

MMPA celebrates 100 years of medical service to mine workers

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INTRODUCTION

In July 1886, gold was discovered on the farm, Langlaagte, in an area of the Transvaal Republic known as the Witwatersrand. As fortune seekers from all over the world flocked to claim their share of the buried riches, a sprawling mining town sprang up. The great Johannesburg Gold Rush had begun. From 1886 to 1900 a number of large mining companies were established and large-scale formal mining operations came into being. There was a burgeoning need for unskilled manual labourers and these were recruited from the indigenous black African population. As the mining operations expanded, the labour force grew into the tens of thousands. It was not long before it became apparent that all was not well with the health of this workforce.

Many mining company directors were worried by the extent of ill-health of the supposedly 'tough' indigenous Africans that they had recruited as mine workers. They had good reason to be; the mortality rate was appalling. Early in 1903, Sir Godfrey Lagden, Commissioner for Native Affairs in the Milner Administration, had called a meeting of representatives of the Chamber of Mines and the medical practitioners who then acted as part-time mine doctors, to discuss the problem. It was decided to appoint a committee of doctors to investigate and report. This committee comprised of Drs LG Irvine, D Macauley, JS Morton, E Pollak, A Watt and CJ Lyons, all of whom were mine doctors, which meant that they combined general practice and/or duties as district surgeons or panel practice with mine medical officers' duties. Their report, presented to Sir Godfrey in June 1903,¹ showed exactly how serious the situation was. They based their findings on the mortality returns supplied to them for the period November 1902 to April 1903, which were the only figures available.

From these data, they showed that pneumonia and other respiratory diseases were responsible for 41.7% of all deaths.¹ There were 493 deaths from pneumonia in the six-month period; approximately 50 000 black Africans were employed. Scurvy was responsible for 186 deaths and meningitis for 122. The total number of deaths from all causes, including accidents, was 1 541; the annual death rate amongst the black African mine workers was thus 57.7 per 1 000. The death rate from sickness alone was 54.5 per 1 000. There were 86 deaths from accidents in the six-month period, and the same number from enteric fever.

Reflecting on these appalling statistics, Dr AP Cartwright, in his treatise on the Mine Medical Officers' Association (MMAOA),² published to coincide with its 50th Anniversary, commented:

Very largely it was the result of the ignorance of the doctors then practising of how to prevent the diseases that killed so many

African mineworkers before ever they had begun work. For this they were not to blame. The medical profession throughout the world had much to learn then. The training of doctors was concentrated on treatment and taught them virtually nothing about prevention.

ESTABLISHMENT OF THE MMOA

Dr AP Cartwright's observation sent out a clarion call for the establishment of a medical discipline where prevention rather than cure became the main focus of attention. This historical hiatus in medical practice is now the responsibility of the relatively young, but already major, medical discipline of occupational medicine, within the wider practice of occupational health. As will become apparent, the MMOA (later renamed the Mine Medical Professionals Association (MMPA)) has been a major driving force in the establishment of this discipline and can, in fact, claim the honour of being one of the pillars on which the practice of occupational health is founded. In this regard, the role of the MMOA in establishing South Africa as a major player on the world stage in the field of occupational medicine has, perhaps, not received the credit that it deserves.

White miners had their own sickness benefit organisations and access to private medical specialists. As alluded to above, black African workers were looked after by part-time 'mine doctors' who carried on their private practices at the same time, and also often acted as government district surgeons. No one will be surprised to learn that this system proved unsatisfactory.

The need for more effective medical care of these labourers was all too apparent and, finally, towards the end of the second decade of the 20th century, the mining companies made the decision to appoint full-time medical officers whose whole duty was to attend to the black African mine workers. This was to bring about a rapid and spectacular improvement in the health and clinical care of the men.

Three of the most prominent mine medical officers of the time, Drs AJ Orenstein, Al Girdwood and HTH Butt, met to discuss the possibility of establishing an association that would represent all mine medical officers. The upshot was a meeting, held under the aegis of the Chamber of Mines, of everyone who was interested. This took place on 3 March 1921, and it was decided to form a body to be known as the Mine Medical Officers' Association.

The name was later changed to Transvaal Mine Medical Officers' Association but, many years later, reverted to the original name since, by that time, there were many members at work outside the Transvaal, notably in the Orange Free State. At the first general meeting of the Association, at the Crown Mines Native Hospital on 12 April 1921, a draft constitution was presented and adopted with



The Johannesburg miners' monument

some minor amendments. It set out two of the principal objects of the Association: to study and discuss all problems of special interest relating to the work of mine medical officers; and to promote and foster friendly intercourse and the exchange of views among members of the Association and with other organisations connected with the mining industry.

At this meeting, it was agreed that the proceedings of the Association should be printed and made available to all members. The first officers elected were: Dr HTH Butt (president), Dr AJ Orenstein (vice-president), and Dr AI Girdwood (honorary secretary and treasurer). Members of the executive committee, in addition to the three mentioned, were Drs SA Hawarden, S Donaldson, A Frew, AB Dodds, A Black, FJ Allen, AJ Smith, EL Ferguson and LE Hertslet. In the year that the Association was formed, there were 50 members. Twenty-five years later, there were 104 members, of whom 11 were honorary members. Branches of the Association were later to be established at Witbank and in the Orange Free State.

ACHIEVEMENTS OF THE MMOA

Nothing better illustrates how rapidly the Association got down to business in the year of its birth than the list of the matters that were discussed at the monthly meetings held under Butt's chairmanship in 1921. To deal with some of these subjects, specialists were asked to lecture. On other subjects, members of the Association read papers which were later discussed, sometimes quite heatedly. The first paper was on the treatment of scurvy and was read by Dr Orenstein. Other subjects that followed in quick succession were the treatment of cerebro-spinal meningitis, degrees of disability caused by injuries at work, sepsis, the diagnosis of silicosis and tuberculosis (paper by Dr W Watkins-Pitchford, Chairman of the Miners' Phthisis Bureau, and Drs LC Irvine and JM Smuts of the Bureau staff), intravenous infusion of vitamin C in cases of scurvy, early treatment of injuries, first aid training, and plague prevention. There were many other subjects discussed, as well as a number of interesting cases discussed at clinical meetings. Clearly, the Association got off to a flying start.

As far back as 1924, three years after its formation, the *South African Medical Record*, which at that time was a privately owned Journal that had no connection with the official body, paid the Association this tribute:

We know of no medical society with so small a membership that has done such sound and, in some cases, brilliant work and which, apart from the strictly scientific side, has effected so much for the people with whom its members are principally concerned: the Natives. It might, indeed, almost as well be called 'Association for the Study of Medicine and Surgery in the Native Population' and therein lies its main *raison d'être*.

The history of the MMOA closely mirrors the history not only of the diseases prevalent in society at large but, more especially, the diseases that specifically plagued the mining industry.

In the early years of the MMOA, the major diseases that needed to be researched, treated and overcome included pneumonia (to which the rural Africans proved to be unusually susceptible), scurvy, enteric fever, leg ulcers, sporotrichosis and hookworm. As the mines became deeper and more mechanised, heat-related disorders and noise-induced hearing loss became major problems.

Throughout the history of mining, two diseases that have always been present, but that have grown exponentially in importance and remained a major area of focus for medical officers and the MMOA, were silicosis and tuberculosis. More will be said about these two scourges in the pages that follow.

Physical injury, including spinal injury, has always been an unfortunate consequence of mining. For the mine medical officers who are, of necessity, the doctors called upon to deal with injured patients, emergency stabilisation, treatment and rehabilitation of these patients has always been a major topic. Many papers have been presented at MMOA meetings and much time and energy has been spent by members of the MMOA on efforts to prevent traumatic incidents.

At the 50th anniversary of the Mine Medical Officers' Association in 1971, it was stated (and celebrated) that:

...the health services main achievements have been:

1. To reduce the mortality from diseases from 24 per 1 000 sixty years ago to less than 2 per 1 000 at the present time.
2. To eliminate, almost entirely typhoid fever, hookworm disease and scurvy.
3. To supervise the training of some thousands of African nurses and male hospital orderlies who now serve in the mine hospitals.
4. To have taught the elementary principles of first aid to close on 2 million of the men who have come to the mines. In many cases these men have carried their knowledge and their acquired skill in treating injuries back to some of the most remote corners of Africa where there has never been medical care of any kind.²

MEDICAL HISTORY: EARLY 1930s

The development of the sulpha drugs and their dramatic success in the treatment of pneumonia and meningitis was, of course, a milestone in the history of the Association. The story

of how the first large-scale test of M & B 693 (2-sulphanilyl-amino pyridine) came to be carried out on the Witwatersrand is well worth recording. The drug was discovered in the laboratories of May & Baker Limited early in 1938.³ Experiments on mice carried out by Dr LEH Whitby⁴ showed a significant reduction in mortality and, after his results were published in *The Lancet*, tests were carried out on pneumonia patients in Bart's and the Dudley Road Hospital, Birmingham, UK. On 1 June 1938, Dr TB Maxwell, a director of May & Baker, wrote to Dr Orenstein at Rand Mines Limited, suggesting that he might care to give M & B 693 a trial. Dr Orenstein immediately agreed to arrange a test involving 200 unvaccinated cases of pneumonia and a further 200 as controls. The prospect of carrying out a test on such a large scale in a short time, which would have been impossible in any one hospital, or probably anywhere but in the mine hospitals of the Rand, naturally delighted the manufacturers of the drug and aroused the widest interest in the medical profession in other parts of the world. May & Baker sent Dr Orenstein 20 000 M & B 693 tablets. Dr Marguerite Kettle, renowned assistant editor of *The Lancet*, wrote "to put in an early claim for first refusal of the account of the results of these tests". The drug was tested at the City Deep Hospital, the Witwatersrand Native Labour Association (WNLA) Hospital, Randfontein Estates Hospital, and the Johannesburg General Hospital; some 550 cases were involved, of whom approximately half were controls. Three papers by Drs AL Agranat (Johannesburg General Hospital), AO Dreosti (City Deep Hospital, Johannesburg) and D Ordman (South African Institute for Medical Research), TF Anderson (Colonial Medical Service, Kenya) and RM Dowdeswell (Medical Research Laboratory, Nairobi) were published in *The Lancet* on 4, 11 and 18 February 1939.⁵⁻⁷ The MMOA held its own symposium on 16 November 1939 on the treatment of various diseases with the sulphonamide preparations. Commenting on the papers presented, Dr A Miller said that it was instructive to note that, within 12 months of the introduction of sulphapyridine, members of the Association were able to report on its effects in over 5 000 cases of lobar pneumonia, 250 cases of meningococcal meningitis and more than 50 cases of pneumococcal meningitis.

Dr AO Dreosti called his valedictory address, delivered at the end of his presidential year in May 1956, 'Yesterday and Today', and described the amazing progress that medicine had made in his lifetime. He recalled that, in 1936, just prior to the advent of the sulphonamides, there had been 465 cases of pneumonia at the City Deep Hospital and 65 deaths. In 1955 there were 790 pneumonia cases and two deaths.

In the early years of the MMOA, much emphasis was placed on the training of medical orderlies, chosen from the ranks of the workforce recruits, in first aid. Such was the emphasis on, and the role of the MMOA in, first aid training that, for several decades, the president of the MMOA was co-opted to serve on the council of the Southern Transvaal Region of the South African Red Cross Society (SARCS); a number of MMOA presidents were, in their time, also elected to serve as presidents of the Society. Dr AJ Orenstein succeeded Sir Evelyn Wallers as president in 1926; he served again from 1928 to 1939. Dr PA Peall was president from 1946 to 1948 and, subsequently Dr LRB Birt, then senior medical consultant to the Anglo American Corporation, was elected in 1964 and served to the end of 1969. All told, members of the Association held the office of president of the SARC for 24 years during its first 50 years.

By 1920, some mines in the Central Reef had penetrated to 1 300 m (4 000 feet) below the collar of the shaft, and there was an increasing awareness that the heat and humidity of the air at these depths could affect the health and productivity of the workers. The high temperatures and humidities were due to the relatively high rock temperatures, the low air movement (the science of ventilation of mines had hardly begun), and the wetness of the stopes due to the legal requirement to water-down the working places at frequent intervals in order to allay the silica-containing dust.

The concern that performing manual labour in this environment could lead to heat stroke was sadly born out when the first such death was recorded in 1924. The response of the mining companies to this threat was to attempt to acclimatise workers to the heat. Sadly, these early attempts at acclimatisation were unsuccessful and, in 1930, 26 deaths from heat stroke were recorded. The alarm that this high death-rate caused in the gold-mining industry is told by Dreosti in his classic paper presented to the Chemical, Metallurgical and Mining Society of South Africa at a meeting in November 1935. He stated: "Heat-stroke was now becoming a serious menace at City Deep mine, especially as still greater depths were contemplated."⁸

Dr E Cluver, then Secretary of Public Health, carried out the first epidemiological survey of the causes of heat stroke in the gold-mining industry. He found that 92 deaths from heat stroke were reported from 1924 to 1930.⁹ It was at this time that Dreosti, senior medical officer of the City Deep Hospital, under the inspiration of Orenstein, carried out a series of investigations into the heat tolerances of African miners, which led to the development of a new, improved method of acclimatisation to heat. Dreosti's paper in 1935⁸ has received world-wide recognition and acclaim as the first thoroughly scientific study of this subject. There can also be little doubt that the form of acclimatisation that was introduced, as a result of Dreosti's research, played a major role in reducing the rate of heat stroke deaths in the gold-mining industry in the latter part of the 1930s and in the 1940s, and gave the mining engineer confidence that he could plan for mining at even greater depths. Dreosti's main contribution was to show that the African recruits to the mines varied greatly in their tolerance to work in heat. He used a severe heat tolerance test: the men shovelled rock for one hour at a wet-bulb temperature 35 °C (95 °F). In a sample of 20 000 men, he showed that 15% were heat intolerant in that their oral temperatures, after one hour of work in the test, rose above 38.8 °C (102 °F); 25% were heat tolerant in that their oral temperatures rose to just above 37.8 °C (100 °F); and the remaining 60% had normal responses in that their oral temperatures were intermediate between these two extremes.

Those most sensitive to heat were categorised as 'heat intolerant'. Those most resistant to heat were categorised as 'heat tolerant', with the remainder of recruits classified as 'normal'. As a result of these studies, the method of acclimatisation was altered in City Deep mine in March 1932. 'Heat intolerant' recruits were acclimatised for 14 days; 'heat tolerant' recruits received four days of acclimatisation; and 'normal' recruits received seven days of acclimatisation.



Silicosis nodules

The success of these procedures at City Deep mine was such that, in the period 1932–1935, there were only two more heat stroke deaths; in the period 1932–1940 there were only four such deaths. Some of the credit for the improvement in the heat stroke position in the 1930s and 1940s must go to the ventilation engineer. The condition of the air was improved by increasing the volume of air sent underground by means of powerful fans; by cooling the air entering the working places by refrigeration of the air entering the mine; and by better direction of air within working areas.

In 1965, a radical change was made in the method of acclimatising the recruits to the mines. This came about because it was increasingly difficult to provide the correct combinations of work rate (from shovelling rock in stopes) and atmospheric heat, due to the greater use of mechanical aids in the removal of rock from stopes. A new acclimatisation procedure was therefore tested on the surface of a mine in a room in which the temperature and humidity of the air could be controlled to within narrow limits. The acclimatisation procedure lasted for eight days and the men worked for four hours each day. Although this new procedure was started in 1965 on one mine, it was rapidly adopted throughout the industry. In 1971, it was estimated that some 250 000 mine workers were acclimatised by these means. Over time, the methods of acclimatisation have been further refined, including the introduction of electronic digital monitoring, enabling the recruits to be individually monitored in real time.

PNEUMOCONIOSIS, MINERS' PHTHISIS AND SILICOSIS

The first International Conference on Silicosis to be convened by the International Labour Office – and the only one convened by the International Labour Organization (ILO) in South Africa – was held in Johannesburg from 13 to 27 August 1930. Dr Louis G Irvine, president of the Conference, together with Dr A Mavrogordato (Institute for Medical Research) and Hans Pirow (government mining engineer) presented a paper, 'A review of the history of silicosis on the Witwatersrand gold fields.'¹⁰ They divided the history into four periods:

1. First period, 1886 to 1889: complete ignorance of the danger, or even existence of silicosis;
2. Second period, 1901 to 1910: realisation of the menace and introduction of tentative preventive measures. It was during this period that Drs Donald Macaulay, Andrew Watt and Louis Irvine pioneered the Inquiries;

3. Third period, 1911 to 1916: systematic preventive measures were initiated and compensation introduced; and
4. Fourth period, 1916 to 1930: expansion of preventive and compensation procedures.

In 1911 a 'Medical Commission' was appointed to inquire into the prevalence of miners' phthisis and tuberculosis, and to advise on compensation 'from the medical point of view'. This Commission examined 3 163 miners; 326 radiologically by Dr AH Watt. This was, as far as is known, the first time that radiography was used on such a relatively large scale for the diagnosis of silicosis. Definite disease was found in 26% of miners, and doubtful disease in an additional 5.5%. The average total duration to dust exposure was 8.2 years; for those who worked with rock drills, it was only 6.1 years.

A series of Commissions and Acts followed, as did many Regulations under these Acts. Much improvement in the avoidance of dust production and control was achieved. From the point of view of mine medical officers, the establishment, in 1916, of the Miners' Phthisis Bureau is of major importance. Under the law now in force, the mine medical officers are 'examiners' with prescribed duties. These include the surveillance of all mine workers to prevent the employment of any suffering from tuberculosis or silicosis. All new arrivals are examined clinically and radiographically by a mine medical officer. Mine medical officers also examine the radiographs taken on discharge from employment, as prescribed by law. The workers are further examined radiographically at six-monthly intervals; this is elaborated upon in the discussion of tuberculosis, below. Surveillance is also maintained by a regular weighing routine. This is primarily aimed at the early detection of tuberculosis, but is also valuable in the surveillance of silicosis as the two diseases often co-exist. Miners who show a loss of weight are subjected to clinical, laboratory and radiographic examination.

Another example of the interest of mine medical officers in pneumoconiosis was the invitation of Prof. EH Kettle, an eminent visiting pathologist, to address the MMOA. This took place at the August 1928 meeting. Further, he advanced the theory that the presence of silica in the lung favoured the development of pulmonary tuberculosis which, at that time, was the cause of the high death-rate of the victims of silicosis, and was probably the reason for the term 'miners' phthisis' that was in common use.

At the meeting of the Association on 19 October 1950, Dr AJ Orenstein reported on the proceedings at the conference on pneumoconiosis convened in Sydney, Australia, by the ILO, which he had attended at their invitation. Others invited were Dr W George (Australia), Prof. C Gernex-Rieux (France), and Drs E Middleton (UK) and A Vorwald (USA). The Conference was attended by a number of delegates appointed by their respective governments – a total of about 75 participants. The agenda included discussions of recent advances in knowledge of the pneumoconioses; diagnosis; functional and laboratory tests relevant to assessment of disability and diagnosis; clinical manifestations of pneumoconiosis; investigation procedures; and preventive measures. The Conference was in session from 28 February to 11 March 1950. Several resolutions were adopted, some of which had considerable influences on the orientation of future research. Of immediate practical importance was the recommendation that radiographic images be classified and coded. The coded classification would identify the radiographic features in communications between workers in this field, without having to describe the details seen.



Dr DJ Emby

have been instituted to limit dust exposure, including more rigorous monitoring of dust levels and improved ventilation, have increased. It should also be noted that the number of workers who develop silicosis appears to be declining.¹¹

Of note is that a recent class action suit, filed in the Supreme Court of South Africa and finalised on 26 July 2019, resulted in a settlement whereby the mining houses have made available five billion rands to meet the compensation claims of ex-mine workers with silicosis.

There have been many publications on silicosis in the international literature (too many to list here) by mine medical officers; often in collaboration with researchers from the South African Institute for Medical Research, the National Institute for Occupational Health (NIOH), The Medical Bureau for Occupational Diseases (MBOD), and a number of local and overseas universities and research institutions. Among the leading researchers in this field with an affiliation to the mining industry are Professors Jill Murray, David Rees, Gill Nelson and Pam Sonnenberg.

TUBERCULOSIS

In 1971, Dr AP Cartwright, in his treatise on the MMOA, wrote the following:

Pulmonary and other forms of tuberculosis have been a scourge of many people of Africa for as far back as there are any records, certainly many years before recruiting for mine work was instituted. The problem facing the mines is, therefore, a dual one – to keep out infected and therefore most probably infective men, and to detect new infections at as early a stage as possible. To these ends diagnostic procedures are constantly evaluated and refined. Many mine medical officers have played an important role in the evaluation of existing methods. The improvements made in the last few decades in the technique of radiography, particularly in the use of small films in mass radiography, enable the use of this most important diagnostic aid in quantity, as well as quality, probably unequalled anywhere else. Mine medical officers read many thousands of lung radiographs every year. The Chamber of Mines sponsored financially several investigations into the prevalence of tuberculosis in the territories in South Africa. The most comprehensive of these was that carried out under the general direction of the late S Lyle Cummins.²

As previously stated, tuberculosis has plagued the mining industry since its inception. The widespread introduction of mass miniature radiography (MMR) as a screening method for tuberculosis in the

1940s and 1950s has played a major role in bringing the epidemic under control. Although the technology required for MMR machines necessitated that they be manufactured overseas, the invention of MMR has a strong South African connection. It begins with the submission of a patent for the first MMR apparatus by Captain KGF Collender¹² to the Office of the Registrar of Patents in Pretoria in 1927.

Mass miniature radiography served the mining industry for more than 50 years until it was replaced by digital radiography in the early part of the 21st century. Although MMR offered a solution to the problem of X-raying large numbers of people and was 'state of the art' in its time, it is relevant, at this juncture, to list the benefits of the new digital X-ray technology that is in use today, and remains a mainstay in the diagnosis and monitoring of tuberculosis. Although the X-ray films produced by MMR measured only 100 mm by 100 mm, they required approximately four times the amount of radiation that is needed to produce a full-sized digital radiograph. Because of their small size, they were difficult to read, and reading was usually done through a magnifying glass. For the same reason, it was almost impossible to visualise the subtle findings of early silicosis, so they were unreliable in this setting; so much so that they were considered to be non-diagnostic for early silicosis. Not only are digital radiographs full size but, with their newer technology, their resolution is superior and ideal for the diagnosis of early silicosis. The archiving and viewing of digital radiographs is achieved with the click of a mouse, while managing and handling MMR films was, at best, problematic. Many a mine medical officer experienced the heart-stopping effect of dropping a pile of MMR films and having to spend much precious time re-sorting them into chronological order!

When the changeover to digital X-ray machines took place at the AngloGold Ashanti medical stations, and the MMR machines were destined for the scrap heap, the chief radiologist at AngloGold, Dr DJ Emby, contacted the University of the Witwatersrand and the University of the Free State (both having had a long association with the mining industry) to enquire if they would be interested in acquiring MMR machines for their museums. Both universities were delighted to take up the offer. Following the necessary arrangements, an MMR machine now stands in the museum of the University of the Free State, while the Adler Museum of the History of Medicine at Wits has installed their piece of mining medical history in the foyer of the Medical School.



A mass miniature radiography (MMR) machine



Several members of the executive committee of the MMPA have, over the years, contributed significantly to the scientific body of knowledge regarding tuberculosis in the mines. Two researchers worthy of special mention in this field are Professors Jill Murray and Mary Ross. In 2008, recognising that there were links between tobacco smoking and tuberculosis, as regards increased risk for infection, relapse, mortality and drug resistance, the MMPA lobbied the director of the Health Promotions Unit in the National Department of Health (DoH) to introduce smoking cessation programmes in the national tuberculosis/human immunodeficiency virus (TB/HIV) five-year strategic plans.¹³

Through the efforts of the screening programmes carried out by the mine medical officers, the tuberculosis epidemic was on the verge of being brought under control in the 1980s when, to everybody's alarm and dismay, there was a sudden explosion in the number of cases. The cause for this soon became apparent. A new epidemic, one that fuelled the spread of tuberculosis by destroying the body's immune system, had hit: human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS).

HIV/AIDS

Two episodes of disease nearly 100 years apart have wreaked havoc among mine workers. As previously discussed, tuberculosis, at the inception of the gold mining industry in 1886, when there was no treatment and no preventive measures, was one of the industry's greatest challenges. In the early 1990s, a new epidemic resulting from the spread of the human immunodeficiency virus, which weakened immunity to tuberculosis, resulted in the emergence of HIV-TB co-infection and a spike in mortality. (The 'unholy alliance' between two pathogens, namely HIV and TB, is often referred to as the 'twin' epidemic.) This resulted in paradigm shifts in the mining industry from eras of silicosis, an incurable disease, to tuberculosis, a preventable and curable disease, to HIV, for which prevention was dependent upon behavioural changes and for which there was no cure. The great tragedy was the HIV/AIDS denialism that was characterised by a distinct lack of leadership and national political will to make lifesaving antiretroviral (ARV) drugs available in South Africa.

Several large mining houses, supported by the Chamber of Mines, took the lead and started to provide more holistic HIV programmes that incorporated counselling and testing for HIV, as well as HIV treatment, with the costs being borne by the mining companies. On 30 April 2003, at Gallagher Estate in Johannesburg, the inaugural HIV/AIDS Mining Summit, in collaboration with employers, government and organised labour, was convened. This event culminated in the signing of a declaration of intent to fast-track the response to the HIV epidemic.¹⁴

In later years, through initiatives by the Mine Health and Safety Council (MHSC), a more comprehensive response, befitting the mining industry's burden of chronic disease, was tailored. From focusing on offering only HIV counselling and testing, only for employees, to an era of intensified awareness, education and prevention, the mining industry arrived at the current state of promise for all employees, including contractors, as well as communities. Early diagnosis, treatment, rehabilitation and accommodation at the workplace are now the common practices, along with screening, not only for HIV, but for tuberculosis and risk factors for chronic diseases of lifestyle. Conversations on the eradication of the virus,

and ending stigma and discrimination, are now the norm, and reflect the paradigm shift in leadership regarding health issues in the mining industry.¹⁵

With the advent of effective ARV therapy and more integrated health programmes, the incidence of tuberculosis is once again on the decline,¹⁶ but the danger posed by drug-resistant strains of the mycobacterium means that the fight is far from won. Tuberculosis, together with HIV/AIDS and silicosis, remain some of the main focus areas of the doctors on the mines. As with silicosis, the contribution to world medical literature on the topics of tuberculosis and HIV/AIDS has been significant, and collaboration with other research organisations has been extensive. In the case of research into the control of tuberculosis in the context of the HIV epidemic, special mention must be made of the co-operative initiatives between the medical officers on the mines and Aurum Health, now known as the Aurum Institute.

FINANCIAL CONSTRAINTS

In the early years of the MMOA, the membership fee was nominal, and financial assistance in the form of grants was obtained from the WNLA and the Native Recruiting Corporation. These two organisations agreed to subscribe R360 a year between them. A few years later, they increased this joint subsidy to R500. In later years, it became necessary to increase the membership fee, but responsibility for payment of the subscription was taken over by the employer. Thus, if a doctor joined a mining company or was employed by the Chamber of Mines, he or she automatically became a member of the Association at no personal financial cost.

In the 1990s, major restructuring took place within the mining industry; the medical services were not spared. A process of scaling back the medical services provided to mine workers began. The Cottesloe Hospital, which was owned by the Chamber of Mines and had served as a tertiary referral hospital for white mine workers, was closed down and sold to Netcare. White miners were transferred to the much larger Rand Mutual Hospital in Eloff Street Extension, which had, until that time, served as a tertiary referral hospital for black mine workers. In 1998, a decision was taken to close the Rand Mutual Hospital, and the era of an in-house tertiary referral hospital for mine workers came to an end.

The initial response of the major mining companies was to increase the capacity of their mine hospitals to provide specialist services. However, this was shortlived and, throughout the industry, a programme of downsizing hospitals and outsourcing specialist services was implemented. At around the same time, the mining houses changed their policy on the payment of MMOA membership fees for doctors. Over the following years, almost all companies discontinued the subscription payment; membership was no longer automatic. Those wishing to remain or become members had to pay the membership fee themselves.

Over the next few years, a crisis followed with the majority of mine medical officers either leaving the industry or discontinuing their MMOA membership. By the end of 2005, almost all the clinicians (who had constituted the largest group in the Association before the scaling back of the hospitals) had left, and it became the responsibility of the occupational health practitioners, most of whom had conversely (and fortunately) elected to stay on, to save what was left of the

Association. Occupational health practitioners who helped steer the Association through these troubled times included Dr Zahan Eloff, Dr DB de Villiers, Dr Vanessa Govender, Dr Vusi Nhlapho, Dr Pravesh Lakha, Dr Elton Dorkin and Dr Deodat Kritzing (general manager, Medical Services, Rand Mutual Assurance), amongst others. Commendations must also go to the current president, Dr Moufhe Murwamphida, and the immediate past president, Dr Nothando Moyo-Mubayiwa, for their tireless efforts to uphold and strengthen the role of the MMPA as a major player in the field of occupational health.

In an attempt to increase membership, a decision was taken to attract members from all medical disciplines within the mining industry. Membership criteria were changed so that membership was no longer restricted to doctors and the name of the Association was changed to the Mining Medical and other Health Care Professionals Association.

In 2009, at a meeting of the executive committee, Dr DJ Emby (a long-standing member of the executive committee), suggested that the name be shortened to the Mine Medical Professionals Association (MMPA); the name was unanimously adopted. Dr Emby subsequently drew up new vision and mission statements for the Association.

AWARDING OF MEDALS

The awarding of medals, in recognition of 1) the publication of a paper that advanced knowledge within the scope of medicine in mining, and 2) meritorious service to the Association, was introduced in 1956 at the instigation of Dr LR Birt, who was a member of the executive committee at that time. The practice of awarding medals was sadly not fostered, and gradually became less frequent; by 1970, it had ceased altogether. However, at a meeting of the executive committee in 2010, it was suggested that the practice of awarding medals in recognition of meritorious contributions to the medical literature by members and/or for dedicated service to the Association should be re-introduced. The suggestion was received with enthusiasm and the proposer, Dr DJ Emby, was tasked with seeing this to fruition. Arrangements were made to search the Chamber of Mines building for any surviving medals from the previous era and for the dies used for

producing the medals. The senior committee secretary of the Mine Professional Associations' Secretariat (MPAS) at the time (Mrs Shirli Geere) and Dr Emby embarked on the search which, with the assistance of the head of security and permission of the management, included all the safes and display cabinets. The search yielded one solid nine-carat gold medal. Sadly, the dies were never found. The gold medal was used as a template for a new set of medals, with the lettering, MMOA, replaced by MMPA. An order was placed with the Gold Reef City Mint and the first of the new medals was awarded a few months later. Because of obvious cost constraints, the gold medal was minted as a gold-plated silver medal.

Consideration was now given to what should become of the original gold medal. Because of the long association between the mining industry and the University of the Witwatersrand, a consensus was reached that it should be donated to the Adler Museum of Medical History at the Wits Medical School. The medal was duly delivered to the curator of the museum, where the donation of a solid nine-carat gold medal, a good bit larger than a Kruger Rand, caused quite a stir! The medal can be viewed by arrangement with the curator of the Museum.

COLLABORATIONS

Throughout its history, collaboration with other organisations in the fields of occupational and industrial health, and safety and preventive medicine, have been at the forefront of the work of the MMPA in its mission to improve the health and safety of the mine workers it serves. A number of examples of these collaborations have already been mentioned. A detailed account of all collaborative efforts would require a separate paper. There are, nonetheless, a few further examples of major collaborative efforts that illustrate the importance of the MMPA in carrying out its mandate to the mining industry while, at the same time, advancing its role as a major player on the occupational health front.

There was extensive collaboration between the MMOA, its members and the Safety in Mines Research Advisory Committee (SIMRAC) occupational health programme established in 1999 to identify and research findings, together with the MHSC-sponsored launches and education sessions for the MMOA to inform its members of research findings. People who made



MMPA vice president, Dr Dipalesa Mokoboto, with Dr Thuthula Balfour, MMPA council member, at the 2019 MMPA Annual Congress



MMPA past presidents, from L-R: Drs Khanyile Baloyi, Vanessa Govender, and Elton Dorkin



Dr VG Govender

substantial contributions include Drs Neil White, Gavin Churchyard and Lettie la Grange. The concept of an organisation combining labour, government and employers in tracking the health status of miners, and determining occupational health research priorities for the mining industry, was a major contribution to occupational health improvement. Mention must also be made of the involvement of the MMOA membership with SIMRAC, in producing the

Handbook of Occupational Health Practice in the Mining Industry,¹⁷ edited by Drs Guild, Ehrlich, Johnston and Ross in 2001; a major contribution to mining occupational health and the first relevant handbook, globally.

In 2004, SIMRAC produced an electronic compilation of 80 years of historical data (1921-1989) from the major Health and Safety Commissions and the Proceedings of the MMOA – a project that was undertaken by Dr Ronald (Haggis) Guild and Dr David Stanton.¹⁸ From its inception in 1921, the MMOA recorded its meetings, often verbatim, in the Proceedings. In 1987, the Association decided that much of the information recorded did not warrant publication. In line with this shift in emphasis, it was decided that publication would henceforth be changed into the format of a journal. As a result, the Mine Medical Officers' Journal, comprising articles and research relevant to the mining industry, came into being.

As a further and important example of collaboration in the field of occupational health, mention must be made of *Occupational Health Southern Africa*. The Mine Medical Officers' Journal was an in-house publication and, although much interesting and valuable medical material was published, the Journal had a limited circulation and was, sadly, a low-key, non-peer-reviewed publication with no real standing in the medical literature. Subsequently, as a collaborative effort between the four associations in the southern African occupational health field, namely, The South African Society of Occupational Medicine (SASOM), the Southern African Institute for Occupational Hygiene (SAIOH), the South African Society of Occupational Health Nursing Practitioners (SASOHN), and the MMPA, together with a dedicated editorial team, *Occupational Health Southern Africa* came into being. The Journal is peer reviewed and, from the outset was widely respected. Under the leadership

of the current editor-in-chief, Prof. Gill Nelson, the reach and accreditation of the Journal continue to grow.

The MMPA is honoured to be a part of this endeavour and has, over the years, contributed to the Journal's content through peer-reviewed papers, advertising of forthcoming events, and highlighting outcomes of annual general meetings, conferences and regional symposia. In the May/June 2010 issue, the immediate past president, Dr Vanessa Govender, highlighted the importance of mine medical professionals, saying that "Health, along with safety, is a key driver of productivity in the mining industry" and that we "should use every opportunity to create awareness of the health priorities in the mining industry, putting health on every agenda of every meeting, from the board room to the coal face, and that we display our commitment as leading advocates of all health-related issues in the industry, thereby raising the profile of medicine in mining".¹⁹

In this same issue of the Journal, the names of those who were awarded medals during the 13th MMPA annual general meeting at Gold Reef City on 21 May 2010, were published, namely Prof. J Murray (Gold), Prof. MH Ross (Gold), Dr VG Govender (Silver), Dr DJ Emby (Silver), Dr DB de Villiers (Silver), Dr D Kritzingner (Silver), and Dr EW Geddes (Silver).¹⁹

CONCLUSION

As an organisation, the MMPA has proud and meritorious history. It is an Association that has gone beyond the call of duty in fostering healthcare services and advocacy for the health and wellbeing of mine workers while, at the same time, setting the benchmark in promoting health and safety leadership in the workplace. It has punched above its weight in raising the standards of occupational health, well beyond the confines of the mining industry. It has survived change in challenging times and has emerged energised and unshaken in its quest to improve and safeguard the lives of all workers. It is an Association that will reach the milestone of having served the greater good for 100 years when it celebrates its centenary in 2021.

Authors' Note

In the preparation of this history of the MMPA, we have drawn heavily on, and quoted extensively from, the treatise by AP Cartwright, published as part of the 50th Anniversary commemoration of the MMPA (formally MMOA) in 1971, titled *Doctors of the Mines*.²

Gold medals awarded to MMOA/MMPA members

Year	Name	Award
1969	Dr AJ Orenstein	<i>Honoris Causa</i> Award for 48 years service to the Association, which he helped found
1958	Dr NJ Weinberg	For paper: "Knotting of the bowel in Africans"
1959	Dr EM Mclean	For paper: "An investigation into the occurrence of a specific dermatitis in the native mine workers in the OFS"
1961	Dr RC Dickson	For paper: "A pilot survey of otitic conditions in Bantu mine workers of the East Rand"
1963	Dr GH Ellacombe	For paper: "Cross-infection – the story of a hospital outbreak"
1967	Dr RC Dickson	For paper: "The normal hearing of Bantu and Bushmen"
2010	Prof. Jill Murray	For outstanding service to the mine health services
2010	Prof. Mary Ross	For outstanding service to the mine health services

Presidents of the MMOA/MMPA

Years	Name	Years	Name
1921–1922	Dr HTH Butt	1969–1970	Dr AT Halliday
1922–1923	Dr A Frew	1970–1971	Dr JGD Laing
1923–1924	Dr AJ Orenstein	1971–1972	Dr L Hurwitz
1924–1925	Dr S Donaldson	1972–1973	Dr RDW Reid
1925–1926	Dr AI Girdwood	1973–1974	Dr JC de W Becker
1926–1927	Dr A Smith	1974–1975	Dr EW Geddes
1927–1928	Dr JF Young	1975–1976	Dr JP Lowe
1928–1929	Dr HTH Butt	1976–1977	Dr D Mirman
1929–1930	Dr C Justin Scott	1977–1978	Dr I Potgieter
1930–1931	Dr A Percival Watkins	1978–1979	Dr WG Alexandra
1931–1932	Dr HQF Thompson	1979–1980	Dr RB Taylor
1932–1933	Dr WG Goudie	1980–1981	Dr PM Moir
1933–1934	Dr AB Tucker	1981–1982	Dr CHC Thomas
1934–1935	Dr HJ Brady	1982–1983	Dr O Martiny
1935–1936	Dr H Daubenton	1983–1984	Dr DJ Heyderych
1936–1937	Dr AW Goldsmith	1984–1985	Dr HSM Falcke
1937–1938	Dr JHG van Blommestein	1985–1986	Dr PJ Demmer
1938–1939	Dr LE Miller	1986–1987	Dr PJ Gillies
1939–1940	Dr PA Peall	1987–1988	Dr DS Mackenzie
1940–1941	Dr AO Dreosti	1988–1989	Dr BR Glover
1941–1942	Dr LS Williams	1989–1990	Dr RL Cowie
1942–1943	Dr F Retief	1990–1991	Dr JFC Snyman
1943–1944	Dr A Miller	1991–1992	Dr PWTN Allin
1944–1945	Dr K Sartorius	1992–1993	Dr JC Andrews
1945–1946	Dr JR Counihan	1993–1994	Dr R Guild
1946–1947	Dr CH Hutchinson	1994–1995	Dr EJC Prinsloo
1947–1948	Dr GF Eagle	1995–1996	Dr EJC Prinsloo
1948–1949	Dr WG McDavid	1996–1997	Dr LR McBey
1949–1950	Dr ET Clifton	1997–1998	Dr EW Louw
1950–1951	Dr NRA MacColl	1998–1999	Dr AP Bester
1951–1952	Dr JS Lawrie	1999–2000	Dr GCD Dees
1952–1953	Dr LF Dangerfield	2000–2001	Dr MJ Mentz
1953–1954	Dr RCT Pearson	2001–2002	Dr AJ de Coito
1954–1955	Dr C Berman	2002	Dr MThomson (to Sep 2002)
1955–1956	Dr AO Dreosti	2002–2004	Dr C Biden (from Sep 2002)
1956–1957	Dr RA Caldwell	2004–2005	Dr JJ Pretorius
1957–1958	Dr LR Birt	2005–2006	Dr JZ Eloff
1958–1959	Dr H le Helloco	2006–2007	Dr EP Dorkin
1959–1960	Dr SJ Levy	2007–2008	Dr MR Hansia
1960–1961	Dr D Oberholzer	2008–2009	Dr DB de Villiers
1961–1962	Dr MAF Helm	2009–2010	Dr V Govender
1962–1963	Dr RC Dickson	2010–2011	Dr D Kritzinger
1963–1964	Dr ME Barry	2011–2012	Dr C Mbekeni
1964–1965	Dr AM Coetzee	2012–2016	Dr V Nhlapho
1965–1966	Dr EM McLean	2016–2017	Dr K Baloyi
1966–1967	Dr VMF Wright	2017–2019	Dr N Moyo-Mubayiwa
1967–1968	Dr P Smit	2019–2020	Dr M Murwamphida
1968–1969	Dr JB Rossiter		

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