

LONDON LIFE INSURANCE COMPANY.

It was pertinently remarked by President John McClary at the recent annual meeting of the London Life, "that in a year in which the public mind was a good deal disturbed, the company was able to not only hold its own, as compared with former years, but show large gains in new business and total insurance in force, as well as in premium receipts and other income—facts which speak well for the confidence in which the company is held by the insuring public." The increase in the amount of new business over that of 1905 (the largest previous record) was \$1,026,868 or 44 p.c. The insurance in force on the company's books at the close of the year, after deducting all re-insurances, aggregated \$10,376,413.37, an increase of \$1,268,788.73 for the year.

The surplus on policy-holders' account, exclusive of subscribed and uncalled capital, is \$116,182.50; and after deducting paid-up capital, the net surplus over all liabilities of every nature, and capital, is \$60,182.50.

MACKAY COMPANIES.

The annual meeting of the Mackay Companies was held at Boston on Saturday last. The report for the year February 1, 1906, to February 1, 1907, shows income from investments in other companies to have been \$3,310,328, of which, after payment of dividends and various expenses, \$209,829 was carried forward as profit and loss balance. The balance sheet statement is as follows:

Investments in other companies.....	\$91,887,487.99
Cash.....	220,459.32
Preferred shares issued.....	\$92,107,947.22
Common shares issued.....	50,000,000.00
Preferred shares issued.....	41,380,400.00
Surplus.....	53,000,000.00
	\$27,547.22
	\$92,107,947.22

The report shows that the Mackay Companies own, in whole or in part, the capital stock of over one hundred telegraph, telephone and cable companies in the United States, Europe and Canada. Regular 4 p.c. dividends are being paid on both the preferred and common shares. The outstanding shares are \$50,000,000 preferred and \$41,380,400 common. During the past year \$9,354,400 preferred shares were issued in advantageous exchange for stocks of corporations, so that the entire authorized preferred shares have now been issued. The outstanding common shares have not been increased during the past two years.

The income of the subordinate companies is stated to be largely in excess of the amount necessary to pay dividends, but it is the fixed policy to leave all surplus earnings in the treasuries of the subordinate companies for extension and development of business and for the building up of reserves.

RELATION OF CHEMISTRY TO FIRE RISKS.

Paper of Great Practical Interest given by Mr. F. E. Roberts, before Insurance Institute of Toronto.

The chemistry of fire and fire extinction is the first subject dealt with in a valuable paper contributed last week by Mr. F. E. Roberts to the records of the Insurance Institute of Toronto. It is pointed out that every fire consists of a chemical process of rapid oxidation, the substance burning combining with oxygen to produce heat and flame. Slow oxidation, as in rotting wood, need not manifest itself in flame, but the oxidation of some substances, commencing at the ordinary temperature, increases in rapidity under certain conditions; heat is generated faster than it can be conducted away until the ignition point is reached and there occurs what is termed spontaneous combustion. But what is true of spontaneous combustion is true of any other fire, namely, that the temperature of at least a part of the substance must be raised to the ignition point before it will burn. Questions of temperature are, therefore, important to the fire underwriter. Of course, the ignition temperature varies greatly with different materials and with the same material under varying conditions of pressure, moisture, fineness of division and so forth. It does not require the actual contact of a flame or spark to cause a fire. Radiant heat alone from a burning building, if intense enough, may ignite a neighboring structure.

The chemical reasons for the great value of water as a fire extinguisher are clearly explained by Mr. Roberts. Of course, if the temperature of a burning substance is lowered below the ignition point, it will cease to burn. Now water possesses the greatest "specific heat" of any substance known, that is, it takes more heat to raise the temperature of one pound of water through one or more degrees, than it does to raise the temperature of one pound of any other substance through the same number of degrees. Stating the matter differently—water possesses the greatest cooling power of any substance. When water is thrown into a fire it is more or less converted into steam, but here again a great additional amount of heat is absorbed in the changing from liquid to gas. Scientifically speaking, the latent heat of vaporization of water is very high. Another property of water most useful in fire extinguishing is its blanketing effect in excluding air. This is seen more particularly in the use of steam jets in extinguishing fires. An inadequate stream of water may sometimes appear to increase rather than diminish a blaze. The steam formed is not sufficient to blanket the fire, but is instead broken up into its elements of hydrogen and oxygen, the oxygen combining with carbon to form principally carbon monoxide. The net result is a mixture of very inflammable gases. But with an adequate supply of water the formation of gas soon ceases, even if not drowned out at its inception; the cooling and blanketing effects make themselves felt and the fire is conquered.

As to the use of substances other than water, it is to be borne in mind that they must act chiefly in one of two ways: either by excluding the air necessary for combustion, or by furnishing an extinctive atmosphere in which most materials will