

# Surveyors of The Past

FOREWORD BY CHARLES FAIRHALL

*The following article is a reprint of a paper presented at the 23rd Annual Meeting of the A.O.L.S. and printed in the 1915 report.*

*Considering the social prestige enjoyed, the remuneration received and the protection afforded by law, the present day reader may be excused for feeling slightly envious of his Roman professional predecessors. The only religious character associated with land surveying to-day, sadly enough seems to be the occasional reference to "those God-damned surveyors". How the mighty have fallen!*

BY J. L. LANG

It may be of some interest to this Association to hear a few details about a similar body which existed many centuries ago. With its roots in the remote antiquity of Etruscan civilization and its growth throughout the glorious period of Imperial Rome, there flourished a professional corporation of agrimensores or land surveyors. It became extinct and its literature and records for the most part lost, in the dark ages that succeeded the fall of the Empire. But enough remained for the patient and laborious researches of a few scholars to reveal a comparatively clear picture of our professional ancestors.

Among the Etruscans, who were the predecessors of the Romans, the division and limiting of lands was a part of the work of the augurs (or priests). Their chief work was to interpret the will of the gods by various sacrificial methods, but, as amongst most early and pantheist peoples, all institutions and actions of importance partook of a religious character, and the division and definition of the limits of land, closely affecting as it did the interests of the people, was a most important and highly prized function.

When the Romans conquered and displaced or assimilated the Etruscans, they adopted to a large extent the religion and other institutions of their victims. The Roman augurs were thus the direct inheritors of the Etruscan priests and had similar powers and functions. Their religion was not, as in its later stages it so often is, an incident, a habit, an ornamental convention, but was a deep seated motive governing conduct and belief both public and private. The augurs, as interpreters of the will of Heaven, were all powerful, the real rulers of the early republic, and land surveying, the delimiting and division of lands and the replacing of bounds, was a highly important function. The taking of auguries and auspices

could only be done in a temple or consecrated place. Hence the practical side of the augurs' work in land surveying extended, not only to towns and villages, but to military camps.

But, as time went on, the augurs or priestly caste began to lose their mysteriousness and influence. Their archives were available eventually to scholars and lawyers. Soon a class of practical men arose who were employed by the magistrates in an advisory capacity as experts on land questions. This was the beginning of the practise of land surveying as a profession separate from the priestly ceremonies and may be placed roughly at about the time of Julius Caesar. It must be noted, however, that the profession never entirely lost its religious tinge. This to some extent is probably responsible for the high esteem in which it and its members were then and subsequently held.

There were, however, causes other than the decay of religion for this development. From about this time dates the real growth of the Roman Empire. Vast areas, not only in Europe, but in Asia and Africa, were conquered by the legions and placed under the rule of Rome. In these areas, vacant, sparsely settled or often depopulated by war, were planted colonies both military and civil. Grants of land were made to veterans both as rewards for service and as a protective measure for the newly acquired territories. In addition civil colonies both of voluntary emigrants and forced settlement to relieve overcrowding and distress in Rome, were planted throughout the Empire. As a necessary preliminary these areas were surveyed and subdivided. The conditions were in fact not dissimilar to those obtaining in Canada at present and in North America generally during the past century.

As a result there was a great demand for land surveyors and they were soon a large and prosperous body. Instead of a religious rite, whose execution was, so to speak, by guess and by God, the practise of land surveying became a definite profession whose standard of training gradually rose till there were well equipped colleges for its students.

To these in Rome repaired youths from the provinces and provincial cities as well as, of course, from Rome itself. Their training was like ours, twofold, first theoretical, in mathematics (principally geometry), in the official technique, and in the laws governing the use and holding of land; and second practical, in actual service. The colleges were, of course, a secondary development. The

earlier training of recruits was an apprentice system.

The instruments in use were the groma and the decempeda pertica or measuring pole. The groma was practically the surveyors' square of the present. It consisted of a frame with two lines of sights marked by threads and at right angles, set on a pivot and mounted either on a single support or as usual on a tripod through which a plumb-bob was suspended. It was an instrument probably as accurate for running lines as the surveyors' compass, until comparatively recently in extended use here.

The agrimensores were employed in two capacities, in work for the state and in work for private parties. The work for the state may be grouped in three divisions, the delimitation and survey of public lands for the foundation of colonies, the compilation and maintenance of land registries not only for Rome, but for the provinces, and the design and construction of military encampments and fortresses.

In the formation of a colony, a law was first passed by the Senate specifying the locality and dimensions of the lands to be used, and the number and character of the colonists together with the size of the parcels to be allotted to them. An expedition under charge of a commission of varying numbers or under a single legate, set out with the colonists under military escort and the surveyors. On arriving at the location the first step taken by the surveyors was the determination of the meridian (by a solar observation) and the running on the ground of the two main axes of the township, one north and south and the other east and west. These were run in each direction to the extremities of the plot and marked with monuments. Secondary lines (or limits) were then run parallel to these and the area thus divided into squares (of about 1,000 feet to a side) or into oblongs whose length was double their breadth. Thus was continued to the boundaries of the lands of the colony, the space between the last lines and the boundary, which was usually an irregular line, being left unallotted, title to it either remaining in the state or being transferred to the colony to be held in common. This course was also followed with blocks unfit for cultivation and with fractional remnants.

The blocks thus marked out varied in size according to the system employed, from fifty to two hundred jugera, that is from about thirty to about one hundred and twenty acres. The blocks were further divided into the individual holdings, which ranged from two to ten jugera — though sometimes as high as seventy jugera. The various parcels thus determined were then divided by lot among

the colonists, not so much with the idea of fairness as because it was thought that by leaving the allotment to chance the gods superintended it.

The limits of the blocks thus established were fixed and immovable just as our original township lines. It may be added that the limites were not lines but spaces, intended probably for road allowances. The widest were those along the two main axes. Of the secondary limits every sixth one was usually forty feet in width and the others twenty. This idea of a space instead of a line holds throughout Roman land laws.

The surveyors in this as in other work were not paid regular fees but honoraria. This was due partly to the professional idea, but largely to the religious tinge still inhering. It is probable that in actual practise the distinction was largely formal. Of course, as in many cases, as in the second two lines of work for the state, the surveyors were often paid regular salaries by the state. In the colony or township surveying outlined before, the surveying was usually done under contract. It was not, however, the surveyor but an entrepreneur or middleman, usually probably a politician, who received the contract and who paid the honoraria to the surveyors.

The second line of state work, that of the compilation and maintenance of land registers, was of great extent and importance. Records were kept of every holding in the colonies throughout the Empire and were in duplicate, one copy being in Rome and the other in the local archives. In addition, frequent general surveys were made. Augustus Caesar, for instance, had a survey made of the entire Empire, under the direction of Balbus, who may be styled the first surveyor-general.

The third class of state work, that of the design and construction of military encampments, which was a function of certain surveyors, was practically military engineering. It is probable that they had also charge of the design and construction of roads and bridges. This activity appears to have started about the time of Julius Caesar and Lucius Decidius Saxa is the first name that is recorded.

As for the private functions of the surveyor, Frontinus, author of some of their text books says:— "In the survey of lands the main thing is the consideration of disputes." This is not an ancient condition only. The underlying fact in this connection is that in the complex system of Roman civil law, the principle of surveying practise, the *ars mensoria*, forms a series of exceptions. Their writers continually contrast the ordinary law and the practise of surveying, the lawyers and the surveyors. Even after making allowances for their onesidedness and natural

egoism, the fact remains that the *ars mensoria* occupied a high and exceptional niche in Roman law.

The surveyors officiated in two ways in connection with land disputes. In matters of small import and those lacking acrimony between the parties, the surveyor acted in an independent judicial capacity, investigating and settling the disputes unaided. In more important affairs he acted as expert adviser to the judge. The different disputes that might arise were classified into fifteen varieties which may be briefly outlined.

The first was *de positione terminorum* the question as to whether a monument was an official one and if so whether it had been moved. In this connection it may be said that in the later stages, particularly, of the profession, the system of monuments became highly complicated. They were made either of wood or stone, usually stone, and as time went on they were made with innumerable small variations in shape, size and position and with mystic marks. The avowed intention was that a qualified surveyor might easily see whether a given monument was official and if so whether it had been moved. It was probably carried to absurd extremes (the technique is unintelligible in the remaining fragments of the text-books) and was intended, partly at least, to impress the general public with the immense complexity and difficulty of the craft. Some developments for use in this direction might not be amiss to-day. It is a condition quite analogous to that pertaining in some of the learned professions of the present, whose descriptions are so compounded of technical phrases either polysyllabic or in a foreign tongue, that they are models of mystery; whereas if their technicalities were reduced to the vernacular, they would often be quite clear even to the layman.

The next four controversies deal with the position of the boundaries and with the area. The third *de fine*, deals with the boundary of the individual holdings, usually an irregular line or rather strip. For according to the laws the boundary between two holdings of land, or between two houses, consisted not of a line, but of a strip of neutral territory five feet in width. Various reasons have been assigned for this provision. One claims that the strip was to remain uncultivated and sacred. Another that it was to serve as a footpath but not necessarily uncultivated. A third view, and perhaps the most probable, is that the intention of the strip was to permit cultivation to the last inch and that each owner could plough his two and a half feet to the centre of the strip without trespassing on his neighbor, but by using the other two and a half feet to turn on.

In the settlement of these and other

controversies the surveyor had not only to take the evidence on the ground, both by surveying and the actual hearing of witnesses, but if necessary to search the records and statutes. He thus required a thorough knowledge of the laws relating to land.

The next two matters of controversy were those of ownership and possession. With these the surveyor had no direct concern except when a survey was ordered by the judge.

The eighth deals with riparian rights. In officially surveyed lands (since the lot areas were fixed and invariable) the owner had no right to alluvial increase or to islands formed by subsequent recession of a stream or lake, unless it were expressly conveyed in the original grant. If, however, the increase or decrease was not the result of a gradual and natural process, but of a sudden convulsion (*vis major*) the owners' rights were unaffected.

The ninth dealt with large areas or territories. In Italy this would usually be a dispute between two colonies or municipalities, but in the provinces, principally in Africa, where there were large private holdings, the controversy could arise between individuals.

The next three controversies were with regard to the unsurveyed portions of the colony or township, the public lands therein, and the fractional remnants — that is the parts not assigned to private ownership. The surveyor's functions in these cases were to examine and ascertain the status of the parcels by reference to the records, to establish them on the ground and to determine the nature and extent of encroachments thereon.

The thirteenth dealt similarly with grants which had been made for religious purposes.

The next referred to damages to lands from rains. The surveyor's function was not only to replace obliterated boundaries, but to provide for drainage.

The last controversy cited by Frontinus dealt with road allowances.

From this catalogue of cases it may be seen that the surveyor's functions in their private capacity, were quite similar to our own. It is rather startling, moreover, to think that nearly two thousand years ago there existed a corporation analogous in many ways to our own. If one were to mark the most decided difference it would be that the Roman surveyors occupied a somewhat higher position than ours. Their status was more secure and their emoluments were probably much higher. They were paid not in the ordinary way of commerce but by honoraria (though there was little

actual difference in practise). In addition before undertaking a commission, they received earnest money corresponding to the retainer given counsel to-day with his brief. And the fees were large. For making an ordinary survey of the line between two properties, the surveyor received two aurei — gold coins each about \$3.00 of our own money. To obtain their real value in present terms we would have to multiply by at least ten and perhaps more.

One other matter which illustrates the position of the Roman surveyors perhaps better than any other may be cited. That is the protection afforded them by the law in the event of their having made mistakes in the course of their work. The first point is that a party injured by an improper survey had no ground for action against the surveyor, unless it were a case of fraud or gross error allied to fraud on the part of the

surveyor. If it were merely a case of lack of skill or of ordinary negligence, the law took the stand that it was the client's fault for not having made a proper choice. Further, the injured client had no recourse against the surveyor until he had exhausted his means of recovery from the other party. To exemplify, if a man bought a field said by his surveyor to contain fifteen jugera, and if the field actually only contained ten, the purchaser could only recover from the surveyor if he could prove that the latter had been guilty of fraud or of gross fault allied to fraud, and even in that case only after he had been able to recover from the vendor, that in the case the vendor were insolvent. It did not affect the surveyor's liability, however, if his honorarium had not been paid, nor did it matter whether the order for the survey had been made by a judge or by the client himself. It was further provided that the surveyor was equally responsible whether he made the survey

in person or by a subordinate agent. Despite these latter restrictions, no better idea can be gained of the high position of the Roman surveyor than from his legal position in the above respects.

It may be mentioned in conclusion that the profession had a direct representative in the Roman Pantheon (the only one to be thus represented if we except what Kipling calls the oldest profession in the world), Terminus the god of boundaries. His statue was the survey monument of wood or stone, and he was thus, in addition to the ordinary converse, a divinity whose ends were shaped. It might not be out of the way when we drink the toast to the profession to pour a sad libation to this dead god who was once the protector of the craft.

Authorities:— de Tissot.  
Etude Historique des Agrimensores.  
Niesukis History of Rome.  
Mommser's History of Rome.