SCIENCE

FRIDAY, JUNE 1, 1888.

LAST WEEK WE CALLED ATTENTION in a few words to the struggle which is going on in the New York City Board of Education over the election of a superintendent of schools. It is a cause of gratification to observe that the question has been lifted above and beyond mere petty detail, and made to rest on broad educational principles. Commissioner Sprague, who has conducted the inquiry into the fitness of the present incumbent for re-election, has shown great ability and a thorough grasp of the real issue. In his examination of Mr. Jasper he brought out the fact that the latter did not attend educational meetings, did not write or speak on education, and for four years had made no attempt to visit and inspect the schools systematically. On being pressed for an explanation, Mr. Jasper said that he had no time for any of these things! In other words, he is so busy marking examination-papers, computing percentages, and doing other trivial clerical work, that he could not be in any sense of the word a superintendent of schools. This admission should be a source of shame, both to the Board of Education that permitted such a state of affairs, and to the superintendent who did not protest against it. It proves exactly what has been charged; namely, that neither the majority of the Board of Education nor the city superintendent are fit for the positions they hold. In a series of interviews with four or five of the most prominent and respected educators in New York City, which a daily paper has published, substantially the same criticism that we made in these columns last week occurs. One said, "Our system does not properly educate, and is conducted too much on the principle that the teacher's work is to cram the pupil with hard facts." Another added, "The theories of the Board of Education are on trial. . . . The school system in this city is nothing more nor less than a magnificent piece of machinery, crushing out, whether designedly or not, all individuality, and tending to repress all the natural activities of the pupil. Uniformity is the thing aimed at, and the uniformity achieved is that of mediocrity." These expressions come from men who have made education a lifelong study, and who know what they are talking about. The force of such damaging testimony cannot be easily broken.

THE RESIGNATION OF PROFESSOR LOVERING of the chair at Harvard which he has held for fifty years calls for more than passing mention. Professor Lovering first entered the service of the college as a tutor in 1836, and in 1838 was elected Hollis professor of mathematics and natural philosophy. During this period much of the development of physical science has taken place, Professor Lovering's contributions winning for him first the presidency of the American Association, and later that of the American Academy, over which latter society he still presides, following in the line of the very distinguished men who have held the office. In accepting the resignation, which takes effect next fall, the president and fellows expressed their belief that "as a teacher, an administrative officer, and a member of the faculty, Professor Lovering has served Harvard College with perfect fidelity and loyalty, and with sound discretion. As a public lecturer and man of science, he has done honor to the university, and to the department of instruction which he represented." They also felicitate Professor Lovering and themselves upon the condition of assured prosperity in which he leaves the department of physics, — the department to which he has devoted a long and well-filled life. The successor of Professor Lovering is Prof. B. O. Peirce, who has given much promise in mathematical physics.

THE YELLOWSTONE NATIONAL PARK.

THE present number of *Science* is accompanied by a map of the Yellowstone National Park, reduced from the surveys of the United States Geological Survey. The four-sheet map of the latter, which is based on explorations during the years 1884 and 1885, gives for the first time accurate information regarding the configuration of mountains and valleys. We do not deem it necessary to dwell upon the wonders of the park, which have for years and years proved so attractive to Americans as well as to foreigners, but it may be of interest to learn what measures have been taken of late to improve it and to preserve its natural beauties.

As in 1886 Congress failed to make any provision for the pay of the superintendent of the park, a detail of cavalry was sent to do duty in the park. One of the principal dangers the protectors of the park have to contend with are forest-fires, many of which originate through the carelessness of camping-parties. In August, 1886, many square miles of woods near Gardiner River were thus destroyed before it was possible to check the progress of the fire. Some of these forest-fires are attributed to unscrupulous hunters, who, being prevented from hunting in the park, resort to this method of driving the game beyond the park limits. It is stated that the park is surrounded by a class of old frontiersmen, hunters and trappers, who, as the game diminishes outside the park, increase their efforts, and resort to all sorts of expedients to get possession of that which receives the protection of law. Some fires seem also to have been started by Bannock Indians from the Lemhi Reservation.

Another source of danger to the beauties of the park lies in the vandalism of the visitors, which cannot be condemned too severely. The acting superintendent, Capt. Moses Harris, says in his report to the secretary of the interior, 1886, regarding this subject: —

"It is apparent from the most casual observation that the means heretofore employed for the preservation of the natural objects of wonder and beauty in the park have been entirely inadequate. It may be said without exaggeration that not one of the notable geyser formations in the park has escaped mutilation or defacement in some form. Those that have been most fortunate are covered with lead-pencil inscriptions recording the names of those shallow-minded visitors to whom such a distinction is a pleasure. A lead-pencil mark seems to be a very harmless defacement, but names bearing date of 1880 are still discoverable through the thin deposit of silica; and, if this marking should go on unchecked, in a very few years these once beautiful formations will have become unsightly and unattractive objects. At the Upper Geyser Basin names with date of June, 1886, have been chiselled into the solid geyserite so deep, that, in the slow process of nature, many years must elapse before this mutilation will be obliterated. Not content with the defacement of the formations, efforts are constantly being made to destroy the geysers themselves by throwing into them sticks, logs of wood, and all sorts of obstructions. The eruptive force of several of the geysers has been totally destroyed by vandalism of this character. The footsteps of the throngs of visitors are wearing away the delicate and lace-like tracery of the silicious deposits, and in a few years the formations surrounding the geysers will present the appearance of the worn pavements of a city street. The wilful defacement of these beautiful objects can only be prevented by watchful supervision, supported by the rigid enforcement of lawful penalties. A certain amount of wear and deterioration, incident to the multitude of visitors, is probably unavoidable."

In the annual report for 1887 the superintendent gives an interesting statement regarding the game living in the limits of the park: —

"Immense herds of elk have passed the winter along the travelled road from Gardiner to Cook City with the same safety which herds of domestic range cattle enjoy in other localities. Several stacks of hay, which had been placed along this road in anticipation of winter freighting, were appropriated and doubtless enjoyed by these animals. It is difficult to form any accurate estimate concerning the number of elk that passed the winter in the park: certain it is that the number that wintered in the valley of Lamar River and on its tributaries have been estimated by all who saw them at several thousands. The elk are accustomed, when driven out of the mountains by the snows of winter, to follow down the course of the mountain-streams into the lower valleys. For this reason but little efficient protection can be afforded to this species of large game in the park except upon the Yellowstone River and its tributaries.

"The elk which follow down the outward slopes of the mountains surrounding the park, along the tributaries of the Madison and the Gallatin on the west, or the Snake River on the south, pass beyond the park limits before the hunting-season permitted by the territorial laws has closed, and fall an easy prey to the hunters who are in wait for them.

"A small number of buffalo still remain in the park, but, after as careful and thorough an investigation as is practicable, I am unable to state their numbers with any approach to accuracy. My impression is, that they have been heretofore somewhat overestimated, and that at the present time they will not exceed one hundred in number. They are divided into three separate herds. One of these ranges between Hell-roaring and Slough Creeks in summer, well up on these streams in the mountains, outside the park limits; and in the winter lower down, on small tributaries of the Yellowstone, within the park. If the reports made several years ago can be relied on, this herd has rapidly diminished, and it is doubtful if it now exceeds some twenty or thirty in number. Whether or not this decrease has been due to illegal killing by hunters, or to other causes, I am unable to say, though I do not believe that many have been killed within the past two years. Another herd ranges on Specimen Mountain and the waters of Pelican Creek. The herd was seen by reliable parties several times last winter, and was variously estimated at from forty to eighty. A traveller on the Cook City road claimed to have counted fifty-four near the base of Specimen Ridge. A scouting-party which I sent out during the month of May found but twenty-seven head of this herd, with four young calves. It is possible that the herd at this time was broken up, and that but one portion of it was found. The third herd ranges along the continental divide, and is much scattered. A band of nine or ten from this herd was seen several times this spring in the vicinity of the Upper Geyser Basin. It will take close observation for several years to determine with any certainty the number of these animals, or whether or not they are diminishing in numbers. It is practically certain that none have been killed within the park limits during the past two years, and yet there is an equal certainty that the present numbers do not approach those of past estimates.

"Large numbers of antelope are found in the park. A herd of some two hundred passed the winter within a mile of the town of Gardiner, pasturing on the plain between the Yellowstone and Gardiner Rivers, south of the town. They were unmolested, though it was found necessary to occasionally drive them back towards the hills, that they might not get beyond the park limits.

"The mountain sheep are found in all of the mountain ranges within the park. A band of seven or eight spent a large portion of the winter in the cliffs along the travelled road between Mammoth Hot Springs and Gardiner, and they became so accustomed to the sight of travellers as to manifest but little more timidity or wildness than sheep of the domestic variety."

The progress of road-construction in the park has been greatly retarded by the lack of sufficient appropriations. It is greatly to be regretted that the beauties of the park, that, in the words of the statute, has been "set apart as a public park or pleasuring-ground for the benefit of the people," is not rendered accessible in all its parts to the public by the construction of roads and bridges, the cost of which has been estimated at $130,000.

It appears that the only method of enforcing the laws and regulations regarding the park is the expulsion of all offenders, there existing no court which has jurisdiction over such cases. The superintendents of the park have for a number of years asked that such a court be established, but so far Congress has not acted upon their suggestions.

It seems, however, on the whole, that the park is well protected from injury, and the steadily increasing number of visitors shows that it has not decreased in attractiveness either to Americans or to foreigners.

A NEW SCIENCE OF MIND.

THE authorities of the Collége de France, the representative institution of the higher education in France, have transformed, as already reported in *Science*, the chair of the 'law of nature and of nations' into a chair of 'experimental and comparative psychology.' The significance of this action lies in its calling the 'new psychology' to a co-ordinate rank with the more widely recognized and historically sanctioned sciences. This honor has naturally caused considerable inquiry as to the nature and the objects of the new science; and M. Paul Janet, the well-known writer on ethical topics, undertakes to enlighten his countrymen in this regard ('Une Chair de Psychologie Experimentale et Comparée au Collége de France,' *Revue de Deux Mondes*, April 1, 1888).

M. Janet, with perhaps pardonable patriotism, poses the new psychology as of French origin, but it is really connected with the past by many roots. It is related to the objective study of mind furthered by Hartley and Locke, by Descartes and Cabanis; its welfare has been more essentially secured by the general renaissance of physiological and neurological studies of which the name of Johannes Müller is representative; the modern alienists drew attention to the valuable mine of mental phenomena that disease laid bare; and, after it emerged as an independent study, it willingly acknowledged its indebtedness to physics and physiology, as well as to psychiatry and anthropology, without forgetting its parentage from the psychology of the past, itself the result of a progressive philosophic insight.

The term 'physiological psychology,' though quite generally in use to describe the new movement, really expresses but one, though perhaps the most important and advanced, division of a scientific, or, as M. Janet prefers, an objective psychology. The new psychology, however, is characterized as much by its method, its spirit, as by its contents; and it was for this reason that the chair was called one of 'comparative' and 'experimental' psychology.

Difficult though it is to summarize the various lines of interest that unite workers in the several specialties of the new psychology, the attempt may be useful. From the physiological side, psychology finds that the phenomena with which it is concerned occur in connection with a material organism of an intricate and mysterious construction. The analogues of the acts which we recognize in ourselves as the indices and concomitants of psychic states are unmistakably found in the lower animals. No matter how far down in the scale we descend, we nowhere lose the thread that makes the world akin. "The tendency of modern inquiry," says Mr. Tylor, "is more and more towards the conclusion, that, if there is law anywhere, it is everywhere;" and in the amœba stretching out its extemporized arm in response to an irritation in its environment, psychology detects a real though remote analogy to that varied and far-sighted adaptation of means to ends that characterizes the life of a high civilization. The problem, then, is to trace the successive stages of this co-ordination of nervous structure with psycho-physiological function; to see reflex act emerging into instinct; to see instinct acquiring more and more adaptability, and sending the young into the world less freighted with the ready-made acquisitions of their ancestors, and freer to shape their lives according to outward conditions, until, in the human infant, nature presents at once the most helpless and the most educable of organisms. This general problem includes many special ones. In ascending the evolutionary scale, the nervous system increases in complexity; the parts become more specialized and more integrated; finer methods of