an undertone of melancholy which enhances their interest. That he enjoyed his fame at first, and the social entertainments it brought him, is manifest; and yet in one of the latest letters of the series, written from Philadelphia, he declares that he doesn't care any more for praise, or for abuse, or for reputation of a literary sort. For the rest, the letters reveal the same qualities of mind and character that his novels exhibit, with perhaps a little more tenderness as he unbosoms himself to his friends. There is the same smooth and brilliant style, the same satirical wit and badinage, the same keen eye for the superficial elements of life, and, it must be added, the same apparent inability to see any thing deeper. Only once or twice, as on pp. 35 and 95, does he strike a deeper vein; and one cannot help wondering whether he did not care for such things, or whether he did not venture to say what he thought about them. The letters are certainly very interesting, and will doubtless long continue to be favorites with readers of English literature.

NOTES AND NEWS.

THIS year is remarkable for the number of accidents in the Swiss Alps. It is stated by a Swiss newspaper that the season's death-roll is an unusually heavy one. In the short space of not quite a month twenty-two tourists met with accidents, of whom eighteen were killed. The accident on the Jungfrau (canton of Bern) involved the loss of six lives; that on the Falkniss (Granbündten), three. One life was lost in each case in the accidents on the Morteratsch glacier (Granbündten), Molesa (Waadt), Gantrist (Bern), Leissigergrat (Bern), Säutis (Appenzell), Kaisereck (Freiburg), Dent de Corjan (Waadt), Schächenthal (Uri), and Diablerets (Wallis). There were no guides among the eighteen killed, and only too many persons make ascents without guides. The four injured persons were all tourists.

—Although automatic telegraphy has long been known, says the *London Times*, it has not, so far as we are aware, proved a commercial success, owing to the circumstance that the instruments used in conducting it are expensive, the system slow, and the synchronism unreliable. In this system the messages are first written with insulating ink on tinned paper, and fed into instruments whereby they are transmitted. At the other end they are received on chemically prepared paper, but the messages soon fade. A very pronounced improvement upon this system was made by Mr. E. A. Cowper, C.E., some few years since, in his writing-telegraph. Here the movement of a pen at the sending-station introduced varying resistances into two electric circuits connected with the receiving-station. The varying currents acted upon two electro-magnets at the latter station, and caused them to impart movements in two directions at an angle to each other to a receiving-pen, which was made to reproduce the writing formed by the sending-pen. Mr. Cowper, however, was not alone in his invention of the writing-telegraph, for, as not unfrequently happens, another diligent worker was busy in the same direction and at the same time. This was Mr. J. Hart Robertson, an American electrician, who, without being aware of Mr. Cowper's invention, produced an instrument upon the same plan. He found, however, that it involved heavy expense in operating, and, pushing his research further, he in course of time produced an improved instrument. This is the writing-telegraph which we recently saw in successful operation in the American Exhibition. The principle involved consists in changing the strength of the electric currents by the movements of the pen when writing, varying the pressure on a series of carbon disks included in the circuits. By this means simplicity, greater speed, and the utmost accuracy in reproduction, are secured. In this apparatus the transmitter consists of two series of carbon disks placed at right angles to each other in a hard-rubber receptacle. Each pile of disks has a screw follower for adjusting the normal pressure of the disks on each other. A rod carrying the pen or stylus is pivoted at its lower end, and has pressure-points opposite the piles of disks. The operator manipulates the stylus or pen as in writing, although he can only move the point of the stylus over a small circumscribed area. As the stylus describes the various letters, the pressure-points are pressed against the carbon disks; and as this pressure is increased or diminished, varied currents are sent into the lines to the receiving-magnets, which cause the receiving-pen to reproduce every movement of the pen of the writer at the transmitting-station. The receiving-instrument consists of two electro-magnets set at right angles to each other. At the point where the poles would reach if extended is a rod for carrying the armatures. Near where the rod is pivoted at the bottom a spring wire is inserted, so that its armatures can easily and quickly respond to the varying attraction of the electro-magnets. The armature rod extends above the table, and carries the recording-pen. Each machine is both a sender and a receiver, and the working of the system is most simple. The operator at the sending-station uses the stylus as a pen to form imaginary letters, words, and sentences: in short, to write. He sees the writing produced by the recording-pen in ink on a slip of ordinary paper ribbon which slowly passes before his eyes. At the receiving-end the operator sees precisely the same thing going on, for the written message is being reproduced by the little pen, line for line, in perfect facsimile, on a slip of paper passing before him. We thus have a really beautiful system of written messages, and one which is already working commercially in the United States, where it is taking the place of the telephone with marked success. Instead of the repeated shouting and comparative publicity of the telephone, the message is written by the sender and the visible answer received in perfect quiet. But should the surroundings be noisy, it matters not, for the little pen silently writes away regardless of noise of any kind. The writing at both ends has all the characteristics of the writing of the sender, and the message constitutes a record which cannot be disputed, and is therefore invaluable to business-men. There is a facsimile record at each end, and neither of them can be altered without detection. The invention is at once ingenious and practical, and is the completed expression of the long-cherished desire to produce a writing-telegraph.

— On a part of Sir Joseph Banks's Museum, at the back of 22 Soho Square, being pulled down, in a recess with doors which had not been opened for about half a century, a very interesting collection of relics of Captain Cook's voyages in the South Seas has been discovered. Inside the panelling the following inscription was written in the handwriting of Sir Joseph Banks, who accompanied Captain Cook on his travels: "Instruments used, carvings, weapons, and heads, collected by Captain Cook during the voyage of the 'Endeavour.' — J. BANKS." These relics have been bought by Sir Saul Samuel, the agent-general for New South Wales, and will shortly be despatched by him to Sydney for the State House Museum at that place. Among the collection are the following interesting articles: old quadrants and other instruments used by Captain Cook on board the 'Endeavour,' four of which are in oak cases; two mummied tattooed heads of New Zealand chiefs; two native models of New Zealand canoes, one carved; two large carved canoe-paddles; carved spears and war-clubs; a native chief's paddle, beautifully worked with idolatrous carving; a very fine stone hatchet with handle, and upon it the following inscription in the handwriting of Sir Joseph Banks, "Brought to England in 1775 by Captain Cook from Otaheite;" and a wooden bowl with lip, used for handing round human blood in the days of cannibalism. There is also a carved wooden sceptre with the following words scratched on it, presumably by Captain Cook: "Made for me by Wanga. — J. C." Sir Joseph Banks's handwriting can be identified.

— As a result of his experiments on the maxillary palpi of mandibulate insects, myriapods and female spiders, Plateau comes to the conclusion that in the arthropods they subserve no functional purpose whatever, and are to be looked on as organs which have become useless, like the mammæ of male mammals. Plateau also discovers by experiment that not the slightest trace exists of any visible external respiratory movements in arachnids, such as Blanchard describes, or in chilopod *Myriapoda*, and suggests that the action must be wholly intrapulmonary, supporting himself partly by some observations of MacLeod, who thought he had discovered evidences of muscular tissue between the pulmonary lamellæ. Locy, however, was unable to discover signs of it in the young.

— Dr. Mercier is about to publish, as an introduction to the scientific study of insanity, a work on the nervous system and the mind. It will contain an exposition of the new neurology as founded by Herbert Spencer and developed by Hughlings Jackson; an account of the constitution of mind from the evolutionary stand-

point, showing the ways in which it is liable to be disordered; and a statement of the connection between nervous functions and mental processes as thus regarded.

— Captain Armstrong of the British steamship 'Alps' reports to the New York branch Hydrographic Office, Sept. 29, 1887, as follows: 7 A.M., Sept. 23, 1887, off the south coast of Cuba (latitude 19° 44′ north, longitude 74° 24′ west), Cape Guanos bearing N. N. E., distant about 22 miles, felt the shock of a submarine earthquake, lasting about 45 seconds, causing the ship to vibrate fore and aft. At first it appeared as if the valves were thrown open to give an extra shake-up on the engine. 7 miles farther N. E. by N. felt another milder shock, lasting about 7 seconds. 8.10 A. M., about 13 miles from the first disturbance, felt three shocks, lasting about two-thirds of a second, at intervals of about a second. At 8.45 A.M. felt another mild shock, lasting about 2 seconds. The sea was quite smooth, and had been smooth during the night. When the first shock was felt, the sea appeared to rise higher in a solid body (without the least break) for about 3 seconds, and continued smooth after. Light variable winds prevailed, with calms at intervals. Barometer, 30.05; air, 79; water, 84; midnight, barometer, 29.95. The high land of Cuba was enveloped in dark lead-colored clouds, sky from N. E. by E. to S. was quite clear, and several water-spouts were visible in a N. N. E. direction. Noon, after passing Cape Maysi, the weather was clear and fine. By the charts I should think the disturbance occurred in more than one thousand fathoms of water. (Civil time.)

— A correspondent of *Nature* seeks the opinion of psychologists on the following circumstance: A female child, quick and intelligent, when about fifteen months old, learned to repeat the alphabet, shortly afterwards the numerals, days of the week, month, etc., and subsequently scraps of nursery rhymes, English and German, then to spell words of two and three letters. All this was learned readily, eagerly indeed, and for a time she remembered apparently every word acquired, indelibly. At about two years old, further teaching was for a time remitted, as she was observed to be repeating audibly in her sleep what she had learned during the day. Subsequently, tuition was resumed under a governess; but she had not only forgotten much of what she had previously known perfectly, but learns far less readily than formerly. She is now about three and a half years old, in perfect good health and spirits, quick, and particularly observant, but the capacity for learning by rote is materially diminished. She is remarkably imitative, but shows no faculty whatever for writing, and as little for music. The writer would like to hear of any parallel cases, and what the ultimate development has been, with any opinions upon the cause of their appearances.

— At the central station of the United States Fish Commission in Washington may be seen a carload of young trout from Wytheville, Va., for distribution in Maryland, Virginia, and places adjacent to Washington. The collection comprises California trout, lake trout, brook trout, and rock bass. Some handsome specimens of grayling, artificially propagated, are also shown. The young trout have all been hatched artificially and reared at Wytheville. The commission keeps them until they attain a growth of several inches, and then distributes them. A supply of trout will be sent to any person who has on his place suitable waters, and facilities to insure proper protection for the fish. A dozen young trout are sufficient to stock an ordinary pond or lake, and one hundred to stock a running stream. The fish should not be molested for at least three years, until they have had an opportunity to spawn twice. The commission will send a carload of young carp and other fish to the Kansas City Exposition in a few days. The car will remain there a few days, affording opportunity to visitors to the exposition to inspect the methods of fish-distribution. Some of the young carp will be distributed from that point, and the car will then proceed on a trip, for distribution purposes, to the South-west. It is proposed to use one of the breeding-ponds in Washington next year for raising shad. Colonel MacDonald says that a million shad could be raised to such a size, in one of these ponds, as to insure the return to the Potomac of at least two hundred and fifty thousand shad of full growth. The young shad will then be turned out into the Potomac.

— The opening address of Col. Sir Charles Warren, president of the Geographical Section of the British Association for the Advancement of Science, deals with the much-discussed subject of the teaching of geography. The views expressed in this address are of interest, as the author opposes the new methods advocated by the Royal Geographical Society, and declares that they will lead to evil results. "It seems now to be desired to promote the acquirement of knowledge at the earliest age without effort and without hard work; but this appears to be directed towards alleviating the toils of the instructor as much as the instructed; and we have now, as a result, children taught common things without any effort to strengthen their memories, and then a system of cramming introduced at a later period, when the memory has ceased to be capable of responding to the efforts made. . . . It seems to me that the remedy recently adopted is worse than the disease it was to eradicate, and that, however injurious it was to attempt to store the mind with mere names, yet the memory was trained thereby to retain something definite; and it is still worse to attempt to store the mind with mere ideas without the connection of names, and leave the memory to rust. There is obviously a middle course which may rid us of the errors of the past without leading us into still greater difficulties; and if we keep the object to be gained always in view, we cannot fail to take a direct line. We want first to lead the memory to constant exertion of such nature that it grows stronger day by day, but is not overstrained or wearied; at the same time it must be stored with useful facts, which may be quite above the capacity of the mind to comprehend at the time, but which will be required all through life: this can readily be done by means of verses or rhymes set to simple airs and committed to memory by song." As these views are expressed from so prominent a place, they require some comment. In another passage of his address, Colonel Warren says, that, in consequence of the progress of science, we are fast losing our human nature, and are becoming machines, and we call it becoming civilized; that we are drifting into a condition in which we learn nothing of ourselves or by our own individual efforts. This is exactly what educationists complain about, and the reason why they demand a method of teaching which develops the mental powers. But this aim will not be reached by memorizing rhymes containing uncomprehended and incomprehensible facts. It is a misinterpretation of the method recently advocated by geographers, if Warren says that it is only directed to alleviate the toils of the teacher and of the pupil. It requires much careful preparation on the part of the teacher to represent facts to the untrained mind of a child so that they will be intelligible, and it requires the utmost exertion of the attention, memory, and the faculties of observation of the child, to meet the demands of the teacher. The remarks of Colonel Warren on the desirability of an efficient teaching of geography will be generally accepted, but there is not much difference between the memorizing which is still practised in most schools and the methods he proposes.

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.

Over-Pressure in the Schools.

WHEN we ask whether over-pressure in the schools is a fact, we receive answers ranging all the way from the most positive affirmatives to the post positive negatives. In fact, it is one of the 'burning' educational questions of the times. There now lie before me two paragraphs cut from the same number of an educational journal, that speak the two voices. In one, Dr. W. A. Hammond of New York tells the story of a little girl brought to him from school affected with St.-Vitus's-dance, in whose book-bag were an English grammar, an arithmetic, a geography, a history of the United States, an astronomy, a physiology, a French reader, a French grammar, and a treatise on general science. The doctor says the little girl had learned all these things, but had done so at the expense of her brain capital, not of her brain income. Intellectual bank-