

Rijksmuseum van Geologie en Mineralogie 1878 - 1978

A retrospect

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Introduction

On reading through the annual reports of the Rijksmuseum van Geologie en Mineralogie (RGM) from its earliest years onwards, one finds three main current themes: the need for more staff, more room, and more money expressed in various keys, in a tone of despair or with confidence in the fulfillment of a reasonable request. This prevented the story thus reported from becoming monotonous.

In the course of the hundred years of its existence the RGM had to serve different functions. According to the dominating function three periods may be distinguished. The first period bears the stamp of K. Martin's personality. It lasted nearly 45 years, from 1878 to 1922; the RGM was then first and foremost a centre of research. During the second period, from 1922 till 1955, it had to function chiefly as an institute for the training of students, the Museum s. str. then

receiving a rather stepmotherly treatment. The third period, from 1955 onwards, is marked by the re-emergence of the Museum, separated from the Institute and finding its way as the National Museum of Geology and Mineralogy, as from the first implied by its name.

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The birth of the RGM

Up to 1878, geological and mineralogical collections formed part of 's Rijks Museum van Natuurlijke Historie', the National Museum of Natural History. This museum, founded in 1820 and established at Leiden, was closely linked with the University there. One of the staff members used to be in charge of the geological collections; the last 'conservator' (curator) was E. M. Beima, who died in 1873 (Gijzen, 1938).

At the time geology was a much neglected, little known science at Leiden University. No geologist was available to train students in the geological sciences. The professor of zoology had to give courses in geology, much to his dislike since he knew very little about the subject (Martin, 1938). This situation was apparently considered unsatisfactory, for in 1876 a law was accepted in accordance with which the University at Leiden, as well as those at Groningen and Utrecht, were required to establish a chair of geology. As a candidate for the Leiden professorship the then director of the Natural History Museum, H. Schlegel, put forward K. Martin, a young German geologist who, led by his interest in glacial erratics, had previously visited the Leiden Museum in order to study the famous Staring collection, in which erratics are so richly represented. This chance visit resulted in his appointment as ordinary professor of geology at the Leiden University in October 1877. He was to teach geology and mineralogy, including palaeontology and crystallography.

The next year, on the first of November 1878, Martin was also put in charge of the geological and mineralogical collections, which continued to be housed in the Natural History Museum. In his ripe old age Martin described the situation as he found it when he took up his task in 1878 (Martin, 1938): 'the collections were in an utterly miserable condition, and no wonder, since no official had been charged with the care of them . . . Beautiful minerals and rock specimens, for which elsewhere no space was available, were tightly packed together on top of the high store-cases. They were covered with thick layers of dust and spattered with whitewash . . .'. One of the floor boards of the gallery must have attracted Martin's attention, and lifting it he found a kind of dust-bin, into which the dirt from the floor used to be swept. Among the rubbish Martin discovered a magnificent dark-green emerald, the most beautiful specimen of its kind the Museum possessed. Thanks to Martin's exhaustive searches two precious diamonds were recovered. He found them in a pillbox in an old packing case stored in the attic, certainly an unexpected, but perhaps too efficient a hiding place for diamonds.

After these experiences Martin was not surprised to find that a collection with a general label 'Petrefacts from the Aachen region' proved to be Junghuhn's collection from Java already given up for lost. The 'regular' collections were in a chaotic condition too, again because no specialist had been in charge of them: everything had to be rearranged, and most of the specimens had to be reidentified. It should be stressed that Martin had to do everything single-handed, at first even without a technical assistant. Fortunately it so happened that the 'President-Curator' (Chairman of the Board of the University) made an unannounced visit to the Museum and came upon the geology professor while he was cleaning the dust-coated minerals with a brush and water. To his question: 'What, do you clean those minerals yourself?', Martin replied by asking: 'Who else is there to do it?'. Apparently only then did the authorities realize that Martin needed some help, and in due course (April 1st 1879) a general assistant (a so-called amanuensis) was appointed. His tasks were numerous: from answering the door and keeping the premises clean (and in the winter also warm), to ordering the collections and sorting the labels, while in between acting as a messenger and running errands.

For the rest, Martin had to do his work under conditions we now would consider appalling. To quote from his first annual report as director of the Geological Museum, covering the period till July 1879: 'The locality which I have now at my disposal is totally inadequate. First and foremost a store-room is lacking, in which the reorganization of the mineralogical collections can take place, and in which specimens, put aside for the time being, may be stored. At present there is nowhere any reasonable space for them; and the rearrangement of the minerals has to be done in the lecture-room and partly in the visitors' gallery. This offers considerable difficulties, as everything in the lecture-room has to be cleared away before lecturing hours, and in the gallery it causes inconvenience to the visitors, not to say anything about the care which has to be taken to prevent the temporarily unstored specimens from being damaged by the spectators.'

Lack of staff and lack of room, these were the greatest difficulties Martin had to cope with. There were other things clamouring for attention too: in the visitors' gallery new showcases had to be made, because the old ones were better suited to display stuffed birds and other animals than geological specimens; those exhibited in the lower part were insufficiently visible and those in the top part scarcely to be seen at all.

The newly appointed 'amanuensis' made a beginning with the rearrangement of the minerals, after the construction of a new show-case in which they could be displayed to full advantage. In the report quoted above Martin remarks: 'I must mention that no labels have been written for the minerals rearranged up to now, nor a catalogue prepared; and that it is beyond my powers to carry out this work too; nor is it possible to charge the amanuensis with such a task, because it requires a specialist. Therefore I take the liberty to point out that there should be no delay in the appointment of a curator or assistant to take care of the collections; also in order to prevent the danger that the value of the specimens in my charge will diminish year by year through decay of the labels'.

In spite of all the difficulties encountered and the conditions under which he had to work, Martin managed to publish in that first year, 1878/1879, three papers: one on sedimentary erratics and their fossil content from the Netherlands and northwest Germany, the second on the diamonds discovered in the pillbox and the third one on gastropods from the Tertiary of Java, collected by Junghuhn.

The first period (1878 - 1922)

In spite of the fact that Martin in succeeding years repeatedly pointed out the urgent need of a curator to take care of the collections, no change in the appointed staff was effected. 'Surely a situation not easily found in another institution of a similar kind and size', wrote Martin in one of his annual reports. However, some changes for the better, for instance in the housing conditions of the Museum, could be reported as well. An adjoining building, formerly used as a coachhouse and still pervaded by the smell of horses, was hired and the ground floor fitted up as a store-room. The collections still packed away in the attic of the Natural History Museum could now be transferred and unpacked. Subsequently Martin was happy to rediscover valuable collections 'whose loss had been deplored already at home as well as abroad', to wit those of the 'Natuurkundige Commissie van Nederlandsch Oost Indië'. This commission had been founded in 1820 in order to study the natural history — in its broadest sense — of the Netherlands East Indies. In the 30 years of its existence its members had collected an impressive amount of plants, animals, minerals, rock specimens, fossils, and data on the native population. Martin considered it his duty to study this rich material and thought it best to publish the results in a journal specially launched to this end. And so started the 'Sammlungen des Geologischen Reichsmuseums in Leiden' (Collections of the National Geological Museum at Leiden), the first issue appearing in 1881.

There was another drawback which made itself even more strongly felt than before: the lack of geological literature. Martin spent a large part of his holidays in travelling to Berlin or London, visiting the libraries there in order to study geological and palaeontological publications. Many books on the systematics of Recent invertebrates, which he also needed for his studies, were not available at Leiden; he had to go to Haarlem or Amsterdam, where the libraries were better provided.

Under Martin's directorate the collections steadily grew, while increasing in scope and scientific importance. From 1881 onward, most of the fossils collected by the mining engineers of the 'Dienst van het Mijnwezen in Nederlandsch Indië' (Mining Survey of the Netherlands East Indies) were sent to Leiden for examination by Martin. The results of his studies fill many issues of the 'Sammlungen'.

Martin received collections of fossils from other sources as well, private collectors in the Indies playing a considerable part in providing material. This ensured a steady stream of publications, dealing with several islands of the Indonesian Archipelago, and with many groups of fossils, ranging from Foraminifera to Mammalia. Most of the fauna studied by Martin dates from the Cenozoic, but his work included Mesozoic Mollusca from Borneo as well.

Between 1882 and 1890 the 'Mijnwezen' undertook a systematic survey of Java. So much new material was then discovered, that Martin devoted a special series of the 'Sammlungen' to the description of the newly discovered fauna: 'Die Fossilien von Java, auf Grund einer Sammlung von R. D. M. Verbeek und von Andern'. The first part appeared in 1891.

Martin's interests were also aroused by the West Indies, about which little was known at that time. As early as 1879 Martin wrote a paper on a certain rock type from the Antilles. When the opportunity arose to take part in an ex-

pedition to the West Indies Martin did not let it pass. Together with a botanist and an entomologist and two students (one of whom was G. A. F. Molengraaff), the journey was undertaken. Martin did not have much time at his disposal; he left Holland in December 1884 and had to be back in May 1885. Yet he managed to make extensive collections, comprising well over 800 specimens, in Aruba, Curacao and Bonaire as well as in Surinam and Venezuela.

The second journey Martin was able to undertake led to the Moluccas in the East Indies. Here again Martin succeeded in collecting much material. According to the entry in the Museum's list of acquisitions for 1892, he brought home a collection of 1063 specimens.

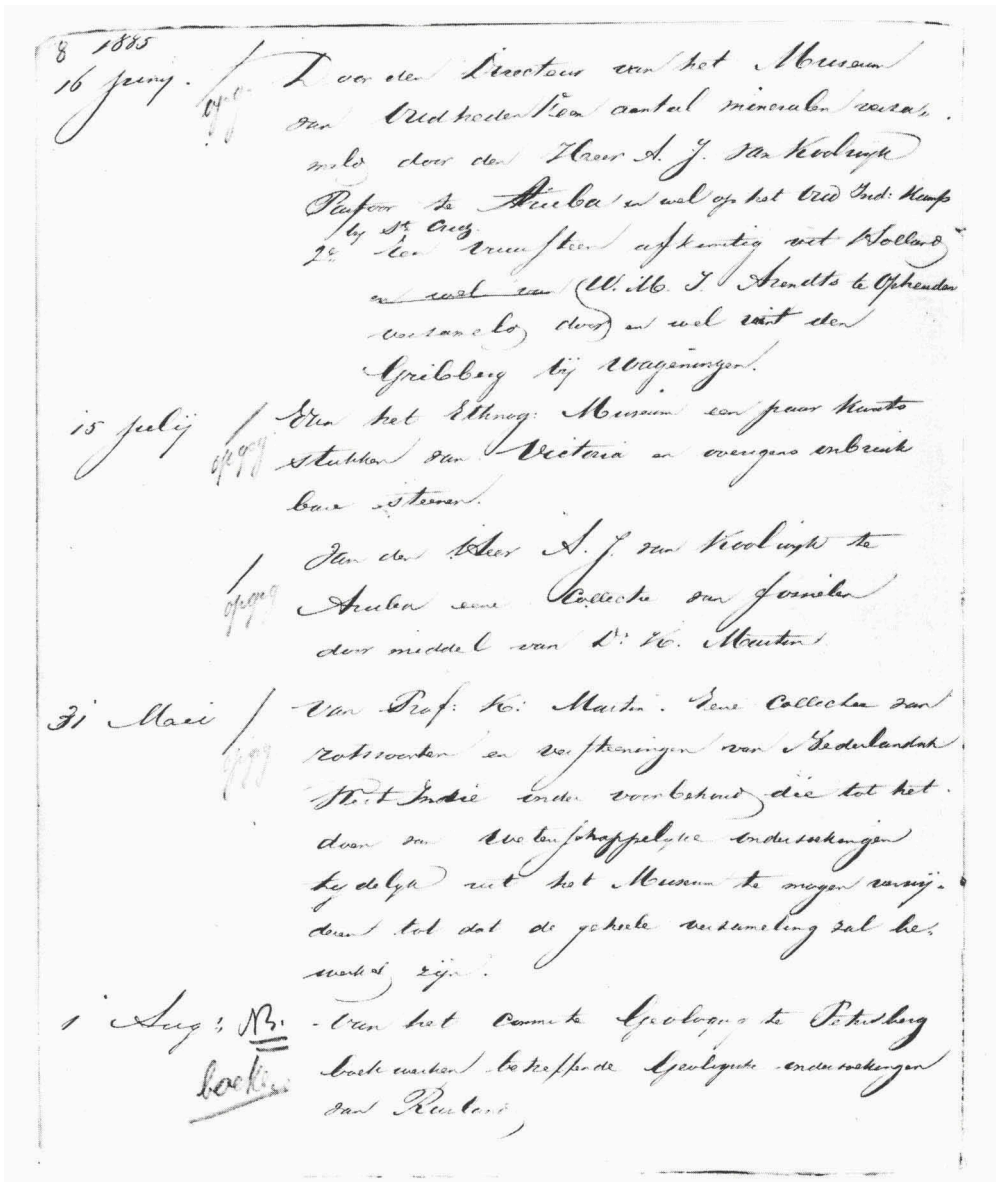


Fig. 1. A page from the book of acquisitions showing entry of Martin's collection from the West Indies.

Fortunately Martin had the opportunity to travel to the East Indies once more. Having studied so many fossils from Java he felt the need to examine a number of localities and sections himself. Moreover, he wanted to take samples with more regard for their accurate stratigraphic position. (In some instances faunas deriving from different beds had been referred to one and the same stratigraphical level by earlier collectors.) Again, mixing up of faunas was suspected, and all this had caused stratigraphical problems which Martin wanted to clear up. And so, together with his second wife and former assistant, H. Martin-Icke, he set out for Java and visited a number of important localities there (1910). Unfortunately he was taken ill during this trip, but nevertheless he and his wife could bring home much material and detailed information.

A number of collections have come to the Museum by means of exchange. The material offered in exchange consisted in most cases of duplicates from the Java Tertiary. In this way the RGM was enriched with series of fossils from Australia, Great Britain, Bosnia, Maryland, Paris Basin, and other regions.

Apart from these means of extending the RGM collections, Martin managed to buy several important ones, although the Museum budget was none too ample: one from the Philippines, collected by C. Semper and another one from Java and Madura. Single minerals and fossils appear regularly on the list of acquisitions, purchased to supplement the systematic or educational collections. Whenever possible, large and spectacular objects for the exhibition were obtained, but this happened only on rare occasions. In 1893 the Board of the University supplied a special credit in order to acquire outstanding specimens, as a kind of house-

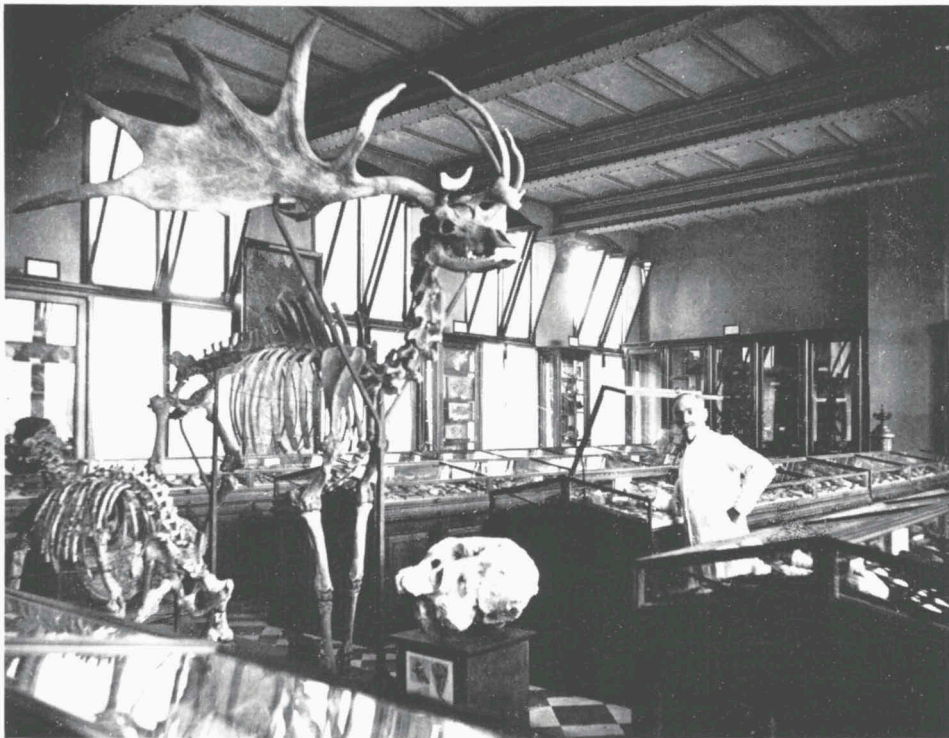


Fig. 2. The palaeontological gallery in the twenties. In the foreground the skeletons of cave bear and giant deer, and an elephant skull, that of *Stegodon trigonocephalus* Martin.

warming gift for the new museum building, which enabled Martin to buy the skeletons of a giant deer and of a cave bear as showpieces, and as such they still serve.

THE NEW BUILDING

Moving into a new building at the Van der Werffpark/Garenmarkt meant a great step forward. The RGM thus became completely independent and was no longer regarded as part of the Natural History Museum. The first plans for a separate building date from 1884. In that year Martin gave his whole-hearted support to a proposal made by the director of the Natural History Museum to the effect that the premises then in use for geology, be vacated to the advantage of the Natural History Museum, which was weighed down by the same shortage of space, and that another building be sought for the geological collections. This proposal, however, unfortunately carried no favour with the authorities. In the following years Martin over and over again enumerated the difficulties caused by the wholly inadequate housing situation of the Museum. Growing despondent, he requested the lease of some other building as a temporary measure to alleviate the untenable situation, if the plans for a new building could not be realized. This request was granted: in 1888 the University hired the premises adjacent to the coach house and so some relief for the Museum was achieved. It is a matter of speculation how long this temporary solution would have had to serve, probably for many years. But as it happened, a fire broke out in Martin's room at the Museum, owing to an overheated chimney-flue, in April 1889. As it was in the late afternoon, most of the staff had gone home and only one curator, the zoologist J. Büttikofer, was still present. 'That skilful and ever energetic man' (Martin, 1938) managed to extinguish the fire all on his own. Thanks to his intervention the damage was limited: only one case with ovine animals in the room above, belonging to the zoological department, was burnt. But for Büttikofer's attentiveness and initiative the fire might have had disastrous results.

On account of the fire and of the plans for reorganization of the Natural History Museum, the desirability of a new building for the RGM once more became apparent. This time there was no further delay: funds readily granted, plans accepted, the building was under construction in 1890 and finished in 1892. The move into the new building was completed by 1893. There is no record of an official opening. In a letter dated 12 September 1895 Martin informed the Board of the University that the day before Her Majesties the Queen and the Queen-Regent (Queen Wilhelmina and Queen Emma) had paid a visit to the Museum and that the Museum rooms were from now on open to the public.

SCIENTIFIC ASSISTANTS

From the first, the RGM had been part of the Leiden University. It had a double task: it had to serve both as the national museum of geology and as an educational institution of the university. In Martin's time the number of geology students was minimal. 'Only four times in more than forty years did a student turn up to prepare a thesis' (Pannekoek, 1962). Martin had to give courses for biology and chemistry students, but we know that teaching did not take much of his time.

As there were so few students, the Board of the University could not provide much money for the benefit of the Museum, as the funds at their disposal were in the first place intended for teaching. And so Martin had to work with a small budget and without the needed scientific assistance. When at last a scientific assistant was appointed (in 1899), it was in a teaching capacity. It must be admitted, however, that before that time temporary assistants had given their aid in arranging the collections, at first unsalaried, later for a small consideration. One such assistant was J. L. C. Schroeder van der Kolk, who aided Martin from 1888 till 1891, but even Martin's proposal to appoint Schroeder van der Kolk as 'conservator buiten bezwaar van 's Rijks schatkist' (unsalaried curator) was not acceptable to the Minister of Home Affairs.

In 1894 an 'extraordinary assistant' for arranging the collections was appointed. This was just after the move to the new building, and assistance was certainly needed then. Since the position of an 'extraordinary assistant' was insecure and unremunerative, temporary assistants came and went in quick succession: F. Vogel (who stayed for about a year and a half), P. G. Krause (nearly two years) and E. Stromer von Reichenbach (no more than 4 months; he left owing to illness). Next came E. M. Jaeger, who was later appointed teaching assistant. These assistants took part in describing material from the Museum collections, their contributions appearing in various volumes of the 'Sammlungen'.

In the following years other assistants occupied the post for a short period. Only Miss Icke held her appointment for four years, until 1908. Her successor, A. L. W. E. van der Veen, a mining engineer, was put in charge of the revision and rearrangement of the mineral collection. Later, in 1910, his post was elevated to a curatorship. So, at long last, the Museum had its curator. But after van der Veen left, in 1913, it was difficult to find someone to fill the vacancy, largely on account of the meagre pay. A German geologist held the post for just over a year, but when the First World War broke out he had to join the army, and so he left.

The war years went by. In 1918 a curator was appointed who worked to Martin's and to his own satisfaction in the Museum. He left, however, after a few months, because he could get a much better position with an oil company. Martin therefore once more urged the authorities to offer a reasonable salary, as it was desirable that a curator should keep his post for several years at least; too many changes in command would harm the collections rather than benefit them.

At last Martin succeeded in finding a curator who was for years to be attached to the RGM and praised by Martin for his 'excellent zest for work': H. Gerth, who took up the job in 1920. His contributions to the description of fossils from the East Indies were considerable, particularly of corals and echinoids from the Neogene, but he also worked on various other groups from older formations as well.

The second period (1922 - 1955)

In 1922 Martin, having reached the age of 70, had to relinquish his post. His successor, B. G. Escher, was one of a number of Dutch geologists who had studied geology in Switzerland, having taken his doctor's degree at Zürich in 1911. His

interests lay in other fields of geology, physical geology and mineralogy attracting him more than palaeontology. Apart from that he had to spend much more time on teaching as the number of geology students increased, due to the rapid development of oil exploration and mining. Therefore, Escher's first care was to build up the geological institute. So much teaching equipment and materials were needed, that all available funds had to be spent on the Institute, and almost no money could be spared for the Museum at all. Escher saw himself primarily as a professor of geology and only next to that as an unsalaried director of the Museum. He realized that the Museum did not get proper treatment any more, but felt that he did not have much of a choice since the training of future geologists came first with him. As a consequence the RGM was soon considered the geology department of Leiden University rather than the National Museum of Geology, which name it retained.

Moreover, Gerth could no longer spend all his time on museum work since he now had to teach palaeontology and stratigraphy, give lectures and practical courses and lead excursions. This seemed inevitable, for when Escher was appointed he stated clearly that geology had become so much diversified that it could no longer be taught by one person; that he had chosen crystallography, mineralogy, petrology and physical geology and that he just was not capable of lecturing also in the other geological sciences.

Apart from laying the emphasis on the training of students, Escher introduced other changes as well. The 'Sammlungen' were renamed 'Leidsche Geologische Mededeelingen' (LGM), as publications would no longer solely be concerned with the Museum collections. The LGM would also contain treatises on geological subjects in the widest sense. The first volume of the LGM included the theses of Ph. H. Kuenen, L. U. de Sitter and J. H. F. Umbgrove; they were the three geology students enrolled at Leiden when Escher succeeded Martin.

Other changes also affected the Museum (s. str.). For instance, in 1926 it was daily opened to the public instead of twice weekly and accordingly the number of visitors rose.

In 1928 a start was made with cataloguing. Curiously enough, the large register in which the data of the specimens are recorded gives no information about the first 900 numbers, regular entries appearing from number 945 onwards. Perhaps the earlier numbers have not been used, or we may yet discover what specimens bear these numbers. One is apt to be particularly curious about the specimen bearing the number 1. Cataloguing proceeded very slowly, as there was only one clerk available for registration, and she had to do other work as well. Several times volunteer workers are mentioned in the annual reports, with a touch of mystery about them: 'Voluntary help was given by two ladies, employed by a private company and temporarily permitted to aid in cataloguing'. Even so, no more than about 5000 specimens were registered each year, a fact which caused Escher to remark in his 1938 report: '... continuing at this rate it will still take dozens of years before we shall really know what we have in our museum'.

Meanwhile the Museum collections continued growing. One might say that a new source area had been tapped: material brought together and studied by 'doctorandi' (post-graduates) preparing a thesis was in due course deposited in the Museum. Under Escher's guidance field work was started in the porphyry district near Lugano; soon afterwards in the Bergamasc Alps in northern Italy, and later also more in the south, in the Appennines and Turin Hills. Most samples

and specimens collected during excursions with students were stored in the Museum. All these activities accumulated European material; Escher led excursions to Switzerland and Italy; Gerth — and later van der Vlerk — also to 'classical' regions in Germany, France and England.

<p><i>Montipora dubiosa</i> spec. nov. Orig. foss. v. Java. Esch. 1878. Afd. Indonésisch. Afd. motien v. Natlab. Coll. Mar. in-Iske. Pis. Giangering.</p>	<p>Zie: Gerth, L. Geol. Med., Dl. I, Af. I, p. 70 Oorsp. litt.: Samml. Neue Folge 2. p. 432. Magazyn Kaat 3. Kelder Ra 12.</p>	<p>4001</p>
<p><i>Montipora dubiosa</i> spec. nov. Orig. foss. v. Java. Esch. 1878. Afd. Indonésisch. Afd. motien v. Natlab. Coll. Verbeek: 1858 Pis. Giangering.</p>	<p>Zie: Gerth, L. Geol. Med., Dl. I, Af. I, p. 70 Magazyn Kaat 3. Kelder Ra 12. Oorsp. litt.: Nie st. 4001</p>	<p>4002</p>
<p>Coll. Verbeek Bewandong 1893 N° 1456. Fossilab. <i>Montipora dubiosa</i> spec. nov. Afd. Indonésisch. v. Natlab. Coll. Verbeek: 1858 Pis. Giangering.</p>	<p>Zie: Gerth, L. Geol. Med., Dl. I, Af. I, p. 70 Magazyn Kaat 3. Kelder Ra 12. Oorsp. litt.: Nie st. 4001</p>	<p>4003</p>
<p><i>Montipora dubiosa</i> spec. nov. Afd. Indonésisch. v. Natlab. Coll. Mar. in-Iske. Pis. Giangering.</p>	<p>Zie: Gerth, L. Geol. Med., Dl. I, Af. I, p. 70 Magazyn Kaat 3. Kelder Ra 12. Oorsp. litt.: Nie st. 4001</p>	<p>4004</p>
<p><i>Polysolenia Hochstetteri</i> Reuss. Orig. foss. v. Java. Esch. 1878. Afd. Indonésisch. Coll. Verbeek: 503 Name: <i>Polysolenia reussii</i> Orig. foss. v. Java. Esch. 1878. Afd. Indonésisch. Coll. Verbeek: 503</p>	<p>Zie: Gerth, L. Geol. Med., Dl. I, Af. I, p. 70 Oorsp. litt.: Reuss. 1867 Uten foss. Korallen und Thoral Java. Fregata mawale v. de Cass. Geol. Tijds. Magazyn Kaat 3. Kelder Ra 12.</p>	<p>4005</p>

Fig. 3. A page from the Register showing original labels of corals from the Java Tertiary.

In 1928 an exchange was effected, by which Gerth departed for Java to work at the 'Dienst van het Mijnwezen' and I. M. van der Vlerk, who had worked there as a palaeontologist, took Gerth's place as curator of the RGM. Van der Vlerk had studied geology at Groningen and Basel. He had obtained his doctor's degree at Leiden in 1922, as Martin's last 'promovendus', on a thesis dealing with larger foraminifera from the Tertiary of the East Indies. When working at the 'Mijnwezen' he further developed his ideas about a regional subdivision of the East Indian Tertiary, based on associations of foraminifera. As a result he introduced (with Umbgrove) the widely adopted letter classification which has proved so eminently useful.

Van der Vlerk's activities at the RGM were manifold. Apart from teaching — first as 'privaat-docent' (approximately lecturer), in 1931 'lector' (approximately reader) and in 1938 professor extraordinarius — he continued his studies on larger foraminifera, not only from the Far East, but also from other parts of the world.

His interest in the Pleistocene of the Netherlands (for which he later, together with F. Florschütz, also developed a regional stratigraphical system) likewise benefited the Museum. He greatly extended the collections of fossil mammalian remains, often visiting excavations, dredgings and fishing harbours; the fishermen who brought home the bones dragged up in their nets knew that 'the professor from Leiden' would be glad to have them, and give a premium for them into the bargain. The cutting of the Twente-canals and the Zuiderzee works yielded a host of fossil remains in the years that followed. Fortunately the Museum had more storing space by then.

THE NEW WING

From 1910 onwards Martin had pointed out to the authorities that the museum building was becoming too crowded and that another wing should be added to it, as had been envisaged already in the 1890 construction plan. Martin urged the need for it repeatedly, but to no avail. Escher took up the thread, having even stronger arguments for his case, as there just had to be room for a growing number of students to do laboratory work and prepare their theses.

It still took years of patience and perseverance, however, to persuade the authorities; building did not start before December 1930. In June 1932 the new wing was ready to be taken into use. Then came a period of settling in the new wing and reorganization in the old one. Work was completed in February 1933, when the whole building was officially opened with some festivities.

More space was allotted to display. As in the former set-up, there was a systematic palaeontological section and one of regional geology of the Netherlands and its colonies in the East and West Indies. In another gallery minerals, ores, gemstones and rocks were displayed. Newly added were exhibition rooms for physical geology and vulcanology. These galleries and rooms were situated in the reorganized old wing.

The new wing — later to be known as the Institute — was on the whole intended for instruction and research: it housed a lecture-hall, library, rooms for staff-members and students and various laboratories. One of these was a laboratory for experimental geology — a subject which Escher took to heart — specially equipped to study sediment movement.

Another of Escher's special subjects was crystallography, on which he wrote a successful textbook. He also pursued an active policy in enlarging the mineral collection. A much appreciated addition formed the beautiful minerals and meteorites brought together by J. Th. Erb, which were loaned to the RGM by his widow in 1934. A selection of these in the mineral exhibition caught everybody's attention. Escher also introduced a show-case displaying luminescence of minerals, which became a great attraction to the public.

Among minerals, gemstones had Escher's particular interest. The Museum was fortunate in possessing since its early days a fine and varied collection which had been donated by King William I in 1825, in all respects a royal gift. Throughout the years additions had been made and the collection might be called representative. As a consequence of Escher's stimulating of scientific research of gemstones, the laboratory of the 'Nederlandsch Instituut voor Wetenschappelijk Onderzoek van Edelsteen en Paarden' was housed in the Museum and opened in 1937.

In 1938 Escher had to report a grievous loss. The show-case with gemstones had been forced open and 96 cut stones stolen, most of them from the King William I collection. At the time they were appraised at about Dfl. 5000,—, but in any case the loss was irreparable.

When the Second World War broke out, many activities came to a standstill. In 1942 Escher and van der Vlerk handed in their resignation. Soon afterwards Escher was imprisoned as a hostage and van der Vlerk had to go into hiding. A year later Gerth made his reappearance at the RGM, in the capacity of acting director. When in 1944 all means of public transport ceased to exist in Holland, Gerth stayed away and did not return.



Fig. 4. The exhibit on volcanology.

After the liberation Escher and van der Vlerk resumed their work and in the years that followed a much needed extension of the professorial staff was effected: E. Niggli became professor of petrology, F. Florschütz of palynology and L. U. de Sitter of geological and geophysical mapping methods. One of the consequences of this increased diversification was that the areas where Leiden students did their field work became more varied, and this meant also more variety in the collections brought to the Museum. In the first place may be mentioned the Netherlands itself, which until the war had not attracted many students. Most of them still went farther afield: Sweden (Dalsland), France (Pyrenees, Belledonne), Switzerland (southern Alps), Spain (Cantabrian Mountains and Galicia), Morocco and even Surinam. Investigations in these areas led to numerous publications, and in many cases the samples described were stored in the RGM.

THE MUSEUM IN THE POST-WAR YEARS

In 1946 A. Brouwer, till then Museum-assistant, was promoted to a curatorship and this time the post did not include teaching. By now the conviction that the RGM was entitled to have a staff of its own had finally gained ground. A few years later another curator was put in charge of the mineralogical and petrological collections, but he and his successor held the post only for a short time. In 1951 P. C. Zwaan was appointed. He took up the work his predecessors had left unfinished: improvement of the display of rocks and minerals, and rearrangement of the collections. He applied himself especially to the study of gemstones and in



Fig. 5. The minerals and rocks gallery (1956).

the course of years greatly enlarged the collections of minerals and precious stones. The 'Stichting Nederlands Instituut voor Wetenschappelijk Onderzoek van Edelstenen en Paarden', which had ceased to exist during the war, was revived in 1957, with Zwaan as its director.

Brouwer was in charge of the palaeontological department. In the first place he sought to augment the collections from the Netherlands, as van der Vlerk continued doing most successfully concerning the Pleistocene mammalian remains. Erratics had been rather neglected since Martin's time, although there had been some additions occasionally, in a haphazard way. Brouwer followed an active policy in gaining material by buying representative collections from amateur geologists when opportunity and money permitted, and by going out on collecting trips himself. Regarding the geology of the Netherlands in general he tried to improve relations with amateur geologists and with the regional natural history museums, in order to obtain timely information on excavations and diggings 'somewhere in the Netherlands', and to find out where fossils had been discovered. Government institutions such as 'Rijkswaterstaat' (Department of Public Works) and 'Rijksdienst voor Oudheidkundig Bodemonderzoek' (State Service for Archaeological Investigations in the Netherlands) also supplied information on these points. Meanwhile, mammalian fossils kept coming in. They include two important collections: that of A. B. van Deinse ('the prince of whales') containing cetacean remains, i.a. from the eastern part of the Netherlands, at first on loan, later permanently deposited in the RGM; and a large amount of fossils from the type locality of the Tiglian, the 'Steyl' collection, assigned to the RGM by the Minister of Education, Arts and Science.

As early as 1937 Escher had warned the authorities that the Institute had not been built to accommodate so many students, their number having risen far more sharply than was foreseen in the twenties. Between 1922 and 1932 each year two to seven students started studying geology. From 1933 to 1937, however, the annual accretion had grown to ten or thirteen, and seemed likely to become even higher. Escher made several suggestions to enlarge the building, but got no response. After the war both Institute and Museum felt the housing situation even more acutely. The Institute, designed for about 30 students, now had to provide working facilities for about a 100 students, so every inch of space had to be utilized.

The outlook for the Museum was none too bright either. Plans to set out the exhibition more in keeping with modern views had to be shelved; the store-rooms were filled to capacity and already in 1946 Escher expressed his concern that the nearly overburdened floors had to bear still more weight. Apart from that, the store-rooms were stated to be: '... below the level of a reasonable minimum... capacity utterly inadequate... quality definitely insufficient' (annual report 1950). Nevertheless, due to reorganizations much needed new store-cases could be added, the floors proving fortunately strong enough to support the additional load. As there were by now at least six types of store-cases in use, the shifting of collections also involved moving them from one type of drawer to another. Inevitably all this took much time and did not do the collections much good.

The third period (from 1955 onward)

In the early fifties, the prospects for the RGM became more cheerful. The technical staff began to grow: two assistants and a draughtsman-photographer were appointed. Now modernization of the exhibition could be undertaken. In the first place, the number of specimens on display was greatly reduced; as was customary in the past, the show-cases had been neatly filled to full capacity in order to show the greatest possible number of examples from the various systematic groups. Further, the dark-brown show-cases and the black frames surrounding many objects were bleached or painted in a light colour. New labels likewise added a modern touch.

The hall laid out to illustrate the geology of the Netherlands and its Colonies had to be adapted to the changed circumstances: material from the East and West Indies was taken out and attention focused on the geology of the Netherlands. Additional information and illustrations enlivened the display: a geological map, diagrams, photographs of outcrops, reconstructions of past sceneries and a geological column. The exhibit entitled 'History of Life upon Earth' consisted of a selection of the specimens, formerly shown in the systematic palaeontological section, laid out according to the stratigraphic succession. As an introduction to this exhibit one or two examples of each main group of fossils were shown in systematic order.

In 1954 Brouwer left the Museum for the Institute, where he took up teaching. Two museum-assistants were then promoted curators in the palaeon-

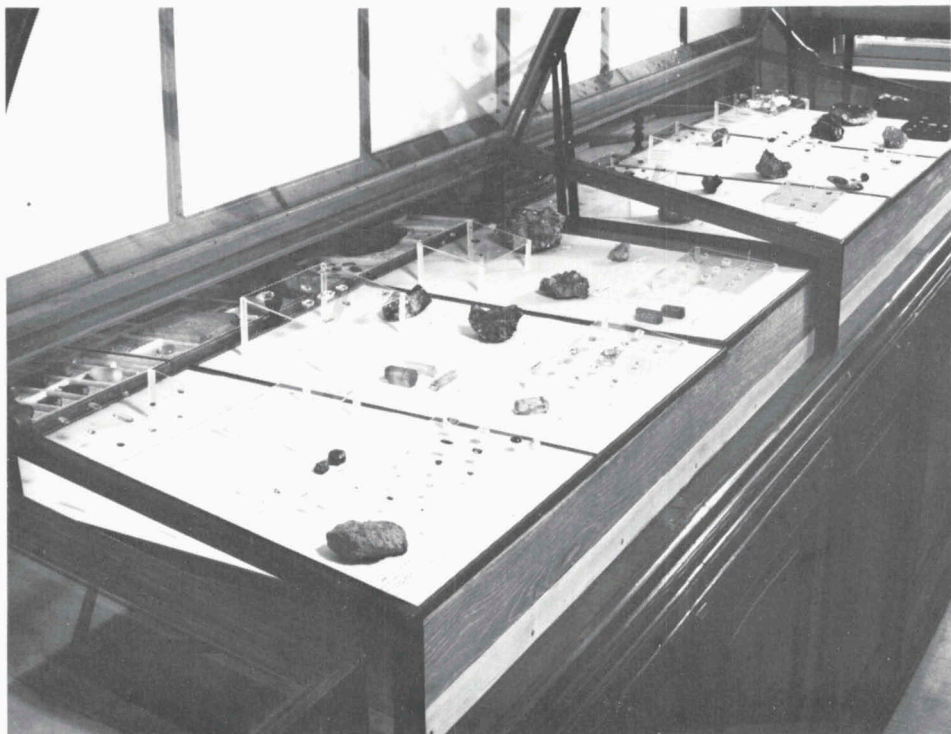


Fig. 6. The reorganized display of gemstones (1956).

tological department, G. E. de Groot in care of the invertebrates and G. Kortembout van der Sluijs for the vertebrates, particularly Pleistocene mammals.

The next year the RGM got its own director. Van der Vlerk succeeded Escher, who retired in 1955, in that function. He had already been taking charge of the daily affairs since Brouwer's departure. When the modernized exhibition rooms were opened, van der Vlerk remarked that he could reap what Escher and Brouwer had sown. But it may be said that he made the most of that harvest. In 1955 a press-conference and the distribution of posters stimulated the public to visit the rejuvenated exhibition. Apparently with good results: the number of visitors rose from c. 850 in 1954 to c. 2000 in 1955.

Van der Vlerk stressed the three-fold task of the Museum:

1. collecting and storing material;
2. scientific investigation;
3. laying out a public display and providing information.

In all three directions van der Vlerk was active. Collecting of Pleistocene mammalian remains went on assiduously, thanks also to a number of 'correspondents', intermediaries between finders and the RGM. Other aspects of Dutch geology had his attention as well. Owing to his efforts the collection of the late J. H. F. Umbgrove was purchased. It contained — apart from much other valuable material — a large number of fossils from the Upper Cretaceous of southern Limburg and as such was a very desirable and important addition. Two more cases are worth mentioning here: a donation of some 1500 erratics by the Geological Museum of Wageningen University, and a gift from the 'Nederlandse Aardolie Maatschappij'



Fig. 7. A section devoted to the Quaternary in the exhibit 'Geology of the Netherlands' showing a.o. a painting by the RGM draughtsman B. F. M. Collet: an autumn landscape in Tiglian time.

consisting of c. 250 cores from borings in various parts of the Netherlands.

In many ways van der Vlerk tried to make the Museum better known to the public and to make it more accessible. He introduced a series of evening lectures, whenever possible combined with a film on a geological subject, and followed by a tour of the Museum. He encouraged the demand for guided tours, especially for school classes or other small parties. As for providing information to the public, during this period he rewrote his part in the Dutch best seller on geology and palaeontology 'Geheimschrift der Aarde' (Cryptography of the Earth). Published in its new version, 'Logboek der Aarde' (Log-book of the Earth) became something of a best seller too and was translated into several languages.

PLANS FOR REMOVAL

Van der Vlerk too had to cope with an increasing want of space. Storing the collections which kept coming in became more and more difficult, temporary measures notwithstanding. To end the untenable situation he proposed removal of the RGM to another building, i.c. an orphanage which was coming up for sale. This 'Heilige Geest Weeshuis' dated from the late sixteenth to the eighteenth century. Its situation was rather favourable, at the Hooglandse Kerkgracht, in the centre of the town.

Van der Vlerk's proposal, which was approved by the University authorities in 1956, had to pass three Ministries before it could be put into execution. Two of the Ministries, those of 'Volkshuisvesting en Bouwnijverheid' (M. of Housing) and 'Financiën' at first refused to give their assent, in view of the great costs involved, but eventually agreed with the plan. The Minister of Finance was prepared to furnish the amount of money needed for purchase and repairs (then estimated at Dfl. 510 000.—).

Plans were made accordingly: work on the building could start in 1959 and it was envisaged that its two side wings should be available for storage of the collections in 1960. The main building was to be ready later that year for accommodation of the staff.

Finally, a promise was obtained for future addition: after five years another part of the building which housed a printing-publishing firm would be cleared and fitted for the use of the RGM.

However, when the sale of the orphanage had been completed, the building turned out to be in a much worse condition than previous inspections had led to suppose, and correspondingly the estimated repair costs rose drastically. This upset the plans seriously. First, the necessary supplementary funds had to be forthcoming. They were indeed granted by the end of 1959. Moreover, restoration unavoidably would take much longer. At that time it was calculated to be finished not earlier than the middle of 1963, if no more obstructions were encountered. Especially for van der Vlerk this was a severe disappointment: he had hoped to end his active career as director of the RGM at the Hooglandse Kerkgracht. As it was, he asked for his resignation at the beginning of his seventieth year (1-2-1961). After his retirement P. C. Zwaan became acting director.

In the mean time the Museumstaff had expanded. In 1957 a curator for the petrological collections had been appointed: C. J. Overweel, who was to occupy himself in particular with crystalline erratics. Later in 1961 P. van Gijzel became curator for micropalaeontology in general and specifically for Quater-

nary palynology. Several exhibits had to be closed to the public as working rooms for the new staff members were required and the need for storage space grew.

Preparations for the eventual removal started in 1961. Having to choose a method for exceedingly compact and economic storage, the RGM staff decided to adopt a system of movable racks. Each storage unit of racks would consist of 7 rows placed directly one after another; the racks in the middle in a fixed position, the 2 resp. 3 rows on either side to be mounted on rails. The material was to be packed in lidded cardboard boxes, this being apparently the only way to keep out the dust. As soon as delivery of the cardboard boxes began, repacking of the collections started according to programme. The metamorphosis in the store-rooms was well worth the effort. It was by no means a clean job, many specimens being intensely dirty. As this work proceeded and the available racks had become completely filled, the boxes had to be piled up, and access to the collections, although not impossible, often involved a laborious operation. This was the more regrettable as it became obvious by 1963 that still some years would elapse before removal to the Hooglandse Kerkgracht could be undertaken, all kinds of difficulties prolonging the work on the orphanage building.



Figs. 8, 9. Metamorphosis in the storing space.

A NEW DIRECTOR

1963 was also the year in which C. Beets was appointed director of the RGM. Beets had studied geology at Leiden University and there obtained his doctor's degree in 1941 on a thesis dealing with the results of field work in the Turin Hills, Monferrato, N. Italy. At about the same time he published a monograph on Miocene Mollusca from eastern Borneo. During the war he had worked for Staatsmijnen (Dutch State Mines) on Tertiary Mollusca from the Netherlands. Moreover he had continued his studies on Tertiary Indopacific Mollusca. After the war he worked a short time for the Teylers Stichting. Subsequently he made his career with the Royal Dutch/Shell Group, starting with, in the main, stratigraphical investigations in Egypt and Libya. After a subsequent spell in the United States, he worked as a subsurface geologist in Venezuela. In 1956, his earlier studies on the Gulf of Suez were extended into the Red Sea/Gulf of Aden region. Lastly, he worked as a regional evaluation geologist in The Hague, also carrying out field work in various parts of the world.

Beets set himself to the task of making the RGM not only in name but also de facto the Dutch national geological museum and centre of research. He



could put his plans into practice after the removal to the Hooglandse Kerkgracht in 1966 and with the rapid expansion of the curatorial staff, which began in 1968. By the early seventies the following new staff members had arrived, listed according to the systematic order of their main specialities:

J. H. Germeraad	Palynology; computer-based coding system for description of palynological species; computerization of the registration system
H. J. W. G. Schalke	Palynology (Cenozoic)
J. P. Krijnen	Foraminifera (Cretaceous)
L. O'Herne	Foraminifera (Tertiary)
C. F. Winkler Prins	Brachiopoda (Late Palaeozoic)
A. W. Janssen	Mollusca (Neogene NW Europe)
P. J. Hoedemaeker	Ammonoidea (Cretaceous)
E. J. Noordermeer-Perreijn	Ostracoda (Neogene); left the RGM 1-1-1972
M. van den Boogaard	Conodonta
M. van den Bosch	Selachii (Neogene)
M. Freudenthal	Rodentia (continental Tertiary); computerization of the registration system
C. E. S. Arps	Mineralogy and Petrology
G. van der Wegen	Petrology (Precambrian metamorphic rocks)

To this list might be added I. M. van der Vlerk as 'honorair medewerker' (unsalaried investigator), who continued his biometric studies on foraminifera.

This expansion enormously increased the Museum's activities and led to



Fig. 10. Dr C. Beets, director Rijksmuseum van Geologie en Mineralogie, 1963 - 1977.

several new projects. Intensive collecting campaigns were taken up, for instance in the eastern part of the Netherlands from Tertiary deposits of the Winterswijk-Almelo region (van den Bosch, Cadée & Janssen, 1975); in the southern part from the continental Pleistocene of Tegelen (Freudenthal, Meijer & van der Meulen, 1976); in Italy from Neogene fissure fillings in Gargano (Freudenthal, 1971; 1972; 1976; Ballmann, 1973; 1976). (Reference is only made to publications which have appeared in 'Scripta Geologica', the RGM periodical introduced by Beets in 1971). Apart from these campaigns, Museum staff members went all over Europe on collecting trips or further afield: Canada, U.S.A., Jamaica, El Salvador, Algeria, Rhodesia, Ceylon (Sri Lanka) and Australia.

The RGM received much valuable material from other sources as well. It is obviously impossible to mention all collections presented, but a few important additions of the past ten years may be mentioned:

Fossils and samples from numerous borings in the eastern part of the Netherlands, donated by the 'Nederlandse Aardolie Maatschappij'.

A large number of samples from deep borings in the provinces of Zeeland and Zuid-Holland, donated by Rijkswaterstaat, the Department for the maintenance of dikes, roads, bridges and the navigability of canals.

Hundreds of ore and rock samples from Billiton and many other parts of the world, and about 1000 drilling samples from the Mbeya carbonatite of Tanzania, donated by the 'Billiton Maatschappij'.

Some 6300 samples and about 5000 thin sections of sedimentary and crystalline rocks of the Oman Mountains, donated by the 'Shell Internationale Petroleum Maatschappij', The Hague.

The collection of the late R. Lagaaij, containing thousands of bryozoan samples from all parts of the world, together with his extensive library.

A comprehensive collection of fossils and rock specimens (a.o. that of Molengraaff's Borneo expedition 1893/94) from the Geological Institute of Groningen University.

A large collection of fossils, notably foraminifera and rudists, and rock specimens from the Cretaceous and Tertiary of Jamaica, from the Geological Institute of the University of Amsterdam.

Many thesis collections, presented by the Geological Institute of Leiden University. The collection of H. M. E. Schürmann (in part): Precambrian rocks of the Eastern Desert, Egypt.

The store-rooms soon could not cope with the influx of all the new material. Although five years had long gone by since the sale of the orphanage had taken place, the promised addition of the part of the building occupied by the publishing firm had failed to come off, and it did not seem likely that the near future would bring any change in the situation. A temporary solution was found by adding a second floor in the high-pitched storing rooms, by which the storage capacity was almost doubled. As the racks had to support the new floor, they had to be re-arranged and the mobile system abandoned.

Storing thin sections and slides was an item for which Beets found a practical device (shortly to be published). Another practical contrivance developed in the RGM is an apparatus constructed for the separation of fossils from clastic material (Freudenthal and van der Linden). In order to recover microvertebrate remains a special sieving technique has been developed (Freudenthal et al., 1976).

The absolute need for a well-equipped library called for a special solution, as the original Museum library since 1923 had had to serve the Institute needs as

RGM	4000 REF:	POS: SE 06 00 107 21 FLDNG: MTI	CLAS: 603 6260000000 AGE 963-963 ST: 2 341-5-03
	ACROPORA SP.		
	TJILAHANG BEDS		
	TJI BURIAL JAVA INDONESIA		
RGM	4001 REF:	POS: SE 07 00 106 57 FLDNG: MTI	CLAS: 603 6260000000 AGE 963-963 ST: 2 341-5-03
	MONTIPORA DUBIOSA GERTH, 1921 SYNTYPE		
	NJALINDUNG BEDS		
	TJI TALAHAB JAVA INDONESIA		
	INV.: GERTH, H. 1921 DIE FOSSILIEN VON JAVA, SAMML. GRL. NF. 80. 12P. 432, PL. 56, FIG. 17		
RGM	4002 REF:	POS: SE 07 00 106 57 FLDNG: VB 1456	CLAS: 603 6260000000 AGE 963-963 ST: 2 341-5-03
	MONTIPORA DUBIOSA GERTH, 1921 SYNTYPE		
	NJALINDUNG BEDS		
	TJI TALAHAB JAVA INDONESIA		
	INV.: GERTH, H. 1921 DIE FOSSILIEN VON JAVA, SAMML. GRL. NF. 80. 12P. 432, PL. 56, FIG. 16		
RGM	4003 REF:	POS: SE 07 00 106 57 FLDNG: VB 1456	CLAS: 603 6260000000 AGE 963-963 ST: 2 341-5-03
	MONTIPORA DUBIOSA GERTH, 1921 SYNTYPE		
	NJALINDUNG BEDS		
	TJI TALAHAB JAVA INDONESIA		
	INV.: GERTH, H. 1921 DIE FOSSILIEN VON JAVA, SAMML. GRL. NF. 80. 12P. 432		
RGM	4004 REF:	POS: SE 07 00 106 57 FLDNG: MTI	CLAS: 603 6260000000 AGE 963-963 ST: 2 341-5-03
	MONTIPORA DUBIOSA GERTH, 1921 SYNTYPE		
	NJALINDUNG BEDS		
	TJI TALAHAB JAVA INDONESIA		
	INV.: GERTH, H. 1921 DIE FOSSILIEN VON JAVA, SAMML. GRL. NF. 80. 12P. 432		
RGM	4005 REF:	POS: SE 07 04 110 52 FLDNG: DK 503	CLAS: 603 6260000000 AGE 963-963 ST: 2 341-5-03
	POLYSOLENIA HOCHSTETTERI REUSS, 1866		
	NGEMBAK JAVA (BURUNG) INDONESIA		
	INV.: GERTH, H. 1921 DIE FOSSILIEN VON JAVA, SAMML. GRL. NF. 80. 12P. 428+PL. 56, FIG. 5+6		
RGM	4006 REF:	POS: SE 06 59 107 20 FLDNG: J	CLAS: 603 6260000000 AGE 963-963 ST: 2 341-5-03
	ASTROPOREA HYRTHALMA LANARCK, 1815		

Fig. 11. Sample page from the computer-produced master catalogue.

well, and had become more and more centred on the Institute. In 1968 a split-up of the library was agreed upon which provided the Museum with most of the older literature, gradually to be completed up to 1971. For in that year 'Scripta Geologica', the RGM's own journal was started, providing periodicals and reprints on an exchange basis.

Another important measure Beets initiated was the computerization of the registration system, as this would make the collections in many ways more accessible. Details of the development of the data bank programme have been published by Germeraad et al. (1972) and Freudenthal (1975). Since then the registration system has become even more attractive to its users by several simplifications of the data input and other refinements. By the middle of 1978 some 50 000 samples were stored in the data bank.

Now we come to the end of this abridged history of the RGM. At the moment the director's post at the RGM is vacant; in 1977 Beets tendered his resignation, and after being honourably discharged resumed his studies of the Museum's Indopacific Cenozoic Mollusca. As in 1962, Zwaan is now acting director.

In conclusion I should remark that the RGM story written down here is far from complete, some parts having been left out entirely. There is still a wealth of information in the RGM archives and the (largely unpublished) annual reports.

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