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The "Spanish" Influenza Pandemic of 1918 and its Impact on the Southern Rhodesian Mining Industry

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The influenza pandemic of 1918 caused the deaths of some 20 million people throughout the world and was probably the worst epidemic in human history. With the exceptions of New Guinea, St. Helena and certain South Pacific Islands, the whole world was ultimately ravaged by the disease which attacked 50 per cent. of the world's population, the attendant death rate averaging 3 per cent. This paper will briefly describe the passage of the epidemic through Southern Rhodesia, with particular regard to the mining industry. It will examine the Administration's response to the advent of the disease and the subsequent criticisms voiced by the Rhodesia Chamber of Mines, before discussing the African labour conditions on the mines in relation to the influenza epidemic and the treatments used to combat its spread. The conclusion will attempt to assess the effects of the epidemic on the mining industry of Southern Rhodesia.[1]

The first cases of epidemic influenza in Southern Rhodesia occurred amongst the railway staff in Bulawayo about the 9th October, 1918, the disease having appeared in epidemic form in South Africa in the middle of the previous month. Bulawayo itself was rapidly infected and from there the epidemic spread equally swiftly to Que Que, Umvuma and Salisbury, before engulfing the remaining towns and districts along the railway lines. The spread of infection was apparently governed by "the density of the population in any particular centre and the mode of communication with other infected places". But although on October 12th, rail travel by Africans was forbidden in an attempt to delay the spread of the epidemic — a prohibition soon extended to the Coloureds and Indians and which remained in force for almost a month — Influenza was carried to many parts of the rural areas by the thousands of deserters from the mines. Some of the more isolated districts, such as Inyanga and Melsetter, and a few of the small, remote mines, initially escaped infection, only to succumb the following year.[2] The epidemic brought the normal administrative, economic and social activities of the territory to a virtual halt, and forced the closure of all the large mines, and most of the smaller propositions. By the 22nd October the situation at Que Que was described as serious, with 150 fatalities and some " . . . dead [having] been found who could never have had any medical aid." At the Falcon Mine the majority of the African labour force was either ill or had deserted, a significant number of the latter having died in the veldt; of the "161 white mine employees, only 30 are [well enough for] working, feeding and attending natives." These conditions were duplicated on all the large mines in the country; for example, at Wankie: "In the space of a few days nearly 2 000 natives were prostrated. The resources of the Colliery management were taxed to the uttermost in giving relief, as a large number of the Europeans also contracted the epidemic." However, by the end of October the worst of the epidemic had passed and Wankie and a few other mines had already resumed work, but on a considerably reduced scale. On 9th November, all travel restrictions were lifted and five days later the Acting Administrator, Newton was able to inform the London Board of the B.S.A. Company that, with the exception of Umtali, the epidemic was practically over in the main towns and the position in the country districts was much improved.[3] Although recurrent waves of the influenza epidemic affected certain rural areas and mines in following years, their impact was comparatively minor and consequently will form no part of this discussion.

Apparently the potential severity of the epidemic was initially not appreciated by the Administration, particularly as the mortality rate in South Africa was at first low. Little advance preparation was made for the epidemic and it was not until the first influenza cases had ap-

peared in Southern Rhodesia that orders for vaccine were sent to the Cape laboratory that normally supplied the territory's needs. Because of the demand for vaccine within South Africa itself, the supplies requested by Southern Rhodesia were only made available after a fortnight's delay, by which time the influenza epidemic was established across the country. As Fleming later remarked, "We were therefore handicapped by being in the position of inoculating at the heels of an epidemic rather than in front of it." Furthermore, the swiftness and severity of the epidemic in its early stages virtually overwhelmed the Administration's medical service, which in any event was handicapped by a shortage of trained men and nurses because of their absence on active service in various theatres of the war. For example, vacancies for medical men existed at Arcturus, Belingwe, Rusape and Enkeldoorn-Umvuma, and this shortage had necessitated the closure of the African hospital at Ndanga. As doctors and trained nurses were often themselves among the first victims of the disease, the Administration initially concentrated its depleted forces against the epidemic in the towns, and left the rural districts, including the mines and the African reserves, largely to their own devices. The majority of the larger mines had their own hospitals and doctors, and here the Administration restricted itself to the supply of medicines and vaccines as they became available, but was unable to give any further aid. A telegram from the Falcon Mine asking for help as "Doctor and nurse cannot stand strain much longer" received the following reply, which graphically illustrates the dislocation caused by the influenza epidemic: "Quite impossible [to] send relief at present moment as supply of medical men and nurses required all over the country quite inadequate for the demands Bulawayo and Salisbury hopelessly understaffed and position is same pretty well elsewhere . . . " Once they were in position to do so, the Native Commissioners and Compound Inspectors sought to bring aid to isolated small mines and the African reserves, where in many instances invaluable work was also performed by missionaries and by black and white lay volunteers.

The Administration subsequently came under heavy fire from the Rhodesia Chamber of Mines, and had that body restricted itself to criticising the tardy response evinced by the Administration and Fleming's overly-complacent assertion that the scattered nature of the mines would militate against a severe epidemic, it would have remained on stronger and more justifiable grounds. However, the Chamber failed to appreciate that, given the state of medical knowledge of the time, there was in fact little the Administration could have done to prevent the spread of the epidemic. Similarly, officials in both the Medical and Native Departments often fell early prey to the disease, and until their recovery in sufficient numbers, organised relief was nearly impossible. The Chamber's case was presented in the form of a collection of emotional and often anonymous complaints culled from various individuals around the country and from letters to the press. While cases of hardship undoubtedly existed and the Administration's initial complacency deserved censure, the Chamber was premature in its criticisms, especially as it refused to wait for the publication of the reports of the various departments concerned. As regards this criticism Fleming thought that the "people were numbed and staggered with the immensity of the disaster, and it was only natural that at a time such as this, feelings should run high." Chaplin suggested that "considering the circumstances and the difficulties of the time and the want of knowledge, there is no great cause for thinking the departments concerned did not do all they could." This seems to have been realised by the High Commissioner because, although the criticisms made by the Rhodesia Chamber of Mines were forwarded to him, no action was taken.[4]

Generally speaking, African labour conditions on the mines in this period were gradually improving, but housing was often inadequate and

Table I

MORTALITY RATE ALL CAUSES AFRICAN AND EUROPEAN MINE EMPLOYEES

YEAR	AFRICANS		EUROPEANS	
	Average No. employed	D.R. all causes p.m. p.a.	Average No. employed	D.R. all causes p.m. p.a.
1917	38861	17,39	1625	2,46
1918	32766	107,72	1452	39,26

Source: A3/12/17.

overcrowded, partly because of the expansion in the numbers of the labour force between 1913-1916. Sanitary arrangements, often of the open trench type barely sufficed under normal conditions, and were potential health hazards in extraordinary circumstances, as in 1918.

Table II

AFRICAN MORTALITY RATE ON

GROUPS OF MINES OF DIFFERENT SIZE

	Average No.	No. of deaths from disease	Death rate per mille per annum employed
Group 1: mines employing over 1 000 Africans	11 388	1 395	122,50
Group 2: mines employing over 500 & under 1 000 Africans	1 603	239	149,10
Group 3: mines employing over 300 & under 500 Africans	3 572	473	132,42
Group 4: mines employing under 300 Africans	16 203	1 522	93,93

Source: *Report on the Public Health for the year* 1918.

Discrepancies between the two tables concerning the total death rate are explained by the figures in Table I being early, uncorrected returns.

The two tables show the African death rate by all causes and not that of the epidemic alone, but the tremendous increase in the death rate is due to epidemic Influenza and a related increase in the number of deaths from pneumonia. Reference to Table II shows that the total number of African deaths in 1918 on all mines was 3,629, while the total number of African miners, as shown in Table I, was 32,766. If no non-random factors were at work then the expected number of deaths within each group would be proportional to the total number of miners within that group. Table III sets out the observed and "expected" numbers of deaths within each group.

Table III

DEATHS

GROUP	OBSERVED	EXPECTED
Group 1: Mines employing over 1 000 Africans	1 395	1 261
Group 2: mines employing over 500 and under 1 000 Africans	239	177
Group 3: mines employing over 300 and under 500 Africans	473	396
Group 4: mines employing under 300 Africans	1 522	1 795
TOTAL	3 629	3 629

In order to determine whether the number of deaths within each group, i.e. the "observed" deaths, were likely to have occurred purely by chance a χ^2 test was applied.[5] The calculated value of χ^2 is 92,4 (on 3 degrees of freedom). The 0,0005 significance limit (17,73) is well below the calculated value, 92,4 and it is therefore concluded that the number of deaths within each group could not have occurred due to random factors alone. In other words, there is a greater than 99,95 per cent. certainty that non-random factors were at work. A broad interpretation of Table III would suggest that, as the death rate rises from Group 4 through to Group 2, before dropping considerably in the last category, the greater the concentration of mine workers the higher was the death rate from influenza, given the crowded housing conditions on many of the mines, in Groups 1 to 3. The fall in the last category is perhaps explained by the existence of hospitals and trained personnel on the mines concerned; in Group 2, mines of that size often provided hospital accommodation but had no resident doctor and relied on visits by the district surgeon. Similarly a mine was not obliged by law to employ a full-time compound manager unless the number of Africans employed exceeded 300, and no full-time assistant was required until 750 or more Africans were engaged. This point is worth noting, as in many instances the brunt of caring for the sick during the epidemic fell on the compound managers, who might find themselves caring almost single-handedly for up to 750 labourers, a factor which may have tended to increase the death rate. Out of the total African

labour force on the mines, 19 471 workers were infected by the epidemic and of this number 2 851 were reported as having died. Fleming observed that "Native miners suffered more severely than any other class of the population." As mentioned previously, however, this varied with the number employed and their distances from infected centres. A further reason has been suggested by Gelfand, who pointed to the generally poorer physique and diet of Africans as contributing to their high mortality rate in the epidemic.

Table IV

COMPARATIVE DEATH RATES, INFLUENZA ONLY, BETWEEN MINING COMPOUNDS AND RURAL VILLAGES

District	Death rate in villages	Death rate in mining compounds
Matobo	1%	8-9%
Bulalima	3%	No mines
Umzingwane	3,4%	15%
Bubi	2%	6%
Nyamandhlovu	3,25%	No mines
Selukwe	2,5%	10%
Belingwe	3,69%	10%

Source: N9/1/21.

Unfortunately Table IV is the only detailed breakdown of the death rate by districts, but the pattern revealed there seems to hold good for the country as a whole, where the mortality rate per cent. on the mines caused by the epidemic averaged 9,174, while in the Reserves it was estimated at only 2-3 per cent. According to the Native Commisioner for the Bulawayo District, "It thus happened that the natives in the town and at mines who were in a position — through being concentrated — to receive some measure of treatment suffered far more severely and experienced a far higher death rate than the kraal natives, the bulk of whom weathered the storm with little or no outside assistance." He hastened to add that this "was almost certainly not due to the superiority of native herbs and remedies over those applied to European patients but rather . . . to the absence of the concentration which organisation implied." Africans who lived on farms and in the Reserves appear to have escaped comparatively lightly, the death rate rising steeply in the large towns and particularly on most of the mines.

An explanation for the almost "explosive" nature of the epidemic on many mines and the pneumonic complications often induced by the Influenza is suggested by Stuart-Harris: "Symptoms may then arise as a result of multiplication of virus if some environmental change such as sudden chilling disturbs the natural resistance of the respiratory tract as in the case of swine influenza. This would explain the instances of apparent simultaneous involvement of all members of a family. Also during explosive outbreaks in schools or other communities, it is difficult to account for the extremely rapid build-up of infection except by some sort of mechanism as that outlined." Underground workers were particularly susceptible to temperature changes, and, indeed, one Native Commissioner noted that they suffered proportionately more from the epidemic than did workers in other job categories. Because of the often over-crowded housing and potentially hazardous sanitation arrangements, together with the temperature changes experienced by underground workers — who, once underground, tended to work in hot, confined areas — it seems obvious that the mines, especially the larger and deeper ones, as concentrated centres of population often provided optimum conditions for the rapid spread of the Influenza epidemic. In this connection it is significant that the Medical Director's Report on the Public Health for 1919 ascribed the comparatively less severe mortality rate of the recurrent epidemic waves in part to the less crowded housing conditions on the mines in that year, this being partly due to the ravages of 1918.[6]

The Influenza pandemic of 1918 was characterised by the occurrence of "high death rates in young adults, by secondary infection by *Haemophilus influenza* in the second and third waves which probably played a large part in the increased mortality and by the occurrence in many of the more severe cases of an intensive cyanosis." Although the exact nature of the virus associated with the 1918 pandemic is still a subject of controversy, the most likely suggestion is that it was a strain of virus A, "related to or identical with the swine virus isolated by Shope in 1931." In 1918, however, medical science knew little concerning the nature of epidemic Influenza, and when answering the criticisms made by the Rhodesia Chamber of Mines, Fleming felt

obliged to quote Sir Arthur Newsholme, the then Medical Advisor to the Local Government Board in England, to the effect that he knew "of no public health measures which can arrest the progress of pandemic influenza." Although Fleming thought "the virus of Influenza (was) undoubtedly due to a living organism", he observed that its nature was still obscure, but advocated preventative inoculation because "though possibly not conferring immunity from infection to any degree, (it) yet affects the onset of dangerous complications and materially lowers the mortality rate." In a more cautious report, the Medical Director admitted that this advocacy was no more than a belief, as no valid statistical evidence existed to support the assumption that the various vaccines used — the most common being a "mixed vaccine containing 'Pfeiffer's Bacillus' with the organisms of pneumonia and septicaemia" — materially reduced the mortality rate, except possibly as regards cases of pneumonia induced by the Influenza. Fleming at least was aware of the limitations of the vaccines used, unlike some members of the Rhodesia Chamber of Mines, who had ordered supplies from a private laboratory in Johannesburg, but as the Medical Director pointed out, it was a curative vaccine and useless for the purpose required.[7]

Present-day medical knowledge would suggest that the value of the vaccines then used was doubtful, although some people believe that they may have been of some psychological importance, as sheer nervous fright may have increased the mortality in neglected cases. Even had the vaccines been of any significant value, the initial delay in obtaining them meant that the comparatively useless practice of curative as opposed to preventative vaccination was followed. A further obstacle to effective treatment was the concentration of labour on the mines, group infection often causing the entire work force, both African and European, to fall ill at much the same time, which rendered adequate medical assistance almost impossible and so tended to raise the death rate. Although desertions from the mines undoubtedly aided the spread of the epidemic, and many deserters died untended in the bush, one Native Commissioner was of the opinion that desertion had brought positive benefits. At Shabani the 900 indigenous African mine employees all deserted and only 75 of them subsequently died from the epidemic; while at the neighbouring Birthday Mine the labour force mostly remained on the mine, but 103 lives out of 500 employed were lost. "Though against advice, desertion has proved to have been a wise course. The carrying of the disease to their homes may have hastened its spread but there is no doubt, had they remained in the compounds, the mortality would have been far greater." Dispersal of the mines' labour force or its reverse, total quarantine of the various mines, would certainly have lowered the mortality rate, but were not considered practicable measures, although one small mine, the Germania, did practise a total quarantine successfully and escaped the epidemic.

In the early stages of the epidemic and in the more remote districts employees and others giving aid often had to improvise various forms of relief. Quinine and Epsom Salts were used widely, as were axle-grease poultices, and all were variously reported as having afforded some comfort. One mineowner was reported as having discovered a mixture of paraffin and sugar to be a successful cure as is still believed by some employers who maintain that in some instances paraffin operates as a crude heart stimulant. Similarly, at the Mali Mine, the tributor "doctored (the Africans) with a mixture of paraffin and eucalyptus and gave Friars Balsam and dop to those bleeding at the lungs, with success." In many cases the provision of dedicated nursing and good food seems to have reduced the mortality rate, and the various sources consulted constantly mention the unstinted aid given the sick by many mining employers and members of the community as a whole. The only exceptions, as far as mining was concerned, were a few mine managers on the smaller mines who were "unnerved at the spread of the epidemic or the possibility of becoming victims and . . . in consequence little if anything was . . . done to help the sufferers beyond sending a boss boy into the compound with some quinine, pneumonia mixture to be administered at his discretion."

Once supplies of vaccination became widely available, those officials attempting to administer it encountered a certain amount of opposition caused both by the lack of success where it had been previously used and by the suspicion felt by many Africans that Europeans were responsible for the Influenza epidemic. A significant number of African mine employees believed the epidemic to have spread from the laboratory at the Falcon Mine where Lister was conducting experiments on a vaccine against pneumonia. The Native Commissioner for Belingwe reported that the sick in one village refused his assistance on the grounds that "If the medicine was any good, there should not have been so many deaths among the Europeans and natives at the Mines and Compounds." Many African mineworkers in the Selukwe district, once they found they were not making a rapid recovery, refused any further European medical attention in favour of their

own methods. "The most popular of treatments was cold water — Natives could be seen in large numbers bathing in the streams adjoining the Compounds." Cold water immersion while running a temperature would seem likely to have induced pneumonia, and, indeed the "Fingoes who were the first to invent the cold water cure died like flies." However, similar treatment noted on the Birthday Mine, where open-air camps were instituted following the early heavy mortality, was apparently successful.[8]

The immediate and obvious impact of the Influenza epidemic on the Southern Rhodesian mining industry was the closure of most of the mines for periods ranging from two weeks to almost a month. Fleming thought the pandemic was the severest blow suffered by the mining industry up to that point, and the Secretary for Mines later estimated that the resultant loss to the industry was approximately £400 000. The pandemic seriously disrupted the African labour supply on the mines and the subsequent labour shortage was still felt in early 1919, which tended to strengthen the bargaining position of African employees. One result of the pandemic was to ease briefly overcrowding on many of the mines, but it was very doubtful if this was a direct management initiative, as opposed to fewer men filling existing accommodation. From about 1918 the mining industry entered a difficult economic period for some years and in this sense the Influenza pandemic occurred at an especially inopportune moment. However, its long-term effects were negligible when considered in this wider context of generally unfavourable economic conditions.[9] The pandemic and its concomitant high death rate may have had some influence on the changing composition of the African labour force on the mines. This change, until 1920 when some sort of equilibrium was reached, was associated with an increasing proportion of alien African workers within the total workforce. Southern Rhodesian Africans would have been able to observe the low deaths rates in the rural areas as opposed to the mines — and in fact many deserted — while alien Africans, further from their homes, may have lacked the opportunities for intimate comparisons of this type. If this was so, it is suggested as no more than a minor effect of the pandemic, as economic considerations decisively affected both alien and indigenous Africans' choice of work. As regards European labour on the mines, the pandemic may have accentuated a pre-existing shortage of skilled labour and so possibly strengthened organised white labour in its later demands on the various mine managements.

In brief the Influenza pandemic of 1918, although a dramatic episode in the medical history of Southern Rhodesia, does not appear to have had any significant long-term effects on the mining industry. apart from precipitating a structural change which would have occurred anyway. The pandemic did stimulate an awareness of the general need for wider-reaching Public Health legislation, but factors outside the scope of this paper obtruded to cause a delay in the introduction of the proposed bill.

FOOTNOTES

All archival sources are held in the National Archives of Rhodesia. Footnotes have been consolidated and relate to the relevant paragraph(s).

1 L. HOYLE, *The Influenza Viruses,* Virology monographs, 4, Springer-Verlag, Wien, 1968, pp. 255-6; for a general discussion of the Influenza epidemic in Southern Rhodeisa, see M. GELFAND, *Tropical Victory,* Cape Town, Juta & Co., Ltd., 1953, pp. 204-207.

2 *Report on the Public Health for the year 1918; Report on the Public Health for the year 1919;* A3/12/30/2, Report on the Outbreak of Epidemic Influenza in Southern Rhodesia in 1918, forwarded 1.vi.1919, Medical Director, to Secretary, Department of Administrator.

3 A3/12/30/1, telegram received 22.x.1918, Haddon to Administrator, Salisbury, telegram 24.x.1918. Asst. Magistrate, Umvuma, to Chanter., Salisbury. 3.xii.-9-8. Acting N.C., Wankie, to Supt. of Natives, Bulawayo., Cablegram, 14.xi.1918, Newton to London.

4 The preceeding paragraphs have been drawn from the lengthy correspondence contained in A3/12/30/2, 5; *Report on the Public Health for the year 1918,* and *Rhodesia Chamber of Mines Annual Report for 1918.*

5 I am indebted to Dr. G. Blake for his generous help in checking the statistical validity of certain tables.

6 *Report on the Public Health for the year 1918;* N9/1/21, Review of the Supt. of Natives, Bulawayo. and Gwelo divisions, of annual reports furnished by NCs for the year 1918; C. H. STUART HARRIS, *Influenza and other virus infections of the respiratory tract,* 2nd. Edition London, Edward Arnold Ltd., 1965, p. 77; N9/4/35, report of the NC, Bubi district for November 1918; GELFAND, *Tropical Victory,* p. 204. The mortality rate differed amongst the different groups constituting the African labour force on the mines; for example 'Nyasa' Africans had the highest death rate. The many variables involved precluded brief, generalised comment and deserve to form part of a broader examination of the health of alien Africans on Southern Rhodesian mines.

7 HOYLE, *The Influenza Viruses,* p. 256; A3/12/30/5, 8.i.1919, Fleming, memo re Rhodesia Chamber of Mines criticisms, 27.xii.1918, Fleming to Chaplin; A3/12/30/2, draft Memorandum, For the Prevention of Epidemic Influenza, issued by the Public Health Dept., S.R., Report on the Outbreak of Epidemic Influenza in Southern Rhodesia in 1918.

8 N9/1/21, reports of the NCs, Belingwe, Selukwe and Hartley districts, for the year ending 31.xii.1918; A8/3/15, 17.xii.1918, Inspector of Mines to Secretary for Mines, Salisbury: A8/3/8, Compound Inspector's report, Gwelo district, October 1918; A/18/30/9, 13.1.1919, J. McDonald to Chaplin.

9 *Report on the Public Health for the year 1918; Report on the Public Health for the year 1919; Report of the Secretary for Mines for the year 1918;* personal communication from Mr. C. van Onslen; N. H. Wilson, *Notes on the Mining Industry of Southern Rhodesia,* [1933], Salisbury, p. 18.