

ancing-point would always have been far east of the places where it has been located, and the changes of the past ten years would have resulted in an eastward, not a westward, movement. More than half of the gain in population has been east of the point taken as the center of population in 1890.

"The Census Bureau system is to take account of distance as well as numbers. The center of gravity, so to speak, is located by counting every person living 2,000 miles away as equal to ten persons only 200 miles distant. The gain of 100,000 population in Oregon or Washington may offset an increase of half a million in New York. That is what keeps moving the official center of population westward, and it is the only reason why there has been such a change in the past ten years.

"But even under the government system of computation the westward progress of the central point of the nation, in the sense of numbers and distance together, has been less in the decade just ended than it was in any earlier like period. . . . The indications are that the end of the movement is about reached. Henceforth the region east of the present official center of population will almost certainly increase much faster in the total number of inhabitants than the part of the country which lies west of the point where the national center of gravity is now located.

"Already the growth of the eastern half of the country is far outstripping the progress of the western part, and there is no reason to suppose that the future will change this state of things. The course of empire is not so much westward as it used to be, and many young men born in the West are reversing Greeley's advice and going East to grow up in the part of the country which has given the greatest and most impressive proofs of vitality and continuing development."

BACTERIOLOGY AND RELIGIOUS RITES.

MORE than one time-honored religious rite is the reverse of hygienic, and this has been particularly realized by scientific men since the recent development of bacteriology. A writer in *The Lancet* (London, December 1) says that the fact that bacteriology is a modern science, whereas religious rites and ceremonies date back as far as historical records will allow us to go, sufficiently explains the want of harmony between them. He adds:

"It would, indeed, have been a proof of marvelous prophetic intuition if those who first initiated religious ceremonies had foreseen and prepared for discoveries to be made many centuries later. Several of our correspondents have expatiated on the risk attending the promiscuous use of the communion-cup. This, however, is far from being the only risk of this description. The holy water in Roman Catholic churches is quite as serious a matter. The shallow, shell-shaped receptacle is placed barely three feet or so from the floor, so that the dust stirred up by the feet or shaken off from the persons who pass by readily falls into it. Innumerable fingers, not always scrupulously clean, are dipped into the water. Also, it is just at the moment of danger and trouble that the faithful are most prone to resort to their church for prayer and consolation. Coming straight from the sick-bed of some loved parent or friend, can we expect that the hands are always thoroughly disinfected before they touch the holy water? In Spain especially, and during the great cholera epidemic of 1885, we have noted that the holy water was absolutely dirty and living organisms could be seen with the naked eye, so what the microscope would have revealed may well be imagined. Now the fingers convey this water to the forehead and breast of the devotee, and of course the mouth might also be touched with the same fingers. But we do not see that there would be any lack of reverence shown if this holy water was changed more frequently, nor are we aware that it would be a sacrilege to mix with it some strong antiseptic solution. Again, at the Ahmed Mosque of Constantinople there is a small piece of the black stone brought from the Kaaba of Mecca. Against this piece of stone the true believers come and rest their heads for a considerable time. By so doing it is supposed that various illnesses can be cured, and as there are certain affections that can be favorably affected by the force of suggestion the results sometimes attained seem to

confirm this superstition. But tho a hard stone is less dangerous than water and germs of disease deposited upon its surface would soon be oxidized, still patients following each other in rapid succession might convey to one another pathogenic microbes. The same may be said with regard to the kissing of the toe of the bronze statue of St. Peter at St. Peter's, Rome. Would it be too much to ask that this stone, this bronze toe, and other similar objects of reverence and adoration should be frequently wiped with a rag moistened in an antiseptic solution? Why should science and religion be divorced one from the other? If we have been endowed with the intelligence to foresee a danger, may we not, with all due reverence, take the necessary precautions to ward off this peril? With regard to the communion-cup, Count Leo Tolstoy, in his recent novel 'Resurrection,' describes the celebration of the liturgy in the chapel of a Russian prison. Here the priest cuts the bread into little pieces and dips them in the cup containing the wine. Then with a spoon he places the piece of bread and wine into the penitent's mouth. Thus there is no drinking out of the cup, and it would be much easier to have a clean spoon for each communicant than a separate cup. This is the general practise of the Orthodox Greek Church, and one which lends itself better to sanitary precautions than that of the English Church and her sister communions, as we have already pointed out."

Bees and Mathematics.—The construction of geometrically perfect cells is not the only mathematical operation performed by bees, according to Abraham Netter, who has just read an interesting paper on the subject before the Paris Academy of Sciences. *The Revue Scientifique* reports that he brought out the following facts:

"Not only is the construction of the cells carried on by mathematical rule, but many other operations of the insects also; for instance, the collection of the maximum amount of honey in the minimum time, and the division of the workers among the plants proportionally to the number of plants of the same species. In the hives, the number of bees engaged in ventilation is almost rigorously proportional to the daily increase of weight of honey, etc. Facts of this order relate to arithmetical proportion, while those having to do with cell-building relate to geometric ratios."

M. Netter is of the opinion, however, in spite of this show of apparent intelligence on the part of the bees, that "all their movements, without exception, are of the nature of reflexes"; that is, performed without conscious action, just as we close our eyes instinctively when a motion is made toward them.—*Translation made for THE LITERARY DIGEST.*

SCIENCE BREVITIES.

A SURGICAL case that has been exciting much attention is that of Miss Rockefeller, daughter of the president of the Standard Oil Company. As described by Dr. Isidor Müller, a celebrated specialist of Vienna, in a lecture reported for the New York *Herald*, the left ear was "affected by the growing together of the 'hammer and anvil' bones. The trouble originated during the dentition period of infancy, and was so far advanced when the treatment began that the bone was partly destroyed. The left ear was apparently entirely deaf and the right was sympathetically affected. After a treatment of twenty weeks the affliction was partly cured, a new drum having been built and the old one entirely destroyed. The 'hammer and anvil' bones were separated by the insertion of gold plates, this measure enabling the drum to grow freely in places where this would have otherwise been impossible.

"NATURAL gas in the United States, according to the last annual report of the United States Geological Survey, has sunk to about one third, in its fuel value, of what it was a few years ago," says *Cassier's Magazine*. "In 1899 the production of natural gas equaled in consumption the heating capacity of 5,400,000 tons of coal. Ten years ago, when this industry was at its height, the equivalent of the heating output of natural gas was equal to about 15,000,000 tons of coal. Both the great gas-producing fields are reaching extinction. The Ohio division, which once had 480 pounds to the square inch, has now no rock pressure whatever. The original rock pressure in Indiana, once 325 pounds, averages now 165 pounds, showing that two thirds of the product has been taken out and consumed. Over a very considerable area of Indiana, covering an area of about 1,500 square miles, industries which were using natural gas are either discontinued, working at a disadvantage, or substituting coal. The effect of this is plain in various directions, particularly in reduced business and opportunities for labor in part of the State. The aggregate value of the gas produced in 1899 was \$20,024,864, a gain of \$4,730,051 over 1898. This is in part due to a slight increase in the cost, but still more to an increased demand."

THE RELIGIOUS WORLD.

"THE NEXT AGE OF THE ROMAN CHURCH."

A ROMAN CATHOLIC observer, writing in an English weekly journal, calls attention to what he deems a distinct change in the religious atmosphere at Rome. A year or so ago, he says, the reactionary party in the Curia appeared to be in the ascendant, "Americanism" was condemned, Father Zahn's book of evolutionary biology was put on the Index, and Leo, in his encyclical "Testem Benevolentiae," seemed to imply that a large party in the American church and on the continent of Europe were tending toward heretical views not unlike the Quietism of Molinus. Now, says the writer (in *The Pilot*, December 29, 1900), all this has changed:

"This year a succession of events has cleared the air. Cardinal Mazzella is gone. The Society of Jesus, which never will come to terms with democracy as long as it can help, is not now represented in the Vatican by that unrelenting and uncritical professor of divinity, who dealt with European scholars as if they were schoolboys, and reduced the world's history to a syllogism. Other cardinals are in the ascendant—Rampolla, who is not a theological expert but a politician, and who would fain be a statesman; Vives, the Spaniard, who has brought with him into the Sacred College a certain air of Franciscan *bonhomie*; perhaps the Vannutelli, exercised in all the arts of winning for themselves the liberal reputation not unloved of men who aspire to the papacy. The wind has changed; prelates are human, and in Rome itself there seems to be an understanding that American 'Progressives' shall be kindly entertained. Under such auspices it was that Archbishop Ireland journeyed to Paris, with the distinction almost of an ambassador from the United States. The name of Lafayette—the reception by President Loubet—the Grand Cross of the Legion of Honor, had their effect. When the archbishop arrived in Rome, he found a profuse welcome. Pope Leo invited him to address the circle about his throne; the archbishop dwelt on his favorite topic, the reconciliation of the Catholic Church with the English-speaking races. He was applauded on all sides; Cardinal Ledochowski embraced him; and Leo bade it be made known that the heresies called 'Americanism' were French and German. Nothing remains except that the Pope should declare officially what he has affirmed in conversation. The charges made against American Catholics are already withdrawn. And Dr. Keane, whom a French pamphleteer described as the most daring of Freethinkers, is now Archbishop of Dubuque, appointed by the Vatican with the full consent of the American hierarchy.

"But it does not follow that the questions so awkwardly handled under a misleading name have found their solution. America is out of the debate; France and Germany are not. A few weeks ago Mgr. Lorenzelli, the Nuncio in Paris, met at Lille a great gathering of the French clergy, and addressed them on the needs of the hour. Mgr. Lorenzelli is from Bologna—one of those grave Northern Italians who have little in common with the smiling South. Trained in the school of St. Thomas Aquinas, unacquainted with the movement of literature or criticism outside Italy, his argument was the familiar appeal to tradition, his warning against those 'who under the pretext of defending Christianity would dig up its foundations.' The moral had its sting, for Cardinal Richard, almost at that moment, was putting his veto on a series of articles in which the Abbé Loisy dealt with the Old Testament from a more or less modern point of view. If Mgr. Lorenzelli represents the Pope—and what is he doing at Paris unless he represents him?—the hopes of the 'Progressive' who thinks to get a free hand in questions of Scripture, and to smuggle in evolution by the way, are doomed to disappointment.

"In the sphere of politics the Roman Church is not bound. Quite unlike is the situation as regards philosophy, science, and criticism. On all the subjects comprehended under these three titles she has given hostages to fortune or to history. There is a received view of the Bible. It can not be altered. There are dogmas which scientific men judge to be irreconcilable with ascertained facts. The dogmas will be maintained. There is a philosophy of the schools now largely fallen into discredit among

thinkers, and hard pressed by the squadrons which Kant, Hegel, Herbart, Schopenhauer, and their lieutenants have brought up against it. The philosophy will be taught in all Catholic seminaries as long as they exist. To these things the church is pledged. If she can not advance, still less can she retreat. Her system is literally crystallized. Were it to change, it would fall into dry powder and float on the wind.

"These facts are plain, if we will not turn our eyes from them. And it is the conviction of her people, as of her bishops and the Pope himself, that to them the church owes her strength and dignity. But they may be disguised a little by the vague language, sometimes heard on Catholic platforms, in which excellent, well-meaning men declare that Rome has never been the enemy of learning; that she welcomes the results of science; and that truth can not contradict truth. Does this imply that Rome will surrender Adam to Mr. Darwin? Or the deluge to Mr. Huxley? Not the least in the world. She will surrender nothing. But she may be long in expressing a final judgment, altho it is anticipated in every one of her approved text-books. She may deal gently with individuals. Where the mysteries of psychology are concerned, she may tolerate—that is to say, not condemn outright—views sanctioned by an illustrious name, on condition that her school-system is left in its pride of place. With democracy she can come to terms, and she will do so, if it holds its own in the age before us. But her dogmas, her Bible, her metaphysics, her autocratic claims, she will never modify—and the world is agreed that she never could without denying herself in the face of mankind. The *semper eadem*, which is her boast, is likewise her *ne plus ultra*."

"RITUAL MURDER" AND ANTISEMITISM IN EUROPE.

THE singular belief that Jews murder Christian children to obtain blood for ritual use has been gaining strength in Europe of late, particularly in Germany and Austria. *The Independent* (January 10) speaks as follows of this delusion, which has frenzied the minds of Christians against the Jews much as similar stories have inflamed the Chinese against the Christians:

"The case has been fomented by a number of cases of mysterious murder, like those of the as yet undiscovered 'Jack the Ripper,' whose bloody deeds in the Whitechapel district caused such excitement in London a few years since. Recent victims in Bohemia were boys and girls, whose assassination in districts largely inhabited by Jews, the populace, failing to discover any plausible cause, account as 'ritual murder.' A young Jew, who on a second trial has been found guilty as an accomplice in one such case, endeavored to clear himself by falsely accusing two other Jews as the real murderers, and asserted that he had seen them drawing off the blood, thereby strengthening the popular delusion. Millions of people in Germany, Austria, Hungary, and Russia remain fixed in the superstitious belief that certain secret Jewish services are performed with the blood of Christian children."

A caustic arraignment of these Christian Jew-baiters appears in the *London Register* (November 30), which, tho one of the two leading Roman Catholic weeklies of England, often treats what it deems reprehensible beliefs among Roman Catholics with unsparing vigor. It says:

"Jew-baiting still continues to be the weekly pastime of the Catholic press in Rome—a press controlled by, if not actually owned by, a section of the Catholic clergy in the Eternal City. That mischievous journal, the *Voce della Verità*, and its contemporary, the *Osservatore Romano*, persist in exerting their influence in encouraging the antisemitic campaign in Austria, and their thinly disguised joy at the result of the recent Polish so-called ritual murder trial makes but sorry reading for tolerant Catholics. According to the Roman correspondent of *The Morning Post*, a committee of Belgian Catholics has been formed to appeal to the Holy Father to instruct the clergy not to encourage antisemitism nor to uphold the calumnious ritual murder theory. A somewhat similar appeal was addressed to Rome a few months ago by some representative English Catholics, including members of the nobility—for Rome thinks little of memorials not