

PHAENOMENA

News about Phaenomena filtered back through different routes. An architect mentioned an amazing bamboo structure in Zurich; an art historian mentioned exhibits relating to light and science-based sculptures; others enthused about an Exploratorium in the park. By the time it became evident that these fragments were indeed the same exhibition, it had closed. Then, quite by chance, Phaenomena was reported to be in a park in Rotterdam, and many of us who missed the exhibition in Zurich caught up with it there.

The scale of Phaenomena was impressive. Some 400 exhibits, including Exploratorium designs, sculptures, a fantasy tower of bamboo with mirrors and gongs and large tent structures created a unique occasion. Despite the huge scale of the exhibition there seemed to be an enthusiasm in the whole presentation that indicated there must be one person or at most a small team behind it. Spontaneity had not been filtered out by excessive styling or by displaying exhibits in modular fashion. There seemed to have been room for evolution and innovation, humour and the involvement of many others.

The exhibition had been organised by Georg Mueller, whose outlook on life influenced the way in which the exhibition came together, as the following texts reveal.

Location:	No longer on show. Previous locations were at Zurich and Rotterdam
Dates opened:	12 May to 4 Nov 1984 and 25 May to 20 Oct 1985
Floor area:	Main pavillion 4400sq m, side pavillion 900sq m, dome 500sq m, plus outside exhibits. Sited in parkland.
Number of exhibits:	400 approx
Number of staff:	150
Number of visitors:	1.23 million and 1.16 million
Opening times:	daily 10-9
Entrance fees:	average SFr10 per person

PHAENOMENA

Georg Mueller



Georg Mueller was born in 1935 and was educated at a Rudolf Steiner School. He first took an apprenticeship in precision engineering but then changed careers to become a manager of a theatre. He founded Zürcher Forum (a small company devoted to organising events and exhibitions) in 1968 and staged a large exhibition on the life's work of Henry Moore in 1976 before opening Phaenomena in 1984.



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Phaenomena at its first showing in Zurich.

Just at a time when it is most essential to get to the heart of matters, the rapid development of our civilisation and the winds of change in all areas of life are leading to haste and superficiality. To form our own picture of the world we must be capable of getting to know and understand the laws, the relations and the processes of Nature.

Phaenomena is intended to bridge the way to a better grasp of a world which has become more complicated. Natural phenomena are the windows, the focal points of the world of appearances; no higher education in the textbook sense is needed to approach and enjoy them.

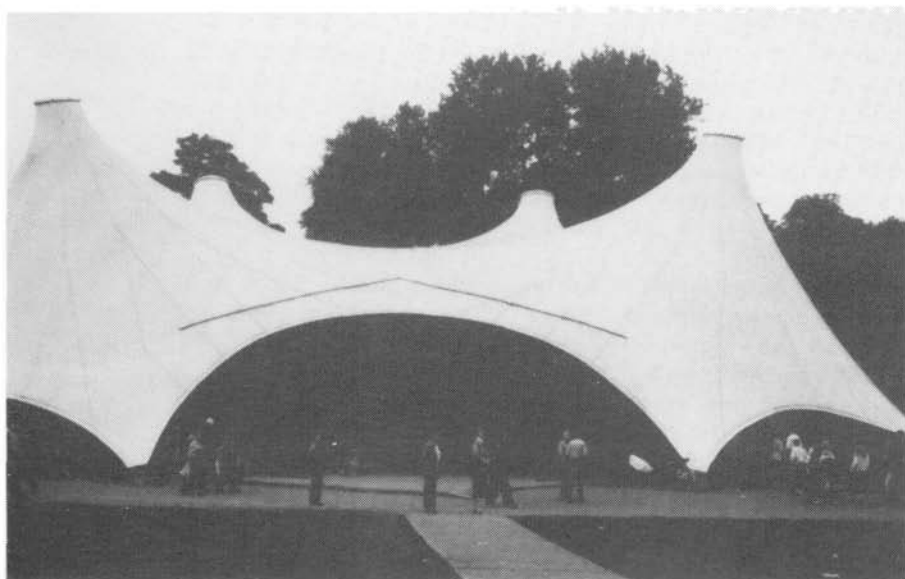
Phaenomena was the work of interested lay persons, but it would not have come about without much help and enthusiasm on the part of experts.

The birth of Phaenomena

Thank goodness for coffee-houses! It was a conversation with a language professor over a cup of coffee that yielded the exhibition's neat title. Its very name should be a guide to



The interior of the main tent which housed over 300 exhibits. In all there were two tent structures, a dome, a bamboo castle and outdoor exhibits in the surrounding parkland. This photograph was taken when Phenomena was in Rotterdam.

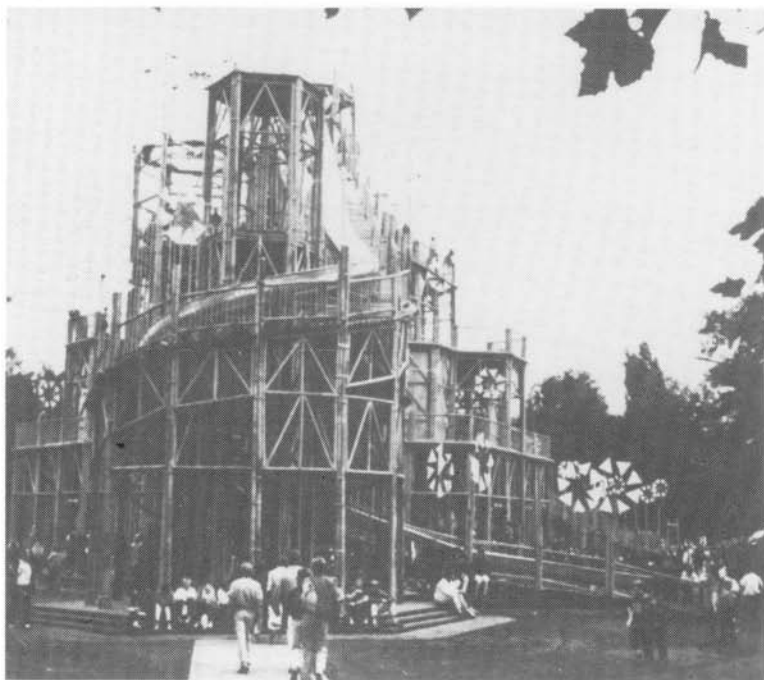


The smaller of the two tents (top), housed a variety of 'fun' exhibits such as the high wire cycle and large optical illusions. The dome structure (above) was used for chemistry experiments and also to show Phaenomena's mineral collection.

its contents. 'Phaenomena' is the plural of the Greek word *phainomenon*. Once we had found our title, the project itself could take its course.

Phaenomena was presented to the Press for the first time on 31 March 1981. We envisaged that the exhibition would be held in the summer of 1983, but it soon became evident that more time was needed to prepare it. In particular, finding a solution to the financial question took time, because this raised far more problems than we could have initially suspected. Despite the postponement to May 1984, the organisers were almost continually pressed for time in translating the exhibition's idea into reality, right up to the day of opening.

The preliminary work was carried out on three different levels simultaneously. First, each and every exhibit had to be designed, built and tested. Almost without exception we are talking of prototypes, some of which needed to go through challenging experimental phases. The second task was the



The fantastic Bamboo Tower was designed by Peter Staub in Zurich and constructed there by craftsmen from the People's Republic of China.

erection of the exhibition buildings. These had both to blend with the natural appearance of the parkland site and to be so designed as to live up to the exhibition's concept. The blueprint strove for a reciprocity between the exhibition material, the external look of the layout and the parkland. The third, and probably the hardest, problem was to put Phaenomena on a secure economic footing at what was a fairly difficult time in this respect.

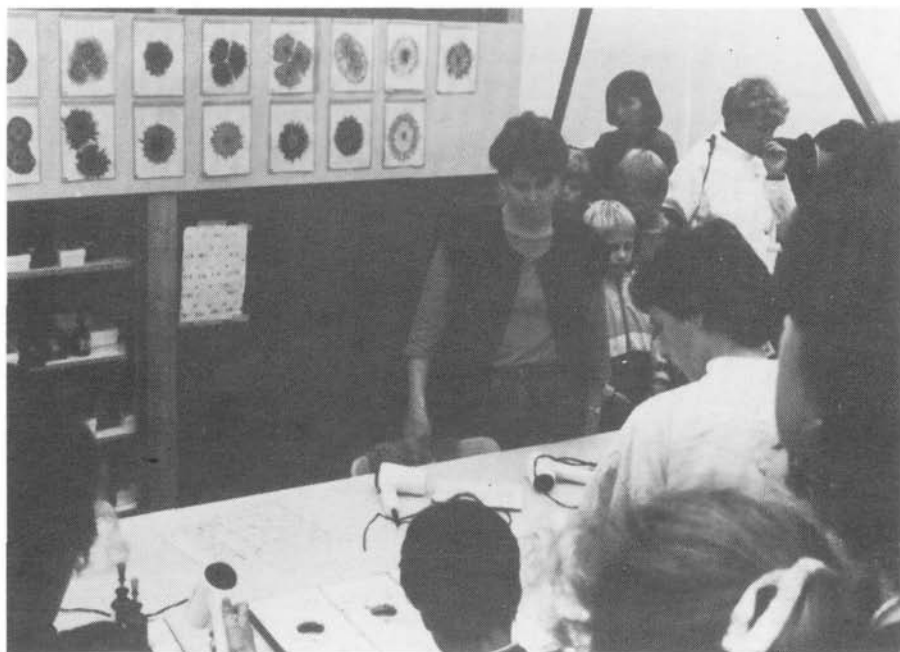
No committees were set up, except for a building commission. The exhibition concept and all administrative tasks including press and publicity were executed within a very small circle. We had also made an early decision to publish all printed matter and to run both the exhibition restaurant and the kiosk ourselves. In spite of the heavier workload involved, this made organisation simpler, and above all it gave us a chance to offset our expenditure with a possible profit. The first sod for the exhibition was turned in October 1983. The interior construction started in March 1984. Mid-April saw the start of a great crescendo and the last hectic weeks. The designer and exhibition builder, Willi Ebinger of Berne, took charge of the dramatic finale in sovereign fashion. As a result, and notwithstanding considerable doubt as to whether this flurry of activity would conclude on time, Phaenomena opened on the stroke of 10am on 12 May with formal speeches and music by Franz Liszt.



Loud whistles and low pitched hooting notes could be heard around the park. These were caused by air displaced from organ pipes which were raised and lowered into the water.

The idea of Phaenomena and the original plan for it have been fully realised, without any compromises, appreciable changes or omissions. Not only the character of the exhibition envisaged but also its geographical position, its size, the ordering of its focal points and our financial and organisational strategy have been basically established from the very beginning.

This clear-cut starting position greatly assisted us in proceeding purposefully and economically and it enabled the organisational staff, including secretaries, office juniors and book-keepers, to be limited to six enthusiastic persons. Johannes Peter Staub joined the team at the initial planning stage as designer of the tract and buildings. Exhibition designer Nikolaus Schwabe was engaged by us early in 1982. It is to these two artists that Phaenomena owes its unified and self-contained appearance. The project leaders, Pierre Cretaz, Hans Denzler and Markus Rigert, joined us in early 1983, by which time the work was already going ahead. Other



Creating pictures from chemical reactions. A supervisor in the dome tent is on hand to assist and offer advice. Visitors dried the patterns with hair driers and could take the pictures home.

influential participants, besides the aforementioned individuals, were Prof Maurice Martin and Dr Albert Gyr, who contributed as scientists, and Thomas Dubs who devised the kaleidoscope room and various open-air objects.

In gathering ideas, Phaenomena owes important stimuli to the Deutsches Museum and to the Exploratorium which Frank Oppenheimer built up in San Francisco in the 1960s. The work of Paul Schatz (invertible bodies), Hans Jenny (cymatics), Theodor Schwenk (flow research), Heinrich Proskauer and Fritz Lobeck (theory of colour), Maurice Martin (mechanics and optics) and Albert Gyr (water) must also be mentioned in this context. The exhibition designer Nikolaus Schwabe contributed many inventions of his own to the specially constructed objects.

During the three years of preparations, the circle of participants was vastly enlarged: thus nearly 500 different individuals, institutes, training workshops and privately-funded establishments were involved. Were we to make a further count of all the collaborators from within the listed firms and institutes (and each has played a part in the success of Phaenomena), the total number of participants would probably come to well over a thousand.



A view of Phaenomena during its six month stay at Rotterdam, as seen from the Eurotower.

Interactivity

The following paper was delivered at a conference sponsored by the Children's Museum and the Gatsby Charitable Foundation, held in London in September 1986.

I am not very fluent in your excellent language and, because I would flounder otherwise, I must take hold of a lifebelt – this script – and read what I have to say to you.

Whenever the world is faced with a problem or a shortage, in the field of either economics, culture or politics, a new expression will tend to appear at about the same time. Perhaps such expressions will be the formulations of clever journalists or authors, or else they may be born of simple necessity. Then, suddenly, these expressions are on everybody's lips, as though the new catchphrase could serve to plaster over or plug an evident gap.

In the Renaissance, with its mighty discoveries and inventions, nobody talked about creativity or innovation. People were creators and innovators without blowing their own trumpets. Today we find it hard to be creative and innovative, and that is why there is so much talk about it.

Interactivity is quite a new term which I am sure you will seldom have heard before 1984. Basically it does not make sense, because we can be active or initiate an activity, but an interactive showpiece is, I think, an impossibility.

People would be glad if they could upgrade media technology and make it more life-like precisely by means of what is called interactive. But everything we get from the data bank, the electronic store-house, is already a lifeless reproduction.

Once, many years ago, I dreamt of producing a cowboy film. So as to overcome the drawbacks of the medium, I thought up the following scenario: The invincible hero, the idol of the public, falls into a trap. Secretly, his enemy creeps up behind him, and it seems to be all up with our hero. But suddenly a film-goer cries from the stalls – 'Look out!' In a flash the hero turns round, disposes of the villain and thanks the cinema audience with a nonchalant wave. Such a scene could be easily achieved. It would even be a novelty. But there is nothing to gain by it. The medium will still remain the same.

The same goes for building an exhibition where one is trying harder and harder to make the visitor an active spectator and to involve him in a process. This process is a purely mental activity which is going on inside the visitor's head. It can be triggered off whether the objects on show remain silent and motionless or not. It makes no difference if

a lot of tiny lights are flashing on and off, or if there is a lot of movement on a video screen.

An exhibition can genuinely become an event if a lot has happened in terms of thinking things out at the planning stage. Any interesting plans and ideas that have been assembled and carried out in a way that is technically right will appeal to the spectator. They will become events, and thus a success.

It is quite amazing how much the product will then agree with one's original intention. It is the unchangeable law of cause and effect.

If the designer has the imagination to get a clear and vivid picture of what he wants to achieve at an early stage, then he can survey this picture and derive from it all the details needed to translate it into reality. In this way a unified exhibition can be realised, provided that its creator is not hampered by external factors. Such factors could include a shortage of materials and funds, or decisions made by a committee. Unfortunately, it is often overlooked that a



The high-wire cycle proved to be a great favourite with children. Most adults lacked the courage to try this exhibit and remained spectators.



The granite sphere (above) weighed over a ton but was supported on a film of water under low pressure and could easily be rotated by hand.



Fundamental physics could be tested in the gravity tower. The lift accelerated to give a weight increase of 25 per cent going up and a corresponding decrease on the way down.

development which is handled by a small group of people, or a single individual, can be very economical in terms of both time and money. This approach pre-supposes an able designer or inventor who knows exactly what he wants.

To illustrate what we mean by a design process, let us ask ourselves what creativity is. There is, I believe, a Chinese proverb to the effect that only stupid people know the answer to everything. But if I cannot give a straightforward answer to the question of creativity, that is not meant to show how clever I think I am.

Let us look back to the pioneering years and all the creative achievements needed to build up our technological civilisation. During the last two centuries, and indeed up to the middle of the present century, there was very little talk of creativity, except in connection with fashions. One spoke of the Paris showing of a new 'creation' – meaning a dress or a hat. Textile and fashion designers are creative people *ex officio*, as it were. Year in, year out, their creations have to make an immediate impact on the fashion scene in order to attract buyers from all over the world. But otherwise the word 'creative' was used very rarely, if ever. A recent German dictionary of foreign expressions still associated it above all with fashions. Today things have changed, because the term creativity has itself become the fashion and people demand and require it in all sorts of fields.

Just compare job advertisements nowadays with job descriptions in the Sixties – I am sure you will find it most entertaining. Because of the worldwide economic problems and the battle for a bigger share of the market, everybody is calling for innovation and creativity as the universal remedies, the ways out of every blind alley, the life-savers for falling sales.

Einstein is reported as saying: 'The splitting of the atom has changed everything except the way we think, and that is why we are heading for an unprecedented catastrophe'. I can well imagine that what Einstein meant by 'the way we think' was a lack of constructive, creative thinking.

The word 'creative' comes from *create*, meaning: to engender, to produce something new. Creatures themselves are creations. And it is possible for the human race to add its own creations to the creations it has inherited.

To clarify this point, I would like to distinguish between three kinds of creativity:

- 1 Applied Creativity: This, we have already mentioned with regard to fashion design.



Three exhibits which demonstrated action and reaction; a balloon on wheels filled with air and released along a track; a ball released in a tube free to move on a track; and bowling alley balls released to propel a trolley carrying a person.



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- 2 Playful Creativity: Playful creativity has produced a wealth of original achievements in literature, music, philosophy and the arts in general. It extends to all spheres of life including gastronomy, the domestic skills, the child playing in the sand-pit. Everything it produces is vitally important, but not vitally necessary as bread and water are. It makes our civilisation more refined, and everyday life more agreeable.
- 3 Exact Creativity: What I mean by exact creativity is the creativity that Einstein was asking for. Necessities are created by actual conditions. There is no endless experimenting and constant tinkering around. Instead, the creator gets his answer, his idea, from the object in hand. Of course, it will only come to him after he has made the necessary effort, and not automatically. It is not a matter of having a brain wave. Given a bad state of the weather, a leaking roof will go on getting 'brain waves' in the form of raindrops. In essence, exact creations are no longer brain waves but solutions or new creations, not playful variations or combinations.

These are basically conversions, whereby what is hidden inside is brought to the surface – as with a convertible cube. Look at this cube. The outside of it is golden, and when I turn it inside-out it becomes silvery. I can do another conversion, producing two stars and from these two stars I can now conjure up two cubes. Each cube is precisely half the volume of the original cube. Now by putting the two parts together again, I can undo my conversions.

Can creativity be tested?

I have heard of tests designed to assess a person's creative abilities. But in practice it turned out that these abilities cannot function under test conditions where the creative readiness and the corresponding performance will be lacking.

Can creativity be learnt?

This question is often answered in the negative. But I want to give a positive answer and quote the following requirements which lie within the reach of everybody: doing one's duty; keeping up with one's obligations; the ability to concentrate; the capacity for sticking to a subject over a longish period; and calmness, an ability to see the positive side of things, not to rule out the possibility of the seemingly impossible.

It seems to me that to strive for these qualities is a primary requirement.

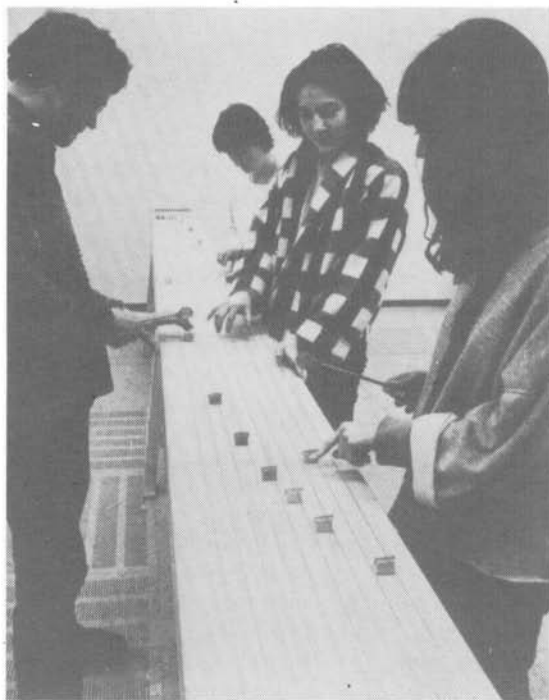
Attentiveness is needed: strain and coercion are not conducive to success, but pressure often is. But for all these pre-conditions, the genuine creative achievement cannot be copied or reconstructed. It is produced, in the end, by presence of mind.

I have been invited to speak to you because of the Phaenomena exhibition which has been shown in Zurich and Rotterdam and could yet be mounted in other countries as well.

Phaenomena was not constructed as a travelling exhibition. The outlay was so great that we had to reckon with the possibility of a financial collapse. The entire contents of the exhibition – the pavillions, bamboo tower and cupola – would then have to be auctioned off. But the exhibition proved to be a draw and all the capital investment was covered by the ticket sales.

The venture was so risky that no outsiders interfered with it. We had no committees and nobody pushed himself forward.

The preparatory work could be carried out quietly and without interruptions. This was a great blessing. I myself



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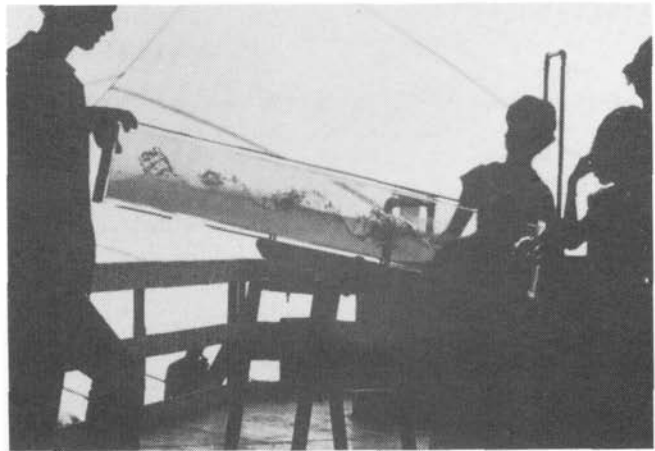
Acoustics and harmonics are explored in many musical – and not so musical – ways in the exhibition.

One of Georg Mueller's special concerns was to represent water by a variety of exhibits and create an opportunity for the visitor to become acquainted with it. Shown here are:

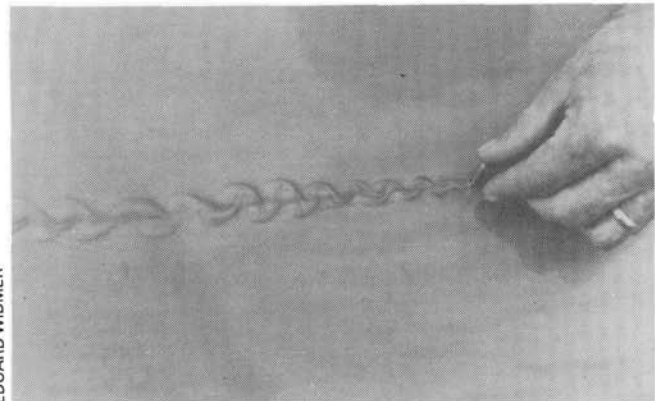


A vortex forming in water.

Internal wave motion shown at the boundary of two immiscible liquids.



Flow patterns round an obstacle made visible in a stream of water laden with fine aluminium particles.



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went to a Rudolf Steiner school. This is a school whose main concern is not to impart facts and figures but above all to teach the pupil to think and judge for himself. It teaches its pupils how to learn and go on wanting to learn. It seeks to arouse their interest in the world about them.

Unfortunately, I was not a diligent pupil, but the school did awaken an interest in the world about me. There were big gaps in my knowledge of the natural sciences especially. So I wanted to organise an exhibition that would give me the further training I needed, and I judged what the general public needed by my personal needs.

Phaenomena presents the relations and laws of nature in such a way that the spectator will grasp them by seeing them for himself. That was the idea behind the exhibition, and the public responded to it. A man wanted to arrange a major training course for his own benefit, so to speak, and during the six months that the exhibition was on show in Zurich, 1.2 million visitors joined his training course.

I would now like to show you a number of slides and afterwards tell you a story.

The story

I don't know if you will have heard of Grock, a great Swiss clown who was famous before the war and as late as the Fifties. His repertoire was made up of a variety of numbers all arising out of tricky situations. Situations so tricky that only the clown's presence of mind could save him. Because of my limited English I shall give just this one example:

Grock was sitting in the circus arena on the arm of a *Wienerstuhl* – this means a chair with a seat of wickerwork. While he was sitting cross-legged on the arm and playing his concertina, this seat suddenly collapsed. Grock was left looking like a prisoner in a cage. Then he saw the possibility of a lightning escape – in one bound – from his tricky position, landing with his bottom on the arm rest, and his crossed feet on the edge of the seat. It was a way out, a sudden inspiration. Grock made his leap and he landed successfully. Next day he tried to repeat the leap while practising but hurt his legs so badly that he could not perform for three weeks. He knew that he needed to put himself in another tricky situation, so in front of the public he plunged through the seat again. Once again he was rescued by his presence of mind. From then on, the leap out of the chair worked at every performance and Grock became world-famous for it.