half of the curve is higher than the first, in the '5 exaggeration' the two halves (except in the case of the colored people) are about equal. The '10 exaggeration' is thus rather a characteristic of old age, while the '5 exaggeration' is used by old and young.

There remains another peculiar irregularity of the census figures which deserves special treatment. It is the excess of the number of persons at 21 over those at 20 years. This excess is not of the same nature as the '10' or '5' exaggeration, and is due, of course, to political reasons; 21 being the voting-age, and 1880 the year of a hot presidential campaign: accordingly this exaggeration ought to occur in males alone. This is really the case. In estimating the size of this excess, we encounter a difficulty. To compare the number at 21 with the number at 20, would probably be comparing one exaggerated number with another; and, knowing that the number at 19 is too small, we cannot make a fair comparison with it. It is sufficient to notice, however, that there are always more males (and fewer females) at 21 than at 19, and, when the '10 exaggeration' at 20 is not large, more than at 20. Taking into consideration the excess at 20, we have to declare the native male whites (the most reliable class in the former exaggerations) as the class that exaggerates most at 21, — a conclusion quite natural, because they are most apt to be benefited by such falsity of returns. With regard to states, the inhabitants of the extreme west (Dakota, Wyoming, etc.) would rank as the worst, the New-England states as the best, under this head.

Whether this exaggeration is increasing or decreasing, is a question which unfortunately can be only very partially answered. Previous to 1880, the returns on age were given mainly in groups of five years. In 1870, however, all persons above 80 years of age were enumerated by single years. This makes possible a comparison between the excess of the number at 90 over that at 89 in 1870 and in 1880. This comparison is entirely in favor of the census of 1880. In this decade the exaggeration at this particular age (90 over 89) has fallen, for the total population, from 104.6% to 65.7%. As to sex, the male excess has fallen, from 87.1% to 36.7%; the female, from 118.7% to 90.3%. The colored people, too, have decreased their excess very greatly, — from 1267% to 647%. Two other peculiarities in the returns of 1870 may be noted: first, the difference between exaggerations of the sexes is less, disappearing entirely in the colored race; second, the excess in the native whites is exceptionally high, being 155.3%, while in 1880 there is no excess at all, but a deficiency of 4.8%.

The observation of such facts as have been here noticed, it is hoped, will shed light on the characteristics of the natural bias in favor of round numbers, as well as be a means of suggesting modifications in the method of questioning which would obviate these misrepresentations. It is just such irregularities that detract from the value of the census figures with regard to the calculation of the life-period, and expectation of life, in the United States. A more thorough comprehension of the questions treated above will doubtless be attainable from the census reports of 1890.

JOSEPH JASTROW.

CHOLERA INOCULATION.

A LETTER from Dr. J. Ferran of Tortosa (Catalonia) to the French academy (*Comptes rendus*, No. 15, 1885) contains some interesting assertions in regard to cholera and the cholera bacillus. He finds that cultures in *bouillon* at 37° C., carried on long enough to just visibly change the fluid, will, in doses of from two to four cubic centimetres, kill a guinea-pig.

At the point of inoculation appears a hot and painful tumor, which dries up and becomes detached, leaving an ulcer behind, which heals without pus formation or pain. The general symptoms are a rapid rise of temperature, bringing on a lowering of the physiological heat as taken in the rectum.

If a drop of blood be taken from an animal thus inoculated, and during life, and this drop be inoculated in *bouillon*, kept at 37° C., in from twenty-four to forty-eight hours a pure culture of spirilla will be obtained.

Microscopic examination of the serous effusion, coming after a blow upon the inoculated side, shows the following: —

1°. Extraordinary number of globules, so much so as to make one doubt the nature of what is being observed. Many of the red-blood globules have projections, and possess a real movement due to the striking of the microbes against these points. 2°. Spirilla and commas, almost invisible by reason of their rapid movements. 3°. Spherical cells full of granulations, some of them containing a granulation resembling a degenerated blood-cell. 4°. Lenticular elements, varying from five to twenty millimetres in size, and differing from the others described above.

A series of cultures in gelatine preserves its virulence, whilst a series in *bouillon* becomes attenuated after a certain time. If a series of guinea-pigs be inoculated with a quantity of the culture less than sufficient to kill them, they become capable of resisting doses which would before have been fatal, — a result which the writer claims he has obtained.

Effects of the microbe upon man. — The injection

of eight drops of a fresh, virulent culture in the region of the triceps brachialis produces a hot and painful swelling, which hinders the movements of the arm; following this comes a localized fever, which soon disappears; three hours after the injection, this phenomenon commences, continues about twenty-four hours, and then all effects disappear completely. If an injection of five-tenths of a cubic centimetre be made in each arm, the local symptoms are intensified, and general symptoms appear. These general symptoms bear an undoubted resemblance to true cholera; as, general coldness, rigors, lassitude, cramps, vomiting, dull mind, cold and clammy sweats, more frequent evacuations (but never reaching the true diarrhoea of cholera).

All of these symptoms are followed by a general rise of temperature, reaching even 2.5° C. above normal. More frequently there are more or less accentuated chilliness, general lassitude, dulness, desire to vomit, and fever. All of these symptoms cease at the end of from twenty-four to thirty-six hours, without necessity for a recourse to therapeusis. Sometimes they are more severe, and the blood from any part of the body gives the same microscopic appearances as in animals.

If, six or eight days after the injection of five-tenths of a cubic centimetre in each arm, the same dose, and of the same virulence, be injected into the same subject, the general symptoms do not occur, whilst the local phenomena are much less severe.

The writer draws these conclusions from his experiments, and offers to reproduce his results before the academy: 1°. "Cholerization is possible in man, as in animals, by hypodermic injection." 2°. "The prophylaxis of cholerization is obtained through graduated doses, or attenuated virus."

Dr. Ferran, no doubt to add weight to his paper, gives the names of twenty-four physicians, five medical students, five other males, and five females, upon whom he has experimented.

These experiments are said to have been carried on farther, but no proper report of them has as yet reached us Our criticism would be that the conclusion as to the efficiency of the inoculation against cholera, granting that the true bacillus of cholera was used, is an exceedingly hasty one, inasmuch as the protected (?) persons had not yet been brought in contact with the disease.

HERAT'S IMPORTANCE.[1]

THE reasons for the importance of Herat are of three kinds, — geographical, ethnological, and historical.

With regard to Herat's geographical situation, it will be seen at once that from Siberia to India, with the exception of the oasis in the Zerafshán basin, there is scarcely a point to be found which can bear comparison with Herat in regard to fertility and climatic advantages. Lying on the western and northern spurs of the Paropamisus Range, which is connected with the lower mountain range of Persia by the ridge of Siah-Bebek, the district of Herat is provided with an extraordinarily full river-system. Water, the most important auxiliary of agriculture in Asia, is therefore to be had in plenty; and the canals leading from the numerous water-courses, can, in consequence of the undulating surface of the district, be turned to account for irrigation in a very effective manner. Under the protection of political quiet, and with moderate industry, Herat could easily be turned into a garden; and that it frequently has indeed been a fruitful garden, whose manifold productions have awakened the envy of the neighboring powers, we have the testimony of history.

In regard to climate, Herat is equally favored. While with two degrees north or south the heat becomes unbearable, Herat enjoys a surpassingly mild climate, under whose influence the products of the north and the south ripen in equal perfection, and an agreeable habitation for mankind has always been provided.

It is no wonder, then, that the western district of Herat, commonly called Baghiz, was, even in antiquity, described by the geographers with enthusiasm. Ibn Haukal, Mukadassi, Edrisi, and others call Baghiz the 'crown of Khorasan:' the author of the geographical work 'Heft-Iklim' calls it a flower-garden of enchantment, with a thousand vales of trees and streams, — a camp-ground rich in grass and water, peculiarly suitable for the resting-place of the largest armies.

Indeed, this fame extends back even to pre-Islamitic times. Herat's wealth was proverbial; as witness the expression, "Khorasan is the mussel of the world, and Herat is its pearl."

As to the boundaries of this Baghiz, which to-day figures as the cause of the quarrel between England and Russia, they have been understood from the earliest times to be, on the west the Hari-Rud, and on the north the edge of the steppe, which, extending from Pul-i-Khisti to Shir-Tepe, marks the line between the cultivated oasis and the bottomless sand-desert.

In passing now to the ethnical features of Herat, it is to be noticed at the outset that it is exactly the miscellaneous character of the population which makes the work of conquest easy, and furnishes such means of civilization as would be sought elsewhere in vain. Among the million and a half inhabitants of Herat and its surroundings, the autochthonous Iranians hold the first place. For the most part, they are dwellers in towns, and have at all times distinguished themselves by their industry, perseverance, and special intellectual talent. It was they who produced so many brilliant periods of the Moslem culture; and the literary productions of the Herat writers, as well as the monuments of Herat artists and architects, are still subjects of admiration.

The population of the outlying districts bears the general name of Tshehar-Eimak, — i.e., four tribes, — and traces its origin back to the times of the Timurides. The former word is of Persian origin;

[1] From an article by H. VAMBÉRY in the *Oesterreichische monatsschrift für den orient.*