into a permanent occupation; and with permanent occupation comes in at once the idea of ownership. Ownership of land is the outcome of a settlement in permanent homes, and the adoption of a regular system of agriculture. This ownership would be of the group, the *universi* of Tacitus, and must be *common* ownership in the strictest sense of the word: for the shifting occupation of individuals or households (*quos mox inter se secundum dignationem partiuntur*) would continue for a while after that of the larger groups (*agri ab universis in vices occupantur*) had ceased; and in this interval there would be real ownership, because permanency of occupation, on the part of these larger groups (*universi*), originally themselves family groups in nature, and probably still so in their prevailing character. At last the same causes which had called into existence the common ownership of the larger group would create, in turn, the individual ownership of the household. This would probably be a very rapid process. Such as it is here described, as a probable result of known causes, it is precisely what Mr. Seebohm appears to have in mind (p. 367) when he says, "It is certainly possible that during a short period . . . tribal households may have expanded into free village communities." If it took place at all, it must have been in this period of blank between the construction of the *limes* and the migrations of the fifth century.

The free village community is therefore a natural and probable connecting link between what we know to have existed in the first century, and what we know to have existed in the fifth century. That it actually existed among the Germans during this epoch, we have no direct and positive evidence; but there are numerous features of the later system, in the community of cultivation, the rights of pre-emption, and the traces of occasional re-distribution, which are easiest explained as survivals of the village community. For a description of these, I need only refer to Sir Henry Maine's 'Village communities,' and similar works.

Of actual cases of village communities, indeed, in any country, it is surprising how few we have knowledge of, considering the large part they have played, of late years, in treatises upon early institutions. The villages of India are composed of independent families, joint or individual. Those of the South Slavonians are groups of house communities; the Celts never appear to have had any institution of this nature; the Greeks and Romans afford no traces of them; the German villages, as Mr. Ross has proved, were communities of independent proprietors, although bound together by ties, which seem to indicate a previous condition of collective ownership; Russia alone affords unquestionable examples of the village community of the theory. What is common to all of these, and may be fairly pronounced a universal institution of the Indo-European race, if not of the human race, in its early stages, is the family group with collective occupation of land. The nature and organization of the group, and the later history of its relation to the land, are questions into which we have not space to enter.

The obscurity and vagueness in the prevailing ideas upon the subject result from not attending to the fundamental character of the transition, in early society, from the personal structure of society (based upon the family relation) to the political organization (based upon territory). In the earlier stage we have family groups occupying a definite territory: in the later stage we may have a definite territory — the *mark* or village circumscription — occupied and owned in common by a group of proprietors. These proprietors may be the family group of the earlier stage, or they may have taken in members of different origin: in any case, the point of view has shifted, and is now territorial instead of personal. This condition of things, if it ever existed, is the free village community. W. F. ALLEN.

TECHNICAL EDUCATION IN EUROPE.

A SECOND and important instalment of the Royal commission, appointed in England in 1881 to inquire into the subject of technical education, was published on May 16. The preliminary report presented during the session of 1882 dealt exclusively with the condition of things in France, where educational development has been most remarkable. The percentage of illiterate conscripts in 1833 was forty-seven and eight-tenths: in 1867 it had fallen to twenty-three, and in 1880 to fifteen, per cent. The law of the 16th of June, 1881, which came into operation on the 1st of January following, decreed gratuitous instruction available for the working-classes throughout an extended series of schools, commencing with the Salles d'asile, which are being converted into kindergarten schools, and graded upwards to the 'superior elementary schools,' in which technical instruction is given, and trades taught. The commissioners appear to have been favorably impressed with what they saw of the handicraft teaching of the Christian brethren in France, Belgium, and Ireland. The combination of manual with ordinary literary instruction imparted to very young children appears to have been first tried in 1873, at the communal school in the Rue Tournefort, with such satisfactory results that schools of the same type are being rapidly and extensively established. "Drawing, modelling, and carving are taught as part of the curriculum; and lathes, forges, and joiners' benches are as much matters of course as desks and blackboards. In the Boulevard de la Villette is the apprenticeship school, established some twelve years ago by the city of Paris, for boys who have completed the ordinary primary-school course, and to whom is given what professes to be a very thorough training in the theory and practice of numerous handicrafts; the pupils especially distinguishing themselves as pattern-makers and engine-fitters. Nearly fifty thousand pounds is said to have been expended on the establishment of this institution, and nearly three thousand pounds is required for its annual maintenance." The abolishing of the old system of apprenticeship is the main object of this institution. The most striking examples of primary schools are to be found

in the Swiss cantons. In Zurich a communal school is described the building for which cost sixty-six pounds per pupil, — five times the much-complained of London average. There are no fees, and ninety-seven and a half per cent of all the children of school age are said to attend schools of this type. The average attendance is returned as ninety-five, — a remarkable contrast to the seventy-two per cent which was the average in England and Wales a year ago; and no proposal for the reduction of school expenditure can find a hearing as an election cry in Switzerland. Without a mine, a canal, or a navigable river, Switzerland carries on extensive cotton and silk weaving, paper-making, and calico-printing works; and the report grows quite enthusiastic on the aniline-color works of Basle, an abundant supply of skilful chemists being thoroughly trained in such institutions as the Polytechnicum at Zurich, or the Bernoullianum at Basle. The report shows that the higher educational institutions are as various in the different countries as they are generous and complete in most. In the German empire there are twenty-four universities. The buildings for the Strasburg university are now nearly complete, and are to cost six hundred thousand pounds. The department of botany has had a sum of twenty thousand pounds devoted to it; that of physics, thirty thousand pounds; and that of chemistry, thirty-five thousand pounds. The votes for maintenance are similarly ample. The rivalry between the universities and the polytechnic schools is wholesome, if costly. New buildings are now being completed at Charlottenberg, in which the work of the old technical high school of Berlin will be carried on. There are many intermediate schools between the primary schools and the universities and polytechnic schools. The 'Fortbildungsschulen' of Germany are very beneficial institutions. "The work of the primary day schools is carried on in evening classes with a direct and practical bearing on the occupations upon which the pupils have entered. But in every country, and notably in France and Belgium, there are night classes provided for the instruction of the industrial classes in drawing and modelling, directly applied to decorative art, as well as in popular science and general knowledge. Then, again, there are schools still more specialized for instruction in weaving, in practical mining, in dyeing, and in designing for every conceivable kind of artistic manufacture. This teaching is often gratuitous; but, where fees are exacted, they are always small; and there is everywhere prevailing a system of bourses and scholarships by which meritorious pupils are enabled to carry on their studies. The state, the province, and the commune bear the charges in their allotted proportions." The use of museums and art-galleries, open on Sunday for the benefit of designers, is much dwelt on by the commissioners, who embody a recommendation of Sunday opening in their report.

Mr Samuelson and his colleagues travelled at their own expense, and have spared no exertion to place their facts before the public in a complete and useful manner.

THE AGE OF STEEL.

The creators of the age of steel (on Sir Henry Bessemer, Sir C. W. Siemens, Sir Joseph Whitworth, Sir John Brown, Mr. S. T. Thomas, and Mr. G. J. Snelus). By W. T. Jeans. New York, *Charles Scribner's sons*, 1884. 314 p. 8°.

In this little collection of biography, the author has given a very interesting, and we may presume thoroughly authentic, account of the lives and the achievements of the great engineers who have during the past generation, 1850 to 1880, become famous as the 'creators of the age of steel.'

The list given by Mr. Jeans includes Messrs. Bessemer, Siemens, Whitworth, Brown, Thomas, and Snelus, but omits Mr. Mushet (in regard to whose claims a somewhat sharp controversy is now going on in the English periodicals), and makes no mention of two great American claimants for hardly less honor than is indisputably due to Bessemer himself, — Mr. Kelly, the contemporaneous inventor of the pneumatic process; and Mr. Holley, the great engineer, who by his wonderful ingenuity in the development of the details of the mechanical processes involved, and by his exceptional genius for designing automatic and efficient machinery, brought up the productiveness of our American establishments to double and treble that of those of European construction, and, in some cases, to several times the magnitude of output for which they were originally calculated.

The sketch of Sir Henry Bessemer is particularly full and satisfactory; and the author evidently feels unlimited admiration for the man, as well as for his work. He outlines the career of the exiled Anthony Bessemer, the father of Sir Henry, whose expulsion from France gave to Great Britain a family of whose achievements the world has learned to speak as those of its greatest benefactors. The father was no less ingenious than the son, and was famous, in his day, for his success in the arts of the gold-refiner and of type engraving and founding.

The son, now Sir Henry Bessemer, was born in England in 1813, and at a very early age exhibited his predilection for mechanics, and especially for its more artistic branches. He became a modeller, a designer, and an engraver, and invented new processes for use in the stamp-office, that were admired both for their singular ingenuity and for their efficiency. Losing the hoped-for reward for these inventions through those delays and those soulless methods characteristic of government offices,