (No. 229). Although the essential part of my communication was perfectly correct, I did not intend to have the patagial muscles in the wing of a toucan stand for those structures in the wing of a passerine bird.

If you will kindly reproduce the three figures I here send you, the matter will be made quite clear.

The lettering of these figures remains the same as in those of my first communication upon this subject. In Fig. 1, we have Garrod's representation of the patagial muscles in the wing of a picarian bird (*Rhamphastos*), wherein the tensor patagii longus is found



pretty much the same as it occurs in the clamatorial birds (*tp. l.*). Fig. 2 is my copy of this anatomist's wing-muscles in a typical passerine bird (*Icterus vulgaris*), and *a* is the stump of the tendon I referred to in my letter in No. 229: it is just possible that it may be intended for the tendon of the dermo-tensor patagii. Lastly, in Fig. 3, I give my own dissection of the patagial muscles in the wing of a typical passerine bird, where *dt. p.* directs attention to the muscle in question. My original description of it in *Science* is correct in all particulars; and the points in regard to it to be briefly noted are, that Garrod apparently overlooked it, and failed to recognize its taxonomical value; that it is characteristic of the true *Passeres;* that it is absent in the *Passeres mesomyodi*, but present in such a form as *Ampelis*, and again absent in the *Caprimulgi*, *Trochili*, and *Cypseli*. To this extent it is an important morphological character.

R. W. SHUFELDT.

Fort Wingate, N.Mex., July 8.

Mean Heights and Body Temperatures of the Eskimo in Hudson Strait.

WITHIN forty miles of North Bluff, Hudson Strait, I should estimate there were sixty families. On such as visited our station, I carried out my determination of their heights; and, by several references to a family who resided alongside of us, I obtained the