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*The relocation of the grave of Johannes Niemann and
unknown Niemann family members buried in a family
cemetery on the remaining extent of Portion 6 and Portion 49
of the Farm Palmietfontein 24 KS, Pietersburg-Polokwane district
Limpopo-Northern Province affected by the development of the
Pietersburg Smelter by Anglo Platinum.*

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This report is submitted to Anglo Platinum Management Services (Pty) Limited, Engineering Division in fulfillment of ED Order No.: E01/0033/01 Ref. no. 361667 and covers the social consultation for; the authorization of and the excavation of the family cemetery on the remaining extent of Portion 6 and Portion 49 of the Farm Palmietfontein 24 KS, Pietersburg-Polokwane District, Limpopo-Northern Province on 4 December 2001 and 8 January 2002 and the re-interment (scattering of ashes) of two exhumed individuals on the same property on 16 March 2002.

**PREPARED BY BUSINESS ENTERPRISES AT
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5. *Authorization*

Since the graves affected by the development fell outside the jurisdiction of SAHRA, the authorization process required by the Exhumations Ordinance (Ord.7 of 1925) was followed.

- An application for permission to exhume the remains was submitted to the National Department of Health on 19 November 2001. On the next day we were telephonically informed that permission would not be forthcoming until written consent from the family was forwarded to the Department. This was done on 22 November 2001 immediately upon receiving permission from the family and National Department of Health permission (Ref. no.: J2X/60/0/01)(Addendum 1) was received on the same day.
- An application for permission was submitted to the MEC Local Government and Housing Northern Province on 23 November 2001. Permission to proceed with relocation (Ref. no. LHL 17/97-2)(Addendum 2) was received on 4 December 2001.

4. *Exhumation*

Exhumation commenced on 4 December 2001.

Upon arrival the grave of Johannes Niemann and the extent of the cemetery was surveyed, photographed (Fig. 1), and documented on a measured drawing (Fig. 2).

FIGURE 1

The cemetery on Palmietfontein 24KS.

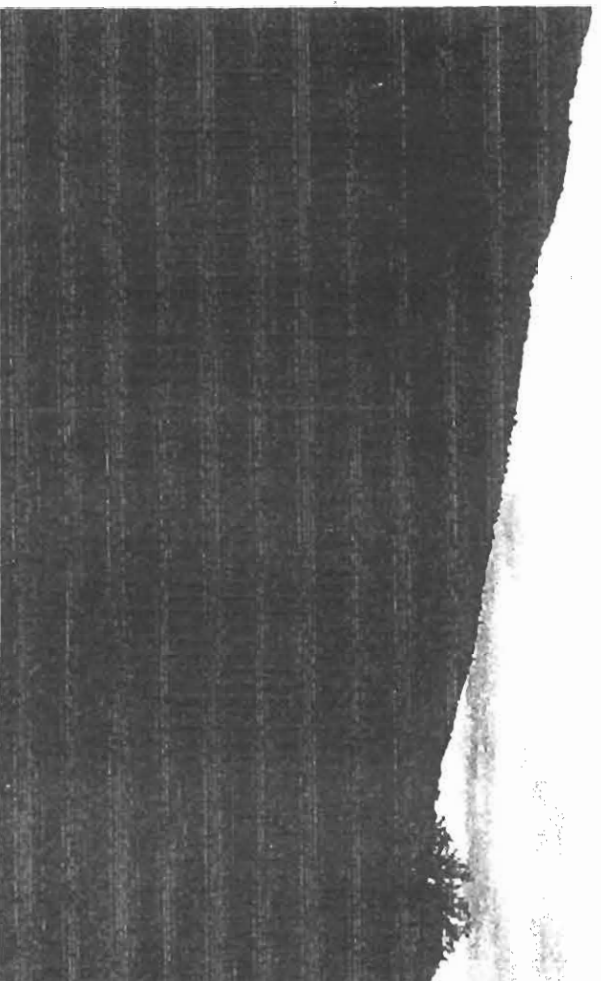
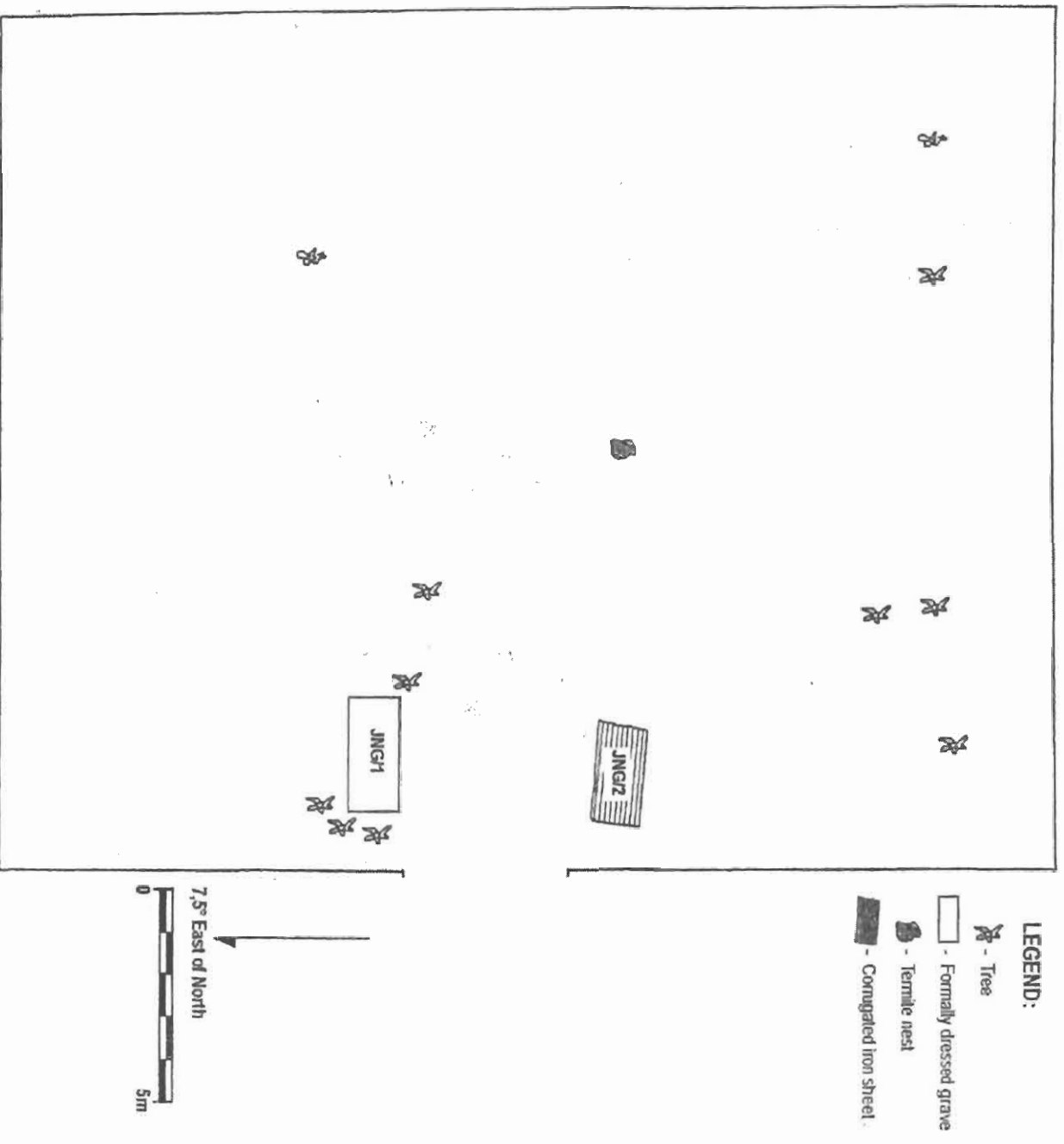


FIGURE 2
Plan of the Palmietfontein 24KS cemetery.

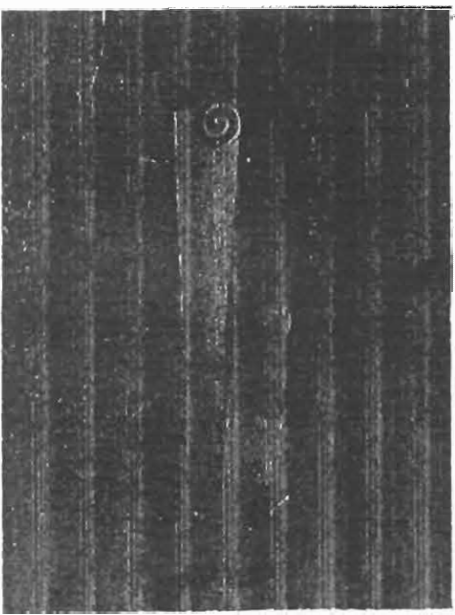
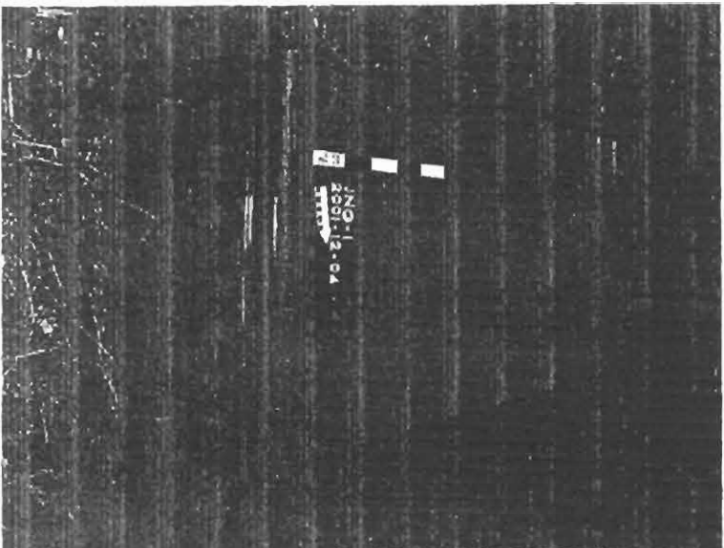


The excavation of the grave of Johannes Niemann (JNG/1)

The headstone and dressing of the grave of Johannes Niemann consisted of a formal granite memorial in the form of an unrolled scroll. It was oriented 274° east of north (i.e. approximately due east-west) and was 132 cm long, 90 cm wide and 45 cm high (Fig 3).

FIGURE 3

The headstone on the grave of Johannes Niemann.



The following inscription was engraved on the granite in parallel rows:

Hier Rus

My Dierbare Egenoot

en ons Vader

JOHANNES NIEMANN

GEB 23-5-1884

OORL 8-8-1956

HY WAT IN HOM GLO WORD NIE GEOORDEEL NIE

Joh. 3:18

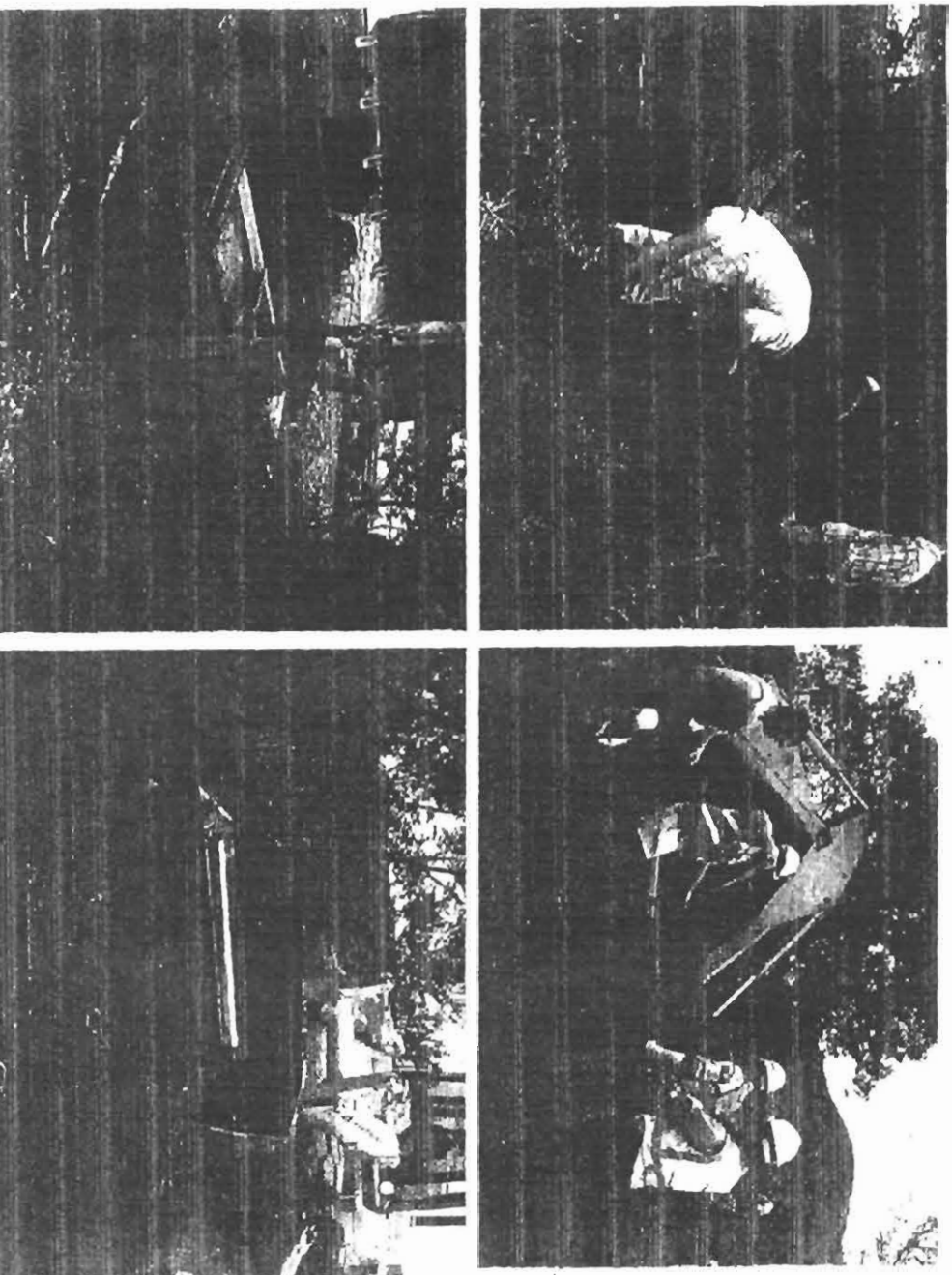
(Literal translation: Here rests; my dear spouse; and our father; Johannes Niemann; born 23-5-1884; deceased 8-8-1956; He that believes will not be judged; John 3:18)

The surname Niemann was engraved on the eastern side of the memorial stone.

The memorial stone was removed as a unit by means of mechanical earth moving equipment. Shallow trenches were dug around the memorial and a corner was lifted, allowing a strap to be passed through underneath the memorial stone (Fig. 4). It was lifted with the foundations intact and was placed at the ruins of the farmhouse on the property, as was agreed with the family and SAHRA.

FIGURE 4

The Lifting and moving the memorial stone on the grave of Johannes Niemann.



The area directly below the headstone of Johannes Niemann was excavated by means of the test trench method. A 20-25 cm deep, approximately 20 cm wide test trench was dug with a trowel and dustpan in the lower third of the extent of the burial pit. This area is chosen for test trenching since the femurs of the skeleton are most likely to occur here. A femur is one of the most robust bones in the human body and is not easily damaged during excavation. Should the femur be accidentally damaged it can be easily repaired without affecting the measurement of the bone. If no evidence of the presence of human remains is observed in the test trench, the remaining matrix is removed to the depth of the test trench floor and the process is repeated until the remains are found.

In the instance of the grave of Johannes Niemann the grave pit could not be distinguished. The matrix was homogeneous dark red loam and no differences in colour, texture or

compaction between the in-fill of the burial pit (presumed to be the area directly below the headstone) and the surrounding matrix could be observed.

This area was excavated to a depth of 1,68 m below the present surface, by means of the test trench method, where a sheet of corrugated iron was found. At this depth the matrix also changed from the homogeneous red clay to a yellow-brown gravel deposit. Water started seeping from this deposit as soon as it was exposed, complicating careful excavation. The burial pit could be observed at this depth, as soon as the corrugated iron was removed, due to the difference between the in-fill deposit (red loam) and the yellow-brown gravel. The extent of the burial pit could not be documented due the very wet, muddy conditions existing at this stage. Excavation of the red loam occurring below the corrugated iron sheets continued until human skeletal elements were encountered at a depth of 1,82 m below the present surface. By this time the excavation was filled with approximately 35 cm of thin red mud – rendering any further documentation impossible.

Since the human remains were already exposed, they were recovered. Care was taken to count individual skeletal elements to ensure that all remains are recovered. Where possible the position of bones were observed in order to reconstruct the burial position.

The skeleton was found on the back oriented east-west with the head at the west. The skull was on its left side and faced in a northerly direction. The skeleton was extended with the arms along the sides of the thorax.

A single white porcelain button, most probably from a burial garment, was found associated with the remains.

Locating the other graves in the cemetery

Due to the homogeneous nature of the deposits (as was observed during the excavation of JNG/1); the very wet conditions prevailing; the constraints on the excavation schedule due to construction activities; the extent of the fenced area (22,7 X 22,7 m) and the fact that no surface indications of any other graves in the cemetery could be observed, it was decided to use mechanical excavation equipment to search for more graves.

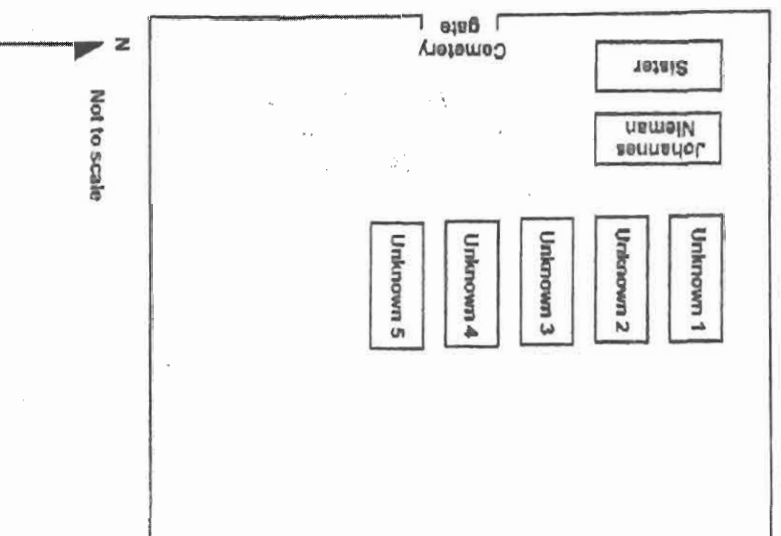
Before excavations commenced the family was asked to provide a layout of the cemetery indicating the number and location of graves as they remembered it. They indicated that the grave of Johannes Niemann as well as that of his sister was oriented north-south with five other graves of unknown family members oriented east-west on the eastern side of the grave of Johannes Niemann (Fig. 5).

They were questioned on the orientation of the graves of Johannes Niemann and his sister and confirmed that it was north-south, and that they distinctly remember that he faced Roodekoppies.

This would be very unusual since normal Christian-western burial practice would be an east-west orientation of the grave with the buried individual facing east.

FIGURE 5

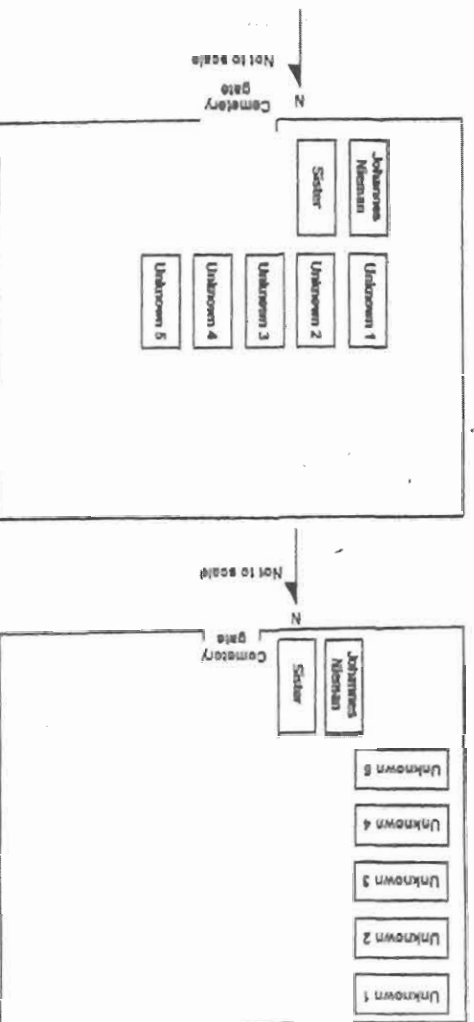
The layout of the Palmietfontein 24KS cemetery as remembered by the family.



Since the grave of Johannes Niemann was not oriented north-south as indicated by the family, but east-west as was expected the layout of the cemetery indicated by the family was re-interpreted in a east-west orientation. The layout could then also be as indicated in Fig. 6 with the unknown graves oriented north-south. Such a layout of graves would be highly irregular, but was considered.

FIGURE 6 AND 7.

The re-interpreted layout of the Palmietfontein 24KS cemetery.

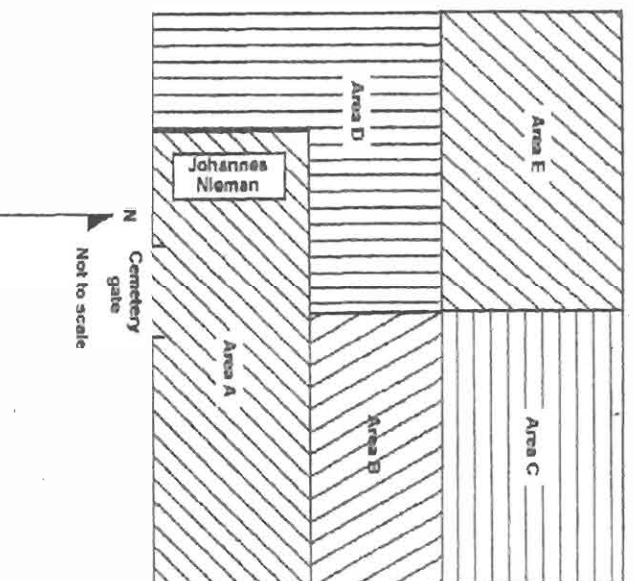


The most probable re-interpretation of the layout would be as indicated in Fig. 7 with all the unknown graves oriented east-west and that of Johannes Niemann and his sister on the western side of the gate along the southern fence.

The different possible layouts of the cemetery were taken into consideration during the search for more graves. Because of the reasons mentioned previously, the excavation was done with mechanical earth moving equipment. Spits of between 25 and 40 cm deep were graded from the indicated area while a member of the excavation team walked alongside the machine and observed the exposed deposits directly behind the blade. This area was cleanly cut and was inspected continuously before the wheels of the grader left tracks that might have obliterated indications of the presence of a grave. Taking the possible layouts of the cemetery into account, the cemetery was excavated methodically. No differences in the deposits, indicating the possible presence of graves, were observed. At a depth of approximately 1,6 – 1,7 m below the surface the yellow-brown gravel appeared along with water seepage.

Since very little uncertainty regarding the location of the grave of Johannes Niemann's sister existed, the area around and to the east of the grave of Johannes Niemann along the southern fence of the cemetery was excavated first (Area A indicated on Fig. 8). No indications of the presence of a grave were found in the area indicated as the most likely location of the grave of Johannes Niemann's sister.

FIGURE 8
Excavations at Palmietfontein 24KS.

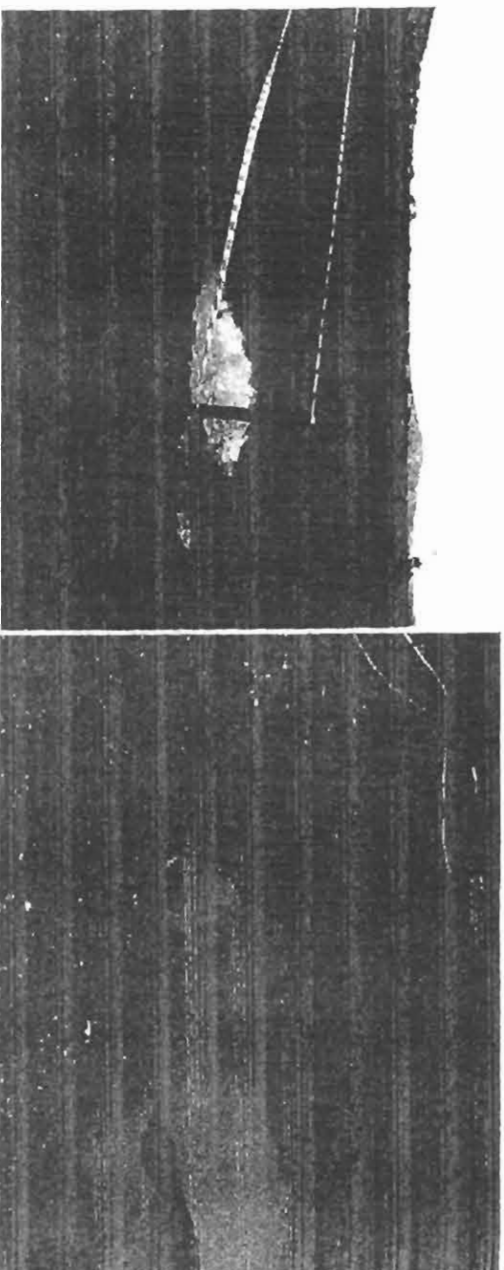


After grave JNG/2 was found and excavated (Refer next heading) the search for more graves continued. Area B (Fig. 8) was excavated in the same way to a depth of 1,8 m below the present surface without finding any indication of more graves. Area C (Fig. 8) was also excavated to depth of 1 m below the surface.

At this stage there was so much water and mud in the excavated area that it was impossible to conduct controlled excavations in the rest of the cemetery. It was decided to abandon the excavation at this stage and to return as soon as conditions are drier and as the construction schedule would allow.

Excavations in the Palmietfontein 24KS cemetery re-commenced on 8 January, 2002. The December excavations were still full of water (Fig. 9), and water again seeped into the excavations as soon as the yellow gravel layer was reached.

FIGURE 9
Water in the excavations at Palmietfontein 24KS after more than a month was allowed for conditions to improve.



The rest of the cemetery was excavated with the aid of earth moving equipment in a similar manner to the previous excavations. Area D (Fig. 8) was excavated with great care down to a depth of 1,8 m below the present surface, since it was thought that there was a good chance of finding more graves in the proximity of that of Johannes Niemann. No graves, or any indications of the presence of graves, were, however, found. Area E (Fig. 8) was excavated to a depth of 1 m below the surface since there was only a slight chance that graves occurred here (similar to area C excavated previously). No graves were found in this area.

The excavation of the grave of an unknown Niemann family member (JNG/2)

To the east of the eastern fence post of the cemetery gate, in line with the grave of Johannes Niemann, corrugated iron sheets were found at a depth of 1, 6 m (Fig. 2). These sheets covered the remains of an individual buried in a coffin. A few fragments of wood and coffin handles were recovered. This individual (JNG/2) was buried in an extended position on the back, oriented east-west, with the skull on the western side. Similar very wet muddy conditions as during the recovery of the remains of Johannes Niemann were prevalent. The excavation of the remains was done in the same way as that described for Johannes Niemann (JNG/1). Preliminary analysis of the remains conducted in the field indicated that this was a male individual, and presumably one of the unknown family members. Finding the remains in this location also indicated that none of the interpretations of the layout of the cemetery was correct.

5. *Analysis of the Remains*

Since the remains of Johannes Niemann were securely identified no analysis of this skeleton was conducted.

Remains JNG/2 were analyzed by means as of the standard physical anthropological methods employed to record skeletal characteristics for possible identification of individuals. The techniques that were applied were aimed at the reconstruction of the individual rather than the study of populations. The only parallel methodology that exists is the techniques of forensic anthropology that also aim to ascertain the individual characteristics of the recovered remains (Krogman and Iscan, 1986). Where possible deductions regarding pathology, health and other indicators of stress were considered in an interpretation of evidence. The data gathered during analysis were recorded in a suitable format, such as that proposed by Buikstra and Ubelaker (1994) for remains that are to be reinterred.

The skeleton was cleaned, studied and measured. Although only a brief report, mostly reflecting on age, sex, racial affinity and diseases are given in this report, more detail (such as metric data) on the skeleton is available if needed.

In the analysis of the skeleton, standard anthropological techniques and measurements were used. South African data were used as far as possible and available for the determination of demographic characteristics. Age was determined mainly with the help of cranial suture closure and degenerative changes (Ferembach et al 1980; Buikstra & Ubelaker 1994, Krogman & Iscan 1986).

Sex was determined using the non-metric characteristics of the pelvis, mandible (Loth & Henneberg 1996) and skull (Ferembach et al 1980, Krogman & Iscan 1986), as well as metric data from the humerus (Steyn & Iscan 1999) and femur (Steyn & Iscan 1997). Population affinity was assessed with the help of non-metric and metric data from the skull and mandible (De Villiers 1968; Iscan & Steyn 1999). For purposes of determining ante-mortem stature, the formulae for South African Blacks, developed by Lundy & Feldesman (1987), were used.

Pathological changes to the bones were assessed. Information from text books by Ortner and Putschar (1981), Steinbock (1976) and Aufderheide & Rodriguez-Martin (1998) were used. No special investigations, such as X-rays, were employed.

The JNG/2 remains comprised of a complete skull, mandible, vertebral fragments, broken ribs, partial scapulae, both os coxae and some hand and foot bones. All the major long bones are represented, but few of them are complete. Both jaws are completely edentulous.

Age

The skeleton is clearly that of an adult. All teeth were lost antemortem, and bone resorption of the jaws is evident. Unfortunately no intact rib ends were found. All long bone epiphyses as well as the synchondrosis sphenoccipitalis are closed. Some of the cranial sutures, such as the sagittal suture, are completely obliterated, while others show varying degrees of closure. No clear arthritic or degenerative changes could be observed on the vertebrae or in any of the joints. These features indicate an age of about 40 - 60 years (Ferenbach *et al.* 1980, Krogman and Iscan 1986).

Sex

Most bones indicate a very robust individual, with pronounced muscular markings and huge femoral heads (diameter of the femoral head is 58.0 mm, Table 1). The brow ridges are large, the glabella massive and the orbital edges rounded. Due to the early teeth loss, the mandible shows bone resorption which makes it difficult to use for sex determination purposes. The sciatic notches of the pelvis are wide, but the subpubic concavity is narrow, no pre-auricular sulcus is present and the ischiopubic ramus shows the typical male configuration. With the exception of the wide sciatic notch, these are all male characteristics (Krogman and Iscan 1986, Steyn and Iscan 1997). It is, however, known that South African white males often have wide sciatic notches (Patriquin *et al.* in press). The general impression is thus that this individual was male.

Population Affinity and Stature

The short and rounded skull, the absence of prognathism (gnathic index 91.5) as well as the long and narrow nose with high nose bridge indicate a white South African individual (De Villiers 1968). A discriminant function analysis using the diameters of the nose yielded a value of 0.31, that is clearly in the range for South African white males (Iscan and Steyn 1999). The cranial measurements that were possible are shown in Table 2 (Buikstra & Ubelaker 1994).

The antemortem stature was calculated by means of the formulae of Olivier *et al.* (1978) for European males. This yielded a statural estimate of about 194.1 cm, indicating a very tall individual.

Dentition

No teeth are present, since all were lost/extracted long before death. Considerable atrophic changes of both jaws are present.

Health Status

No clear signs of disease could be observed. A small round defect is present just above the right external acoustic meatus, with one small hole anterior and another posterior to it. The cause of these is not clear, and they may possible be due to postmortem factors.

Discussion

The remains found were those of a robust male individual of about 40 - 60 years old. He was of European extraction, and was quite tall (about 194 cm). He was totally edentulous. No clear signs of disease could be observed.

6. Memorial Visit and Scattering of Ashes

The remains of both individuals exhumed from the Palmietfontein 24KS cemetery were cremated on 8 March 2002 (City of Tshwane Crematorium; Cremation no.: 07598 & 07599). The ash was scattered at the ruins of the old house on Palmietfontein 24KS, around the new location of Johannes Niemann's memorial stone, on 16 March 2002 during a memorial ceremony which were attended by 28 family members.

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TABLE 1

Long bone measurements of JNG 2 (Buikstra and Ubelaker 1994).

DIMENSION	mm
Clavide	
Diameter: antero-posterior	12.8
Diameter: supero-inferior	9.2
Humerus*	
Max. length	380.0
Epicondylar breadth	62.2
Vertical diameter of head	44.9
Max. diameter at midshaft	23.4
Min. diameter at midshaft	19.3
Radius*	
Max. length	291.0
Diameter: antero-posterior	13.2
Diameter: medio-lateral	17.4
Ulna	
Diameter: antero-posterior	13.8
Diameter: medio-lateral	18.8
Min. circumference	39.0
Os coxa	
Height	238.0
Pubis length	83.9
Ischium length	93.9
Femur	
Max. length	565.0
Bicondylar length	561.0
Max. diameter of head*	58.0
Ant-post subtrochanteric diameter	29.3
Med-lat. subtrochanteric diameter	36.2
Ant-post midshaft diameter	36.4
Med-lat midshaft diameter	30.7
Midshaft circumference	105.0
Tibia	
Max. diameter nutrient foramen	42.4
Med-lat. diameter nutrient foramen	29.8
Circumference nutrient foramen	112.0

*measured on the right side

TABLE 2

Measurements of skull and mandible of JNG 2 (Buikstra & Ubelaker 1994)

DIMENSION	mm
Max. cranial length	189.0
Max. cranial breadth	137.0
Bizygomatic diameter	129.0
Basion-bregma height	144.0
Basion-nasion	106.0
Basion-prosthion	97.0
Biauricular breadth	121.0
Upper facial height	72.2
Min. frontal breadth	93.3
Upper facial breadth	106.4
Nasal height	57.6
Nasal breadth	29.2
Orbital breadth	43.9
Orbital height	36.5
Biorbital breadth	97.7
Interorbital breadth	24.7
Frontal chord	118.0
Parietal chord	121.8
Occipital chord	94.4
Foramen magnum length	45.5
Foramen magnum breadth	35.5
Mastoid length	27.9
Bigonial width	103.4
Bicondylar breadth	116.9
Min. ramus breadth	28.7
Max. ramus breadth	42.2
Max. ramus height	67.0
Mandibular length	78.0
Mandibular angle	128.0