but all these salts which have been enumerated consist of an acid united to some other substance. Sulphate of lime consists of sulphuric acid and lime; carbonate of lime, of carbonic acid and lime; sulphate of magnesia, sulphate of soda, of sulphuric acid of soda; muriate of soda, of muriatic acid and soda, etc.

Sulphate of lime is by far the most general cause of the hardness of ordinary spring water, carbonate of lime is another substance very commonly dissolved in water, and which occasions hardness as well as being otherwise inconvenient and prejudicial. Common carbonate of lime not being soluable in water, it is natural that one should enquire how it can be occasionally held in solution in that fluid? That some kind of carbonate of lime in hard water is dissolved is evident since water of this kind having the lime in it perfectly transparent, and not cloudy. It is perhaps explained in this way. Every kind of limestone or carbonate of lime, of which chalk is one, is insoluible in pure water; therefore pure water running over chalk or other limestone rocks cannot be impregnated with lime. Were not this the case we should have no water free from this earth as it is so abundant in nature; nor should we have springs of water issuing so pure as they frequently do from chalk rocks. But springs of natural water are often impregnated with carbonic acid, which they receive in the earth by means not well understood; the fact, however, is certain; and when such water is exposed to the air, but still more when boiled, the acid gas passes off and leaves the water free. Now, for instance, the substance chalk, which is lime in combination with a certain determinate quantity of carbonic acid, and no more, making it the common carbonate of lime, and insoluible in water as above said; if this common carbonate should come in contact with water holding free carbonic acid without any lime, the lime of the carbonate will then take up an additional quantity of the acid gas, and thus become doubly carbonated, or what is called a bi-carbonate, and this bi-carbonate of lime is soluible in water.

Upon these facts the explanation of the phenomenon in question depends. In order that water should have bi-carbonate of lime in solution, it must first have been impregnated by some means or other with carbonic acid; how that has happened we annot always say; we know this gas issues in abundance from the interior of the earth. Water greedily absorbs this gas and by its means in the way just mentioned it is rendered capable of holding abundance of lime in solution. But what will be the natural consequences of exposing such water now impregnated with lime to the air, and, still more, of boiling it? We have said that carbonic acid will be driven off by exposure, that is, so much carbonic acid as was sufficient to convert the common carbonate of lime into bi-carbonate of lime, but no more. By boiling, therefore, the bi-carbonate is reduced to common carbonate. Now what must follow? Bi-carbonate of lime is a soluble substance and the solution of it in water is transparent; but common carbonate is not soluible, that is, water cannot retain it in solution, consequently the new formed carbonate falls down as a cloudy precipitate. Everyone knows that if a common carbonate of lime, as powdered chalk or limestone of any kind, reduced to the state of powder, be mixed with water it will not dissolve; but after causing at first the fluid to be turbid, will, after some time, settle to the bottom as a powder or pasty mass, leaving the water quite free. This is exactly what happens in the case we have mentioned, with this difference, that the precipitated carbonate does not fall down in the state of a loose powder or soft pasty substance, but forms a hard crust; and it is this crust which is called incrustation or scale in steam boilers.

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### The Abolition of Statute Labor.

The agitation for better roads commenced by the various Associations of bicyclists, has been taken up by the Provincial press, and every week valuable suggestions are published, which will in time be instrumental in bringing about a reform of the greatest public interest.

To secure a uniform system of good roads Counties should assume a leading road in each township, making a connecting system throughout the county. These roads should be improved under the supervision of the county engineer, and if the county roads could be made a connecting system throughout the province the benefit to be derived therefrom would be increased. Members of councils in incorporated villages, towns and cities can hardly appreciate the benefit they would derive from the improvement of our roads. it can be shown in many ways that the business interests of all would be increased, that the farming community, which is in general the main stay of the province, would have more ready money which fact cannot but help to benefit unban communities.

We would strongly urge upon every member of a municipal council to consider this question, and if the people are not unanimous or the council decided in the matter, to at least make an effort to secure the vote of the people in reference thereto at the coming municipal elections by making this great reform the leading question at that time. The following is copy of an address presented to the ratepayers of Yarmouth by the township council, who will submit a by-law providing for the commutation of Statute Labor to the ratepayers at the coming municipal elections.

The question of the improvements of our roads has become one of great importance. The Statue Labor system which has been in operation for the last fifty years has been a good one, and has done much towards making and improving the highways of the township. During the last few years the matter has been considered by the various councils, and it has been thought advisable if the ratepayers so decide, to change the present system, for one under which the roads and highways will still continue to improve at a faster rate than they have in former years. The Champion Road Machine, purchased this year, will in future do all the grading required for the roads in the township, and will leave the taxes collected for Statute Labor to be expended for drawing gravel. Pathmasters will be required to be appointed as formerly, to act as commissioners in the expenditure of the commutaton tax and to cause obstructions to be removed and bridges to be repaired at any time during the year, for which he has been appointed. The provisions of the Act respecting noxious weeds also requires the appointment of Pathmasters to see that the Act is carried out within their respective highway divisions. For the purpose of securing uniformity in the construction and repairs of roads in the township, simple instructions and specifications will be issued to each Pathmaster to which he will be required to conform in carrying out the work under his charge, and it will be the duty of the council or other officer appointed by them to see that the Pathmasters comply with the specifications. Gravel pits will be opened in different parts of the township, wherever they can be found, and every effort will be made to secure more, and a better quality of gravel for the roads in the township.

The by-law as published provides for the payment of seventy-five cents per day for the number of days required to be performed under the present system. The money to be expended by Pathmasters under direction of the council in the Statute Labor divisions which are to be those now existing, or the same as they may be hereafter modified, and such new ones as may from time to time be established.

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### Measurement of Builders' Work.

EXCAVATOR.

Digging is measured by the yard cube of twenty-seven feet. Extra depths, methods of removing whether by barrow, basket or cart. If by barrow and the distance is over twenty yards (called one run), should be accurately described; also the final disposal of the materials should be given whether carted away, filled into trenches and rammed, filled in, leveled and rammed to receive tile or other pavings, or disposed of in terraces.