in a witness-box, could give reasons for his judgment which would satisfy a jury. The question is determined by the most delicate weighing of probabilities, by a subtle tact similar to that by which the most complicated operation of an artificer is carried on. Is not this the very process which we have to apply to the most difficult problems of life? The organon of mathematical reasoning is a far clumsier and blunter instrument than the organon by which humanistic difficulties are decided, while the organon of scientific reasoning is clumsier and blunter still. Mathematics deals for the most part with things which can be accurately apprehended by the mind. It aims, more than anything else, at exactness, and although in its higher branches it admits hypotheses of probability, yet its principal object is certainty. Science goes farther than this; it not only admits certainty of apprehension, but it claims that it should touch, see, and handle the matters with which it deals. Few results can stand this coarse analysis. If biology and chemistry refuse to acknowledge any truth which cannot be demonstrated to the senses, they put out of their reach those truths which are the most important to know, and which can be arrived at by probability alone. If methematics admits of demonstation which shall give a clear proof to any one who asks it, it removes from its sphere those judgments which rest upon the trained instinct of experts, and which can only be made clear to one who has undergone a similar training.

Regarded from this point of view, humanism was no bad preparation for active life or for devotion to any other study. It had the advantage of being small in compass, and of limits which were easily ascertained. Devotion to humanistic studies, properly understood, did not exclude application to other studies which might be considered more grave and important. William Pitt, chancellor of the exchequer at twenty-two, prime minister at twenty-four, was a first-rate humanist, as he was an excellent mathematician; but this did not prevent him from being an admirable orator, a close reasoner, a profound student of history and politics, and a political economist far in advance of his time. Much as we may regret that education in Protestant countries, especially in England, Holland, and Sweden, was narrowed by the humanistic tendency, we must not refuse to give that training all the credit which it deserves.

OSCAR BROWNING.

OF 250 railway employees examined in Budapest by Lichtenberg, 36.8 per cent were found to have impaired hearing, — a result which is certainly startling.

PUBLIC INSTRUCTION IN NEW YORK STATE IN 1886.

THE advance sheets of the annual report of the superintendent of public instruction of New York state, Andrew S. Draper, while not containing the full tables of statistics and the appendices that will accompany the full report, enable us to judge of the work of the past year.

The aggregate amount of money expended by the department during the year was $13,896,834.08, and it covers the expenses of supervision, of normal schools, teachers' institutes, Indian schools, and institutions for the deaf, dumb, and blind. It does not include the expenses of those parts of the school system that come immediately under the supervision of the regents of the university. The total number of teachers employed was 31,325, of whom 25,373 were females. The average annual salary of teachers was $701.31 in the cities, and $261.66 in the towns. The number of children of school age — between 5 and 21 years — was 1,735,073. The number who attended the public schools at some time during the year was 1,027,767; the average daily attendance was 625,813. The whole number instructed in the common schools, normal school, academies, colleges, private schools, and law and medical schools, was 1,212,327. The average number of weeks taught was, in the cities, 39.7, in the towns; 33.6.

From the data collected, it seems that fifty-nine per cent of the school population attended the public schools at some time during the year, against sixty-nine per cent in 1870. At first sight this number seems very small, but its smallness is apparent rather than real; for all persons between the ages of five and twenty-one are reckoned as of school age, and it is therefore possible for a boy to be returned as not attending school who has been fifteen years a pupil. Furthermore, it must be recollected that among the forty-one per cent of non-attending children are reckoned all these who attend private schools and academies; and in a state like New York, which contains a very large urban population, the number of pupils in private schools and academies will be very large: so the figures as to school attendance cited above, and which first meet the eye in reading the report, are misleading. In another paragraph, however, Superintendent Draper makes the direct statement that the number of pupils in the public schools, private schools, and academies, at some time during the year, was *sixty-eight* per cent of the school population.

Mr. Draper finds that the compulsory-education act of 1874 has not only been ineffectual, but that in its present form it is hardly capable of being

made to operate successfully. He says that "school trustees elected to supervise the schools, and serving without any compensation, naturally object to being turned into constables and police officers for the purpose of apprehending delinquent children or the children of delinquent parents. Moreover, the schools are full. In most of the cities, the accomodations are taxed to the utmost. Any effectual execution of the law would at once create the necessity for additional buildings in every city of the state. But, notwithstanding these considerations, the problem cannot safely be treated with indifference by the state."

The normal-school work in the state seems to be in excellent condition. There are nine normal schools, employing 128 teachers, and having a total enrolment of 5,608. While these schools are in good hands, and doing excellent work, yet they are inadequate, for as now operated they do not fill one in ten of the vacancies occurring in the ranks of the thirty thousand common-school teachers of the state. The superintendent urges that the normal schools might accomplish larger results should they spend less time in foundation work, and confine themselves to special training and practice. Moreover, some scheme should be devised to bring the normal schools to a substantial uniformity, instead of leaving them so subject to local demands and influences as they now are.

After treating of the various other subjects that have come under his supervision, Mr. Draper concludes his report with some general observations and suggestions of more than local or state application. He inquires whether, since the state of New York is now spending $14,000,000 annually in support of its public school system, it would not be a good idea to spend a few thousand dollars, once in a while, in determining how to spend this vast sum to the best advantage. "Is our education as practical as it might be? Do we reach all the children we ought? In our ardor over the high schools, which nine-tenths of our children never reach, have we not neglected the low schools? Is there not too much French, and German, and Latin, and Greek, and too little spelling, and writing, and mental arithmetic, and English grammar being taught? Have we been as ambitious of progress in the lower grades as in the advanced? Are not our courses of study too complex? Are we not undertaking to do more than we are doing well? Is not the examination business being overdone? Are we not cramming with facts, which will soon be forgotten, in order to pass examinations, rather than instilling principles which will endure? Is not our education running on the line of intellectuality alone? Are we educating the whole man? Are we not giving up moral training more than we ought, because of the danger of trenching upon sectarianism? Is there no way of adhering to the one, and avoiding the other? Are we doing what we might in the way of physical culure? Ought not the state to do something at least to encourage industrial schools? Would we not secure better schools in the country if the township was the unit of government rather than the present school district? Does not the present arrangement help the well-to-do and leave the poor to get along as best they may? Should not the law which fixes five and twenty-one years as the limits of school age be changed to six and sixteen years? Is it not time to forbid the diversion of library moneys from their legitimate uses, or to provide that they may be expended for school apparatus instead of teachers' wages? Is our system of apportioning public moneys the wisest and the best? Is there no way of specially aiding the small, remote, and poor districts? Do our different classes of educational work supplement each other and fit together so as to make a symmetrical and complete system, and do they co-operate as they might and ought?"

As Mr. Draper adds, these are live questions, and appeal to educators the world over. To answer them, he makes the suggestive recommendation that a council of say thirty eminent educators, representing college, normal school, high school, and common school alike, be called, to meet at Albany to discuss these questions and make such recommendations and suggestions concerning them as it sees fit. In New Jersey, a state council of this sort is in process of organization, in pursuance of President Meleney's recommendation, made to the state teachers at their annual association meeting in Trenton last December; but there, it is unofficial, the first move having been made by the teachers. If it is wisely constituted, it should become an educational factor of great force in the state; and if Superintendent Draper's plan is carried into effect, New York state will have a similar body of representative advisers on educational subjects.

THE TRAINING OF THE FACULTIES OF JUDGMENT AND REASONING.[1] — *II.*

I NOW proceed to show how some of our school subjects may be employed in the systematic training of the judgment and the reasoning powers. I shall follow, as nearly as possible, the order laid down in the previous article.

The lessons which I have described under these

[1] From the *Journal of education*, a paper read before the Education society, Oct. 25, 1886.