

species *L. carinatus* is distinguished from all the other species of this genus, including even *L. cubensis* which is more common in Cuba, by a particularly strong development of a component of aposematic behaviour: its tail has a definite threat function and is then rolled up dorsally in a ring or a spiral and is carried over the back. (*L. personatus* also shows this behaviour in a somewhat weaker form, though here the tail is moved more sinuously. (Mertens, R., 1946: *Die Warn- und Droh-Reaktionen der Reptilien. Abh. senckenberg. naturf. Ges.* 471).

The hatching of a Roll-tailed iguana (we call it this on account of its characteristic threat behaviour) in the East Berlin Zoo must be the first to be recorded in Europe. The adult animals arrived on the 9th August 1962 after a ten-day journey by sea. In the small transport box we found eight apparently dry, already shrivelled eggs (size 14-16 × 9-11 mm.). They were bedded in damp peat dust which was held in a sieve over water in a daytime temperature of about 30-35°C and a night time temperature of about 20-25°C and which functioned as a simple form of incubator.

On 7th November 1962 a young lizard was hatched. (The incubation period was thus between 91 and 101 days.)

*Details of the young lizard:*

Length from head to end of body	35 mm.
Length of tail	39 mm.
Total length	74 mm.
Weight	1,653 mg.

The bright brick-red throat, quite different from that of the adults, was particularly remarkable. The yellow-brown tail, which became caudally lighter, bore more clearly than do those of adults the strongly defined dark cross markings (a phenomenon frequent in juvenile lizards, probably of an aposematic nature). The young animal was reared in isolation in a separate container. The 'rolling' of the tail was seen for the first time on the second day of life, which, as was to be expected, demonstrated that this was an inherent instinctive action. When the young animal sat at rest, clinging to a sloping branch, its tail lay flat, with at most the extreme end of it turned upwards. However, as soon as it went into motion the tail with its remarkable striation was jerkily raised and rolled up high over the back.

Unfortunately, the young animal died after forty-two days, probably because of an accident, but in the meantime a female in the group had laid two further eggs (16.3 × 10.5 mm., 1,146 mg.: 17.5 × 11.8 mm., 1,322 mg.)

Our experience has shown that representatives of the species *Leiocephalus carinatus*, highly interesting from the ethological point of view, do very well in captivity, in which the aposematic function of the tail in the often very severe struggles for social position merits particular attention. (Analysed in Evans L.I.T., 1953: Tail Display in an Iguanid Lizard (*Leiocephalus carinatus conyi*). *Copeia* 1953 No. 1, 50-4).

## STOCK

### THE BLACK RHINOCEROS

*Diceros bicornis*

#### IN CAPTIVITY

by Richard J. Reynolds

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FOR a number of years I have been compiling data regarding rhinos in captivity. In 1961 I prepared articles on the history of the Asian

and white rhinos, and they appeared in *International Zoo Yearbook*, Vol. II, 1960, Zoological Society of London.

This paper will deal with the history of today's most commonly exhibited species, the African black or hook-lipped rhinoceros (*Diceros bicornis*). The large number of Black rhinos brought into captivity since World War I and the tragic loss of the archives of some of Europe's foremost zoological gardens

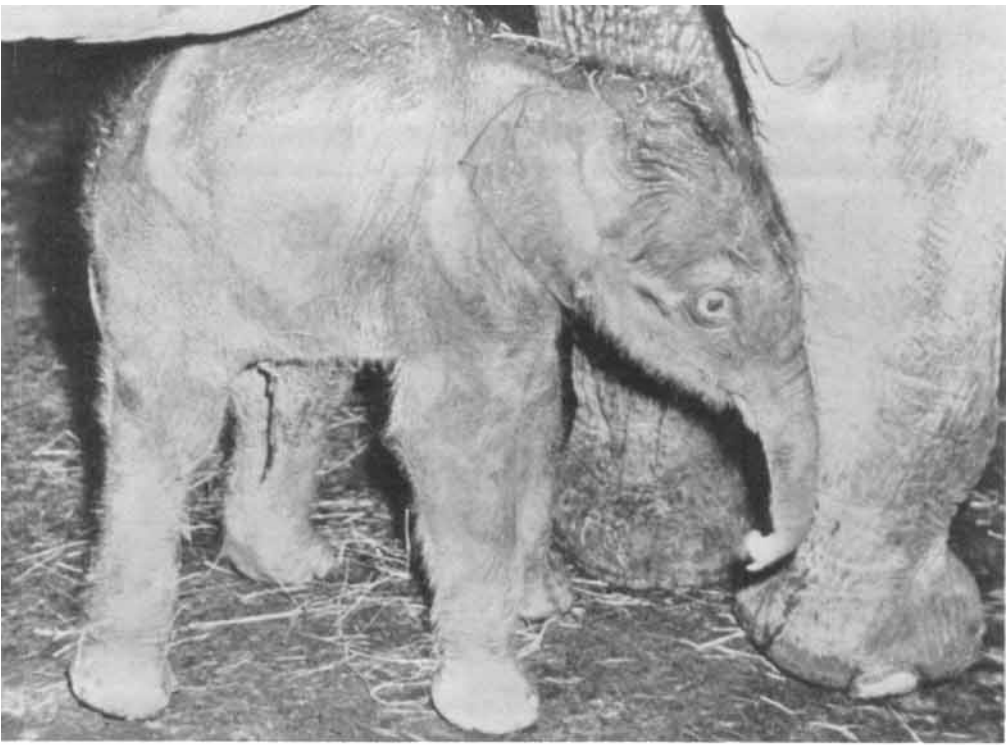


Plate 44. During 1962 two Indian elephants (*Elephas maximus*) were born at the Portland Zoo, USA — a notable achievement as elephants rarely breed in captivity (see pages 80–83). The first was a male, 'Packy', who was born after a gestation period of 634 days and weighed 225 lb. at birth; the second was a female, 'Me-Tu', born after a gestation period of 635 days and weighing 182 lb. at birth. The photograph shows Me-Tu with her mother very soon after birth.



Plate 45. The bonobo, or Dwarf chimpanzee (*Pan paniscus*) was bred in captivity for the first time by the Frankfurt Zoo in 1962. The photograph shows 'Margrit' with her three-week-old baby, 'Pan'. In appearance and behaviour the bonobo is very different from the chimpanzee and much work has been done at the Frankfurt Zoo on its anatomy, biology and ethology (see pages 76–78). B. Grzimek

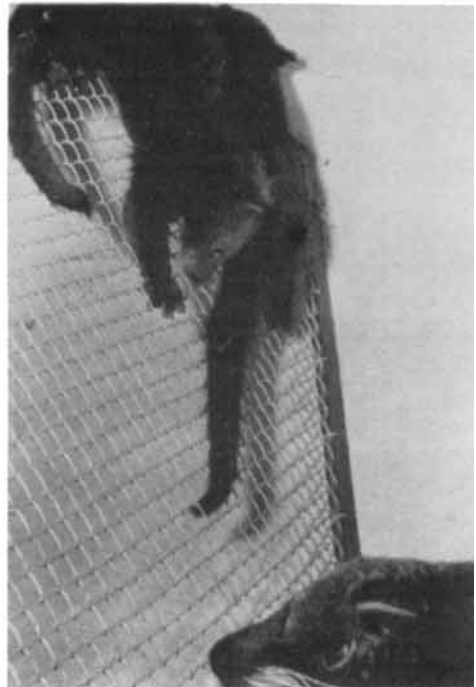


Plate 46. Two young binturongs (*Arctitis binturong*) climbing round their cage while their mother watches from below. They were born at the Dresden Zoo, Germany, during 1962 after a gestation period of 92 days. By the time they were nine weeks old they were climbing all over their cage, using their prehensile tails with great skill (see pages 79–80).

Zoologischer Garten Dresden



Plate 48. During 1962 Kyoto Zoo, Japan, succeeded in hand-rearing a baby gibbon (*Hyllobates lar*—see pp. 289–290). The photograph shows the gibbon when it was fourteen days old. The hands and feet of a baby gibbon are very large in proportion to the rest of its body and are used for clinging onto the mother's body. If the baby is being hand-reared it is very important for it to have a substitute to cling to — note the grasping action of the hands in the photograph. *Asahi Shinbun*

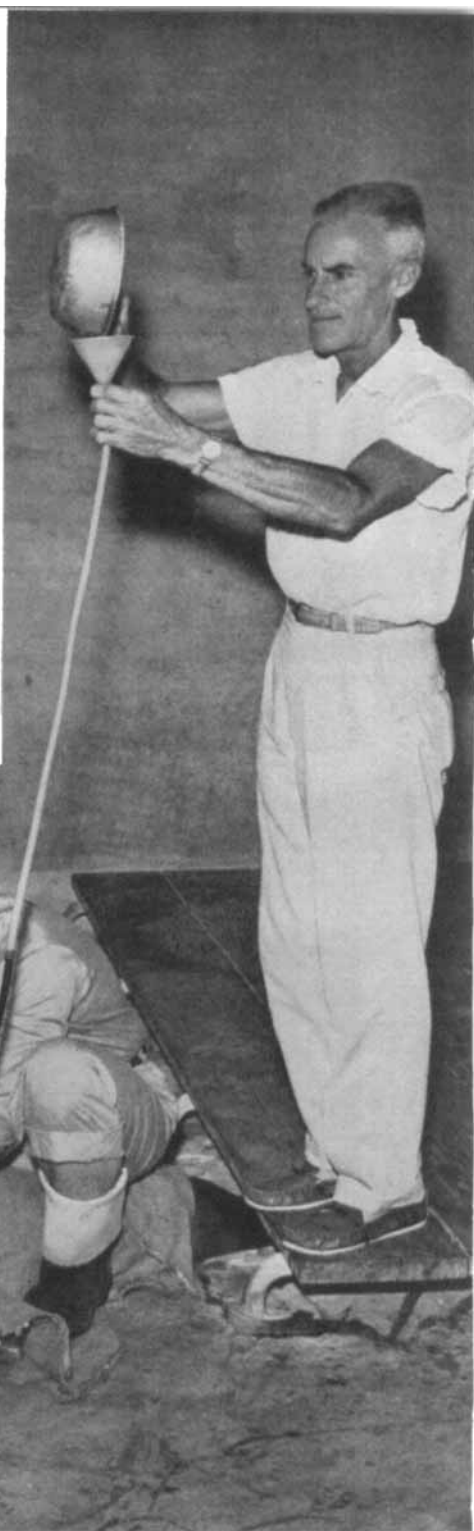


Plate 47. A young elephant seal being fed by hand at the San Diego Zoo. Young Pinnipeds have difficulty learning to suck and have to be force-fed. The food mixture is poured into a funnel attached to a long rubber tube — this has to be introduced into the gullet very carefully so that it does not go down the wind-pipe and choke the animal. Note the wooden gag which prevents the young seal from biting the rubber tube. *San Diego Zoo Photo*

during World War II will cause errors and omissions in this work.

Nevertheless, I have attempted to list all examples which five years of research have uncovered. With apologies for the shortcomings and heartfelt gratitude to those whose co-operation has made this paper possible, I should like to draw the reader's attention to the days of the ancient Mediterranean world.

It has always been recognized that *Diceros bicornis* was well known to the ancient Romans and was frequently shown in their games. However, on the authority of George Jennison in his book *Animals for Show and Pleasure in Ancient Rome* (1937), it appears that there is some question whether the Black rhino was as common to the ancients as the more hardy Great Indian rhinoceros, *Rhinoceros unicornis*, surprising as this might seem considering the distance between the Mediterranean world and the haunts of *R. unicornis*.

Be that as it may, *Diceros bicornis* was probably the rhinoceros which Athenaeus describes as part of a very remarkable assembly of exotic animals forming a portion of a great procession in Alexandria, Egypt, at a festival of Dionysius celebrated by the head of the ruling family of Egypt, Ptolemy II (283-246 B.C.), probably at the beginning of his reign. Rhinos, which may have been *Diceros bicornis*, were seen in Rome in 29 B.C., and during the reign of Commodus A.D. 180-92, Caracalla A.D. 211-17, Heliogabalus A.D. 218-22 and Philip the Arabian A.D. 248. The Black rhino was definitely seen there during the reign of Titus A.D. 79-81. The traveller Pausanias also saw it in Rome, during the reign of Antoninus Pius A.D. 138-161.<sup>1</sup>

From the days of the Romans until 1868, the Black rhino was apparently not seen in captivity. On 12th February of that year Arabs of the Beni-Ammer tribe captured a young

male in the vicinity of Kassala in Upper Nubia (Sudan). At this time the enterprising collector, Herr Casanova of Vienna was conducting an expedition in the area and succeeded in purchasing the young animal and sending it to the famed dealer, Carl Hagenbeck, Hamburg, Germany. A few days after its arrival in Europe, it was purchased from Hagenbeck by the Zoological Society of London for £1,000 and arrived at Regent's Park on 11th September 1868; it was the first Black rhino in captivity in modern times. It died in the London Zoo on 4th December 1891.<sup>2</sup>

In the 1870's Hagenbeck began importing Black rhinos for his travelling Nubian caravans. On the night of 6th July 1870, he arrived in Berlin with a great animal caravan, including a female Black rhino, 'Molly', which had been captured by the Italian Migoletti. It was purchased by the Berlin zoo and lived there until some time between 1884 and 1887.<sup>3</sup>

In 1878 one of Hagenbeck's travelling Nubian Caravans, exhibiting three young, tame Black rhinos again visited the Zoological Gardens of Berlin.<sup>4</sup>

The first Black rhinos seen in Frankfurt, Germany, were likewise shown by Hagenbeck when his Nubian Caravan gave an exhibition at that zoo.<sup>5</sup> *Diceros bicornis* was not long in coming to the old Hamburg Zoological Garden which is no longer in existence. An example was placed on exhibit in May 1881, and stayed there about a year. It was not there on 12th May 1882, for a Malayan tapir then occupied its cage.<sup>5a</sup>

On 15th May 1888, a Black rhino was purchased by Breslau Zoological Garden, Germany (now Wroclaw, Poland). It had been imported in 1878 for a Nubian African Show (probably Hagenbeck's) and had lived ten years in the cage of a travelling menagerie.<sup>6</sup> Another European zoo to obtain a Black rhino at an early date was the Jardin des Plantes,

1. Jennison, George, 1937, *Animals for Show and Pleasure in Ancient Rome*, Manchester, 30-4, 74, 86, 87, 90-2.
2. 1868, *Proc. zool. Soc. Lond.* p. 529; Sclater, P. L., 1876: On the Rhinoceroses Now or Lately Living in the Society's Menagerie, *Transactions zool. Soc. Lond.*, IX, p. 655.
3. Schlawe, Lothar, Berlin, 27th Aug., 1961, after *Vossische Zeitung* of 12th May 1871, and Berlin guides of 1873 and '75 by Fernbach and those of 1874, '75, '78, '84, and '87.
4. Hagenbeck, Carl, 1909: *Beasts and Men*, London: Longmans, Green and Co., p. 168; Schlawe, Lothar, Berlin, 27th Aug. 1961.
5. Kuhn, Hans-Jürg, Philadelphia, Pa., 5th June 1959.
- 5a. Schlawe, Lothar, Berlin, 1st May 1963.
6. Lukaszewicz, Karol, Wroclaw, Poland, 7th Jul. 1960.

Paris. A male arrived there around 1881 and was still there in 1891 when it was seen by P. L. Sclater of London.<sup>7</sup>

The first reference in the Western Hemisphere to a rhinoceros which can be identified as *Diceros bicornis* occurred in 1872. That year the advertisements preceding the appearances of P. T. Barnum's Great Travelling Exposition and World's Fair, listed a 'Monster Black Rhinoceros' as a feature in a very impressive menagerie. This animal was leased to the Older & Chandler show in 1873, was returned and seems to have been with the Barnum show through at least 1878.<sup>8</sup> This or another Black rhino was with the Barnum Circus in 1886.<sup>9</sup>

Other American circus proprietors, not to be outdone by the Barnum show, eagerly purchased Black rhinos as they arrived on the animal market in the 1870's. The western showman, Montgomery Queen, was quick to capitalize on the novelty of the example he acquired in 1877. When his circus exhibited in Los Angeles on 7th-9th May 1877, a newspaper article said: 'Among the strange animals and most unusual to be exhibited will be a two-horned rhinoceros, the eighth wonder of the animal world. The only animal of its kind ever exhibited on the Pacific Coast. This horned horse will be the first ever seen in California.' This rhino was sold at auction to the Sells Brothers Circus in 1878.<sup>10</sup>

Also in 1878 the W. W. Cole Circus received a female from Hamburg. This rhino travelled with W. W. Cole's Circus to Australia in 1880, and returned with the circus to San Francisco in the spring of 1881. At the close of the 1886 season, the Cole circus was

sold at auction in New Orleans, and the Park Commissioners of New York City bought the rhino for \$4,200. It arrived at the Central Park Zoo on 14th December 1886, the first *Diceros bicornis* in an American zoo. It lived there until at least 1906.<sup>11</sup>

This last mentioned female is the first Black rhino definitely known to have been exhibited in Australia and New Zealand. One or more rhinos are also known to have been shown in Australia and New Zealand in 1877-8 when the Cooper & Bailey Circus from the United States made a tour 'down under'.<sup>12</sup> However, their species is undetermined, and this is worthy of note only in so far as *Diceros bicornis* may have been involved. As far as I can determine, the first Black rhino in an Australian zoo was an example listed in the annual reports of the Melbourne Zoo from 1914 until 1916.<sup>13</sup>

As to the other major geographic areas of the world, Black rhinos were not exhibited until well after the turn of the century. The first on the African continent was a female which arrived at the Giza Zoo, Cairo, Egypt, on 29th May 1910.<sup>14</sup> In the Asiatic area, the Ueno Zoo, Tokyo, Japan, apparently obtained the first specimen. A Black rhino was purchased from the Hagenbecks in the early 1930's and, while unconfirmed, would appear to have been the one brought to Japan with the Hagenbeck Circus in 1933.<sup>15</sup>

On its way back to the United States from New Zealand in 1878, the Cooper & Bailey Circus conducted a South American tour. If its rhino was *Diceros bicornis*, then this would be the first example shown there. Otherwise, the first example in either Central or South

7. Sclater, P. L., 1891, *Proc. zool. Soc. Lond.*, p. 327.

8. Conover, Richard E., Xenia, Ohio, 21st Sept., 1961.

9. 1886 *The New York Times*, Wed., 15th Dec., p. 8.

10. Conover, Richard E., supra; Taber, Robert, Riverside, Calif., 27th Sept. 1960.

11. Chindahl, George L., 1959: *A History of the Circus in America*, Caldwell, Idaho: The Caxton Printers Ltd, pp. 101-2; Jones, Marvin L., Arlington, Va., 21st Jan. 1963, after Loisel, Gustave, 1906: *Rapport sur une Mission Scientifique dans les Jardins et Etablissements Zoologiques Publics et Privés des Etats Unis et du Canada*; Mann, William M., 1930: *Wild Animals in and out of the Zoo*, Washington, D.C., Smithsonian Institution, pp. 209-10; see also footnote (9) supra.

12. Murray, Marian, 1956: *Circus from Rome to Ringling*, New York: Appleton-Century-Crofts, Inc., pp. 240-1.

13. Jones, Marvin L., Arlington, Va., 11th Apr. 1963, from Melbourne Zoo reports, 1914-16.

14. Flower, S. S., *List of Animals*, 2nd edition (Giza Zoo), Cairo: Egyptian Public Works Department, p. 39.

15. Hagenbeck, Lorenz, 1956: *Animals are My Life*, London: The Bodley Head, pp. 149 & 155; Jones, Marvin L., Arlington, Va., Sept. 1962, after Tadamichi Koga, Tokyo.

America appears to have been a male which came to the Zoological Gardens of Buenos Aires, Argentina, in January 1938.<sup>16</sup>

From the beginning, the rate at which *Diceros bicornis* was brought into captivity rapidly increased. Since World War II the rate of importation has been tremendous as new, rebuilt, and more prosperous zoos eagerly purchased the most plentiful of all the rhinos.

Hagenbeck must surely have been the leading importer in the early part of this century; but his records were destroyed in World War II, so it is impossible to say just how many were imported. Six examples were received by the Hagenbecks on 18th April 1954, and this was perhaps the largest shipment of rhinos ever received by a zoo or dealer at one time. In all, twelve examples have been imported through their Tierpark since the war, but none since the last pair was sent to Amsterdam in 1959.<sup>17</sup>

The firm of L. Ruhe, Hanover, Germany, has also imported Black rhinos for many years, but its records were likewise destroyed during World War II. Since 1951 this firm has handled no less than thirty-five examples through its facilities at Hanover.<sup>18</sup> It is unfortunate that precise records are not available to determine which dealer has imported the largest number of Black rhinos.

Several zoos, other than those operated by dealers at Hamburg and Hannover, have exhibited a large number of Black rhinos. The Zoological Gardens of West Berlin and Taronga Park Zoo, Australia top the list with nine examples each. The Amsterdam Zoo, Netherlands; the Giza Zoo, Cairo, UAR; and the National Zoo, Washington, USA, have each had eight Black rhinos, while the Zoological Gardens of Frankfurt has certainly shown seven and possibly eight. London's Regent's Park Zoo has exhibited seven specimens. The zoos at Buenos Aires, Argentina; Chicago (Brookfield), USA; the Ringling

Bros. Barnum & Bailey Combined Circus; and, apparently, the German Circus Brumbach have all shown six examples.<sup>19</sup>

As common as *Diceros bicornis* is today, it does not live in captivity as long as the much rarer Great Indian rhino. The longevity record for a captive Black rhino appears to be held by a male which lived in the Municipal Zoological Gardens, Hermann Eckstein Park, Johannesburg, South Africa, from 7th March 1914, to 21st March 1948, a total of thirty-four years and fourteen days.<sup>20</sup>

The next best record belongs to a pair living at present at the Chicago Zoological Park, Brookfield. They arrived there in May 1934, thirty years ago. This pair also produced the first two Black rhinos bred and born in captivity. Two females that arrived at the St Louis Zoo on 15th July 1938, are still living, and after nearly twenty-five years in captivity are worthy of note when discussing longevity. During the same month of July 1938, a male arrived at Copenhagen Zoo and is now the oldest rhino of any species in Europe. It is Europe's only living 'prewar' rhino.<sup>21</sup>

Another long-lived Black rhino was the above-mentioned female brought to the USA by the W. W. Cole Circus in 1878, sold to the Central Park Zoo in 1886, and seen there as late as 1906. This example appears to have lived at least twenty-eight years in captivity.

A male was deposited in the Amsterdam Zoo on 7th May 1931, was sent to the Brookfield Zoo in May 1934, and lived there until July 1943, when it was sold to the Milwaukee Zoo. It died in Milwaukee on 26th July 1957. This animal was exhibited in three different zoos on two continents, and lived a captive life of at least twenty-six years, two months, and nineteen days.<sup>21a</sup>

Other noteworthy longevity records include a female which lived in the National Zoological Gardens of South Africa, Pretoria, from 31st December 1914, until 15th Novem-

16. Saporiti, Enrique J., Buenos Aires, 28th Jul. 1959.

17. Hagenbeck, Carl Heinrich, Hamburg, 2nd Sept. 1958, and 6th May 1963.

18. Müller-Langenbeck, Garlef, Hanover, 12th Jan. 1963.

19. See the list of rhinos for these zoos, *infra*.

20. Sheat, W. G., Johannesburg, 10th Mar. 1960.

21. Andersen, Svend, Copenhagen, 5th Mar., 1959; Vierheller, George P., St Louis, 10th Apr. 1959.

21a. Graham, Ralph, Brookfield, Illinois, 23rd Jul. 1958; Pelt, W. G., Amsterdam, 7th Aug. 1959; Speidel, George, Milwaukee, 8th Apr. 1959.

ber 1942 (twenty-seven years, eleven months, and fifteen days); a female which lived in the Detroit Zoological Park, Royal Oak, Michigan, from 5th June 1930, until 19th December 1956 (twenty-six years, six months and fourteen days); a male which arrived in Detroit with the female and lived there until 5th June 1955, (exactly twenty-five years); and a female which lived in New York's Bronx Zoo from 25th May 1906, until 5th November 1931 (twenty-five years, five months and eleven days).<sup>22</sup>

The Black rhino has been bred and born in captivity more than any other species. As far as I have been able to determine, there have been twenty-two births. They are listed below in chronological order. If there is no mention of the current status of one of these rhinos, it is known to be dead:

1. Male, 7th Oct. 1941, Chicago Zoo (Brookfield), Ill. <sup>23</sup>
2. Male, 21st Sept. 1944, Chicago Zoo (Brookfield), Ill. <sup>24</sup>
3. Female, 14th Feb. 1954, Rio de Janeiro Zoo, Brazil. <sup>25</sup>
4. Male, Rio de Janeiro Zoo. The birth was apparently in 1955 or 1956. <sup>26</sup>
5. Male, 24th Dec. 1956, Frankfurt Zoo, Germany. <sup>27</sup>
6. Male, Dec. 1956, Buenos Aires Zoo, Argentine. This animal lived only a few days. <sup>28</sup>
7. Male, Jan. 1958, Buenos Aires Zoo, Argentine. Still at Buenos Aires. <sup>29</sup>
8. Female, Rio de Janeiro Zoo, Brazil. This birth

probably took place between January and August, 1958. <sup>30</sup>

9. Male, 22nd Aug. 1958, Bristol Zoo, Great Britain. Now living at Chester Zoo, G. B. <sup>31</sup>
10. Aug. 1958, Taronga Park Zoo, Sydney, Australia (sex unknown). Present status unknown to me. <sup>32</sup>
11. Female, 12th Dec. 1958, Frankfurt Zoo, Germany. Still living at Frankfurt Zoo. <sup>33</sup>
12. 1959, Taronga Park Zoo, Sydney, Australia. It is known only that an example was born sometime in 1959. Its present status is unknown. <sup>34</sup>
13. Mar. 1960, Cincinnati Zoo, Ohio. When I visited this zoo in May 1960, Director J. F. Heusser said that a calf was breech born in March 1960, and died shortly afterwards. <sup>35</sup>
14. 1960, Taronga Park Zoo, Sydney, Australia. I am not certain about this specimen. A relative saw an American movie newsreel in July 1960, which featured a recently born rhino in Australia. Since it was also rumoured that a Black rhino birth was expected at Sydney about this time, it seems reasonable to assume that a birth did occur in 1960, probably in the early summer. Its present status is unknown. <sup>36</sup>
15. Female, 29th Aug. 1960, Rotterdam Zoo, Netherlands. Now living at Dublin Zoo, Ireland. <sup>37</sup>
16. Male, 23rd Oct. 1960 Pittsburgh Zoo. Now living at Jacksonville Zoo, Fla <sup>38</sup>
17. Female, 27th July 1961, Cincinnati Zoo, USA. Still at Cincinnati. <sup>39</sup>
18. Male, 28th Dec. 1961, Bristol Zoo, Great Britain. Still at Bristol. <sup>40</sup>
19. 1961, Buenos Aires Zoo. A birth took place sometime in 1961, and the animal is apparently still at Buenos Aires. <sup>41</sup>
20. Male, 19th Apr. 1962, Detroit Zoo, Mich. Still at Detroit. <sup>42</sup>

22. See the list of rhinos for these zoos, *infra*.

23. 1948: *Official Illustrated Guide, Chicago Zoological Park*, Chicago: The Chicago Zoological Society, p. 41.
24. Ulmer, Frederick A., Jr., 1958: On Breeding Rhinoceroses, *America's First Zoo*, Philadelphia: Philadelphia Zoological Society, Vol. 10, No. 3.
25. *Ibid.*
26. *Ibid.* Also, Levy, Dennis R. H., São Paulo, Brazil, 26th Feb. 1963.
27. See footnote (24), *supra*.
28. See footnote (16), *supra*.
29. *Ibid.*
30. Levy, Dennis R. H., *supra*: 1958: *O Jardim Zoológico*, Rio de Janeiro, No. 9, Sept., p. 24.
31. Greed, R. E., Bristol, 20th May 1959; Mottershead, G. S., Chester, 25th Sept. 1962.
32. See footnote (24), *supra*.
33. Guidebook *Zoo Frankfurt*, 1961.
34. Jarvis, C. & Morris, D., 1959: 'Species of Mammals and Birds Bred in Captivity During 1959,' *Inter. Zoo Yearb.* I, London, 1960, p. 144.
35. van Bommel, A. C. V., Rotterdam, 4 Dec. 1962.
36. Associated Press Wirephoto, 1960: *The Atlanta Constitution*, 24th Oct., p. 2; Hays, Howard R., Pittsburgh, 8th Jan. 1963.
37. Associated Press Wirephoto, 1961: *The Atlanta Journal*, 1st Aug. 1962: p. 40.
38. Sherborne, June, 1952: 'News from the Bristol Zoo, England' *International Zoo News*, Zeist, Holland, Vol. 9, No. 1, Jan. Feb., p. 6.
39. Jarvis, C. & Morris, D. 1961: 'Species of Animals Bred in Zoos and Aquaria During 1961,' *Inter. Zoo Yearb.* III, 1961, London: Hutchinson & Co., p. 264.
40. Associated Press Wirephoto, 1962: *The Atlanta Journal*, 26th Apr. 1962, p. 18.

21. Male, 14th Apr. 1963, Pittsburgh Zoo. Still living at Pittsburgh. <sup>40a</sup>
22. Sex unknown, Spring 1963. Taronga Park Zoo, Sydney, Australia.

In the sixteen cases where the month of the birth is known, it is seen that four took place in December, three in August, two in October, two in April, and one in each of the months of January, February, March, July, and September. Thus it would appear that Black rhinos are capable of breeding throughout the year in captivity. Curiously, only the breeding pairs at Buenos Aires and Rio de Janeiro have succeeded in producing three offspring. Except for Sydney where the situation is unknown, all other pairs have produced no more than two calves.

Another interesting point is that while the first six captive born rhinos are now all dead, at least one of their parents is still living.

On the unusual side, captive Black rhinos have been shown as movie stars, elected to public office, and kept as household pets.

There have been two 'film stars'. In 1932 Metro-Goldwyn-Mayer Motion Pictures (USA) purchased a female from the Hagenbecks. This animal, 'Mary', arrived in Boston in the spring of 1933 and was exhibited that summer at John Benson's animal farm at Nashua, New Hampshire.

In the winter of 1933-4, this rhino was used at MGM's Hollywood studio to film the movie *Tarzan and His Mate*. She was taught to lie down, roll over, and permit Tarzan to ride her during a 'charge' in a sequence where she was 'stabbed to death' by the hero. This was a remarkably tractable rhino.

From April to October 1934, Mary, travelling in a special truck, made a tour ahead of the film. She was sold to the Ringling Bros. Barnum & Bailey Circus and arrived at circus winter quarters, Sarasota, Florida, on 17th October 1934. She died in the summer of 1935 as the result of wounds inflicted with a pitchfork by a disgruntled circus employee. <sup>41</sup>

The second 'film star' rhino, a female, 'Molly', was owned by a private collector, Tony Diano, of North Industry, Ohio, USA. This animal was advertised as a star of the movie *Snows of Kilimanjaro*, produced in the early 1950's. During the outdoor circus and carnival season, she was leased to various travelling shows and toured the country in an immense tractor-trailer cage owned by Diano. She died in 1960 while travelling with the Cristiani Bros. Circus in Illinois. <sup>42</sup>

The rhino with 'political aspirations' was the female born in Rio de Janeiro in 1954. This animal, named 'Cacareco', was loaned to the zoo at São Paulo, Brazil, when it opened in 1958. Cacareco was an immensely popular attraction. When São Paulo's municipal council elections were held in the autumn of 1959, she received almost 100,000 write-in votes to lead all candidates. This situation was attributed to a popular protest against politicians and various local conditions. <sup>43</sup>

Cacareco returned to Rio de Janeiro in 1959, but her days as an ambassador of good will were not done. In April 1962, she was sent to Porto Alegre, Brazil, for the official opening of the zoo there. Because of cold weather, her visit was short lived; and she was flown back to Rio de Janeiro by the Brazilian Air Force on 8th May 1962. <sup>44</sup> Cacareco, undoubtedly the most popular rhino in history, died on 27th November 1962.

The household pet, a young example named 'Kifaru', lived at Borås, Sweden with the family of Sigvard Berggren. It was apparently brought from Africa in September 1961, along with other exotic animals. Unfortunately, it lived only a few months before dying from blood poisoning. <sup>45</sup>

As far as I can determine there have been over 275 different examples of *Diceros bicornis* exhibited in captivity, with at least 127 and perhaps 133 of them currently living in some seventy-eight different zoos, circuses, and menageries.

40a. Hays, Howard R., Pittsburgh, 18th May 1963.

41. Phifer, Volney, Gillette, N.J., 17th Feb. 1963.

42. Walton, Homer C., 1962: 'Tony Diano Winter Quarters,' *The Bandwagon*, The Circus Historical Society, Vol. 6, No. 3, May-June, p. 17.

43. Levy, Dennis R. H., São Paulo, Brazil, 26th Feb. 1963.

44. *Ibid.*

45. Berggren, Sigvard, 1962: *Freedom Forest*, New York: William Morrow & Company, pp. 136-7.



The following is a list of Black rhinos that I know have been exhibited in captivity in modern times. Where possible the rhinos at each zoo are listed in the order they came to the zoo. To conserve space, the data for each rhino (when fairly certain) is presented in an abbreviated system. The sexes are represented by the letters M and F. The first date shown for each animal or pair is the arrival date. Where the day, month, and year are shown, the abbreviation is done in that order, according to the European custom. Where the information is available, short comments regarding the origin or method of acquisition follow the origin date. Frequently the name of the dealer who supplied the rhino is shown.

The next date is that of the departure of the animal from the zoo (death, sale, trade, etc). Unless shown to the contrary this is the date of death. Appropriate comments regarding the cause of death or departure are shown after the departure date where this information is available.

Dates of arrival or departure are as nearly certain as I have been able to determine. Sometimes this information is exact to the day. In other cases only the year or month are available. Where dates are reasonable approximations, the date is preceded by the letter c.

Where the data for a given rhino is vague or inconsistent, I have attempted to make an explanation.

Occasional mention is made of London's 1962 census. This refers to the census of the world's captive Black rhinos conducted in 1962 by the Zoological Society of London (*International Zoo Yearbook*, Vol. III, pages 310-11). Other credits and sources of information for material in the above text as well as the list below are given by numbered references to footnotes at the conclusion.

## ARGENTINE REPUBLIC

### ZOOLOGICAL GARDEN OF BUENOS AIRES

1. M Jan. 1938 - 9/7/52.
2. F Dec. 1948 - living.
3. M Sep. 1953 - living.
4. M Dec. 1956, born - lived only a few days.
5. M Jan. 1958, born - living.
6. Born in 1959 - living.<sup>46</sup>

### ZOOLOGICAL GARDEN OF LA PLATA

1. M 23/9/57, from Frankfurt Zoo, Ge. through Tilburg firm - 9/8/59.<sup>47</sup>

### ZOOLOGICAL GARDEN OF MENDOZA

1. M 1949, Peter Rhyiner brought it to S. America along with pair for Rio de Janeiro. I do not know if it is still alive, but in 1959 the zoo was trying to locate a female.<sup>48</sup>

## AUSTRALIA

### ADELAIDE ZOOLOGICAL GARDENS

1. M 1947 - living.

*Note:* Director Vincent Haggard thinks two examples may have been exhibited for a short period before his time as director, but there is no reference to them in present zoo records.<sup>49</sup>

### MELBOURNE ZOOLOGICAL GARDENS

1. c Summer 1914 - c Autumn 1915. These dates are taken from the annual reports from 1914 until 1916.<sup>50</sup>

### PERTH ZOOLOGICAL GARDENS

1. F Feb. 1950 - living.<sup>51</sup>

### TARONGA PARK ZOO, SYDNEY

As early as 1955-6 the zoo had one male and four females. Since then there have been four births. The first took place in Aug. 1958; the second sometime in 1959; the third probably in 1960; and the fourth in the early part of 1963. It is known that there are eight Black rhinos at Taronga Park.<sup>52</sup>

## AUSTRIA

### TIERGARTEN SCHONBRUNN, VIENNA

1. M Spring, 1931 from Ruhe, Alfeld - 21/2/45, killed in air raid.
2. F 20/6/52 from Heini Demmer - living.
3. M 2/10/54 from Molinar - living.

46. See footnotes (16) and (39), supra.

47. Becerra, Jose, La Plata, 8th Sept., 1959; *International Zoo News*, Zeist, Holland, Vol. 5, No. 1, Jan.-Feb., 1958, p. 26.

48. Rhyiner, Peter, 1958: *The Wildest Game*; Philadelphia and New York: J. B. Lippincott Company, pp. 136, 139-40, 149-53; 1959 *International Zoo News*, Zeist, Vol. 6, No. 2, Mar.-Apr., p. 37.

49. Haggard, Vincent D., Adelaide, 15th May 1963.

50. See footnote (13), supra.

51. Zoological Gardens Board, Perth, 28th Oct. 1959.

52. Anonymous, 1963: 'News About Zoos - Sydney's Taronga Zoo,' *Animals*, Great Britain, 16th Apr., pages 18-9; Jones, Marvin L., Ft. Belvoir, Va, 12th Aug. 1959. See also footnotes (24) and (34), supra.

Note: Two female Sumatran rhinos at Vienna in the 1900's were labelled *Rhinoceros bicornis* by the zoo and are referred to by that name in several periodicals of that time. The excellent account of Schönbrunn rhinos by Otto Antonius (*Der Zool. Gart.* 1937, Vol. 9, Heft 1, p.20) clearly shows that the first Black rhino arrived in 1931.<sup>53</sup>

2. M 1960 - living
3. M c 1962-3 - living.<sup>54</sup>

## CHINA

### PEKING ZOOLOGICAL GARDEN

1. & 2., M & F, 27/7/57 from Heini Demmer - living.<sup>55</sup>

## BELGIUM

### ANTWERP ZOOLOGICAL GARDEN

Note: Archives were destroyed during World War II, and I have not found a definite record of Black rhinos before the war. According to Marvin Jones there are vague references to an example there around 1900.

1. F 22/9/49 - 7/3/56.
2. M 26/6/53 from Kenya - living.
3. F 3/8/56 from Kenya - living.<sup>56</sup>

## BRAZIL

### ZOOLOGICAL GARDEN OF PORTO ALEGRE

1. F Apr. 1962 borrowed from Rio de Janeiro - May 1962, returned.<sup>57</sup>

### ZOOLOGICAL GARDEN OF RIO DE JANEIRO

1. M 1949 from Ryhiner - 11/4/58.
2. F 1949 from Ryhiner - living.
3. F 14/2/54, born - 27/11/62, died. (Loaned to Sao Paulo Zoo from early 1958 until autumn 1959, and to Porto Alegre zoo in 1962.)
4. M c 1955-6 born - Dennis Levy says it did not live long and was not there in Aug. 1960.
5. F c Jan.-Aug 1958, born - died around 1961.<sup>58</sup>

### SAO PAULO ZOOLOGICAL PARK

1. F Early 1958 - Autumn 1959. Borrowed from Rio de Janeiro Zoo.<sup>57</sup>

## CANADA

### ZOOLOGICAL GARDEN, GRANBY, QUEBEC

1. F 6/9/59 - living.<sup>59</sup>

## CEYLON

### GOVERNMENT ZOOLOGICAL GARDEN

- DEHIWALA, COLOMBO
1. F 25/3/55 from H. R. Stanton, Kenya - living.

## CZECHOSLOVAKIA

### ZOOLOGICAL GARDENS PRAGUE

1. M Oct. 1932-7.
2. M 24/10/54 from Behrend - living.
3. F 21/10/58 from Ruhe, captured near Kilimanjaro around 1955 - living.<sup>61</sup>

## DENMARK

### ZOOLOGISK HAVE, COPENAAGEN

1. An adult was received on 15th May 1933, from Rhodesia through Ruhe-Alfeld. I cannot determine exactly how long it lived, but there is a likelihood it was merely on deposit for the summer of 1933.
2. M 22/7/38 - living.<sup>62</sup>

## DOMINICAN REPUBLIC

### JARDIN ZOOLOGICO, SANTO DOMINGO

1. M Apr. 1960 from Heini Demmer - died about one year after arrival.
2. F Apr. 1960 from Demmer who thinks it is still living.<sup>63</sup>

## FRANCE

### MENAGERIE DU MUSEUM D'HISTOIRE

- NATURELLE, PARIS
1. M c 1881 - Still there in 1891 when it was seen by Slater.<sup>64</sup>

### PARC ZOOLOGIQUE (VINCENNES ZOO) PARIS

1. M 5/5/33-10/11/44.
2. M From Carr Hartley, Kenya, date of arrival unknown - died 1961.
3. F 1959 - living.<sup>65</sup>

### BOUGLIONE'S CIRQUE D'HIVER, PARIS

1. M Jun. 1954 from Naples zoo - living.<sup>66</sup>

53. Fiedler, Walter, Vienna, 21st Nov. 1959.
54. Verlaeckt, Raymond, Antwerp, 17th Sept. 1958; Jones, Marvin L., Arlington, 10th Apr. 1963.
55. Levy, Dennis, R. H., São Paulo, Brazil, 26th Feb. 1963.
56. Ibid. See also footnotes (24) and (30), supra.
57. See footnote (55), supra.
58. Charbonneau, Gilles, Granby, Canada, 18th Nov. 1959.
59. Weinman, A. N., Colombo, 23rd Feb. 1960; Weinman, A. N., '1960 Report of the Zoological Gardens Dehiwala - Ceylon,' *International Zoo News*, Zeist, Vol. 9, No. 1, Jan.-Feb., 1962, p. 21.
60. Roderick, Mrs G. E., Secretary to Heini Demmer, Vienna, 14th May 1963.
61. Dobroruka, L. J., Prague, 20th Jul. 1960.
62. Andersen, Svend, Copenhagen, 5th Mar. 1959; Jones, Marvin L., Arlington, 18th May 1963, from 1933 and 1938 Annual Reports of Copenhagen Zoo.
63. See footnote (60), supra.
64. See footnote (7), supra.
65. *International Zoo News*, Zeist, Vol. 7, No. 1, Jan.-Feb.-Mar., 1960, p. 26; Jones, Marvin L., Arlington, 8th Feb. 1962, after Pierre Brouard, 22nd Jan. 1962; Rinjard, J., Paris, 26th Sept. 1958.
66. Cuneo, Franco, Naples, 22nd Mar. 1960.

## GERMANY

### TIERPARK BERLIN, EAST BERLIN

1. M 10/12/56 through Demmer - 3/10/59.
2. F 17/10/56 from Ruhe, Hannover - living.
3. M 22/7/60 from Ruhe, Hannover - 26/8/60.
4. M 6/9/61 from Ruhe, Hannover - living.\*\*

### ZOOLOGISCHEN GARTENS ZU BERLIN, WEST BERLIN

Note: This does not include the three rhinos shown in the zoo in 1878 with Hagenbeck's Nubian Caravan.

1. F Jul. 1870 from Hagenbeck's Nubian Caravan - died around 1884-7.
2. F 29/1/04 bought from Schillings - c Mar. 1908, blood poisoning.
3. F 24/5/07 gift from Negus Menelik of Abyssinia - 22/3/17.
4. M 29/11/09 bought from St Petersburg Zoo, Russia - 18/6/10, colic.
5. M 1928 from Tanganyika - 22/23 or 11/43, killed in air raid.
6. F 1940, deposited - 15/11/40 returned to owner.
7. F 4/12/40 - 1941.
8. F 5/8/54 - living.
9. M 2/7/57 - living.\*\*

### ZOO AT CHEMNITZ (NOW KARL MARX-STADT) BRANCH OF LEIPZIG ZOO

1. F Apr. 1929 from Leipzig Zoo - 1930 returned to owner, apparently Christoph Schulz.\*\*

### ZOOLOGICAL GARDEN OF COLOGNE

1. A male was sent there from Ruhe, Hannover on 6/5/51. This or another male was there in the late 1950's, but appears to have died by July 1961 as it is not mentioned in the guidebook published that month. London's 1962 census does not list rhino at Cologne.\*\*

### ZOOLOGICAL GARDEN OF DRESDEN

1. M 1928-44.
2. F 1930-6.
3. F 23/8/57-3/11/61.
4. M 6/10/60 - living.\*\*

### ZOOLOGICAL GARDEN, FRANKFURT AM MAIN

Note: This does not include those shown there by Hagenbeck's Nubian Caravan around 1870's - 1880's.

1. M 24/8/09 from British East Africa, gift of Herr von Goldschmidt Rothschild - still there in 1915, date of death unknown.

2. An example was seen there by Wm. Mann in 1929. This or another example, a male, died just after World War II.
3. M 5/5/50 - living.
4. F 31/5/51-5/1/52.
5. F 22/8/52 from Ruhe, Hannover - living.
6. M 24/12/56 Born - 8/8/57, sold to La Plata Zoo, Argentina.
- 7 F 12/12/58 Born - living.\*\*

### RUHR-ZOO GELSENKIRCHEN

Since this zoo is managed by the L. Ruhe firm, it appears to have shown a number of Black rhinos, some of which were no doubt simply awaiting shipment to other zoos. In winter of 1959 there were two, but later, in May, only one. On 24/7/59 a female was sent there from Hannover, London's census shows 1-1 there in 1962.\*\*

### ZOOLOGICAL GARDENS OF HAMBURG

1. An example arrived in May 1881. It was exhibited about a year but was not there on 12th May 1882.\*\*

### TIERPARK CARL HAGENBECK, HAMBURG-STELLINGEN

Records before World War II were destroyed. In August 1908 there were two examples shown. This or another adult pair were there in 1913. Another came there in 1922. In the winter 1930-1 a group of five was there.\*\*

Since the war the following rhinos have been in Stellingen:

1. M 28/4/53 - 16/5/53 to National Zoo, Washington, DC.
2. F 28/4/53 - 17/6/53 to San Diego Zoo.
3. M 18/4/54 - 20/5/54
4. F 18/4/54 - 16/2/55
5. M 18/4/54 - 23/9/54
6. F 18/4/54 - 13/5/54 to Pittsburgh Zoo.
7. M 18/4/54 - 13/5/54 to Pittsburgh Zoo.
8. M 18/4/54 - 1/11/55 to Munich Zoo.
9. F 4/6/55 - 1/11/55 to Munich Zoo.
10. M 1/10/56 - 2/7/57 to Berlin Zoo.
11. M 16/4/57 - 30/9/59 to Amsterdam Zoo.
12. F 16/4/57 - 30/9/59 to Amsterdam Zoo.\*\*

67. Dathe, H., East Berlin, 19th Jul. 1960, and 17th Jan. 1963.

68. Klös, Heinz-Georg, West Berlin, 12th Aug. 1958; Schlawe, Lothar, Berlin, 27th Aug. 1961; see also footnotes (3) and (4), supra.

69. Zukowsky, Ludwig, Leipzig, 16th Jul. 1960.

70. Jones, Marvin, Arlington, 25th Jul. 1961, from Zoo guide Cologne, 1961; See also footnote (18), supra.

71. Ullrich, Wolfgang, Dresden, 30th Jun. 1960, and 22nd Jan. 1963.

72. Faust, R. Frankfurt, 8th Sept. 1958; Jones, Marvin, Arlington, 10th Apr. 1963, and after Mann, Wm., 'A Visit to European Zoos', from *Explorations and Field Work of the Smithsonian Institution in 1929*; See also footnotes (5), (24), and (33), supra.

73. Jones, Marvin, Ft. Belvoir, Va., after Dennis Levy, 1959; See also footnote (18), supra.

73a. See footnote (5a), supra.

74. Hagenbeck, Carl, *Beasts and Men*; supra, p. 261; Jones, Marvin, Arlington, 1st May, 1961, after Zukowsky, Ludwig, 'Kleine Hagenbeck Erinnerungen,' *D. Zool. Gart.*, 1954, Vol. 21, N. F., pp. 14 and 16; See also footnote (41), supra.

75. See footnote (17), supra.

ZOOLOGICAL GARDEN OF HANOVER

1. An example was seen there by Wm. Mann in 1929.<sup>76</sup>

Note: The zoo was acquired by the Ruhe firm in 1932, but all records before World War II were destroyed. Since then, the following rhinos have been through the Hanover Zoo:

2. M 6/5/51 - 6/5/51 to Cologne Zoo.
3. F 6/5/51 - 12/4/52 to Circus Holzmüller.
4. M 6/5/51 - 7/5/51 shipped to USA.
5. M 8/4/52 - 10/4/52 to Circus Brumbach.
6. F 30/5/52 - 20/8/52 to Frankfurt Zoo.
7. M 22/8/52 - 30/3/53 to Circus Brumbach.
8. M 27/5/53 - 21/7/53 to Circus Brumbach.
9. M 24/7/53 - 7/8/53 to the dealer Lothar Behrend, Buenos Aires.
10. M 27/10/53 - 7/11/53 to Mexico City Zoo.
11. M 20/5/54 - 31/5/54 to Circus Brumbach.
12. M 20/5/54 - 30/6/54 shipped to New York.
13. F 20/5/54 - 30/6/54 shipped to New York.
14. F 3/7/54 - 13/8/54
15. M 19/9/54 - 27/5/55 shipped to New York.
16. F 19/9/54 - 16/5/55 to Mexico City Zoo.
17. M 20/10/54 - 20/10/54 to Prague Zoo.
18. M 28/4/55 - 8/12/55 to Mexican zoo, apparently not Mexico City.
19. F 25/5/55 - 26/5/55 to the dealer Fockelmann, Hamburg.
20. F 25/5/55 - 26/5/55 to Circus Brumbach.
21. F 25/5/55 - 8/12/55 to Mysore Zoo.
22. F 9/5/56 - 14/5/56 to Madrid Zoo.
23. M 15/4/57 - 4/6/57 to Circus Brumbach.
24. F 17/6/57 - 22/8/57 to Dresden Zoo.
25. F 17/6/57 - 24/6/60 to Mexico City Zoo.
26. M 13/10/58 - 12/12/58 shipped to New York.
27. M 14/7/59 - 14/7/59 to Barcelona Zoo.
28. M 24/7/59 - 24/7/59 to Gelsenkirchen Zoo.
29. M 20/7/60 - 20/7/60 to Barcelona Zoo.
30. F 23/9/60 - living.
31. M 12/5/61 - living.
32. M 26/5/61 - 26/5/61 shipped to New York.
33. F 26/5/61 - 26/5/61 shipped to New York.
34. M 5/9/61 - 5/9/61 to East Berlin Zoo.
35. M 1/11/62 - living.
36. F 1/11/62 - living.<sup>77</sup>

ZOOLOGICAL GARDEN LEIPZIG

1. F Exhibited for a special show in mid Apr. 1929 and sent to the Chemnitz Zoo.

2. F 6/2/41 from Tanganyika through Schulz - 24/4/47 to Kiev Zoo, USSR.<sup>78</sup>

TIERPARK HELLABRUNN, MUNICH

1 & 2., M & F, 3/11/55 from Hagenbeck - living.<sup>79</sup>

TIERGARTEN NUREMBERG

1. A young example from Schulz was on deposit for around a month in 1929.<sup>80</sup>

ZOOLOGICAL GARDEN WUPPERTAL

1. M Lived at zoo for six months in 1952.<sup>81</sup>

CIRCUS BRUMBACH

Six examples have apparently been exhibited, all sent from Ruhe, Hannover on, respectively, 10/4/55, 30/3/53, 21/7/53, 31/5/54, 26/5/55 and 4/6/57.<sup>82</sup>

CARL HAGENBECK CIRCUS, HAMBURG

1. An example was with circus when it left Germany for a Japanese tour on 3rd Feb. 1933. It may have been sold to Ueno Zoo, Tokyo.<sup>83</sup>

CIRCUS HOLZMULLER

A female was sent to this circus from Hannover on 12/4/52.<sup>84</sup>

GREAT BRITAIN

ZOOLOGICAL GARDENS, BRISTOL

1 & 2. M & F 18/10/52 - living.

3. M 22/8/58, born - Mar. 1960 sent to Chester Zoo.

4. M 28/12/61, born - living.<sup>85</sup>

ZOOLOGICAL GARDENS, CHESTER

1. F This young animal died in the winter, 1953, soon after it arrived.

2. F 3/10/59 from John Seago - living.

3. M 7/3/60 from Bristol Zoo - living.<sup>86</sup>

THE ROYAL ZOOLOGICAL SOCIETY OF

SCOTLAND, EDINBURGH

1. M 8/2/52 - Dec. 1952.

2. F 8/2/52 - Dec. 1954.<sup>87</sup>

THE ZOOLOGICAL SOCIETY OF LONDON,

REGENT'S PARK

1. M 11/9/1868 from Carl Hagenbeck - 4/12/91.

2. F 24/7/06-14/12/11.

3. M 19/5/11 from Nairobi through R. B. Woosman - 20/7/24.

4. F 15/12/22 - 20/12/38 sold.

5. F 9/7/28 presented by G. L. Bailey - 23/12/39.

6. M 18/10/46-10/12/46.

7. F 1/10/47 - living.<sup>88</sup>

76. See Jones after Mann footnote (72), supra.

77. See footnote (18), supra.

78. See footnote (69), supra.

79. Heck, Heinz, Munich, 9th Sept. 1958.

80. Seitz, Alfred, Nürnberg, 21st Jan. 1963.

81. Müller, Richard, Wuppertal, 3rd Sept. 1958, and 21st Jan. 1963.

82. See footnote (18), supra.

83. See Hagenbeck, Lorenz, footnote (15), supra.

84. See footnote (18), supra.

85. See footnotes (31) and (38), supra.

86. See Mottershead, G. S., footnote (31), supra.

87. Fisher, G. D., Edinburgh, 10th Jan. 1963.

88. Matthews, L. Harrison, London, 8th Jul. 1958; *Proc. zool. Soc. Lond.* 1911, p. 985 and 1928 p. 1036. See also footnote (2), supra.

BELLE VUE ZOOLOGICAL GARDENS,  
MANCHESTER

1. M May 1937 from H. R. Stanton, Kenya - Dec. 1937, gastroenteritis.
2. M May 1939 from Stanton - Feb 1940, diseased dorsal vertebrae.
3. F Aug. 1947 from Stanton - Sep. 1947, received in poor health.
4. M Jun. 1953 from Tanganyika through Seago - Jul. 1957.
5. F Jul. 1954 from Seago, Tanganyika - living.\*\*

THE ZOOLOGICAL SOCIETY OF LONDON,  
WHIPSNADE ZOOLOGICAL PARK

1. M 14/6/60 from J. Seago - 15/11/62 nephritis.
2. F 14/6/60 from J. Seago - 28/12/60 circulatory trouble.
3. 14/6/60 deposited by Seago, probably a female - 12/7/60 returned to Seago\*\*.
4. & 5. M & F, 27/7/63 from J. Seago - living.

HUNGARY

ZOOLOGICAL GARDENS, BUDAPEST

1. M May 1929 from Ruhe, Hanover - Apr. 1941.\*\*

INDIA

MUNICIPAL HILL GARDEN ZOO, AHMEDABAD  
Reuben David, Sup't., on 22/10/62 said the zoo was trying to obtain a pair of Black rhinos. This is worthy of note since rhinos may now be at this zoo.\*\*

SRI CHAMARAJENDRA ZOOLOGICAL GARDENS,  
MYSORE

- 1 & 2, M & F, 17/1/56 - living. This pair obtained through Albert Meems. Female appears to have come originally from L. Ruhe, Hanover.\*\*

IRELAND

ROYAL ZOOLOGICAL SOCIETY OF IRELAND,  
DUBLIN

1. F May 1962 from Rotterdam Zoo - living.\*\*

ISRAEL

JERUSALEM BIBLICAL ZOOLOGICAL GARDEN

- 1 & 2. M & F Arrived in late 1962 or early 1963 - living.\*\*

ITALY

ZOOLOGICAL GARDENS OF NAPLES

1. M 30/7/51 caught by Pellegrino in Tanganyika - 18/3/52, intestinal infection.
2. M 30/7/51 from Pellegrino, Tanganyika - 10/6/54 to Cirque d'Hiver, Paris.
- 3, 4 & 5. London's census shows 1/2 there in 1962.\*\*

ROME ZOOLOGICAL GARDEN

1. M 1910 from Hagenbeck, Stellingen - Jan. 1915.\*\*
- 2 & 3, M & F, arrived around 1930-2 - died around 1942-3.\*\*

JAPAN

FUKUOKA MUNICIPAL ZOO

- 1 & 2 According to S. Yamamoto, Kobe, a pair was in this zoo in Jan. 1963.\*\*

KOBE OJI ZOO, KOBE

1. F 2/5/59 from Carr Hartley, Kenya, through Far East Trading Co. - living.
2. M 1/9/59 obtained same way - living.\*\*

MUNICIPAL HIGASHIYAMA ZOOLOGICAL  
GARDENS, NAGOYA

1. F 29/5/54-6/6/56.
2. F 4/10/56 - living.\*\*

TENNOJI MUNICIPAL ZOO, OSAKA CITY

1. M 25/5/55 - 20/10/61 tuberculosis.
2. F 25/7/60 - 3/1/61 gastritis and enteritis.
3. F 1/8/61 - living.\*\*

MARUYAMA ZOO, SAPPORO

1. M There in 1962 and still living in Jan. 1963.\*\*

UENO ZOOLOGICAL GARDENS, TOKYO

1. An example obtained from Hagenbeck in early 1930's died around beginning of World War II.\*\*
2. M Was there in 1957 - living.
3. F 1957 - living.\*\*

89. Iles, Gerald T., Montreal, Canada, 24th Oct. 1960.
90. Jarvis, Caroline, London, 13th May 1963; Langer, Marcel in *International Zoo News*, Zeist, Vol. 7, No. 4, Aug.-Oct., 1960, p. 134.
91. Anghi, Cs. G., Budapest, 1960.
92. David, Reuben, Ahmedabad, 22nd Oct. 1962.
93. Marigowda, M. H., Mysore, 26th Oct. 1960; See also footnote (18), supra.
94. See footnote (35), supra.
- 94a. Jarvis, Caroline, London, 2nd May 1963.
95. See footnote (66), supra.
96. Knottnerus-Meyer, 1928: *Birds and Beasts of the Roman Zoo*, pp. 203-6.
97. Bronzini, Ermanno, Rome, 18th Aug. 1959.
98. Yamamoto, Shizuro, Kobe, 14th Jan. 1963.
99. Ibid.
100. Kano, Yoshio, Nagoya, 16th May 1963.
101. Tarumoto, Isao, Osaka City, 4th Apr. 1963.
102. See footnote (98), supra. Also, see *Inter. Zoo Yearb. III*, pages 310-11.
103. See Jones after Tadamichi Koga footnote (15), supra.
104. Nakagawa, S., and Nishiyama, T., 1959; 'Broken Horn of Black Rhinoceros Grows Again,' *Animals and Zoo*, Tokyo, Vol. II, No. 2, No. 109, Feb.

## MEXICO

### CHAPULTEPEC ZOOLOGICAL PARK, MEXICO CITY

1. M 1953 from L. Ruhe, Hannover Zoo - living.
  2. F 1955 from Gelsenkirchen Zoo through L. Ruhe - 1959 killed by the male.
  3. F 1960 from L. Ruhe Hannover zoo - living.<sup>105</sup>
- ATAYDE BROS. CIRCUS, MEXICO  
This circus was supposed to receive an example in 1959. Recent reports say a rhino is currently exhibited.<sup>106</sup>

## NETHERLANDS

### NATURA ARTIS MAGISTRA, AMSTERDAM

1. M 7/5/31 Deposited by Schulz - 13/5/34 sent by Schulz to Brookfield Zoo.
2. F 14/8/31 Deposited by Hagenbecks and returned to them, date unknown.
3. F 17/5/37 purchased from Schulz - 1/4/45.
4. M 17/5/37 purchased from Schulz - 14/4/59.
5. F 5/6/48 purchased from Sherer - living.
6. M 2/10/59 from Hagenbeck Stellingen - 27/10/60.
7. F 2/10/59 Also from Hagenbeck - living.
8. M 19/5/61 purchased from Schulz, Okahandja - living.<sup>107</sup>

### BURGERS' NATUUR-DIERENPARK, ARNHEM

1. M May 1951 from Peters, Arusha - Oct. 1958, colic.
2. F May 1951 also from Peters - 1951, died soon after arrival.
3. M May 1959 from Schulz, Okahandja - living.
4. F June. 1961 from Kenya through van den Brink - 1961 died soon after arrival.
5. F Jul. 1962 from Rotterdam Zoo - living.<sup>108</sup>

### ZOOLOGICAL GARDEN, ROTTERDAM

1. M 1928-41.
2. F c 1948 - 5/7/62 sent to Arnhem Zoo.
3. M 10/5/50-14/4/55.
4. M 18/7/55-2/4/62.
5. F 29/8/60, Born - 11/5/62 sent to Dublin Zoo.<sup>109</sup>

## PHILIPPINES

### MANILA ZOOLOGICAL & BOTANICAL GARDENS

1. M 13/8/59 - living.

2. ? 13/8/59 - 26/3/60 tetanus.<sup>110</sup>

## POLAND

### ZOOLOGICAL GARDEN OF WROCLAW (formerly BRESLAU, GE.)

1. ? 15/5/1888 from a travelling Nubian African show - 24/7/92 tuberculosis.
2. F 26/10/06 from Ruhe, Alfeld - 7/1/07, invagination of small intestine.
3. M 20/9/32 deposited - 23/11/32 returned to owner.<sup>111</sup>

## PORTUGAL

### ZOOLOGICAL GARDEN, LISBON

1. M 1954 from Angola - living.
2. F 1958 from Angola - living.<sup>112</sup>

## SOUTH AFRICA

### HERMANN ECKSTEIN PARK ZOOLOGICAL GARDENS, JOHANNESBURG

1. M 7/3/14-21/3/48. (World longevity record.)
2. F Jun. 1924-24/4/48.
3. M Dec. 1952-26/4/53.<sup>113</sup>

### NATIONAL ZOOLOGICAL GARDENS OF SOUTH AFRICA, PRETORIA

1. F 31/12/14 from Gatoona, Southern Rhodesia-15/11/42.
2. M 16/6/44-13/5/55 tuberculosis.
3. F 26/11/53 - living.
4. M c 1962-3 - living.<sup>114</sup>

## SOUTH WEST AFRICA

### ZOOPARK OKAHANDJA

Two males are there at present, according to the returns from London's 1963 census.

## SPAIN

### ZOOLOGICAL PARK OF BARCELONA

2 males were sent there from Ruhe, Hanover on 14/7/59 and 20/7/60, respectively. A pair is currently exhibited.<sup>115</sup>

### ZOOLOGICAL GARDEN OF MADRID

A female was shipped there by Ruhe, Hanover on 14/5/56. There is no rhino there at present.<sup>116</sup>

105. Monteverde, Humberto Ortiz, Mexico City, 14th Mar. 1963.

106. *The Circus Review*, Portland, Tennessee, Winter Issue, Vol. 7, No. 1, 1959; Lyon, Doug. Burbank, California, 20th Apr. 1963.

107. Pelt, W. G., Amsterdam, 7th Aug. 1959, and 13th Jul. 1962.

108. van Hooff, J. A. R., Arnhem, 21st Jan. 1963.

109. See footnote (35), supra.

110. Almazan, Reuben G., Manila, 18th Oct. 1962.

111. See footnote (6), supra.

112. Levy, Dennis R. H., Paris, 10th Apr. 1963.

113. See footnote (20), supra.

114. Bigalke, R., Pretoria, 3rd Sept. 1958; Bigalke in *Proc. zool. Soc. Lond.* 1945-6, pp. 323-6; Jarvis, Caroline, London, 2nd May 1963.

115. Brouard, Pierre, Paris, 30th Sept. 1962; Jonch, Antonio, 1960; 'News from Barcelona,' *International Zoo News*, Zeist, Vol. 7, No. 3, Jun.-Jul. p. 68. See also footnote (18), supra.

116. Brouard, Pierre, supra; See also footnote (18), supra.

PRIVATE ZOO OF SALVADOR DALI

Wyman Carroll says he sent a pair to S. Dali but Pierre Brouard was informed that there were no rhinos at the zoo when he visited Spain in Sep. 1961 and Feb. 1962.<sup>117</sup>

SWEDEN

SIGVARD BERGGREN, BORAS

A young animal was privately owned by the Berggren family. It arrived around September 1961 but lived only a few months.<sup>118</sup>

SWITZERLAND

ZOOLOGISCHER GARTEN, BASLE

1. An example came from Ruhe-Hannover for a special exhibit in Jul. 1935. It died *en route* from Basle to a new zoo in Geneva.

2. F 25/11/54 deposited - 1/3/55 returned to owner, Circus Knie.<sup>119</sup>

ZOLOGISCHER GARTEN, ZURICH

1 & 2, M & F, 1949 - living.<sup>120</sup>

CIRCUS KNIE

1. F 1949 - living. Once loaned to Basle zoo.<sup>121</sup>

USSR

KIEV ZOOPARK, KIEV

1. A female was sent there from Leipzig, Ge. zoo in Apr. 1947 - died in 1960.<sup>122</sup>

LENINGRAD ZOOPARK, LENINGRAD (formerly ST PETERSBURG)

1. A male was sold by St Petersburg zoo to Berlin zoo in Nov. 1909.

2. Another male arrived in 1954 and is still living.<sup>123</sup>

MOSKOVSKI ZOOPARK, MOSCOW

1. F Jun. 1954 - living.<sup>124</sup>

UNITED ARAB REPUBLIC

GIZA ZOOLOGICAL GARDEN, CAIRO

1. F 29/5/10 presented by H. H. Prince Yusef Kamal Pasha - 31/1/18.<sup>125</sup>

2. M 18/12/31-7/3/42.

3. F 15/5/32-17/8/41.

4. F 15/5/32-7/1/43.

5. M 3/3/51-29/12/52.

6. F 3/3/51-14/1/60.

7. M 20/12/60 - living.

8. F 20/12/60 - living.<sup>126</sup>

UNITED STATES OF AMERICA

California

ROEDING PARK ZOO, FRESNO

A pair arrived at Thousand Oaks, Calif. Nov. 1962 moved to Fresno around Apr. 1963.<sup>127</sup>

SAN DIEGO ZOOLOGICAL GARDEN

1. F 30/8/52 from Kibwezi area, Kenya, - living.

2. M 6/7/53 from Hagenbeck's Tierpark - living.<sup>128</sup>

SAN FRANCISCO ZOOLOGICAL GARDENS

1. M 1957 - living.<sup>129</sup>

LOUIS GOEBEL'S JUNGLE LAND, THOUSAND OAKS

1 & 2, M & F Nov. 1962 from Ruhe Hannover - sent to Fresno zoo in 1963.<sup>130</sup>

Colorado

CHEYENNE MOUNTAIN ZOO, COLORADO SPRINGS

1. M 21/5/56 from L. Ruhe, Inc. 15/8/56.

2. F 21/5/56 from Ruhe - 21/5/57 traded back to Ruhe.

3. M 21/5/57 from Ruhe - living.

4. F 21/5/57 from Ruhe - living.<sup>131</sup>

DENVER ZOOLOGICAL GARDENS

1 & 2, M & F 16/2/60 from Kenya - living.<sup>132</sup>

District of Columbia

NATIONAL ZOOLOGICAL PARK, WASHINGTON

1. M. 2/8/23-13/3/25.

2. M 22/7/30-18/8/43.

3. F 21/5/48 deposited and returned to owner, date unknown.

4. M 7/8/48-12/2/51.

5. M 29/5/53 from Hagenbeck, Stellingen-12/7/57.

6. F 29/5/53 - spring or summer 1959.

7. M summer 1960 - living.

8. F 31/8/61 - living.<sup>133</sup>

117. Brouard, Pierre, *supra*.

118. See footnote (45), *supra*.

119. Wackernagel, H., Basle, 6th June. 1959; See also footnote (5), *supra*.

120. Hediger, H., Zurich, 19th May 1959.

121. Kuhn, Hans-Jürg, Atlanta, Georgia, Jul. 1962.

122. Sosnovskii, Igor, Moscow, 14th Aug. 1959; see also footnote (69), *supra*. Levy, Dennis, Leningrad,

123. Jarvis, Caroline, London, 2nd May 1963; Schlawe, Lothar, Berlin, 27th Aug. 1961; Sosnovskii, *supra*.

124. Sosnovskii, Igor, *supra*; see also Levy, footnote (122), *supra*.

125. See footnote (14), *supra*.

126. Monastery, A. El, Cairo-Giza, 21st Mar. 1963.

127. Miles, Mrs Kay, Fresno, 13th Dec. 1962.

128. Pournelle, George H., San Diego, 24th Jul. 1958.

129. Baldwin, Carey, San Francisco, Sept. 1959.

130. See footnote (127), *supra*.

131. Davis, Don G., Colorado Springs, 16th Apr. 1959.

132. Frazier, Julian, Denver, 16th Nov. 1962.

133. Jones, Marvin L., Arlington, 11th Sept. 1961; Reed, Theodore H., Washington, 5th Sept. 1958.

## Florida

### JACKSONVILLE MUNICIPAL ZOO

1. F 15/2/61 from Kenya through Miami Rare Bird Farm - living.
2. M Sep. 1961 from Pittsburgh Zoo - living.<sup>134</sup>

## Illinois

### CHICAGO ZOOLOGICAL PARK, BROOKFIELD

1. M. May 1934 - living.
2. F May 1934 - living.
3. M 1934 from Amsterdam zoo through Schulz - Jul. 1943 sold to Milwaukee zoo.
4. M 7/10/41, born - 5/11/43 sold to Pittsburgh Zoo.
5. M 21/9/44 born - Jun. 1945 sent to Ringling Bros., Barnum & Bailey circus.
6. F May 1956 - living.<sup>135</sup>

## Indiana

### MESKER PARK ZOO, EVANSVILLE

1. M May or Jun. 1956 from L. Ruhe - living.<sup>136</sup>

## Michigan

### DETROIT ZOOLOGICAL PARK, ROYAL OAK

1. M 5/6/30 - 5/6/55.
2. F 5/6/30 - 19/12/56.
3. M 18/5/57 - living.
4. F 18/5/57 - living.
5. M 19/4/62, born - living.<sup>137</sup>

## Missouri

### SWOPE PARK ZOOLOGICAL GARDENS, KANSAS CITY

1. M Oct. 1960 - Jun. 1961 traded back to dealer for No. 3 below.
2. F Oct. 1960 - died within a week of hepatitis.
3. M Jun. 1961 - living.
4. F Jun. 1961 - c Aug. 1961, heart attack.<sup>138</sup>

### ST LOUIS ZOOLOGICAL PARK

1. M Mar. or Apr. 1929 from Ruhe-Alfeld - 27/12/29
2. & 3 Two females arrived 15/7/38 - living.<sup>139</sup>

## New Hampshire

### JOHN BENSON'S ANIMAL FARM, NASHUA

1. F Apr. or May 1933 from Hagenbeck, Hamburg - Sept. or Oct. 1933, sent to her owner, Metro-Goldwyn-Mayer motion picture studios, Hollywood, California.<sup>140</sup>

## New York

### CENTRAL PARK ZOO, NEW YORK

1. F 14/12/1886 from W. W. Cole Circus - It was seen there by Gustave Loisel in 1906 and seems to have died in 1906.
2. M c 1940 deposited by Schulz - Apr. 1941 sent to Bronx Zoo.<sup>141</sup>

### NEW YORK ZOOLOGICAL PARK

1. F 25/5/06 - 5/11/31.
2. M 21/12/06 - 19/2/10.
3. F 25/1/32 - 19/3/41.
4. M 17/4/41 from Central Park zoo through Schulz - 15/3/54.
5. M 10/6/55 - living.<sup>142</sup>

### PROSPECT PARK ZOO, BROOKLYN

1. M 12/7/54 - living.
2. F 12/7/54 - 12/1/56.<sup>143</sup>

## Ohio

### CINCINNATI ZOOLOGICAL PARK

1. M 26/7/35 - 12/9/56.
2. & 3, M & F, 12/11/58 - living.
4. A calf was breech-born in Mar. 1960 but did not survive.
5. F 27/7/61 Born - living.<sup>144</sup>

### CLEVELAND ZOOLOGICAL PARK

1. M 22/10/55 captured in Tanganyika by Willy deBeer and zoo's East African Expedition - living.
2. F 22/10/55, captured by same expedition - 17/2/62, malignancy of bladder and kidneys.<sup>145</sup>

### COLUMBUS MUNICIPAL ZOO, POWELL

1. F 1941 - living.
2. M. 1953 - living.<sup>146</sup>

### TONY DIANO'S PRIVATE MENAGERIE, NORTH INDUSTRY

1. F c 1953-60. Diano used this rhino on his own Diano Bros. Circus in 1953. He leased it to World of Mirth Carnival in 1954 and to Cristiani Bros. Circus for the 1956, '58 and '60 seasons. It died with Cristiani in Illinois in summer 1960.<sup>147</sup>

### TOLEDO ZOOLOGICAL GARDENS & AQUARIUM

1. F May 1926 from dealer Ellis Joseph - 2/7/40.
2. F 1948 - living.<sup>148</sup>

134. Hays, Howard R., Pittsburgh, Pa., 8th Jan. 1963; Miller, Eleanor, Jacksonville, 14th Aug. 1961.
135. Chicago Zoological Society, 1954: *The Brookfield Zoo 1934-54*, Chicago: R. R. Donnelley & Sons Company, p. 30; See also footnotes (21a), (23), and (24), supra.
136. Davis, Don G., Colorado Springs, 21st Aug. 1962.
137. McGinnis, Frank G., Detroit-Royal Oak, 31st Jul. 1958; see also footnote (40), supra.
138. Cully, William T. A., Kansas City, 17th Nov. 1962.
139. Jones, Marvin, Arlington, 1st May 1963; Vierheller, George P., St Louis, 10th Apr. 1959.
140. See footnote (41), supra.
141. Galm, John, New York, 16th Jan. 1963; see also footnotes (9) and (11), supra.
142. Davall, Grace, New York, 29th Aug. 1958.
143. Galm, John, supra.
144. Heusser, J. F., Cincinnati, 3rd Apr. 1959; See also footnote (37), supra.
145. Reuther, Ronald T., Cleveland, 7th Apr. 1959, and 16th Nov. 1962.
146. DiSabato, Louis R., Columbus-Powell, 9th Apr. 1959.
147. Bradbury, Joseph T., Atlanta, Georgia, 1962, after Walton, Homer C., Carrollton, Ohio. See also Walton in footnote (42), supra.
148. Skeldon, Philip C., Toledo, 5th Oct. 1959, and 11th Jan. 1962.



## Pennsylvania

### PHILADELPHIA ZOOLOGICAL GARDEN

1. F 19/9/12 from Hagenbeck, Hamburg - 28/3/17.
2. & 3, M & F 11/5/48 gift of Frank Palumbo through Meens Bros. & Ward - living.<sup>149</sup>

### HIGHLAND PARK ZOOLOGICAL GARDENS, PITTSBURGH

1. M 5/11/43 from Brookfield zoo, Chicago - 1952 pneumonia.
- 2 & 3, M & F, 23/5/54 from Hagenbeck Stellingen - living.
4. M 23/10/60 born - 10/9/61 sold to Jacksonville Zoo, Fla.
5. M 14/4/63 born - living.<sup>149</sup>

## Rhode Island

### ZOO AT PAWTUCKET

1. M Spring 1958 on loan from Ringling-Barnum Circus - died winter 1958-9.<sup>149</sup>

## Tennessee

### MEMPHIS ZOOLOGICAL GARDEN & AQUARIUM

1. F 4/8/58 from Ringling-Barnum Circus - living.<sup>149</sup>

## Texas

### MARSALIS PARK ZOO, DALLAS

1. M 25/9/56 - Mar. 1957 died from injuries received in Africa.
2. F 25/9/56 - living.
3. M Oct 1959 - living.<sup>149</sup>

### FORT WORTH ZOOLOGICAL PARK

1. F 1954 - living.
2. M 1956 - Aug. 1959.<sup>149</sup>

### HOUSTON ZOOLOGICAL GARDENS

- 1 & 2, M & F, obtained sometime after Mar. 1961 - living.<sup>149</sup>

### SAN ANTONIO ZOO & AQUARIUM

1. F 1953 from Meems Bros. and Ward - living.
2. M 1957 from H. R. Stanton, Kenya - living.<sup>149</sup>

## Wisconsin

### WASHINGTON PARK ZOO, MILWAUKEE

1. M 8/7/43 from Brookfield zoo, gift of *Milwaukee Journal* - 26/7/57 stroke.<sup>149</sup>

## Circuses

### AL G. KELLY & MILLER BROS. CIRCUS

1. c 1949 - 2/3/53 died in winter quarters, Hugo, Oklahoma.

2. F Jun. 1955 - died before close of 1955 season.

3. M 1960 or 1961 from Famous Cole circus - living.<sup>149</sup>

P. T. Barnum's Great Travelling Exposition and World's Fair (1872-3); P. T. Barnum's Great Roman Hippodrome (1874-5); P. T. Barnum's New and Greatest Show on Earth (1876-80); P. T. Barnum's Greatest Show on Earth and Howes' Great London Circus and Sanger's Royal British Menagerie (1881-7). *Note:* These were the official titles of Barnum's Circus during the years shown. These were the years before his association with James Bailey during which *Diceros bicornis* was shown.

An example appears to have first been exhibited in 1872. It was leased to Older & Chandler in 1873, repossessed, and seems to have been with Barnum's show through 1878. In 1883 a 'two-horned rhinoceros' was advertised. When the female arrived at New York's Central Park in 1886, the *New York Times* said the Barnum Circus had the only other *Diceros bicornis* in America. Hence, it seems Barnum had at least one and maybe two examples.<sup>149</sup>

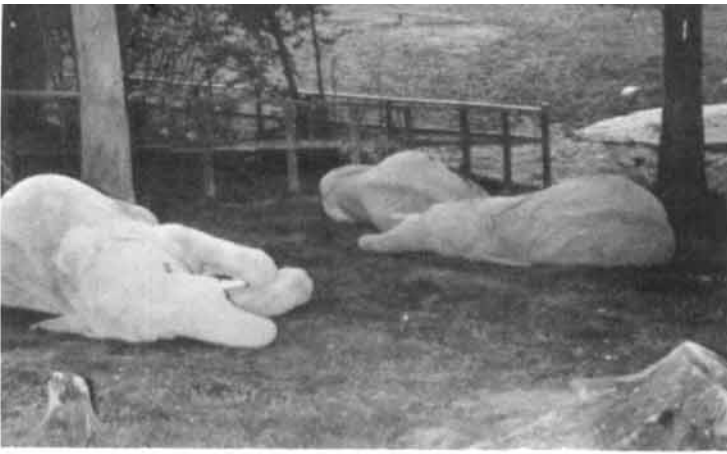
### BARNUM & BAILEY'S GREATEST SHOW ON EARTH (1888-1918)

The 1905 and 1917 programmes contain vague and general references to a Black rhino in the menagerie. No other information is known.<sup>149</sup>

### W. W. COLE CIRCUS

1. F 1878 from Hamburg, Ge - Dec. 1886 sold to Central Park Zoo.<sup>149</sup>

149. 'The Rhinos Reach the Zoo 1948,' *Fauna*, Phila. Zool. Soc., Vol. 10, No. 2, June 1948, pp. 48-9; Ulmer, Frederick A., Jr., Philadelphia, 31st Jul. 1958.
150. House, Edward J., Pittsburgh, 24th Jul. 1958; See also footnotes (36) and (40a), supra.
151. Bradbury, Joseph T., Atlanta, Georgia, 1961, after Ed Tracy, Providence R. I.; Anonymous 'Ringling Animals to Remain Near New York,' *The White Tops*, Rochelle, Illinois, The Circus Fans Association, Inc., Vol. 31, No. 3, May-Jun. 1958, p. 18.
152. Gray, Raymond S., Memphis, 26th May 1959, and 15th Mar. 1963.
153. Fontaine, Pierre A., Dallas, 21 Apr. 1959; see also footnote (60), supra.
154. Brown, J. R., Ft. Worth, 14th Jan. 1960.
155. Jones, Marvin L., Arlington, 4th Apr. 1963, after Conway, William G., New York.
156. Farley, Leonard V., San Antonio, 19th Aug. 1959.
157. Speidel, George, Milwaukee, 8th Apr. 1959.
158. Al. G. Kelly & Miller Bros. Circus, Hugo, Oklahoma; Annual Programme and Official Route 1949; Anonymous in *Billboard*, Chicago, June 1955; Harshman, James L., 'Al G. Kelly & Miller Brothers Circus,' *The White Tops*, Rochelle, Ill., Vol. 34, No. 4., Jul.-Aug. 1961, p. 8 Woodcock, William, Hugo, 1954, and c 1959.
159. See footnotes (8) and (9), supra.
160. Barnum & Bailey Circus programmes for 1905 and 1917.
161. See footnotes (9) and (11), supra.



**Figure (i) (Left)** The three African elephants (*Loxodonta africana*) studied by Dr. Kühme at Kronberg Zoo, Germany (see pages 113–121) are shown in their sleeping place, fast asleep, at 5.30 a.m.

**Figure (ii). The fighting ritual of the African elephant.**

**Figure (ii) a.** The frontal encounter of two aggressive elephants.

**Figure (ii) b.** Each elephant tries to press the base of its trunk against its opponent's.

**Figure (ii) c.** The frontal threat is repeated.

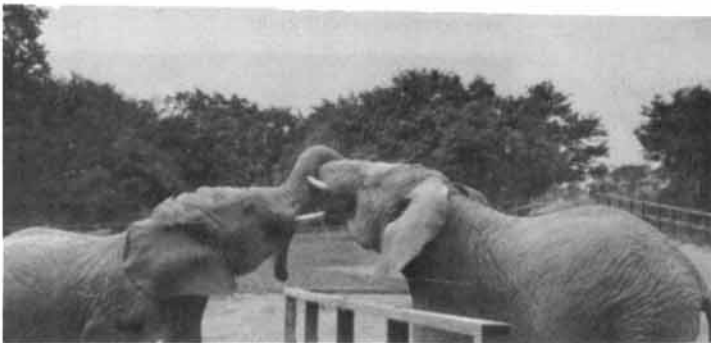
**Figure (ii) d.** The elephants would often interpose a barrier between each other when fighting.



a



b



d



c



Figure (iii) a. The loser would sometimes thrust his rump against the victor who would try and drive him forward with his tusks (this is the first stage of mating behaviour).

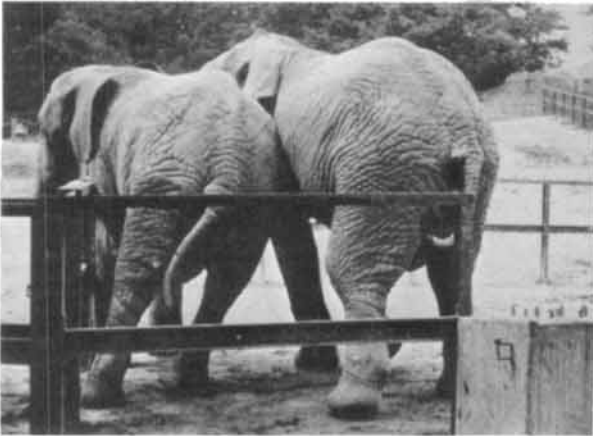


Figure (iii) b. The socially inferior animal then tries to avoid the frontal position.



Figure (iv) c. Sometimes they would try and scrape earth or hay on to it with a fore-foot.

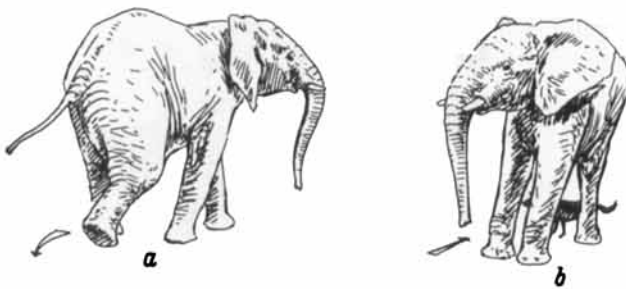


Figure (iv) a & b. If another animal came into the enclosure the elephants would step backwards towards it and try and tread on it.

Figure (vi). By the third year of Dr Kühme's observations the bull elephant had learned to throw grass and earth very accurately at his 'enemies'.

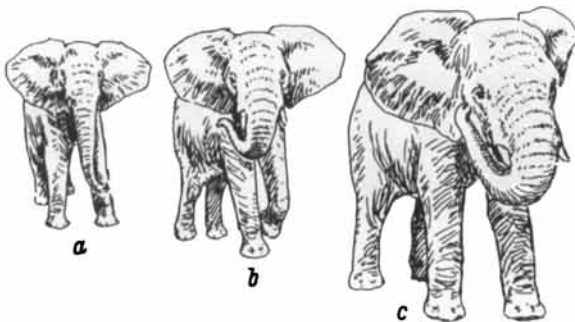
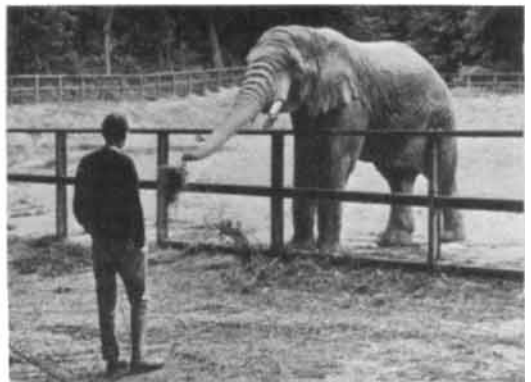


Figure (v). An aggressive elephant raises his head, spreading his ears (a), as he gets nearer he loops his trunk (b) but a short distance from the 'enemy' he feels his temporal gland as though seeking reassurance (c).



GEORGE W. COLE and FAMOUS COLE  
CIRCUSES

Note: The name of this circus was changed from the former to the latter in 1957; neither have any relation to the W. W. Cole Circus.

1. M Jun. 1955-60 or 1961 moved to the Al. G. Kelly & Miller Bros. Circus. Famous Cole and Kelly-Miller had common ownership and shared winter quarters at Hugo, Oklahoma.<sup>165</sup>

CRISTIANI BROS. CIRCUS

1. F Leased from Tony Diano for circus seasons of 1956, 1958 and 1960. Died while on tour in Illinois in 1960.

2. M Winter 1959 from Ruhe - late 1959 or early 1960.<sup>166</sup>

MONTGOMERY QUEEN'S CALIFORNIA

MENAGERIE, CARAVAN, and DOUBLE CIRCUS

1. Acquired for opening of 1877 season at San Francisco - sold to Sells Bros. at auction in 1878.<sup>167</sup>

OLDER & CHANDLER CIRCUS

The Barnum rhino was leased to this circus for its first and only season in 1873.<sup>168</sup>

RINGLING BROS., BARNUM & BAILEY

COMBINED SHOWS

1. M c 1927 - died at Knoxville, Tenn. on 25/10/35 of pneumonia.

2. F c 1927 - died late in 1933 or early 1934.

3. F 17/10/34 arrived at Sarasota, Fla. from M G M motion pictures - died summer 1935.

4. M Jun. 1945 received at Washington, DC from

Brookfield Zoo - died 31/5/53 at Baltimore, Md. of dysentery and pneumonia.

5. M Spring 1955, received at Madison Square Garden, New York. - Spring, 1958 loaned to Pawtucket, Rhode Island zoo.

6. F Spring 1955, also received in New York - Aug. 1958 sold to Memphis Zoo.<sup>169</sup>

SELLS BROTHERS CIRCUS

The example purchased from Montgomery Queen in 1878 was said to be still there in 1881. However, at least some advertisements for 1880-1 do not mention the African Black rhino, but advertise an Asiatic two-horned rhino. From 1878-87 the Sells brothers operated a subsidiary show which, from 1882-87 was named S.H. BARRETT'S CIRCUS AND MENAGERIE. In 1883 this show advertised 'A 5 ton performing Black rhinoceros'. It seems the *Diceros bicornis* and *Didermoceros sumatrensis* were used interchangeably between the two circuses owned by the Sells.<sup>167</sup>

METRO-GOLDWYN-MAYER MOTION PICTURES,  
HOLLYWOOD, CALIFORNIA

1. F c Oct. 1933 from Hagenbeck, Hamburg after spending summer 1933 at Benson's Animal Farm - Oct. 1934 sold to Ringling-Barnum Circus.<sup>168</sup>

YUGOSLAVIA

ZOOLOGICAL GARDENS OF ZAGREB

1. A female rhino presumably *Diceros bicornis*, arrived in late 1962 or early 1963.<sup>169</sup>

162. See *Billboard* and Woodcock, William, from footnote (158), supra.

163. Anonymous, Cristiani Bros. Circus 1956 and 1960; See also footnotes (42) and (147), supra.

164. See footnote (10), supra.

165. See footnote (8), supra.

166. Ringling Bros. Barnum & Bailey Circus, 1945 *Route Book*, p. 16, 1955 *Route Book*, p. 115, *The White Tops*, Rochelle, Vol. 9, No. 2-3, Dec., 1935-Jan., 1936, p. 26; See also footnotes (24), (41), (151), and (152), supra.

167. Chindahl, George L., supra, p. 107; Parkinson, Robert L., Cambridge, Ill., 12th Mar. 1961; see also footnote (8), supra.

168. See footnote (41), supra.

169. Klimek, K., 1962: *International Zoo News*, Zeist, Vol. 9, No. 5, Oct.-Dec., p. 155.

ETHOLOGY OF THE  
AFRICAN ELEPHANT  
(*Loxodonta africana* Blumenbach 1797)  
IN CAPTIVITY  
by Wolfdiétrich Kühme

Max-Planck-Institut für Verhaltensphysiologie, Seewiesen/Obb, and Georg von Opel-Freigehege für Tierforschung, e. V., Kronberg, Germany

IN Kronberg Zoo near Frankfurt-am-Main, three East African bush elephants (♂ 1=a, ♂ 2, ♀) have been living since 1955, and are

now about eleven years old. Unlike the usual practice in zoos they are allowed to move about freely in an enclosure which is some 3,800 cu. m. in area and includes a wood and meadow as well as a stable which is heated during the winter. The elephants are never chained. Human influence is limited to feeding, to which they are attracted, and to the cleaning of the enclosure during which they are either shut out or kept at a distance by threatening gestures. Unfortunately, from year to year they are becoming more used to begging for food from the public. Behavioural studies on such untrammelled animals are very