

OUR ASTRONOMICAL COLUMN

THE TRANSIT OF VENUS IN NEW SOUTH WALES, &c.—In his address as president of the Royal Society of New South Wales, read May 3, Mr. H. C. Russell, the director of the Observatory at Sydney, gave some account of his arrangements for the observation of the approaching transit of Venus in that colony. Provision was liberally made last year by the legislature, and a sum of 500*l.* has been placed at Mr. Russell's disposal for this purpose. With this he states he will be able to provide four high-class 6-inch equatorials, exactly similar to those which are to be used by European observers, and two of 4½ inches. There are remaining from the last transit one equatorial of 11½ inches, one of 7¼, one of 5 inches, one of 4¾, and one of 4¼ inches. He hopes to be able to take up four stations, in addition to the Observatory, with two observers and two telescopes at each point. In order to make the best of the chances of favourable atmospheric conditions, elevated points on the east coast of New South Wales, have been selected, which, it may be fairly anticipated, will have a clearer view an hour after sunrise than could be looked for near the sea-level. Mr. Russell remarks that in observing the transit of Mercury last November, the observers were stationed at Bathurst, Katoomba, and Sydney, places which he had thought were far enough apart to secure different weather; but the result showed that the weather was practically the same at the three stations. This induced the unpleasant reflection that it may prove cloudy all along the coast on December 6, and he had therefore gladly taken advantage of the recent commission to Lord Howe Island to make some inquiry as to its suitability as a station. It is found that an elevated spot is easy of access, and the weather at the hour and season is almost sure to be fine.

We have also received from the Imperial Observatory of Rio de Janeiro a report on the proposed arrangements to be made by the Brazilian Government for securing observations of the Transit. In addition to Rio, it is intended to establish a station at Pernambuco and to equip an expedition to Santiago de Cuba. The details are in charge of M. Cruls, acting director of the Observatory at Rio.

SOLAR PARALLAX FROM OBSERVATIONS OF MINOR PLANETS.—Mr. David Gill, H.M. Astronomer at the Royal Observatory, Cape of Good Hope, has arranged with a number of observatories in both hemispheres for corresponding observations of the minor planets, *Victoria* and *Sappho*, about the times of their oppositions in the present year. *Victoria*, in opposition on August 24, will be distant from the earth 0.89 of the earth's mean distance from the sun; and *Sappho*, which comes into opposition in R.A. on September 24, will be within 0.85, so that we have in each case a favourable opportunity of applying the method of determining the sun's parallax, which was advocated and also applied by Prof. Galle, the director of the Observatory at Breslau. In a communication to the *Astronomische Nachrichten*, Mr. Gill states that the necessary extra-meridian observations will be made in the southern hemisphere at the Cape, Natal, Melbourne, and Rio de Janeiro, and in the northern hemisphere at Dunsink (Dublin), Strasburg, Berlin, Bothkamp, Leipsic, Upsala, Moscow, Clinton, U.S., and probably at Kiel. From the clearer skies of the southern hemisphere, he believes that a fully corresponding number of observations will be secured there, notwithstanding the smaller number of observatories, and he invites co-operation from other establishments in the northern hemisphere, on this ground. A list of the proposed stars of comparison is given in his letter.

COMET 1882*a* (WELLS).—The Emperor of Brazil, telegraphing to the Paris Academy of Sciences (of which body his Majesty is a member), reports the visibility of this comet at Rio de Janeiro, on June 17, and that three days later the nucleus was very bright, and the tail 45' long. If there be no error in the telegram, the development of the tail must have been rapid after the perihelion passage.

Prof. Zona has made a communication to the Società di Scienze Naturali di Palermo, in which he describes the undulations in the tail observed there in the week following April 14. On the 17th, in a fine sky, it is remarked of the phenomenon—“Sembra che la luce della coda vada a poco a poco diminuendo stringendosi attorno il nucleo come se venisse da questo attratta, poi ad un tratto si spande di nuovo.”

EDUCATION IN THE UNITED STATES¹

THE great work of the American Bureau of Education continues, like that of a large Reference Library among men who know its value. About 100 inquiries a day are addressed to it, and 150 letters of information are sent out on subjects varying from the Semitic language to dress-making, and including everything that comes within the limits of education. Its latest report, in which everything is tabulated, down to the opening of a normal summer school only kept open for four weeks, and in which attention is called to many matters of special interest, cannot be gone through without advantage to educationists in any civilised country, and most of all to those in our own.

If we are accustomed to think that Americans look upon their country with complete satisfaction, and as standing ahead of the Old World, more particularly in the matter of education, we shall not find such self-praise in the Government reports. A very interesting *résumé* is given of what foreign countries are doing. Attention is called to the more thorough manner in which young persons aiming at commercial pursuits are instructed on the Continent, while England is quoted as an example to be followed of the higher education of women. It is satisfactory to find, in this Report also, that the province of Ontario, in Canada, stands at the head of educating countries. There a system of free schools and compulsory attendance was established in 1871; and while the number of children within the school ages of five and sixteen was 492,460, there were actually attending schools 489,015! On the other hand, it is surprising to find the illiteracy of a very large proportion of the population of Prussia, where of 40,000,000 persons (including infants, &c.), 25,000,000 were unable to read or write!

The schools requisite to supply education to so widely spread a population as that of America are far more numerous than in our crowded country. Naturally, therefore, it is a great difficulty to find sufficient teachers properly educated and qualified for this important work. It might seem, at first, that, in a country where, on an average, each individual is better educated than in England, there would be no lack of able teachers; but teaching is an art requiring a technical education as much as any other art; and the work of those who have not had this technical training is as clumsy as most amateur work is, and is found to have the fault of superficiality. The Bureau of Education is simply an office of information and reference; it has no central control over the various States; and one result of this is, that no uniform standard of capacity is required of those who present themselves as teachers, and two standards are to be found, not only in the same State, but in the same city. A more unsatisfactory difficulty still is the favouritism and even corruption, not infrequent in appointing and dismissing teachers, who, in many cases, seem to go in and out of office like the nominees of a government. The picture of corruption on page xxii. must surely be an extreme case; but its possibility must add greatly to the difficulty of the situation. Pennsylvania's is called a proud record, there dishonesty among school-board officials is almost unknown; “a few thousand dollars would cover all the losses.” These things tell greatly against the business of a teacher being an attractive one, and, to add to them, in many States, as in Virginia, diminished public funds have been allotted to the common schools; the number of schools has been reduced, and the salaries of the remaining teachers lowered. In some countries in that State the local boards determined to open no schools, and to use the income for paying off debts.

The small pay of teachers, in the lowest standards especially leads them to throw up that branch on the first

¹ United States Report of the Commissioner of Education for the year 1879. (Washington Government Printing Office, 1881.)

opportunity—a very mischievous thing in its results—for in nothing is it more true than in the case of education that what is well begun is half done. Hence a good infant school is an immense help to all subsequent stages, and *vice versa*. So much is this deterioration felt in Michigan, where salaries of schoolmistresses have been reduced to the level of those of domestic servants, that the attendance at the primary schools has absolutely fallen off; and the explanation of it seems to be that these faults are well known to the intelligent public of the United States, and accordingly the children are being removed to private schools. The Commissioner very aptly quotes Roger Ascham's words:

"It is a pity that commonly more care is had, yea, and that among very wise men, to find out rather a cunning man for their horse, than a cunning man for their children. . . . To one they will gladly give a stipend of 200 crowns by the year, and loath to offer to the other 200 shillings. God that sitteth in heaven laugheth their choice to scorn, and rewardeth their liberality as it should. For he suffereth them to have tame and well-ordered horses, but wild and unfortunate children; and therefore, in the end, they find more pleasure in their horse than comfort in their children."

This is not a bright picture of the work of education in America. It certainly seems an indication that our brethren there are losing faith in the old rule, that what is worth doing at all is worth doing well, but it does not go very deep below the surface of so vast a work. On the whole there continues a steady rise in numbers of both schools and pupils, though not so large since 1875, as we should have expected in such a progressive country. This rise also is almost wholly in cities, again pointing to the difficulty of supplying the *number* of schools required in so wide-spread a country. In one of the most flourishing of these cities also, Chicago, it sounds more like the Old World to read that more than 2000 children are taught in underground rooms, where the light is so bad as to expose their eyes to serious injury! In New York and New Jersey, where population in its extremes of rich and poor keeps crowding together as in older countries, the school attendance is actually falling off. In Maine, New Hampshire, and Rhode Island the population is, curiously enough, at the present time decreasing, but school attendance is increasing; not quite one-third of the population attend daily; nearly two-thirds are on the books. In nearly all Southern States there is considerably increased attendance. The administration of the Peabody Fund has had a remarkable influence in developing the school spirit in the south, in awakening the people to a sense of their obligation with reference to the support of public schools and in maintaining a high standard for such schools. This last result has been accomplished by the wise policy pursued by Dr. Sears in insisting upon a certain degree of excellence in a school as the condition of receiving aid from the fund.

An increase of more than 50 per cent. in the number of students in the Schools of Science in 1878 led to the number of these schools being raised from 809 to 884; but this increase of pupils hardly kept up in 1879. Still science, though a long way behind theology in number of schools, is rapidly gaining ground upon it, and has already far outstripped it in number of students. In 1870 there were 80 schools of theology with 3254 pupils, which numbers have grown respectively to 133 and 4738; but the corresponding numbers for science are 17, increasing to 81, and 1413, increasing to 10,914! This has called for a large increase of teachers; and, accordingly, while in secondary schools the proportion of those receiving a scientific, to those receiving a classical, education is as 2 to 5, in the preparatory department of colleges the proportion is as 4 to 5. At some of these colleges there are workshops, where the use of tools is taught to students by their being used in the production of other tools and

things useful to the establishment. The Massachusetts Institute of Technology has one of these workshops upon a plan designed at the Imperial Technical School of Moscow, Russia. The income of these scientific colleges is partly derived from the sale of lands allotted to them in each state; 30% a year is charged to each pupil for tuition, but it represents but a small percentage of the income. The Cooper Union Free Night Schools of Science are well described as "an intelligent application of a great charity. Their purpose is the technical instruction of the labouring classes, and the means used are a free library and reading-room, free lectures, and two classes of schools, viz. the Evening Schools of Science and Art, and the Art School for Women. All money earned in the schools belongs to the pupil, and a number are thus enabled to support themselves while studying. A Telegraph Company has appointed a teacher in this school, who trains the pupils in their methods of working their instruments, and they have employed many of its graduates on their lines. Still the Report endorses the doctrine that even in technical schools, principles, not practice, must be the leading object of a school, and that even to those following a special business, a broad general culture is very important, and a want of it very much felt. After reviewing the various schools and institutions of this class in the United States, the Commissioner of Education is led to the conclusion that "the present condition of scientific and technical schools in our country is thus seen to be very promising. . . . Already they have excited the people to an appreciation of scientific methods and processes in their application to agriculture and the mechanic arts; and as the results of such methods are more widely known and more fully comprehended, the institutions rise in favour and influence, and the demand for their graduates increases."

Drawing is highly eulogised, and its importance insisted upon. In Massachusetts any town *may*, and every city and town having more than 10,000 inhabitants *shall*, provide for instruction therein; and a training school for teachers has been organised to meet their wants, with the result also of supplying designers to many manufacturers who were in want of them.

On the law schools in America, our Report observes that it is surprising that a profession which requires such thorough preparation, and which has in it so large a number of men of wealth, and one which occupies so important a place in the public affairs of the country, has done so little to endow its schools in the most substantial manner.

Medical men are very plentiful in the United States compared with other countries: 1 to every 600 inhabitants, while Canada has only 1 to 1200 inhabitants, Great Britain 1 to 1672, Germany 1 to 3000. A higher standard of examination is recommended, and an all-round education insisted upon. Only five schools at present require the highest amount of study to qualify a full practitioner.

A valuable branch of education is the training schools for nurses, which adopt a very high standard as to whom they receive for their important functions. A small sum, however, is *paid* to students, besides board and lodging, the latter of which is carefully provided them at a bright, cheerful home away from the hospitals where their duties are inculcated.

More than 30,000 blind people are among the population of the United States, and their education is considered, like other education, a duty and not a charity, and is provided out of national funds. Again, the education of the feeble-minded is systematically provided for, as being necessary for the prevention of crime, and useful to individuals of all classes. This leads on to the most important question in a country where population is thickening even as much as in America, of Reform Schools. There, under the Michigan system especially, which all should investigate, it seems fully realised that

prevention is better than cure; and that while these industrial homes are indubitably powerful in preventing the formation of criminals, prisons, on the other hand, are just as indubitably powerful in carrying it on!

Evening High Schools have been worked in several American cities, but hardly with results lending much encouragement to increase. One would think, however, that the knowledge gained at elementary schools by the age of fourteen would lead to a wish for more on the part of many, to whom a library only could not supply it. But free libraries are a great power in the United States. Forty-nine new ones were opened in 1879, containing 86,779 volumes, making a total of 3842 public libraries of all classes. The correspondence with the Bureau of Education on the subject of public libraries far exceeds that on any other subject; academies standing next, and art and science standing curiously low for a country like America. Yet local feeling varies even on a favourite subject like free libraries, the large manufacturing town of Paterson being without one like so many populous English towns.

Like free libraries also, agricultural education is a department in which England, notwithstanding the height to which husbandry has been brought there, stands lower than in any other country.

One can hardly, nevertheless, read this Report without feeling that spite of our shortcomings the advantages are not all on the side of America. Our compactness, plentiful supply of thoroughly-trained teachers, and, we must add, higher sense of honour in political transactions, perhaps owing in part also to the close inspection to which the works of every man are subjected here, entitle us to feel how far better we are placed, as far as meeting educational requirements goes, than the thin and scattered families of the United States.

MALAYO-POLYNESIAN LINGUISTICS¹

THE learned authors have earned the thanks of linguistic students by issuing, in a separate form, this important contribution to a better knowledge of the Melanesian and Papuan languages, which was first published in the eighth volume of the *Philological Transactions* of the Royal Saxon Scientific Institute. It forms the first instalment of a series of papers intended to supplement the comprehensive and well-known treatise of H. C. von der Gabelentz, published at Leipzig in 1860 and 1873. To the languages dealt with in that work are now added two others: that of Mafór (Núfór), Geelvinck Bay, and a dialect current on the Astrolabe Bay Coast, North-East New Guinea, from materials supplied by Van Hasselt and Miklucho-Maclay respectively. To these notices are added the Papuan idioms spoken in the islands of Errúb and Maer, Torres Strait, and in Segaar Bay, near Cluer Gulf, South-West Coast of New Guinea, the former by Herr Grube, the latter from data supplied by H. Strausch to the *Zeitschrift für Ethnologie*, viii., pp. 405-18.

In the introduction, the question of the relations of the Papuan and Malayo-Polynesian linguistic groups is discussed at some length. It is satisfactory to find that the authors seem at last disposed entirely to abandon the views held by the elder von der Gabelentz regarding a possible, if not probable, fundamental unity of these families. The key-note of the objection to this theory is struck in the following paragraph, at p. 4:—"Assuming that the linguistic affinity were fully established, we should have at once a direct antagonism between anthropology and philology. Two linguistic groups are related; of the corresponding ethnical groups, one belongs to one, the other to another race of mankind. How is this possible?"

To many this may seem merely an old-fashioned

¹ "Beiträge zur Kenntniss der Melanesischen, Mikronesischen und Papuanischen Sprachen," von G. von der Gabelentz und A. B. Meyer. (Leipzig, 1882.)

a priori argument, of no value in itself unless supported by the evidence of facts, which have hitherto pointed at an opposite conclusion. But one of the most firmly established and universally accepted principles of anthropology maintains the evanescent character of human speech as compared with the relative fixity of physical types. Ethnologists are of accord as to the substantial unity of the Iranian, Semites, Berbers, Basques, Georgians, and other members of the so-called Caucasic ethnical stock. Philologists are, on the other hand, equally of accord as to the essential difference of the Iranic, Semitic, Hamitic, Basque, Georgian, and other linguistic groups spoken within this common Caucasic ethnical group. Here we have fundamental racial unity combined with organic divergence of speech, and the apparent contradiction is readily reconciled by the doctrine of the far greater permanence of physical, as compared with linguistic types. The race, even notwithstanding the intrusion of foreign elements, remains essentially one; the speech, presumably one originally, owing to its greater evanescence diverges in various directions to such an extent, that all traces of this original unity have long been effaced.

Coming now to the Oceanic area, where the Papuan and Malayo-Polynesian forms of speech, shown to be fundamentally one, while the physical forms are confessedly distinct, the case would be entirely reversed. Instead of physical unity, combined with linguistic disparity, we should have the opposite phenomenon of linguistic unity combined with physical disparity. Such a phenomenon is certainly neither intrinsically impossible nor altogether unknown to science, as appears, from the Persian-speaking Házéráhs and Aimaks of North Afghanistan, or the French and English-speaking negroes of the New World. But where they occur, such cases are easily accounted for by political supremacy, social contact, superior culture, and other obvious influences. These influences have also been to some extent at work probably for many ages in the oceanic world. The Malays in the west, and the brown Polynesians in the east, both of kindred speech, and both of roving or piratical habits, have in this way influenced numerous Papuan and Melanesian peoples in their respective domains. Hence we find the Tagalas, Bisayans, and even some of the Negrito Aetas of the Philippines, as well as some of the Negrito Samangs of the Malay Peninsula, and most of the Formosan wild tribes speaking various more or less divergent dialects of the organic Malay speech. In the same way the Papuan Motu tribe of the south-east coast of New Guinea, many of the Melanesian Fijians, New Hebrides, and Solomon Islanders are found to be now speaking various more or less divergent dialects of the organic Polynesian speech.

It was precisely from these misunderstood facts that philologists had generally arrived at the surprising conclusion that, in point of fact, the Polynesian and Melanesian languages were essentially one, thus placing anthropology and philology in antagonism. The Melanesian and Papuan dialects selected by Hans Conon von der Gabelentz, and again quite recently by the Rev. Mr. Codrington, as the subjects of comparison, were not, properly speaking, Melanesian languages at all, but Polynesian forms of speech imposed by the restless Samoans and other Polynesians on these Papuan and Melanesian populations. Obvious instances are the almost pure Papuan Motu people speaking a tolerably correct Samoan dialect (Rev. W. G. Lawes), and the mixed Melanesians of Fotuna, in the New Hebrides, speaking idioms closely related to the same group.

But it is remarkable that the reverse phenomenon has not yet been recorded. At least no instance is known to the writer of a distinctly Malay or Polynesian tribe speaking a distinctly Papuan or Melanesian tongue. It is more than doubtful whether such a case will ever be discovered in this watery domain, where the Malays and Polynesians