MORTALITY EXPERIENCE OF THE CANADA LIFE OFFICE.

In our introductory notice of the report on the mortality experience of the Canada Life, we referred to the general scheme of the investigation, and briefly summarized the conclusions arrived at by Mr. Sanderson from consideration of his exhibition of the experience. The important details of compilation and construction, which we propose to touch in the present notice, possess, perhaps, even greater interest for students of the report in this country than its vital statistics. As a life insurance field it appears clear that the Dominion is now practically won for Canadian enterprise, and that, while established British companies may successfully maintain the respectable position they have long held, the Canadian offices, with the Canada Life at their head, will—as their Canadian constitution, satisfactory financial position, and vigorous administration fairly entitle them to do—transact the bulk of the life insurance business in the Dominion. The results, therefore, of the experience under consideration are chiefly of importance to Canadian insurance men, but the method by which they are arrived at is of cosmopolitan actuarial interest in this country at a time when a new experience of British life offices is in course of compilation.

We have already remarked upon the scrupulous care with which the principle of homogeneity has been observed in the compilation of the Canadian experience, and this scientific laying of a good foundation is almost a guarantee of masterly building. So far as our reading of the report has gone, it would in our opinion be difficult to improve—with a data at command—upon the method followed by Mr. Sanderson. We say, "with the data at command," because the absence of dates of birth in the case of a number of older policies was partly responsible for the adoption of the "office age" (*i.e.*, age "next birthday," not, as in American practice, "nearest age") as a basis of classification. We gather that, notwithstanding this difficulty, mean or nearest ages might have been adopted, had not some uncertainty existed at first as to whether a calendar or policy year method would be employed—an uncertainty excusable in view of the fact that the latter method was ultimately decided upon. The adoption of the office ages necessitated, of course, a somewhat troublesome adjustment to pass to completed years of age, but we should doubt whether the results finally obtained are in any way inferior to those that would have been obtained by the adoption of nearest or mean ages. From the brief particulars we have given, it will be gathered that the method of compilation was substantially Galloway's method, but with these improvements:

(1) That the observations were carried to the anniversaries of the policies in the final year of the experience (1893): (2) That the average duration of the policies before attainment of the office age, at entry, was found by various trials to be about four months, and the necessary adjustment based upon that average: (3) That Galloway's unsatisfactory method of passing to completed years of age was replaced by a method of interpolation applied to the life table for the fractional ages; (4) That withdrawals were treated by the nearest duration method.

A most interesting feature of the construction of the final table is, that the graduation was made by Makeham's formula (the constants being derived from the original values of 1 at fractional ages), the resulting table thus lending itself to the calculations that assume Makeham's law. It is noteworthy that the value of log C comes out at over ·0425. It would be interesting to know whether the graduation did much violence to the original observations in any sections of the table.

In addition to the general table, of which we have described the construction, the appendix of the report contains a graduated mortality table for years of assurance after the first five, and an analyzed table for the first five years for ages at entry 20 to 50. For this purpose the materials are not weighty, but the system of grouping adopted appears to preserve the character of the original facts. Upon the results deduced, an exhaustive comparison with former exhibitions of the influence of selection is based; other points touched upon by Mr. Sanderson in this connection are the question as to whether the effects of selection are appreciable after five years, and the question of the effect of withdrawals; Mr. Sanderson finds that the rates on the whole experience after ten years in the Canada Life, were almost identical with these after five years, but also that the second quinquennium of assurance shows on the average higher rates than the third and fourth for the same ages of exposure. We have mentioned above as an improvement upon Galloway's method, the plan of "nearest duration" adopted in dealing with the withdrawals. In expressing an opinion in favor of this method rather more than a year ago, we went somewhat fully into the question, and we need say no more on the present occasion than to observe that Mr. Sanderson brings out clearly the character of the functions which he tabulates as rates of discontinuance, and that the original observations in table I. throw some light on the comparative weight of withdrawals at the first and second quarters. The section of the report, and the tables dealing with discontinuances, appear to us among the most valuable fruits of the investigation. In conclusion, we may renew our congratulations to the Canada Life on a report which possesses the great merits of presenting the facts of the experience in an admirably definite and intelligible shape.—*Insurance Record, London, Eng.*

THE YIELD POINT OF IRON AND STEEL.

From a paper recently contributed to the Royal Society, by Professor W. C. Unwin, it appears that the yield or breaking down point of iron and steel was first observed in the experiments made on very long bars of iron and steel by the committee of the Institute of Civil Engineers in 1870. As the yield point is only found in rolled materials, it has been supposed to be due to the mechanical work expended on the material, causing a state of constraint, but as annealing, if anything, makes it more marked, this hypothesis is untenable, especially as it does not disappear on repeated loadings of the test piece.

Osmond suggested that the yield point was due to the re-arrangement of the atoms within the molecules of the metal, and some experiments made by Prof. Unwin on alternate straining and annealing of test bars could be explained on this hypothesis. In these experiments a steel test bar was alternately loaded somewhat beyond the yield point and then annealed in a gas oven, being protected from direct contact with the flames by an iron muffler. The operation was repeated seven times, and the range of stress at which the bar broke down was always between 17 16 and 18.71, the point being as clearly marked in the first test as the last. Very similar results were obtained with a wrought iron bar treated in the same way, and with other steel bars. It thus appears that the change produced in iron or steel by straining beyond the yield point is completely reversed by annealing, the bar being brought back to nearly its original condition.

Hence it would appear that there really is a molecular change produced in a bar by straining it beyond the yield point, the iron being changed into some allotropic modification similar to one of those it passed through in being cooled down from a high temperature. Similarly, when bars are broken by alternate stresses, as in Wohlor's experiments, the material, Professor Unwin suggests, may have had its molecular constitution modified, as would indeed appear from the peculiar characteristics of the fractures in such cases. In fact, it is not ordinary iron or steel as we know it that gives way, but the iron or steel in one or other of its allotropic modifications.—*Chicago Jour. Com.*

"LET SLIP THE DOGS."

The New York *Press* adorns a tale and points a moral from a recent decision in a Lachute court of justice. The particulars of this case may not be unfamiliar to all of our readers. The suit was over a dog which was claimed by two farmers. There being doubt as to the ownership of the animal, even after a great deal of testimony and eloquent summing up by counsel, His Honor applied a practical test. The plaintiff and defendant were placed in opposite corners of the room and the dog was then let loose. In response to the defendant's invitation the dog approached reluctantly, but when the complainant called, the dog sprang to him with demonstrations of the liveliest delight, wagged his tail joyfully, licked the hands of the plaintiff eagerly, and in every possible manner known to a dog showed its affection and devotion. Our New York contemporary makes use of this incident to illustrate the alleged attitude of certain State senators of that commonwealth, about whom there is considerable doubt as to what party they belong. When the Republicans call, they respond sullenly, but when the Democrats signal, they leap out "barking joyfully and sporting with glee." We have nothing to do with this application of the story among our neighbors; but we submit it is quite apropos of certain aldermen in the Montreal city council. These pretend to be economists and reformists, but when the mayor appeals to them, they answer sullenly, but let Aldermen Prefontaine and Herteau signal and they will leap forth with joy.—*St. John's News.*

IMPROVEMENT IN THE STATES.

A general expansion of demand is reported this week from all iron and steel centres, growing out of the presentation of orders for early deliveries on new work to hand. The locomotive works that have been running less than full time have recently started on full time. Two eastern and three or four western car shops have lately done the same. Quite a number of the larger manufacturing concerns have within a few days placed orders for iron and steel material, to see them through the summer. There are symptoms of advancing prices, and to some extent this accounts for the liberal placing of orders. All the tin-plate mills in the country are crowded with orders. From Swank's iron and trade statistics, just published, it appears that the production of pig iron last year was 6,657,388 tons, against 7,124,502 tons in 1893, of which production last year 57 per cent. was Bessemer. The production of steel ingots last year was 3,571,313 tons, against 3,215,636 tons, 1893. Production of rails, 1894, 1,021,722 tons; 1893, 1,136,458 tons. Ore production 1894, 7,748,932 tons; 1893, 6,060,492 tons. Coke shipments, 1894, 5,454,451 net tons; 1893, 5,054,797 tons; average price of coke in regions last year, $1; in 1893, $1.50. *R. R. Review.*

BUYING A PIG IN A POKE.

A sale of unclaimed goods and baggage was held by Messrs. Rae & Donnelly at their rooms, St. James street, under the authority of the Grand Trunk Railway, last week, when fair fair prices were received. Great fun was experienced in the opening of some of the lots; in all 130 pieces of baggage and 169 pieces of freight were sold, the average price being about $3.25 per piece. All were sold without inspection. The following are some of the bargains purchased: A box of feeding bottles, 35c.; a harrow, 60c.; 7 bags of rags, 35c.; a table, 30c.; a bale of white duck, $40; a roll of shoe leather, $38.50; a hat box, 40c.; a box with about 20 lbs. tobacco, $2.40; a box of drugs, $1; a box containing two splendid engravings of the Derby, $3.70; a small valise, 75c.; when opened a magnificent gold watch was found amongst the contents; three new suits, $2.50; a number of silver prayer beads, $1.05.—*Montreal Gazette.*

HONEST ADVERTISEMENTS.

If it were necessary to be dishonest in business in order to succeed, then there would be no premium on honesty, as there is everywhere today. If the dealers only knew how rapidly their people absorb every influence that tends to pull down rather than elevate the standard of commercial integrity, they would slow up on such methods from policy, if not for conscience's sake. There are, fortunately, conspicuous examples of very successful houses who will not allow an advertisement of any sort, be it newspaper or placard, that contains any untrue statements. Such firms say there is no need to deal in any misrepresentations, as sufficient enthusiasm can be aroused with the truth in their advertisements, for "truth is stranger than fiction," and wisely served up, does the business.—*Dry Goods Economist.*

—At the annual meeting of the New England Woman's Club, held the other day, the president, Mrs. Julia Ward Howe, said, in her opening address: "It was once eccentric to belong to this club. Now the eccentric woman is the one who does not belong to any club."