now possess the only skull of a carnivore of the American eocene.

This work on the south slope of the Uintah Mountains was only preparatory to the main aim of the expedition, — the exploration of the little-known White River country. The passage of the Uintahs was quite difficult, for the climbing is very steep and the road very poor. The road bears off to the eastward, and crosses the range at an elevation of over ten thousand feet. The scenery was very wild and grand, and the air delightful. The nights were always very cold, and on the night of July 25 there was a severe frost. The descent into the Ashley valley on the south slope is very fine, and the views toward Salt Lake City in the west, and the Colorado mountains in the east, superb. The valley of Ashley's Fork, another tributary of Green River, has by wonderful irrigation and great care become of much agricultural value, and is now supporting a considerable population, almost entirely Mormon. From the settlement of Ashley to Ouray, the agency of the Uncompahgre Ute Indians, is a long, hot ride of thirty-five miles through a desert country in which some of the cañon formations are most curious.

Ouray agency is on the west bank of the Green River, just above the mouths of White River, flowing in from the east, and Duchesne River, a tributary from the north and west. Green River was crossed here, — a work of great difficulty, because of the swiftness of the current and quicksand bottom, — and the march continued almost due east, following the north bank of White River. Camp was pitched in a small cottonwood grove, the only trees for miles and miles, in a bend of the river, and work prosecuted from there. No fossils were found within two miles of camp, and at the conclusion of the work the ride out was from twelve to fourteen miles. The expedition's work was well organized; and men detailed to dig out and pack followed the prospectors, who located the fossiliferous strata and particular outcroppings of bone. No bones of any account were found, save in the two white or gray strata, the one lying at the base of the buttes, and the other some thirty feet above it, with two distinct strata intervening.

The prospectors soon discovered much of interest and value; and when camp was broken, and the march back begun, some twelve or fourteen hundred pounds of fossils were ready for transport. Every thing was packed with greatest care; cotton, tissue-paper, wrapping-paper, canvas sacks, and thin gunny sacks being used for teeth and joints, and all save cotton being used in every instance.

Of Amynodon, which the expedition desired particularly to get, numerous fragments were obtained, enough to make one nearly complete skeleton and the major part of several others. Tapiroids were found in great abundance, and it is not improbable that careful study will reveal some unique specimens among the finds of this expedition. The bones are not all in the best preservation, though some are in a far better state than others found immediately adjoining. The real scientific value of the expedition will only be known when the authorities of the museum make a careful study and description of the bones found.

The weather on White River was intensely hot by day, and very hot even at night. Mosquitoes were in abundance; and the river-water, while not strongly alkali, is warm and insipid. There is absolutely no vegetation save grease-wood and scanty sage-brush, and no animal life beyond small snakes and lizards and a few rabbits. The snow-topped Uintah range was in full view, and thunder-showers could be seen there daily. But in this White River desert it never rained, and it was asserted that it had not rained there since April, 1885.

The third week in August the White River country was left behind, and the long, slow march over the mountains began. Perhaps the country was left none too soon, for the Indians were very insolent, and, even on crossing the mountains, General Crook was passed going into that country with a detachment of cavalry and infantry to locate a new military post, as a safeguard against Indian treachery and violence.

The expedition is greatly indebted for its comfort to the aid rendered in outfitting by the war department and the quartermaster-general of the state of New Jersey, and for courtesies extended by the officers at Fort Bridger and the officials at the Ouray agency. For its scientific success, it is indebted to the untiring energy and ability of its conductor, Mr. Francis Speir, jun., of South Orange, N.J. N. M. B.

THE LONGEVITY OF GREAT MEN.

THE conclusion that the intellectual giants of the race are favored by an abundance of years on the scene of their heroic activity, and are thus further differentiated from their more common fellow-men, seems natural, and has been accepted upon evidence which, in a less pleasing conclusion, would be considered ridiculously insufficient, and even false. The usual method of attempting to answer the question whether great men are longer-lived than others, is to prepare a list of the ages, at

death, of a number of eminent men, take the average age, and compare it with a similar average of a number of ordinary men, or even with the average lifetime of the race, and in this way to make the results speak decidedly in favor of the superior longevity of great men. All that such a method can prove (and this it does prove) is that it takes long to become great. It neglects to consider that a select class of men is dealt with, and that, to be even potentially included in this class, one must have lived a certain number of years.

For example: in an article translated in the *Popular science monthly* for May, 1884, it is argued that astronomers are a long-lived race because the average life-period of 1,741 astronomers is 64 years and 3 months. An average human life is only 33 years; but, as one cannot be an astronomer before adult life, the author takes the expectation of life at 18 years, which is 61 years, and thus makes an excess of over 3 years in favor of astronomers. He also divides his astronomers into four degrees of eminence, and finds that those of the first rank live longer than those of the second, and they in turn longer than those of the third, and so on, thus implying that the best astronomers are most favored with years. The true conclusion is, that it takes longer to become a first-rank astronomer than it does to become a less eminent one.[1]

If great men were great from their infancy, and we had the means of ascertaining this fact, the method would be correct. But as it is, we must define in some way or other what we mean by greatness, and then fix the average age at which it becomes possible to distinguish an amount of talent sufficient to enable its possessor to be enrolled in the ranks of the great as already defined. What is known as the 'expectation of life' at any number of years tells the most probable age at death of one who has attained the years under consideration: a comparison of this age with the age at death of great men will decide whether they are longer-lived or not.

The attempt was made to select about 280 to 300 of the greatest men that ever lived.[1] Throwing out about 30 of the doubtful names, there remain 250 men, about whom the statement is hazarded that a list of the 250 greatest men, prepared by another set of persons, will not materially differ from our list, as far as all the purposes for which it is to be used are concerned. From this list I have selected at random a set of men of whom it was probably easy to fix the age at which they had done work which would entitle them to a place on this list, or work which almost inevitably led to such distinction: it is a date about midway between the first important work and the greatest work. The average of over 60 such ages is 37 years; which means, that, on the average, a man must be 37 years old in order to be a candidate for a place on this list. The real question, then, is, How does the longevity of this select class of 37-year-old men compare with that of more ordinary individuals? The answer is given by the expectation of life at 37 years, which is 29 years, making the average age at death 66 years. And this is precisely the age at death of these 60 great men; showing, that, as a class (for these 60 may be considered a fair sample), great men are not distinguished by their longevity from other men.

Further interesting conclusions can be drawn if we divide the men into classes, according to real psychological and physiological differences in the ways of manifestation of the several kinds of genius. It is almost surprising how well the ordinary trinity of faculties — intellect, emotions, and will — accomplishes this purpose. Greatness seems to appear either in a brilliant thought, a deep feeling, or a powerful will. Under men of thought would be included philosophers, scientists, historians, etc.; under men of feeling, poets, musicians, religionists, etc.; under men of action, rulers, commanders, statesmen, etc. Before comparing the relative longevity of these three classes of men, I assure myself that the period at which greatness begins to be possible does not materially differ[2] in the three classes, and, as was done in the former case, I exclude all cases of unnatural death. I find that men of thought live 69.5 years, or 3.5 years longer than ordinary men; while the lives of men of feeling are 3 years, those of men of action 5 years, shorter than those of average men, — a conclusion that agrees with the commonly

[1] Mr. Galton (*Hereditary genius*, p. 34) has allowed himself to neglect a similar consideration. In giving the number of men in each class that the population of the United Kingdom would have between certain ages, he gives 35 as the number of men of class G (a very high degree of eminence) between the ages 20 and 30, and only 21 such men between 40 and 50 years. But this cannot be true, because only a very small proportion of men could possibly attain the eminence requisite to be classed among the G's in 20 to 30 years, while almost all (of those who will attain it at all) will have attained it before the end of their fiftieth year. And this consideration far outbalances the excess in absolute number of men between the former ages over those between the latter. Similarly the falling-off in the number of men of class *g*, i.e., idiots, from decade to decade, would be more rapid than in ordinary men, — a fact which the tables fail to show.

[1] The names were selected by three others and myself, while engaged in a study of what might be called the natural history of great men. The process of selection was most rigid and careful, by a system which it would take too long to describe.

[2] Mr. Sully (*Nineteenth century*, June, 1886) has shown that men of feeling are more precocious than men of thought; but the difference in the age at which their first great work is done, though in favor of men of feeling, is very slight indeed.

accepted view on the subject. If we subdivide these three classes, we find, that, while all classes of men of thought live longer than ordinary men, the moralists live longest, scientists coming next; that among the men of feeling the religionists alone live the full period of life, while poets' lives are 5 years, and musicians' lives 8 years, too short; that, of men of action, rulers and commanders both fail to complete the full term of life by 4 years. One sees from these statements (which, however, in their detail at least, must be accepted with hesitation, owing to the fewness of examples) that the kind of psychical and physical activity pursued, influences the life-period; that certain types of genius are apt to die young, while others are particularly favored with a full allowance of years.

The question of longevity becomes important when we consider that through it the leaders of civilization are allowed to exercise their important function a few years longer, thus enabling more great men to be alive at the same time; and that, by its tendency to be inherited by the offspring, the children of great men will begin life with a better chance of reaching maturity, and, in turn, of becoming important to the world, if, as we have reason to believe it would, the genius of their ancestors has left its traces in them.

JOSEPH JASTROW.

PARIS LETTER.

THERE is a good deal of discussion going on at present concerning the Municipal laboratory in Paris. This laboratory, as is known, was established in order to furnish to all persons who require them, a means of making careful analyses of all sorts of manufactured goods, and especially eatables and drinks. Of course, this made the dealers and manufacturers who sell impure wine, milk, or preserves very angry. But this resentment showed the usefulness of the laboratory; and notwithstanding the efforts of some aldermen, whose votes are under control of wine-dealers, and whose voices are necessary to them, the laboratory has been kept up, and continues doing useful work. The present discussion concerns salicylic acid, and has brought a howl from the beer-men. The laboratory considers the use of salicylic acid as hurtful, and wishes all manufacturers who use it to be prosecuted. In 1877 a committee appointed to study the matter reported, saying that it is better to forbid the use of salicylic acid in the manufacture of beer. In 1880, another committee, on which were Brouardel and Würtz, reported in a similar manner, considering salicylic acid as a dangerous substance, which is preservative only when used in such large quantities as to render the beer toxic, and proposing that all alimentary substances containing that acid be destroyed, and their sale forbidden. In 1881 a law was enacted, forbidding the use of the acid. This brought such a number of protestations, that in 1883 the question was again brought before a committee composed of Würtz, Pasteur, and others. It reported as the preceding ones had done. It was immediately decided to prosecute all manufacturers of or dealers in alimentary substances containing the acid. But as the victims of the prosecution were generally innocent, being retailers, and not manufacturers, a plan was instituted to seize upon beer as it came into Paris, and before it was sold to dealers. But there arose a serious difficulty. Most of the adulterated beer comes from Germany, and the law has no force among foreigners. But then the dealers to whom German beer is sent have it analyzed; and, if it contains salicylic acid, they merely have to send it back. On the whole, the course followed by the Municipal laboratory is a very good one, and profitable to public health. It will always have enemies, since unscrupulous dealers will always exist, as they have always to the present day; but every man who cares for his health must be a stanch supporter of it.

The *Journal officiel* has recently published the annual report on the statistics of the population of France for 1885. The results are very unsatisfactory. The birth-rate has diminished (it is 922,361), being smaller than usual by twenty or thirty thousand. The number of illegitimate children is larger than in preceding years, being more than eight per cent instead of seven. The death-rate also has diminished, but not to a degree commensurate with the birth-rate, which exceeds the death-rate by 85,464. This difference is much smaller than it was some ten years ago, when it was 140,000 or 150,000 yearly. However, it must be remembered that the effects of the war of 1870 are still felt, and that the diminished birth-rate may be ascribed to the loss of a great number of men, who, at the present time, would have been heads of numerous families.

M. Paul Bert has recently created in Tonquin a scientific society. He wished to imitate Napoleon in Egypt, no doubt, and has given a sister to the Institut d'Egypt. The Bac-ki-ham-lam-vien — such is the name of the new academy of sciences — has for its mission the collecting of materials for the history of Tonquin. Of course, M. P. Bert has created himself president of the academy, and is sole elector. It is he who decides who shall be the members: they must be of Tonquin blood.

Professor Herzen of Lausanne has published an interesting review of the researches recently con-