ROUGH ROAD TOWARDS RE-BREEDING THE QUAGGA
HOW IT CAME ABOUT

From my early childhood I was fascinated by nature. When, during my schoolboy time I saw an impressive bull being paraded in a circus arena, I learnt for the first time about the breeding experiments by the Heck brothers, Heinz and Lutz. Heinz was the director of the Hellabrunn Zoo at Munich, Lutz the director of the Berlin Zoo. Both, quite independent of each other, selected individuals of various domestic cattle breeds, which they believed displayed one or other similarity to the extinct wild ancestor of domestic cattle, the Aurochs, Bos taurus. If these various similarities, like colouration, hornshape, stature of the animal etc. could be united into a breed, a replica, at least in appearance, of the Aurochs might be produced through selective breeding. Such was the thinking of the Heck brothers.

Impressive the circus bull was, but his colour, being whitish with dark dapplings, was not yet right, but he was said to be an individual of the Heck's breeding project. Nevertheless, the idea that extinct animals might be re-bred from their descendants, impressed me immensely.

On 1 December 1948 I started my apprenticeship as a preparator at Senckenberg Museum in Frankfurt, Main, Germany. On 1 October 1959 I took up employment as a taxidermist at the South African Museum in Cape Town. I was surprised to find a quagga foal amongst the mounted mammals in the Museum exhibitions. It had been crudely stuffed in 1859 and appeared in a sad state. Its great value as being one of only 23 preserved skins of the extinct quagga worldwide and the only one left on the African continent, was not at all emphasized. It was simply `stored' inbetween many other stuffed specimens, and even largely hidden by them. This worried me and the idea of improving its appearance and the way it was displayed came to mind. However, in order to do anything meaningful about the animal's wrong proportions and shape, the animal would have to be made wet. Not knowing what treatment the skin had been given in 1859, wetting it or even soaking it in some bath, would have run the risk of destroying it.

For many years the idea of improving the quagga foal's condition and appearance remained an idea only, it was a risk too high to be taken.

Then in 1967 it was discovered that one of the huge wooden boxes in the Museum's archaeology storeroom contained several untanned, only salted dry skins. Among the skins was that of a jaguar, obtained in 1896, and another of a plains zebra from Zululand of 1913, and a third of a Hartmann's mountain zebra of 1920. These obviously long-forgotten skins in poor condition were of sufficient importance to warrant preservation from further deterioration. They provided a welcome opportunity to practise modern conservation and restoration techniques.

The experience gained from the treatment of these skins provided the confidence and led to the decision to conserve and remount the most valuable mammal in the Museum's collection, the quagga foal.
Dismantling the original mount of the quagga foal, treating the skin, and then remounting it in a more life-like pose, was started in 1969 and completed the following year. During this project, it was found that the skin had not been properly cleaned or tanned, and small amounts of dried-out muscle, blood vessels and other soft tissue was recovered from it. Evidently, it had been mounted just as it was received after having been skinned by a labourer on the farm Kamphers Kraal near Nelspoort in the Karoo. The careless treatment of this skin more than 100 years earlier was to lead to the most exiting and important result of the whole project.

All the soft tissue removed from the skin was kept, together with the skull and footbones, which had also been removed during the remounting process, because even then it seemed possible that a study of the soft tissue might shed some light on the question of quagga relationships. During the years that followed, unsuccessful attempts were made to find a scientist who would be interested in studying this tissue. One such attempt in 1979 involved the assistance of the noted zoologist, W F A Ansell in England, but that too ended in failure. Ansell wrote:

'Unfortunately, as I suspected would be the case, there does not seem to be any meaningful cytological tests that could be carried out on such long dead material.'

The idea to re-breed the quagga, which had already been expressed by Lutz Heck in his 1955 book "Grosswild im Etoshaland", as I learned later, began to occupy my mind when in 1971 I visited most of the European museums that house the preserved quaggas. Examining, photographing and measuring these specimens and thinking of especially certain individuals which I had seen in southern plains zebra populations from Etosha, Namibia in the west to Zululand in the east, revealed the close similarities, in one or other respect, between these individuals and the preserved quaggas in museums. While in Munich, Germany to study the quagga there, I had a discussion with the well-known mammalogist Dr Th. Haltenorth about a possible attempt to re-breed the quagga. Haltenorth expressed surprise that nobody had started such a project in South Africa yet, a project he certainly considered a worthwhile effort. I decided to explore the possibilities.

The owner of the private game park, Wiesenhof, near Stellenbosch, Mr D Kulenkampf, was willing to accommodate some zebras and pay for their transport.

On 2 September 1975 I wrote the first of many letters, seeking opinions on the possibilities of such a project. The director's office of the Natal Parks Board replied on 27 November 1975: 'The answer is that we consider the proposal to breed a quagga-like animal to be merely an academic exercise of very dubious conservation value, ...' and that there was no prospect of their making any zebras available.

In his letter of 23 February 1977, a well-known South African zoologist, Dr U de V Pienaar, replied: "Let me assure you at the outset that I was most interested in your idea of breeding back the extinct true quagga, Equus quagga quagga through selective crossing of related plains zebra individuals carrying genes of the extinct species. This is a project which we have been considering for some time, but which we had to hold in abeyance through lack of funds and a suitable release area' and 'I am quite certain that if we tackle a project of this nature in a systematic manner and on a wide enough scale we should be successful in breeding back a true likeness of the extinct quagga in a relatively short space of time. A project of this nature could have tremendous prestige value not only for the Parks Board but also for the country and the new National Park at Beaufort West could be the key to start the ball rolling.'

A letter dated 14 February 1977 from Dr B L Penzhorn stated: 'I am very interested in your proposal to "breedback" the quagga as I share your view that it represented the
southernmost form of the Equus quagga/Equus burchelli cline. Please keep me informed on further developments.

In 1980 I was invited to the Natural History Museum in Mainz, Germany, to remount three quaggas and a plains zebra. Their skins were acquired in 1842 and had been stuffed with straw and hemp, as was customary at that time. During my stay in Mainz, where I again saved tissue from the skins, a geneticist, Dr Oliver A Ryder of the San Diego Zoo in California, wrote to my Cape Town address asking if I could obtain for him fresh blood and other tissue samples from zebras. This letter was forwarded to Mainz in January 1981 and it seemed that at last I might have found someone who would be interested in the quagga tissue samples - or rather, he had found me!

Dr Ryder responded to my offer of the quagga tissues as follows: 'I can only tell you that I was thrilled to hear that dried blood and flesh from quaggas still exists. I think that the most promising taxonomic data would be derived from dried blood, although other tissues might also be of help. To anticipate generating any results at all would be optimistic, but there are several electrophoretic techniques I would very much like to try if you could be so kind as to send me the connective tissue, dried blood, and flesh samples.'

Tissue samples were sent to Dr Ryder, both by the South African Museum and the Natural History Museum at Mainz, Germany.

Dr Ryder shared the material which he had received with Dr Russel Higuchi of the University of California at Berkeley and with Prof. Jerold M Lowenstein of the University of California at San Francisco. The series of tests carried out by these scientists and their associates were varied and complex, and they yielded results that exceeded my expectations. Most importantly, from my point of view, was the confirmation of my belief that the quagga was indeed more closely related to the plains zebra than to any other member of the genus Equus.

This belief had developed from a long study of the stripe patterns in zebras, and it is one that has been shared by many scientists, mainly in Europe. The plains zebras of East Africa have distinct black and white stripes over the entire body, but as one moves south, the colour contrast becomes less marked, with shades of brown becoming more predominant, and there is a progressive reduction in striping. The quagga represents the extreme limit in this trend, and it is simply the brownest and least striped of the plains zebras. This was, however, a subjective opinion that could be, and was, disputed. The results of the biochemical studies carried out in California are not subjective, and they should settle the issue of the relationships of the quagga and other zebras once and for all.

These studies have also settled the controversy about the correct scientific name of the quagga. To those who believed that the plains zebra and quagga were separate species, the scientific names applied were Equus burchelli and Equus quagga respectively. Now that the quagga has been shown to be no more than a subspecies within the plains zebra group, its name takes precedence, since it was the first to be named, and all plains zebras become Equus quagga. The various subspecies are distinguished by the addition of a third name, so that the quagga becomes Equus quagga quagga, the zebras that once inhabited the regions immediately north of the true quagga were Equus quagga burchelli, and so on. Interestingly, the old vernacular names given by the settlers to the 'quagga' in the Karoo and the 'bontquagga' for the plains zebras further north, were more correct in indicating relationships than those applied by many scientists in recent times.
In 1981 on 18 September Dr de V Pienaar wrote: "Many thanks for your letter of 11 September about the possibility of selective breeding of plains zebra with the aim of producing a breed, resembling the extinct quagga. In this respect I can inform you that the Karoo National Park was indeed proclaimed in 1979 but my suggestion to the Parks Board for a project to selectively breed plains zebras to produce an animal resembling the extinct quagga met with flat and complete opposition - particularly from the Chairman, Prof. F Eloff".

In his reply on 24 October 1982 Dr G L Smuts, who had done much research on the biology of the Kruger Park plains zebras wrote: "I support you whole-heartedly in an attempt to re-breed the quagga and also feel that it would be relatively easy - material is available and zebras breed well in captivity".

The National Zoological Gardens of South Africa wrote in their letter of 27 October 1982 as follows: "Dr Brand has indicated that while your efforts to stimulate an interest in the "re-breeding" of the extinct quagga must be appreciated, circumstances such as a very tight budget, the lack of suitable and adequate facilities together with a staff position which is fast becoming critical entirely preclude the possibility of this institution participating in the proposed selective breeding programme".

A reply of 24 January 1983 from the Endangered Wildlife Trust stated: "After lengthy discussion with our scientific advisors with regard to your letter of 5 November 1982 I regret whilst your proposals are interesting we will not be able to assist, due to limited funds and priorities which must take precedence over any such project".

On 10 August 1983 I wrote to Dr de V Pienaar, who had been the first scientist to give the selective breeding idea moral support: "All my efforts so far, to get a selective breeding programme with plains zebras going, failed".

Despite having received more negative than positive replies, I was still not ready to abandon the idea.

The problem was due to the fact that zoologists the world over were divided on the question of the taxonomic status of the extinct quagga, some considering it as a species of its own, whereas others regarded it as the southernmost subspecies of the plains (Burchell's) zebra. It was furthermore thought that, because the animal had been extinct since 1883, this question could never be answered.

Amidst the exitement of that unexpected discovery in the Museum's Archaeology storeroom in 1967, as already mentioned, none of us imagined that the repercussions would be experienced in countries as far away as Germany and the United States, and that it would lead to the solution of a problem that has confounded scientists for more than 100 years. But more than this, it gave scientific credibility to the idea of attempting to re-breed the extinct quagga from specially selected individuals from today's most southern plains zebra populations.

On 26 August 1983 I inquired about the possibilities of obtaining live plains zebras from Etosha in a letter to Dr H Berry of Etosha National Park, Namibia. Negotiations about obtaining two zebra carcasses for the Museum collection during a routine culling operation at Etosha had been ongoing for some time. I also mentioned in that letter that Mr Gordon Verhoef had purchased a large farm, joining onto the Karoo National Park, which was being developed into a game farm and where the envisaged selective breeding could be done. Dr Berry had informed me in his reply that decisions about my requests would be made at his head office, the Department of Nature Conservation...
and Tourism at Windhoek. To this office I had originally written on 12 November 1982. Several letters passed between Dr Berry and me and the Directorate in Windhoek before a letter of 26 January 1985 from Dr Berry informed me that the Directorate had decided to donate two zebra skins and skeletons to the South African Museum during the next culling of zebras at Etosha, for which no date had yet been set. Regarding the request for live zebras, this would be handled according to the existing standard procedure, namely that purchasers fetch the animals from the holding pens at Etosha after they had been caught by the Directorate’s game capture unit.

In my letter of 28 March 1985 to Dr Berry I informed him that I had received news about the results of the quagga tissue examination in California, which showed that the quagga was one of the plains zebra sub-species.

This is what Dr Ryder wrote in a letter of 17 February 1984. "Work is progressing with the quagga material. We now definitely have segments of DNA obtained from the quagga skin amplified by recombinant DNA techniques. We know that a large number of the recombinant DNA "clones" react in a manner similar to zebra DNA. Additionally, some further tests with the proteins that may be isolated from the dry skin show a very close affinity of the quagga to plains zebras. This, I am sure, does not surprise you".

In a further letter of 14 March 1985 Dr Ryder wrote: "I have heard indirectly from Dr Russel Higuchi that the DNA sequencing work has found that a sample of plains zebra DNA is identical to that of a quagga".

In their joint article: Immunological systematics of the extinct quagga (Equidae), published 1985 in "Experientia", J M Lowenstein and O A Ryder stated that the extinct quagga was more closely related to the plains zebra than the two subspecies of the African Wild Ass are to one another, and that the quagga therefore should be regarded as a variant (subspecies) of the plains zebra and not a distinct species.

My letter to Dr Berry also pointed out that this confirmation of the view that the quagga was not a species in its own right, made the envisaged selective breeding all the more worthwhile. I expressed my anxiousness to get it started and asked whether there was any way in which some selected zebras could be captured for this purpose, independent of the occasional routine capture.

Dr Berry referred the points raised in my letter to the Directorate in Windhoek for a decision. That decision was made known to me in a letter from the Directorate, dated 4 June 1985 and read as follows: "This Directorate regards your proposed project on the extinct quagga as academic and of little importance to conservation. As your project is not an approved one with this Directorate, we regret to inform you that we cannot make any Burchell’s zebra available to you".

Needless to say, by that time and with such negative news from Windhoek, my enthusiasm was near exhaustion and I wondered whether I should give up, but the results of the quagga tissue studies in California, as stated above, had begun to appear in publications and, against all expectations, the question of the taxonomic status of the quagga had been answered. Three groups of scientists from the University of California had executed various biochemical studies on dried flesh and blood samples that had been removed from quagga skins during re-mounting by me; in 1960/70 from the Cape Town quagga foal and in 1980/81 from the three quaggas at the Natural History Museum at Mainz, Germany. Mitochondrial DNA fragments were extracted and successfully cloned by Dr Russel Higuchi and proteins were studied by
Prof. J Lowenstein. These studies confirmed that the quagga was one of the subspecies of the plains zebra, not a species of its own.

Then came another fortunate event. The retired veterinarian, Dr J F Warning of Somerset West, contacted me during the latter part of 1985. He was an expert in animal husbandry and had been associated with horse and cattle breeding for more than 50 years in Germany and Namibia. He was a friend of Prof. Lutz Heck and had spent much time with him during the latter's stay in Namibia (which resulted in Heck's book mentioned above).

These two events gave new impetus to the envisaged back-breeding programme. Dr Warning contacted Prof. G N Louw of the University of Cape Town, and an informal meeting of the three of us and Dr G R McLachlan took place at the Heerengracht Hotel during September 1985. Prof. Louw suggested contacting the Cape Department of Nature and Environmental Conservation with the view to asking them to consider the Nature Conservation farm, Vrolijkheid, at Robertson as a venue for the breeding project.

Dr Warning phoned the Director of Nature Conservation, Mr W Morsbach, and Dr McLachlan wrote a letter to him. On 9 October 1985 the first meeting with Nature Conservation took place at their offices. Present were Mr W Morsbach (Director), Dr J A van Zyl (Assistant Director), and Mr P Lloyd (Mammalogist of Cape Department of Nature conservation), Dr J F Warning, Prof. G N Louw (University of Cape Town) Prof. E H Harley (University of Cape Town), Dr G R McLachlan and myself. At this meeting views towards the proposed selective zebra breeding programme were very positive, and the farm Vrolijkheid was offered by Cape Department of Nature Conservation as a suitable and available venue.

Dr Warning also made contact with Dr Anton Rupert of the S A Nature Foundation in Stellenbosch. Subsequently a meeting between Mr J Stroebel, Dr Warning and myself took place at the offices of the S A Nature Foundation. A project outline and a list of estimated costs was requested by Mr Stroebel, who appeared to be in support of the proposed project.

During a further meeting at the offices of Nature Conservation on 2 December 1985, Mr Morsbach, Dr Neethling, Dr van Zyl and myself discussed the project again. Nature Conservation expressed their interest in and support of the project. Facilities at the farm Vrolijkheid, fencing, feeding and any practical assistance would be provided by Nature Conservation. In addition they would try, through negotiation with their counterpart in Windhoek, to have the necessary zebras made available at a reduced price or free of charge. Nature Conservation also expressed the opinion that a clear project outline should be drafted that could be used to raise funds, and that a project leader should be appointed. Prof. Louw, with his backing of the University of Cape Town and his contacts in Namibia was suggested as a likely candidate.

However, due to heavy commitments, Prof. Louw declined to take on the post of project leader, while emphasizing his full support for the project.

Up to this point all negotiations etc. were conducted in my private capacity. The Director and management of the South African Museum were unaware of these negotiations. But now, since some success with regard to obtaining live zebras from Etosha seemed to be looming, I became somewhat nervous. What would I do, where would I put the zebras?
On 6 February 1986, I had an informal discussion with the Director of the South African Museum, Dr M A Cluver, about the envisaged project. Dr Cluver was very interested in the matter and felt that the Museum, together with Nature Conservation and the University of Cape Town, should pursue this programme.

In his letter of 17 February 1986 Dr Berry informed me that Prof. G N Louw had spoken to him in detail about the envisaged selective breeding and that my request for live zebras had been forwarded to the Game Capture/Culling Unit, who would contact me directly, giving dates and prices if operations were to be carried out in Etosha during 1986. This news seemed to cancel the negative news in the Directorate's letter of 4 June 1985.

On 3 March 1986 Dr van Wyk, of Game Capture in Windhoek phoned me, informing me that two dead and two live zebras had been granted, and that these specimens should become available during the period 7-18 April 1986.

Several more phone calls between Dr van Wyk and myself took place, leading eventually to the granting of 10-12 live zebras. Arrangements had been made with Mr Uwe Schulz of Okahandja to transport the zebras. Should Mr Schulz not be able to transport the zebras immediately after capture, Dr van Wyk saw a chance of the game capture transport truck taking the animals as far as Okahandja.

On 20 March 1986 a meeting of interested people, with whom individual discussions about the envisaged breeding project had already been held, came together at the office of the Museum director, Dr M A Cluver. This was attended by Dr Cluver, Mr Morsbach, Dr van Zyl, Dr McLachlan, Prof. Louw, Dr P A Huley and myself. It was agreed that the experiment should be a Museum project and that a formal committee should be formed and be known as the 'Quagga Experimental Breeding Committee'. All those present, plus Dr J F Warning and Prof. E Harley were to constitute this committee with the power to co-opt. Dr Warning's ill health had prevented him from attending this meeting, and Prof. Harley had come to know about the envisaged breeding project just prior to the meeting. Prof. Louw suggested that he would invite an animal scientist from Stellenbosch University. It was agreed that one member of the committee should now make concerted efforts to get the breeding project going, call meetings etc. I suggested, that after my long battle to do just that, it might be good that someone else should also come into that battle. Dr McLachlan was suggested, and he agreed.

Together with a young colleague I went to Etosha Game Reserve in Namibia, in order to be on stand-by, should casualties occur during the capture of zebras for brand-marking during 7-18 April 1986. We received the two dead zebras and did the field preparation. However, due to some confusion, no live zebras could be selected at that time, and we returned to Cape Town with the skins and skeletons of the two zebras. That the selecting and capture of 10-12 live zebras could not take place during April 1986 was really a blessing in disguise. More time was now available to plan the transport and to construct a 80x80m camp for the zebras on the Nature Conservation Farm Vrolijkheid near Robertson, as had been decided during the founding meeting on 20 March 1986.

While at Etosha in April 1986, both Dr van Wyk and the head of the game capture team, Mr Louis Geldenhuyts spent two hours with me to look at zebras in the Wolfsnes-Okondeka-Adamax area. I was to point out individuals which would be suitable for our envisaged project. In addition to that, I was to send photographs of suitable individuals to Dr van Wyk. This I did on 16 May 1986. The idea was that, if a
capture would take place at Ethosa during 11-30 August 1986, the capture team would know what to look for, should I not be present. It was also thought that approximately 20 zebra would be caught, guided by the photographs and discussions we had while looking at zebras as well as description which was repeated in my letter of 16 May 1986. Once these 20 zebras were in a boma, I was to come and select the 12 animals for the envisaged programme. Things did not go that well at our end. The main problems were to find the funds for capture, for paying the R135,00 per animal, for the transport of the zebras and the materials for the construction of the camp at Vrolijkheid. On 13 August 1986 I wrote to Dr van Wyk, explaining our difficulties and asking for a postponement of the capture. The head of the capture team, Mrs Geldenhuys, informed me during a telephone conversation on 13 August 1986 that the postponement was not a problem, in fact it might be better to do the capture during March/April 1987 when the zebras are more concentrated at Groot Vlakte, he suggested.

Any further arrangements with the Namibian authorities I made by telephone. Dr Jeff McLachlan, produced a fundraising pamphlet, in which a brief outline of the envisaged breeding project was given. He posted this pamphlet to various people, who in turn made donations. Dr McLachlan tried to organize the transport of the zebras to Vrolijkheid. On 1 August 1986 he mentioned in his progress report that the Divisional Council had agreed to allow us the use of their special zebra transporting crate and that a truck would have to be hired to transport it. But in the next progress report, dated 25 February 1987, it was stated that "Rent-a-Truck" would fetch the zebras from Ethosa in their seven ton Mercedes truck, and it was hoped that more than half of the cost would be born by another party's cargo going north. Construction of the new camp at Vrolijkheid was going well. Cape Gate Fence and Wire Works had given a substantial discount on the diamond mesh wire.

Early in 1987 Dr Warning wrote a letter to Baron B von Prittwitz-Gaffron, a friend in Germany, seeking financial assistance. He included Dr McLachlan's fund-raising pamphlet. In his reply of 24 March 1987 Dr Warning's friend included a copy of the letter which he had drafted and was sending, together with copies of the fund-raising pamphlet to nine different individuals, among them were Prince Philip, Duke of Edinburgh, and the Princes Bernard and Claus of the Netherlands. It is not known whether these letters were actually sent, but it appears that no reactions were received by Dr Warning, who unfortunately died in the following year.

During March 1987 the capture team of the Department of Nature Conservation and Tourism of Namibia were busy at Etosha with various capture projects, among these the 20 zebras to be caught as discussed earlier, guided by the photographs which I had sent to Dr van Wyk. When starting to look for suitable zebras, the capture team soon realized that it was no easy task to find the right animals. Mr Geldenhuys phoned me and suggested that I came to Etosha as soon as possible. I took the earliest flight which I could get, that was on 13 March 1987. Arriving at Windhoek at 13:20, a member of the capture team Dion Muller, was awaiting me at the airport. We drove to Etosha where we arrived at Okaukuejo at 21:50, with a truck, loaded with a steel rhino grate.

The following morning at 7:30, a Saturday, the capture team picked me up. We drove to Gemsbokvlakte. Many zebras were there, coming to or leaving the waterhole. By 8:30, the first selected zebra had been darted and was taken to the temporary hessian boma at Okaukuejo, accompanied by the capture team and myself. There I had a glimpse at the five zebras, which had already been caught for us before I had arrived. I was not impressed with their colouration, knowing that more suitable zebras were living at Etosha. Two more selected zebras were caught during that day.
On Sunday, 15 March 1987 we caught three zebra. The capture team became disenchanted with me not liking most of the animals which were pointed out to me as "good". It was hot, and driving for many hours, mostly off the roads, was quite exhausting. Before we stopped our searching for that day at 15:00, I was told that the following day would be the last day during which the capture team would be available, as rhino capture in the Otjozandao area was their next task, and that there would be a disappointing opportunity for me to Windhoek on Tuesday 17 March 1987. This was very disspointing news, as we were far from having 12 good, selected zebras in the boma. During Monday 16 March 1987 another three zebras were caught, among them a very good mare with intense brownish colour.

Contrary to their plan, the capture team did not leave for the western part of the park until Wednesday 18 March, and so we could go out searching for suitable zebras once more for the whole day on Tuesday 17 March 1987. But we found no more suitable individuals on that, the last day of this capture operation.

During a final conversation with the capture team on 18 March 1987, Mr Geldenhuyys informed me that the department's game truck could transport the zebras all the way to Robertson, not only as first envisaged, as far as Okahandja. The cost would be R2,15 per km. Only the journey from Etosha to Robertson, not the return of the truck would be charged for.

On Friday 20 March 1987 I was invited to travel to Windhoek from Etosha together with the director of the Department of Nature Conservation and Tourism, Mr P Swart, and Mr Roger in their car. On the same day I flew back to Cape Town.

Of the animals which had been caught, some died of stress or injury before reaching the boma, others died in the boma. The zebras had to stay at Etosha for four weeks quarantine because of the danger of being infected with Anthrax or equine flu, against which they had been injected at capture and in the boma. At the end of the quarantine period while being loaded onto the department's big Scania game truck for the long journey to the Vrolijkheid Nature Conservation station near Robertson, the zebras were again vaccinated against Equine influenza. On 21 April 1987 nine of the zebras which were selected and caught at Etosha arrived aboard the big Scania game truck at Vrolijkheid after a long, uninterrupted journey. They were accompanied by Dr van Wyk, whose positive input during the lengthy negotiations prior to the capture made the entire operation possible a fact which is gratefully acknowledged.

Although 12 selected zebras had been granted, only nine arrived at Vrolijkheid. This is due to the fact that the capture team, who had not realized how much time would be required to select 12 zebras of rather rare colouration, and therefore had allocated too little time for this unusual capture operation. Another reason was the fact that some of the captured animals did not survive. The nine animals which did arrive were four stallions and five mares and included, out of necessity, four of the less suitable zebras which had been caught prior to my arrival at Etosha.

The transport cost amounted to R3225,00 which was paid by the S A Nature Foundation, who also paid the purchase price of R135,00 each of the nine animals.

With the arrival of these first nine animals for the selective breeding with southern plains zebras, aiming at eventually producing individuals that will match the original quaggas, the Quagga Project had been physically started. It has taken 12 years from first attempts to start this project to the actual starting of the selective breeding.