

hitherto been a disastrous failure. A benevolent law in its conception, and by no means foolishly constructed, the late Act deserves higher consideration than it has ever obtained. But, while theoretically excellent, it was practically mischievous. The evils were known only too well to the business community; they were evils that went on increasing from year to year until creditors almost ceased to look for any assets worth mentioning out of a bankrupt estate. Merchants got completely tired out, and, after the first momentary chagrin, usually made an effort to avoid any further reminder of the trouble, in most cases left the matter in the hands of the assignees, and did not attend meetings of creditors. They fancied it the better policy to look after those who remained staunch, and to avoid worrying themselves over "spilt milk." Every year it appeared that the assets grew less, until 30 cents began to be looked upon as a good offer. Compositions gradually became easy, and bankruptcy pure and simple more and more avoided.

In Canada, as in England, creditors seldom performed their part in the working of the Act. Neither they nor the inspectors sufficiently supervised the estates, contenting themselves with merely attending to their duties in a sort of routine fashion. To the supineness of creditors, or, rather, it may be said, to their lack of public spirit, is to be chiefly attributed the failure of the Act. Here and there where a creditor or inspector showed a zealous disposition he was accused of hard-heartedness, was soon overpowered, and had to abandon his position. Once the creditors in this way deserted their duty, the law became simply an engine in the hands of unscrupulous lawyers and assignees. Too often was there felt to be collusion with the debtor; at all events they generally managed to get well paid for their work; a lower commercial morality became prevalent all round, for, where business becomes a kind of gambling, scruples disappear. Assignees, originally designed to be the protectors of the creditors without being the enemies of the debtor, in too many instances became, along with the solicitors with whom they hunted in couples, mere plunderers. Merchants fell into the habit of treating an account owed by an insolvent as money lost; they signed off, wrote off the debt, and finished with it. Thus it arose that the assignee became, in a great measure, an irresponsible person, and he would not be human did he not often yield to the temptation thus put before him. It was also too frequently his interest to side with the

debtor rather than with the creditors; and so sure did merchants become that little or nothing was to be gained by throwing a debtor into bankruptcy, that they were usually ready to accept the smallest composition offered rather than take proper steps to protect themselves. Such, briefly, was the deplorable outcome of the law. The most cunningly devised rules for protecting the creditors and for facilitating the swift despatch of business were either ignored or adroitly turned into a means of robbery, fraud and conspiracy against the rights of creditors.

The new Act framed in England reverts to the principle of official control, and hopes by substituting the Board of Trade, as proposed in Montreal, the nominators of the assignees or trustees, to remedy the mischief which the Act, as now existing in that country, has caused. Under the new law, "liquidations by management" and compositions will disappear alike, and insolvent estates will be dealt with only in bankruptcy. The debtor is still allowed to present a petition, but the moment he has done so all control of his affairs passes to the Court. An official trustee takes charge of the estate till the creditors meet, which they must do within seven days; proxies are not abolished, but their abuse is checked; they can no longer be held by the debtor's solicitor, nor can they be used by any one to vote for his own appointment as a trustee. No compositions of less than five shillings in the pound is possible; it also provides for a percentage limitation of costs, both of the Court as well as the trustee. The creditor himself must make up a statement of his affairs within three days at his own cost.

Some of the new points introduced were features of the late Dominion Act. The main principles of the proposed Bill are good, but it may well be feared that the merchants and legislators of the Mother Country have not as yet had their fill of experience in the matter. They are more favored than we of Canada in having no "across the lines" as a *dernier ressort* for him who is closely pressed, or who thinks that fresh fields and pastures new are to be preferred to further efforts in the path of honesty.

A NEW TELEPHONE.

The remarkable discovery made by Graham Bell and Sumner Tainter that the rapid intermittent incidence of rays of light on discs of hard substances produces sonorous vibrations has attracted very much attention and has excited much physical work to solve an unexpected problem. The advocates of the emission theory of light have striven for 200 years to obtain such a proof of their theory and have

failed. Why have Bell and Tainter succeeded, or have they succeeded at all? May not their phenomena be due to some other cause than to the incidence of light? It was suspected by many that it was a heat effect, and not a light one at all. M. Mercadier, in Paris (*Comptes rendus*, Dec. 6, 1880), and Professor Tyndall (*Proc. R. S.* Jan. 3, 1831), have placed this beyond the region of doubt, and now Mr. Preece, electrician to the London, Eng., Post Office, has completed the chain of evidence by a careful and elaborate inquiry into the cause of the phenomena. In the first part of his paper recently read before the Royal Society, he has shown that ebonite and india rubber, though opaque in the light rays, are remarkably diathermanous or transparent to the heat rays, and therefore that radiant heat can act through screens of those materials. Indeed, ebonite is shown to be almost perfectly transparent to radiant heat, while it is absolutely impervious to light. He next shows by experiments made on very delicate apparatus that no more vibrations than six per second can possibly be produced by the direct impact of heat waves causing expansion of the mass of the disc, and therefore that the Bell-Tainter effect is not due to the absorption of heat changing the volume of hard substance experimented upon. He next inquires whether the effect observed is due to a molecular pressure similar to that which produces the rotation of the radiometer, for this being a mere surface action, the element of time is eliminated. Many experiments are described which were made with discs of various kinds in different ways, but the results were so unsatisfactory and variable that the question was raised whether the discs vibrated at all. By the aid of microphones and specially-constructed chambers, it is proved clearly that the undulations are those of the contained air, and not of the discs. In fact, the sounds were intensified by removing the discs. Moreover, the effects were materially assisted by coating the sides of the containing vessel with a substance highly absorbent of heat, such as the carbon deposited by burning camphor. It is next shown that the effects are dependent on the number of heat rays that pass through the discs, and not on those that are incident on them, and that the greater the absorbent character of the air or vapour contained in the case, the more intense the sounds emitted. All these results are repeated and shown with ordinary flasks lampblackened on their exterior and interior. Finally, it is shewn that there is a time element introduced, and that the loudness of the note emitted depends not only on the rapidity with which the contained air absorbs the radiant energy, but also on the rapidity with which it gives up its heat to the sides of the case and the exits open to it. It varies also with the form of the enclosed space and with the character of the contained vapour, and with the diathermancy only of the discs. The effect being thus due to radiant heat and its absorption by suitable surfaces, it was next shewn that if a spiral of wire be completely enclosed in a lampblackened case sounds were emitted when currents of electricity were rapidly and intermittently transmitted through the wire, and, moreover, that when these currents were produced by a proper microphone-transmitter articulate speech was produced.