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On the rates of extra premium for foreign travelling and residence.
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FEW who are engaged in the practice of Life Assurance will deny that the prevailing restrictions imposed on, and charges made for foreign travelling and residence are unsatisfactory to all parties concerned. A considerable and increasing portion of the public whose pursuits or inclinations, especially in early life, take them to different parts of the world, are deterred from effecting life assurances on this account. The value of policies as securities is diminished owing to the uncertainty of the extra premiums which may at any time be imposed, and the risk of the assurances being forfeited altogether by causes over which mortgagees have no control. And actuaries feel that this subject is the opprobrium of their profession; for as in general no sufficient data exist whereby the risks incurred may be measured, the extra charges are therefore arbitrary and unscientific, for the most part little better than random guesses made on no intelligible principles. For these reasons it is hoped that any suggestions on the subject, however imperfect, may not be unacceptable, and may be the means of eliciting some useful discussion.

The subject may be conveniently divided into three heads. (1) What has been considered to constitute extra risk. (2) The general principles on which extra risks should be treated. (3) The rates of premium which should be charged. It is proposed in the present paper to limit the discussion to times of peace, and to persons following civil occupations.

Under the conditions of the early policies the persons whose lives were assured were restricted to Great Britain. The language of one in my own possession, which bears date the 25th November 1721, and is believed to be the oldest life policy extant, is as follows:—"Provided always, that this Policy shall be utterly void and of no effect in case the said ——— shall voluntarily go to sea." From the early records of some old Offices to which I have had access, the following specimens of the extra premiums charged about the year 1741, are extracted.

Flanders and back	£1	6	per cent.
Ireland and back	0	10	"
Scarborough by sea	0	10	"
Gibraltar	2	2	"

(And the same as late as 1821.)

Holland, Germany, and Russia.	0	10	"
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Even during the present century some charges have been made which now seem almost ludicrous—*e.g.* in 1821—for leave to proceed once to Paris by way of Dover and Calais and return once from thence by the same way—10*s.* per cent. In 1817, for sea risk and residence in Brussels—10*s.* per cent. From time to time the restrictions have been relaxed; residence allowed in any part of Europe; and voyages permitted, first, from one port of the United Kingdom to another, then to and from certain foreign ports, generally those between Hamburgh and Bordeaux, and afterwards to and from any European port. Even now the conditions of several Offices restrict the lives assured to Europe; others however allow of residence in Australia, British North America, the northern of the United States, and some other temperate climates, a charge being generally made for the voyage to and fro. Latterly a practice has grown up, convenient but not scientific, of bounding the prohibited regions by two lines drawn round the globe parallel to the equator, and corresponding generally with the 33rd degrees of north and south latitude respectively.

When however the prohibited regions are once touched, all system is at an end. I have examined several lists of extra premiums,—*rudis indigestaque moles*,—imposed without either

knowledge or skill, and of which it would be useless to attempt any analysis. Extra rates varying from 5s. to £10 per cent (£2 per cent appears to be the favourite,) are demanded in the most arbitrary way, a reasonable ground of complaint to the policyholder, who in this matter is almost entirely in the power of the Offices, not having the benefit of competition, which, if it could have full play, would bring about at all events a greater uniformity of practice.

Rather more than twenty years ago an improvement was introduced by the managers of the Scottish Offices, by classifying most of the climate risks into four main divisions. Class A, including Europe and other temperate regions, B, the parts of North America not included in class A: for these the extra rate proposed was £1 per cent. C, the East Indies and China, for which £2. 10s. extra was proposed; and D, the West Indies, for which no rate was recommended. About the same time a Company was formed for the express purpose of giving increased facilities for foreign travelling and residence. This Company adopted the same classification of risks as the Scottish managers, but instead of levying extra premiums by a uniform annual addition to the home rate, tables of premium varying according to age were published in the prospectus for each of the four classes. But the classification was incomplete; several places were excepted, and a general power was reserved of charging increased rates in particular circumstances. Since then little progress seems to have been made either in reducing the number of prohibited places or in better defining the risks. The laudable attempt made several years ago by the Council of the Institute to collect data whereby these risks could be measured, an account of which is given in the *Journal* for October 1857, was barren of result.

In endeavouring to arrive at some general principle of treating extra risks, I venture to lay down the maxim that all problems in Life Assurance must be considered in a broad spirit, remembering that they deal with numbers not individuals. Minute classification is impracticable. If any additional premium is imposed it should be considerable in amount, as small extra charges annoy the assured without corresponding benefit to the Office. It is already the practice to charge the same premium for men of almost every occupation and station in life, and to allow of residence in a great variety of climate. Experience has justified this practice, and it seems to me that it may be further extended with safety and advantage.

Extra risk is divisible into sea and climate risk. As regards

the former, is there really much greater danger to the lives of passengers in sea voyages than in other modes of travelling? or than in hunting, shooting, mountain climbing, or even in walking about the crowded streets and alleys of great cities. The last is not an imaginary risk. We learn from the Registrar General's report that during the year 1867, 164 persons, including 49 children under the age of 10, were killed by horses or carriages in the streets of this metropolis. And on the other hand from the valuable statistics compiled from the records of the Scottish Equitable Life Assurance Society, it appears that out of 126,672 lives exposed to risk, the deaths from drowning were 19 only, and of these 8 are reported as "found drowned," so that the mortality from sea risk was not more than 11 in 126,672, '009 per cent, and in these mariners by profession are of course included. From the equally valuable statistics published by the Scottish Amicable Society it appears that 10 deaths from drowning were recorded out of 56,300 lives at risk. How many of these deaths occurred at sea is not stated; but even if all be taken into account, the mortality from this cause would have been only '018 per cent. Other Assurance Societies which have published statistics of the causes of death, have not at the same time furnished the corresponding number of lives at risk, so that the materials they supply are of little avail for the purpose of this inquiry. But it may be confidently asserted that deaths from accidents at sea are of rare occurrence in the experience of Life Offices, so that I have come to the conclusion that all extra charge for sea risk may safely be dispensed with, except for seafaring men.

We have next to consider climate risks. Here we find one rate of premium almost invariably adopted for such an immense tract of country as the East Indies and China, the former alone extending over 26° of latitude. Is it then a very startling proposal to adopt one uniform rate for tropical climates generally? We are content to measure life risks in the whole of British North America and a great part of the United States by observations made in England. Why then should we object to deduce premiums for Central America and the West Indies from records of mortality in the East Indies, especially when the materials available for the purpose are ample and trustworthy in the latter case, few or none in the former?

The Offices seem to have put some parts of the world under a sort of ban, often without any good reason. Take for instance the West Indies. In 1824 I find an extra charge of £8. 8s. per cent made for Jamaica, and even in my own time 6 per cent was a

common rate. But sufficient experience has now been acquired to show how unwarranted are the notions which have been prevalent as to the mortality of Europeans in the West Indies. Thus, in the report of the Colonial Assurance Society in 1864, it is stated that the amount of assurances effected with that Society in the West Indies was £794,189; and in the East Indies £499,546; that the number of deaths was 108 in the former, and 97 in the latter; which seems to indicate a more favourable mortality for the West than the East Indies. From the late Mr. Spens's report on the mortality of the Scottish Amicable Society, it appears that the deaths in the West Indies among the members of that Society were 31, while the number of computed deaths was 32·5 by the Northampton, and 17·4 by the 17 Offices' Experience table. And again from Mr. Burnett's carefully compiled statistics of the Barbados Mutual Life Assurance Society it will be observed that he records 106 deaths during the 25 years ending in 1865, while the number expected by the Northampton table was as many as 149.

The settlements on the West coast of Africa are no doubt extremely unhealthy, but then the European settlers there are extremely few. And as regards particular places, such as New Orleans at one season of the year, may we not confidently trust to the instinct of self preservation implanted in mankind that such places will be carefully shunned whenever possible? And it must be remembered that these exceptional cases bear so small a proportion to the whole number, as scarcely to affect the general result.

As almost any authentic information on this subject is worth having, the result of 45 years' experience of the London Assurance may not be without interest. In that period assurances were granted on 12,200 lives, of whom 1186 (nearly 10 per cent,) had at one time or other incurred extra risk—climate, military, or maritime. The annual mortality per cent was, for the ordinary risks 1·99, for the others 2·91, and for the two combined 2·07. So that the effect of what is believed to be an unusually large proportion of extra risks was to raise the ordinary mortality ·08 per cent only.

Considering then the importance both of simplifying and systematising the charges for climate risk, I have come to the conclusion that for this purpose it will be sufficient to divide the world into two portions only; one, containing what may be considered healthy climates, to which the common premiums will apply; the other, unhealthy districts, for all of which a uniform scale of premiums may I think safely be charged.

To distinguish between the healthy and unhealthy districts is

no doubt a difficult task; the line wherever drawn must be arbitrary, and to some extent governed by considerations of expediency. In the Northern hemisphere, Madeira, Egypt and the Holy Land, all now places much resorted to by visitors, may I think be included in the healthy districts with the region north of the 33rd parallel of latitude. Otherwise this boundary, which has been adopted for several years, seems judicious; it excludes Shanghai in the east, and Charleston in the west. In the southern hemisphere, it seems to be now generally admitted that the whole of Australia, the Cape colony, and Natal should be included in the healthy districts; and I would suggest that the general boundary should be extended to the 31st parallel of latitude, so as to allow of residence in such parts of South America as Valparaiso, on the west coast, and Uruguay and the River Plate region, on the east.

The remaining consideration is what scale of premiums should be adopted for the unhealthy districts. The materials available as a guide for this purpose are by no means abundant. Reference may be made to the official reports which have been published on the sickness and mortality of the troops at different stations, the principal results of which have been embodied in a series of papers by the late Sir Alexander Tulloch which will be found in the early volumes of the *Journal of the Statistical Society*. Valuable and interesting as these papers undoubtedly are, the information they contain is unsuitable for life assurance purposes. For several reasons the common soldier in tropical climates is placed in very unfavourable circumstances in regard to health when compared with the upper and middle classes. To such an extent is this the case that the Royal Commission which reported in 1863 on the sanitary condition of the army in India found that the rate of mortality in that country was nearly twice as great among the private soldiers as among the officers, being 6·9 per cent for the former, and 3·8 per cent for the latter.

Fortunately however for our purposes several Funds were established under the auspices of the East India Company for the members of the different branches of their service. The financial affairs of these Funds having become extremely complicated, the assistance of several actuaries has at different times been required for their investigation, among whom Griffith Davies, Mr. Neison, and Mr. Brown have been conspicuous. In the elaborate reports of these gentlemen will be found most authentic information, derived from the recorded experience of the Funds, on the mortality

of the civil, military, and medical officers of the Indian services. Most of these reports I have examined with care and interest. My attention was first directed to the mortality among the civil servants as most suitable for the present purpose. But these being a select body, the numbers are small. Mr. Neison enumerates in the Madras Civil Service 335 deaths only in a period of 91 years; in the Bengal Civil Service 398 deaths only in 52 years; and Mr. Brown, in his more recent report dated in 1865 on the Bengal Civil Fund, records only 478 deaths, including 99 annuitants, in the period 1801-58. These seemed to me insufficient data on which to found a table of mortality for practical use.

I therefore at last decided to make use of Messrs. Brown, Hardy and Smith's report on the Madras Military Fund. The period embraced in that investigation comprises 50 years from 1808 to 1857 inclusive, and the number of deaths recorded is 2251. But with great deference to the knowledge and experience of the authors of the report, it seems to me that the materials at their disposal have not been judiciously used. The facts they record show conclusively that there has been a marked improvement in the mortality of Europeans in India, not merely since the first establishment there of British rule, but ever since the beginning of this century. Instead therefore of deducing a table of mortality from the entire observations, it seemed to me better to use the recent facts only, wherever the numbers were sufficient. The summaries in quinquennial periods of age given in the report, pp. 162, 163 have accordingly been taken, going back no further in point of time than was sufficient to obtain a minimum of 50 deaths for each quinquennial period of life. The facts thus obtained with the resulting rates of mortality deduced, contrasted with Mr. Brown's rates and those of the 17 Offices' Experience table, are subjoined.

Madras Military Fund.

Entered the Fund between the years	Age.	Exposed to risk.	Deaths.	Mortality per cent.	Do. by Mr. Brown's table.	Do. by 17 Offices' Experience.
1838-57	20-24	6573	173	2.631	3.26	.747
Do.	25-29	4797	119	2.480	3.16	.802
1828-57	30-34	4257.5	86	2.019	3.20	.875
1818-47	35-39	5173.5	98	1.894	2.94	.970
Do.	40-44	3600	72	2.000	2.80	1.095
1808-37	45-49	4368	117	2.679	2.63	1.356
Do.	50-54	2867	79	2.755	2.75	1.600
Do.	55-59	1635	50	3.058	3.06	2.475

As with most other observations on Anglo-Indian mortality, the rates thus obtained seem to set at defiance the prevailing ideas as to the relative mortality of different periods of life. Any elaborate graduation appeared therefore to be out of the question; and in order to obtain money results I have been content to adopt the method suggested in the report. The rate of mortality for each quinquennial period has been taken to represent the probability of dying in the year at the mean age of the period. The logarithms of these numbers being taken, the logarithms of the probabilities for the intervening ages were interpolated by first differences. To complete the table it was assumed that the annual mortality is constant from 18 to 22; and that above the age of 60, where the facts are very few, it corresponds with the English Life Table No. 2. On these data tables have been computed of the values of annuities and annual premiums at 3 per cent interest. Specimens of the latter are subjoined, and the corresponding premiums by the 17 Offices' Experience table placed in juxtaposition.

Net Annual Premiums.

Age.	Proposed whole world rates.	17 Offices' Experience.
25	2.594	1.665
35	2.890	2.210
45	3.748	3.133
55	5.026	4.767

These rates may in my judgment be safely adopted as the basis of a table of whole world premiums for civilians in time of peace. Of course it must be clearly understood that these are net premiums only; the amount of loading must be a matter of individual judgment. For myself I think that this loading should be heavy, not on account of the mortality risk, but on account of the expense of foreign business, which, according to my experience, has increased, is increasing, and is not likely to diminish.

No one can be more conscious than myself how much this scheme is open to criticism both in principle and detail. To give one instance only;—parallels of latitude and territorial divisions are unsuitable boundaries of climate; isothermal lines would certainly be an improved substitute. But how are boundaries defined by isothermal lines to be brought within the four corners of a legal contract? The whole question is a choice of difficulties; as has been before observed, all our arrangements, and not ours

only, must be a compromise between what is correct in theory and what is expedient in practice. If these suggestions tend to introduce some approximation between theory and practice, some attempt at order out of the present chaos, they will not have been altogether offered in vain.

Net Annual Premiums—Whole World Risk.

Age.	Premium for £100.	Age.	Premium for £100.
20	2.580	40	3.257
21	2.581	41	3.347
22	2.583	42	3.442
23	2.585	43	3.543
24	2.588	44	3.646
25	2.594	45	3.748
26	2.601	46	3.852
27	2.611	47	3.953
28	2.623	48	4.052
29	2.641	49	4.160
30	2.666	50	4.275
31	2.698	51	4.401
32	2.737	52	4.540
33	2.783	53	4.690
34	2.834	54	4.852
35	2.890	55	5.026
36	2.953	56	5.214
37	3.021	57	5.418
38	3.095	58	5.639
39	3.174	59	5.877

The following discussion is abridged from the *Insurance Record*.

Mr. PORTER stated that he had been engaged for some time in collecting information for his own Office with regard to extra premiums, and that his Directors had paid the Institute the compliment of deferring consideration of the question until after Mr. Bailey's paper had been read. He had procured a list of the extra premiums charged by most of the principal Offices, and was surprised to find the extraordinary variation between the rates of different Offices of equal standing and respectability. In one first class Office, presided over by one of the ablest Actuaries, he was told that the experience with regard to extra risks had been highly satisfactory—so much so, that they thought charging extra premiums to be wholly unnecessary, although in deference to the views of other Offices and because they found they could get them, they would charge say 10s. per cent. In another Office, the experience has been so extremely bad, that they would rather not take extra risks at all, and therefore they charged as much as they could get. He found that, for the same place (the Mauritius), the rates varied from 10s. to £4. per cent with all intermediate rates. What would the public think of Assurances Offices when they found this to be the case? They would conclude that they did not know what they were about. He did not consider this to be a satisfactory state of things for either the Offices or the Institute in the year 1869.

He remembered that twenty years ago he was much perplexed at the different values put by Actuaries upon reversionary property—so much so that he was almost afraid to name a definite sum when consulted. Just about that time the Institute was established, and in consequence of the papers read and the discussions which took place upon them, and of the greater freedom of intercourse which was brought about between Actuaries, this scandal has been got rid of. A greater uniformity of practice now prevails, and there is scarcely a single point of difficulty which can occur in the ordinary professional practice of an Actuary which is not elucidated in the pages of the *Journal*. He should like to see the question of extra premiums set at rest in the same way. The Institute should first agree upon a scale of rates. They should next consult with the Actuaries' Club—and he gathered there would be every disposition on the part of that body to meet the Institute. Lastly, they should induce the Offices to adopt the common tariff. Mr. Bailey in his paper divided the world into two parts—healthy and unhealthy. His own and several other Offices had adopted as the limits of the healthy districts the lines of 33 degrees north and south of the equator. He regretted that Mr. Bailey had selected the 33rd parallel north and the 31st south, as the uniformity and simplicity of the scheme was thereby marred, and the public would confound the two lines and never be sure whether they might go within 31 degrees north or south. No doubt, the intention was to include Buenos Ayres, Valparaiso and the River Plate. For measuring the risk of the unhealthy districts, Mr. Bailey proposed to take as a standard the mortality experience of the Madras Military Fund. There was, of course, great difficulty in finding anything to answer the purpose; but he did not think that the Directors of Assurance Companies would like to fix their premiums according to the mortality of any particular place. The mortality even of troops differed widely in different places. In 1866 the annual mortality per 1000 of the mean strength of the white troops was 9.62 for the United Kingdom. Taking this as the standard, the rate in Gibraltar and Malta was 8.89; in America, 9.58; in Bermuda, 24.01; the West Indies, 26.94; the Cape and St. Helena, 10.46; the Mauritius 14.01; Ceylon, 21.44; Australia, 12.53; China and Japan, 32.46; and India, 21.7. Therefore while the rate for the United Kingdom was under 10 per thousand, that in China and Japan was 32, or three times as much. The average for all stations was 14.3 per thousand. There were reasons for these different rates of mortality, in the case of the army. The position of the barracks was sometimes very bad, and the removal of the forests by permitting the spread of miasma sometimes rendered places very unhealthy which had previously been perfectly salubrious. For it was well established that forests resisted the spread of miasma, but how this was brought about was unknown. Again, enthetic disease was a principal cause of mortality to the troops—while in the course of his experience amongst Assurance Offices he had not known a single case of a death recorded from that class of disease. The pioneer on the question of extra risks was the late Mr. Bidder, who drew up a report on the subject in the year 1840. This was circulated amongst Actuaries, some of whom used it as the basis of their own extra premiums. Mr. Bidder explained that, except for the East and West Indies, he possessed no data, and that his results must be taken as rough approximations only. He however deemed that the “moral risk,” or liability to be imposed upon

by fraud, was an important element. He (Mr. Porter) considered that this latter risk could not be measured, and that therefore there was a reason for avoiding any affectation of precision. For such a risk as Timbuctoo one Actuary might quote 2 per cent; while Mr. Bailey would require £2. 7s. 4d. per cent if the life were 45—but if the birth-day be only just passed an additional 3s. 2d. per cent beyond. This was not in keeping with Mr. Bailey's statement in the outset that he wished to treat the subject on a broad basis.

It would have been better, in his opinion, had Mr. Bailey deferred the publication of his scheme until it had been more fully discussed. It was so desirable that all should agree upon a uniform scale; and this was quite possible now, since each independent worker could give the benefit of his lucubrations to the general body. He was surprised to see that the mortality of the West Indies was so much less than that of the East Indies, but for some improvement of this nature he had been prepared, for he remembered that 8 guineas used to be charged for the former risk and only 3 to 3½ for the latter. The West Indian rate was now greatly reduced, and having felt some doubt as to the safety of the reduction he was now glad to find it justified by the statistics. He thought that the proportion of lives exposed to foreign risk in the "London Assurance"—10 per cent—was excessive: in his own office, it was probably 2 per cent. With a proportion at once so large and returning only an additional mortality of .8 per cent, he considered that we should soon entirely get rid of extra premiums. Mr. Bailey's paper was thoroughly well done, and the Institute owed him one more debt. To the Assurance Offices it was no less valuable, as it might be the means of inducing a more rational and less empirical method of dealing with an important practical question.

In answer to an enquiry, Mr. Bailey said that his Office would not grant an insurance on the published terms to a man who proposed his life and stated he was going to the West Coast of Africa.

Mr. EMMENS had been led by the paper into the belief that, in Mr. Bailey's partition into healthy and unhealthy districts, there would be no exceptions whatever, even in the case of new assurers. He now gathered that special contracts would be made in some cases, just as is now done with regard to the question of health. Mr. Bailey's objection to the existing rates was they were empirical; but, he had himself shown in his paper that no data existed upon which a scale might be founded. In the selection which he had made for the basis of his whole world rates, he was at issue with Mr. Brown. Finding therefore that two such eminent authorities disagreed, he (Mr. Emmens) scarcely thought that either the data, or the subsequent results would command the confidence of the profession. The practice in his own Office was to take as a standard Indian premiums deduced from a combination of original observations made by Neison and Naylor. For other places, the risk would be compared with the Indian risk as far as practicable and the premium fixed accordingly. These rates were about the average of those usually charged, and gave general satisfaction. With such limited data, the question of acclimatization did not weigh with them. Upon this point, he would remark that, the superior vitality observed amongst the older lives was due to exceptional circumstances, and did not militate against the normal law of mortality as propounded by Gompertz and Makeham.

Mr. BADEN thought that there were other influences to take account of besides those of climate. In one Office that he was acquainted with, there was a considerable agency at Truro, and the risks consisted chiefly of miners. Many of these emigrated to Chili to follow their avocation there, and an additional premium of 2 per cent was charged without any special consideration. The mortality among these men turned out to be exceedingly high, and the Office in reviewing its extra rate for Chili determined on doubling it. This would supply an instance of the necessity of regarding other things besides the mere climate. With a universal scale, such as Mr. Bailey proposed, no consideration would be taken of the circumstances under which a life went abroad, nor of the peculiar influences to which he was likely to be subjected. He thought that, as the expense of maintaining foreign agencies was considerable, there was no reason why an extra rate should be confined to the unhealthy districts only. Why should not an extra premium be charged for Valparaiso without assigning any particular reason for it—we being satisfied that it is necessary to meet the extra expenditure there.

Mr. HARBEN thought that the subject was one of practice rather than of theory; and could not therefore agree with Mr. Porter that it was brought forward prematurely. It was a means of getting it well ventilated. He preferred Mr. Bailey's method to that of Mr. Emmens. It had the charm of simplicity and would free the policies from some of the conditions usually attaching to them, and assignees would know exactly what rate would be added for any particular place. At present, the extra rates charged were almost prohibitory. Analogous to the reduction of the fire duty, a considerable augmentation of business might be expected from a removal of restrictions. Mr. Bailey's principle might be safely adopted, after the period of acclimatization had been got over. He would charge a small extra premium for the first five years, and then allow the premium to revert to the ordinary rate. The difficulties of an Indian climate would be overcome in five years, and the life would then be as good as a European one—except in a few localities. Extra premiums should cease at the expiration of a specified time, and then people would know what they had to pay. He should adopt a rough principle that within certain limits there should be certain fixed rates, and beyond those limits certain other rates.

Mr. SPRAGUE said that two views had been taken of the subject. One by Mr. Porter, who urged them to wait till they had agreed upon a common course. The other by Mr. Bailey, who, having judged for himself what were the proper rates for tropical parts, had adopted them. This latter course was to be preferred as the more practical and business-like, but Mr. Bailey had, he thought, gone too far in some respects. The present scheme had already been noticed in the *Journal*, under the heading of "Conditions of Assurance." It was new to him to learn that many Offices allowed their assured to reside in any part of Australia, free of extra premium. He thought that even when residence was permitted up to 33 degrees from the Equator, Australia was sometimes excepted, and that Queensland was usually charged for at the rate of 10s. per cent. In the southern hemisphere, the limit might, he thought, with propriety be extended to 31 degrees, which in point of temperature would nearly correspond with 33 degrees in the north. The emigration of Cornish miners to Chili, referred to by Mr. Baden, was to be accounted for by the failing

state of the mining industry in Cornwall. The expense of working had been increased by the great depth to which it was now necessary to go, the mines having been so long worked; and it was found that mines in other parts of the world could be worked cheaper. Numbers of miners were consequently thrown out of employ and might naturally emigrate to Chili, which now sent a very large quantity of copper to England.

He was wholly opposed to the suggestions which had been thrown out as to the total abolition of extra premiums. That would have the effect of making those who stay at home pay for all those who go abroad and are subject to extra risk. Such would be a fair condition if at the outset all had the same expectation of going abroad: but in practice it would not be fair, because some of the assured were more likely to go abroad than the others. The inducement to go to a place like India might be the larger salary which can be obtained there: there was no reasonable objection to charging a man himself with the extra premium instead of leaving those who stay at home on lesser salaries to pay it for him. A good deal, however, might be done in the direction which Mr. Bailey had taken. A gentleman of position and wealth travelling for mere pleasure might have *carte blanche* to go where he pleased, without the Insurance Offices losing thereby. But this would be a different thing from relieving from extra premiums all who were compelled by business to visit places that inclination and health would have made them shun. He could not adopt Mr. Harben's suggestion with regard to acclimatization, that after a certain period lives are not exposed to heavier mortality than those who stay at home. Looking at the table before us, we find that lives from 20 to 24 have a mortality in India of 2·6 per cent against ·77 per cent in England; from 40 to 44, the mortality was 2 per cent in India and 1 per cent in England, and from 55 to 59, 3 per cent against 2½ per cent, and so on throughout all the Table. So that although many of the persons have been the greater part of their lives in India, they exhibit a greater mortality than is seen amongst persons of corresponding ages in England.

Mr. BUNYON said that he had paid a great deal of attention to the subject of acclimatization, and was satisfied that there was a considerable fallacy in the idea that a person becomes as well able to withstand an adverse climate as if he had originally been a native. The effect of acclimatization was of this sort. There are certain diseases which attack all new comers to a climate. But after these have been got over, the climate begins to take an insidious effect upon the constitution, till it can no longer be borne. It is then necessary to come home for complete restoration of the health. But on return, the first acclimatization was of no avail, for the same process has to be gone through; and the older a man was, the less able was he to withstand the climate. In the case of Indian lives, it might be noticed that each stay in the country became shorter. Were it not for the experience which old Indian residents acquire in measuring their power of resistance, the mortality at the higher ages would be just as great as that at the younger. This shows that the effect of foreign unhealthy climate continues during the whole of life. The question of rates seemed to him to be one of contract and convenience. The late Mr. Downes told him that, after careful enquiry, 2s. 6d. per cent would have met the extra risks of the "Economic." No doubt this was correct, and as only comparatively a few go abroad, a very small addition to the ordinary premiums would allow

people to go all over the world. But how could you get parties to pay such higher rates as you might propose? The Fire Offices had pretty well agreed to the rates for various risks: but life premiums were charged upon different scales and different principles, and the question would be how to deal with those persons who have broken the conditions of the contract upon which they had entered. Mr. Bailey had hit upon the right principle, that there should be some identification of the various interest and some modification of the general contract. There should, however, he thought, be more than one division. If you allow persons to travel in unhealthy districts at a uniform rate, you charge many such persons more highly than you ought, in order to let others off more easily: that is, should a risk which would be met by 1 per cent be rated at 2 per cent, in order to let another man go to the West Coast of Africa for the same premium? If we are to modify our present ideas, it must be by an accommodation of various interests—and a closer enquiry will enable us to do so without taking such a very broad division as Mr. Bailey has done.

Mr. ADLER thought that one set of rates for extra risks would not work satisfactorily. An officer insured in his own Office was charged £10 per cent for the Gold Coast—and he was the only officer of his regiment who returned, and he acknowledged he had not been charged too much. He objected to Mr. Bailey's deviations from the simplicity and uniformity of the general line laid down; and thought that if exceptions were made in one direction they should also be made in the other. Mr. Brown's results did not present the great fluctuations from the ages 20 to 39, which Mr. Bailey attached so much importance to in his own. Such roughly deduced figures should not be made the ground of a sweeping assertion against the Gompertzian theory as propounded by Gray and Makeham. Woolhouse's rate of mortality unadjusted for age 20 was 2·66; for 25, 2·73; for 30, 2·91; for 35, 3·15; for 40, 3·44; for 45, 3·81; for 50, 4·26. Neison gave also, without adjustment, for age 20, 2·32; 25, 2·50; 30, 2·78; 35, 2·86; 40, 2·97; 45, 3·79; 50, 2·98. There are here fluctuations at different ages, but not particularly between the ages 20 and 39. We make no restriction upon the occupations of lives after they are once assured: so that the rest of the assured pay for the risk incurred by those who subsequently embrace more dangerous pursuits. He believed that eventually we should have to do away with extra premiums, and that considering the increased facilities of communication such was merely a question of time.

Mr. NEWBATT stated that, in the experience of his Office those lives which returned to India appeared to be subject, even in a more marked degree, to the effects of the climate than those who had gone out for the first time. This fact was adverted to and brought out very prominently in the Report of the Commissioners of military mortality in India. The lines of division proposed by Mr. Bailey had been adopted, in the main, by his Office since the year 1851, though not quite to the same extent. The free limits included the Holy Land, Madeira and Egypt, and generally all places south of 31 degrees south latitude. Free residence in Australia was also conceded. The charge for voyages to America was remitted, but that to Australia retained till about seven years ago, when it was abolished. The great object to be gained in any alteration of the existing system is that people should find themselves as much as possible

unfettered. Giving leave to reside in North America and Australia, and then imposing a penalty for unauthorized voyaging between the two was likely to mislead people to their cost. As a matter of practice, his Office would allow the Panama route to be taken.

The rate of charges for the zone reserved by Mr. Bailey would not be easily settled in this generation. *Prima facie*, there would be no equity in charging the same premium for all parts of the world embraced in it,—for it contains different and varying risks. The risk on the West Coast of Africa could not be compared with that of Ceylon. But these varying and unequal risks exist in our every day business. We assure the life of a butcher upon the same terms as we do that of a clergyman—and therefore Mr. Bailey has considerable justification for putting forward a uniform scale. His own leaning was to an abolition of extra premiums upon the Scotch plan, that is after the policy had subsisted a certain number of years without having been the subject of an additional premium. To this, no doubt, we should ultimately come. This would still involve payment by the stayers at home for those who went abroad; but, as Mr. Bailey pointed out, the home residents incur risks of their own, not of the same kind but in degree more perilous than those of foreign residence. There was no question of equity, and there was no establishing a perfect equity. That which in itself would work the least harm—that which was the simplest—that which, upon the whole, would give the greatest satisfaction to the great body of life insurers, was the plan which we should endeavour to carry out. Such a plan would be one which said to a policy holder, who had been upon the books a certain number of years, that he was free from any trammel in respect of residence, provided his pursuits were not of a kind necessarily to lead him into circumstances and places that might be considered highly dangerous.

Mr. AUGS. HENDRIKS wished to express an opinion as to what he considered a want of appreciation of the extra risk incurred in travelling by sea. It was pretty generally admitted that it was advisable that the additional premium for such risks should be abolished, and most Offices had now ceased to charge for them. But this had been done on the ground of expediency, and from the idea that if we could disregard the risk of railway and other accidents, we could also afford to allow sea-travelling. Recently he had examined the experience of his own Office in the matter. They had about £1,000,000 assured in Australia, at an annual premium of about £30,000. During a year about £50,000 of these risks passed the sea either way, and the average of the losses (excluding all cases of falling overboard) in the past ten years had been £300 per annum, or nearly 1 per cent upon the premiums. Reducing this sum by the reserve upon the policies, the loss was £250 about—so that an extra rate of 10s. per cent on the sum assured, which was assumed at hap-hazard, turned out to be very correct. For foreign residence, it was desirable to reduce the rates so as to bring assurance within the means of the largest portion of the community: but he objected to its reduction below cost price. The risks could not be divided into two classes only—the difference between them was too wide. Probably some five or six classes would have to be established, with a separate tariff for each, to be revised as circumstances might occasion. Many of the good American Offices restricted their operations to the north of a point just below Washington. California used to be

excluded, but recently it has been proved to be a very healthy district and admitted. It will be found impossible to fix foreign rates upon a durable basis: we have not got the same numbers to deal with, and therefore have to treat these isolated cases more as underwriters than as actuaries. The Panama route, he thought, was one of considerable risk, and should be charged at the rate of one guinea per cent.

Mr. HODGE thought that the general body of the assured were under as great obligations to Mr. Bailey for bringing the matter forward as the Offices were. It was of pressing importance that, in these days, the question of extra premiums should be settled upon some more satisfactory basis than at present. He did not complain of the existing system as compared with that formerly adopted. He remembered a case which occurred 30 years ago, of a gentleman assured for £30,000 who went to pay a visit to his father, the then Governor of the West Indies. The premiums paid amounted to £1,800, and the gentleman stayed only two or three weeks—but the only return allowed by the Office was about £300. He remembered when the West Indian rate was ten guineas, and 5 per cent was considered to be ruinously low. He could not agree with the deduction made by Mr. Hendriks from his facts. An extra premium of 10s. per cent for the voyage, with £50,000 constantly at risk afloat, would have been charged upon a larger amount—because the voyage lasts only half-a-year. He thought the proposition with respect to the southern limit supported by the facts with which we are acquainted. The regulations of many Offices allow the assured to go to any place, not within 33 degrees of the Equator. What if any one should propose to go to the North Pole? It was impossible to follow strictly the isothermal lines; but he did not see why the limitations as to latitude should not be varied with those of longitude, so as to exclude peculiarly unhealthy places. Notwithstanding what had been said by Mr. Bunyon, there was a good deal in a person's being accustomed to a climate, because he gets a knowledge of what is beneficial, which a new comer does not possess. He approved of the line of 31 degrees south, but thought that justice would not be done to all parties by adhering to the principle of a single rate. It was sound to enlarge the limits as much as possible, and to fix them in the way which Mr. Bailey had done. He thought that there was a good deal of information yet to be obtained, and that considerable light would be thrown upon the question if such be properly classified.

The PRESIDENT was pleased that so interesting a paper on so important a subject had elicited such an animated discussion. The subject was one of great moment, and he trusted that we were soon likely to arrive at a period when there would be no extra premiums whatever. There were difficulties in one Office alone commencing so utopian a scheme; but if others also agree, the undue excess arising from an accumulation of risks would vanish. The losses arising from the risks of foreign residence would be easily met by the most trifling addition to the ordinary premiums paid by residents in this country. On looking into the experience of a large Office, he found that the extra premiums amounted to only sixpence per cent on the total sums assured. In that case would it be thought necessary to put on an extra charge, if all were to participate in the risk? He had adopted the limit of 33 degrees on each side of the Equator, with some large increase of licence in certain parts as Buenos Ayres, Natal and Australia. The tropical risks, in his own Office, amounted to £1,400. a year, and many of these

were introduced through Indian connections: he did not think that the time *had arrived* for accepting these at the ordinary rates. He agreed with Mr. Bailey that it was advisable to reduce the whole of the foreign risks as much as possible to a single rate. The rate proposed was, he thought, rather too high, for he was under the impression that there was a great improvement going on in the rate of mortality during residence in tropical climates. This was observable in his Reports upon the Indian Funds. In the case of the Madras Military Fund, where the experience extended over all kinds of military service during the last 50 years, the rate taking both climate and war was scarcely more than 3 per cent through the entire period of service, and was nearly constant at all ages under 65. It started at a little over 3 per cent and diminished slightly to about the middle period of life; and if the individuals be traced on their return home, it will be found that they merged into the ordinary mortality of the country. Examining the data, and subdividing the classes into married and unmarried, a great difference will be found in the mortality of the latter. This was easily explainable. In the early part of the period over which the observations extended, the habits of society were different, and the unmarried were most exposed to those influences which are injurious to health after their first arrival. The mortality of the married men, under age 65, in the whole 50 years' experience, was little more than from 60 to 73 per cent of that of the unmarried. He believed that a great change was going on in civilian life also. The real rate of mortality was from $1\frac{1}{2}$ to 2 per cent above that of this country in the case of the military; and scarcely over 1 per cent for civilians. These rates include the average of all the climates in India, some of the localities of which are quite as healthy as any in this country. No permanent extra premiums could be charged for the Himalayas, nor for some other places. With regard to the effects of acclimatization, he thought that those who survived were better lives from the beginning and not that because they became accustomed to the climate. Such as survived and returned to England were quite on a par with other lives—the climate does not appear to deteriorate them to any extent. This point has been controverted; but the experience of nearly all the Funds showed that the retired officers received their annuities as long as residents here. These facts confirmed the conclusions he had arrived at, that the nearer we could come to the pleasing result of getting rid of all our extra premiums the better it will be for all parties. In these days of rapid and easy travelling it was impossible to say where we may be tempted to go, and it was a great hardship to put a heavy charge upon persons, which would prevent their taking pleasure excursions. The climate risks are now generally less than they were, and business representatives were frequently sent abroad on the slightest occasions. Heavy charges for extra premiums were likely to affect commercial enterprise, or check the practice of assurance amongst a class in which it was very desirable to extend it.

Mr. BAILEY, in reply, expressed his gratification that his paper had elicited so interesting a discussion. Mr. Porter objected to taking the experience of military risks as the basis of the premiums for the unhealthy districts. But there was a distinction between the mortality of privates and officers. In those districts which he had termed unhealthy he did not think that the difference in mortality was very marked—probably not 10 per cent. But even if it were more, it would hardly affect his argument, because the mortality of the troops is not to be taken as a

standard. He did not use the mortality in the Indian Civil Service, as the members were too few and the results appeared to him to be too favourable. No exception ought to be taken to the military statistics, on the ground of insufficiency: they are the most recent, and the best that can be got. The resulting rates are moderate, more moderate than those generally adopted. He had endeavoured to contend that rates derived from observations upon the mortality of officers in the Madras Presidency would suffice for the whole world. The essence of his plan was there should be no exception—once introduce exceptions and the whole scheme is destroyed. By adopting two rates only, one for healthy and one for unhealthy districts, a man knows exactly what will happen to him wherever he goes. As a matter of fact, how many out of the total number of the assured went to the West Coast of Africa? A man was allowed at present to go to the North Pole, as pointed out by Mr. Hodge. But why? Because he did not go there. The Cornish miners referred to by Mr. Baden were probably assured for £50. upon the same terms as charged to a country gentleman for £5,000: such small policies ought, no doubt, to pay a much higher rate, since the expense to the office would be the same as for the larger cases. But these inequalities do exist, and to a certain extent are unavoidable. He had had his scheme under consideration for some time past, and had consulted skilled underwriters and others conversant with sea risks, all of whom would be content to allow passengers to go by sea without any extra charge whatever. He did not understand Mr. Hendriks's statistics, unless it was meant to be asserted that one out of every 200 persons going to Australia is drowned. From the evidence he had obtained, the risk of drowning was very small and not worth considering. He had not referred to Mr. Bidder's report, for he had not heard of it: but the notion of there being a "moral risk" involved in foreign assurances reminded him of Lord Burleigh's shake of the head. He did not at all understand Mr. Emmens' process of fixing extra premiums: it was certainly not logical. There was considerable force in Mr. Baden's suggestion that premiums should be loaded, not simply on account of the additional mortality, but on the score of the increased expense of conducting a foreign agency. But the difficulty is that there are many places for which it would be impossible to charge any extra premium—Canada for instance—although the expense of an agency there would be as considerable as at Valparaiso or Buenos Ayres. His figures were deduced from Mr. Brown's report and could be easily tested. There were many objections to Messrs. Woolhouse and Neison's statistics. Mr. Woolhouse commenced from 1760, soon after the establishment of the British rule in India, and extracted his data from Dodwell and Miles' lists, and thus included a period which he thought it desirable to exclude, because the class of men first sent out to India were a totally different class to those now going out there. The interesting question of acclimatization was still unsettled. Sir Ranald Martin, the medical examiner at the India Office, has no belief in acclimatization, and thinks that a new comer is better able to resist the ravages of the climate than an old resident of the same age. The mortality amongst men aged 35 landing in India for the first time would be less than that amongst men of the same age who had been there for ten years. He did not think that a common agreement would ever be arrived at by the Offices. Let each actuary act upon his own judgment, and do what he deemed equitable between the public and his own Office.