



## HANS HASS: HIS EARLY UNDERWATER FILMING CAMERAS

This discussion concentrates on the early movie cameras and housings that were used by Hans Hass on his various Expeditions to the Caribbean, Adriatic Sea, Aegean Sea, and the Red Sea.

An examination of the early Black and White films and the books that were written giving a detailed account of each adventure, has enabled certain facts to be established about the particular cameras selected and the housings that were developed over the years prior to full professional equipment being acquired, for his later films and TV Documentary Programmes.

The first films were made using snorkel diving

techniques and also hard-hat equipment with surface air pumping facilities, also known as 'Hookah' diving.

Later films were made using early design 's.c.u.b.a.' equipment, of the closed-circuit type.

The quality of the finished films, mostly filmed using 16mm equipment, was exceptionally good and was able to be blown-up to 35mm for Cinema Distribution.

What follows is the writer's own research and references will be acknowledged throughout the text.

1<sup>st</sup>. Film : 'Pirsch unter Wasser' (Hunting Underwater)  
16 mins B+W 16mm  
First screened 12/1942

Hans Hass and two student friends travelled to Curacao, in the Caribbean in July 1939. The Expedition lasted 210 days (7 months) and while there, WWII broke out in Europe.

He used a Movikon K16 (K meaning Cassette) movie camera in an 'unidentified housing' (which I refer to as Housing 'A'), constructed for him in Austria.

(Housing 'A')



It is not known for definite who constructed the housing for him but it is believed to be a Mr. Steurer from Vienna.

This Zeiss camera model was manufactured in Dresden and only launched in 1938.

(Zeiss Movikon K-16 camera)



(Refer to sketch Housing 'A')

The housing had a drive-shaft to the clockwork motor carried through the top of the side-wall, with a winding lever, and a start/stop run button control also carried through the bottom front wall of the housing.

The camera was installed through the rear of the brass housing with a clamping of the rear cover onto a rubber gasket to achieve proper sealing against water leakage at depth.

There was no external control for changing the focus or aperture of the lens, which had to be set before the camera was inserted into the housing.

(Hans was to recommend that those modifications be carried out as a result of his first experiences using the housing.)

The Movikon K16 was fitted with an interchangeable lens with a special bayonet fitting, unique to the Zeiss movie cameras. The lens he used was a Zeiss Sonnar f/2.8 50mm.

(An alternative choice would have been the Zeiss Sonnar f/1.4 25mm or even the Zeiss Tessar f/2.7 20mm lens, which were more expensive lenses ).

The choice of film speeds on the camera were 8,16,24,64 fps which again had to be selected before installing the camera in the housing as there was no facility for changing the film speeds once the camera was fitted into the housing.

The camera used Kodak 16mm 50 Ft. (15 Mtrs) magazines with Black and White film stock, possibly Kodak, which at the film running speed of 16 fps gave a total running time of approximately 4 minutes for each magazine.

Each full winding of the spring motor gave 6 metres running length of film which was equivalent to approximately 1 min 25 seconds of screen time.

The bulk of the film brought on the Expedition was not used as they could not develop it themselves and needed to ship it to New York to be processed.

They also encountered many problems with the housing which leaked due to external pressure at depths of 8/10 Mtrs.

Flooding of the housing necessitated the drying out the camera on the surface by stripping down and re-assembling.

The other problem that they encountered was that at depth

the motor winding lever was pushed back against the drive shaft, due to the external pressure of the water, and that tended to jamb the shaft which affected the normal operation of the camera. They devised a crude means of counteracting that difficulty using a small piece of wood inserted against the outer wall of the housing, inside the winder.

In the finished film there were no apparent shots of the movie camera in use which suggested that they did not have more than one camera in a housing.

Featured in the book 'Diving to Adventure' ('Unter Korallen und Haiem'), which was published in 1941, there was one 'still' shot of an Underwater Movie Camera being used, mounted on a tripod on the floor of the seabed (Ref. Page 216, Photo No. 65).

Based on that photograph I visualized the Housing 'A' as shown on the sketch above.

In one section of that book (Ref. Page 156) there is also a description of Hans using the movie camera while a diver attempted to bait a Moray eel.

Finally the three students managed to get on the last ship to leave Curacao, and travelling via New York, they returned to Austria after 15 months of adventure.

The final filming took place in the Adriatic Sea (Dubrovnic), and the film was screened in December 1942, entitled 'Pirsch unter Wasser'.

2<sup>nd</sup>. Film:

'Menschen unter Haien' (Men and Sharks) 83 mins B+W 16mm

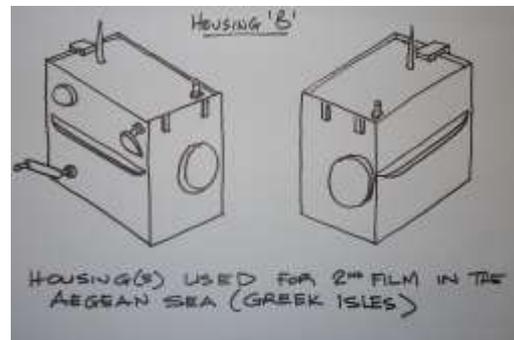
The film was first screened in Switzerland in 1947, in Austria 1948 and finally in Germany in 1949.

This film is based on an Expedition to the Aegean Sea and the Greek Islands of Sporaden, Kykladen and Kreta, which commenced on June 12, 1942 (remarkably in the middle of WWII).

The cameras chosen for this Expedition were two(2) Movikon K16's for the overwater filming and two(2)Siemens for the underwater filming, models unknown (?).

Housing 'B' was used for this Expedition.

(Housing 'B')



Siemens 16mm cameras were manufactured by Siemens & Halske, Berlin.

It is probable that the model of Siemens camera used was the Model B, C or CII or F. The CII was manufactured from 1938 - 1940 and later from 1947 - 1950/1.

Model CII is shown below

(Siemens Model CII camera)



(Note: This same camera was found in the example of Dr. Kurt Schaefer's cast Aluminum Housing which he designed/built for the later 1950 Expedition to the Red Sea.

The precise date of manufacture of his housing is not known but believed to be 1947.

I refer to this as Housing 'E'

(Housing 'E' - Kurt Schaefer)



This example of Dr. Schaefer's housing and the wooden casting model is on display in the AQUAZOO Aquarium/Museum in Dusseldorf.

(Interior view of Housing 'E')



Kurt Schaefer's housing has a Siemens Model CII camera in it)

In the 1942 film there is a photo of a movie camera in a housing being used underwater BUT it is NOT any of the examples to be seen in AQUAZOO. I refer to it as Housing 'B'.

The photo of the housing in use appears to be like Housing 'B' (see sketch above), constructed of sheet brass with brazed joints and only with the control for the winding of the motor spring and the start/stop button.

There is no external control of the lens aperture or focus or film running speed.

If the model of Siemens camera selected was the CII then it was a standard camera, with a high quality 'fixed' lens BUT with the ability to easily fit 'gear rings' to control aperture and focus as was subsequently done in some of the housings viewed.

In the book 'Menschen Und Haien' which was published in 1949 (translated into English in 1954) it is mentioned that the two housings were constructed by a small factory in Vienna.

Hans also said that he did not select the Agfa Movex 16-12 camera, also with a unique film magazine, as it's 'fixed' lens was not suitable for filming underwater.

He also said that his reason for not continuing to use the Movikon K16 (as in the Curacao Expedition) was that because it used standard KODAK film magazines and as Kodak was unwilling to load Agfa film into those magazines he was restricted in using his preferred choice of film stock.

For that reason the Siemens camera magazine was his first choice.

He continued using Siemens cameras, underwater, for this and his subsequent Expeditions to the Red Sea.

Above water for his second film he also used the Zeiss Movikon 16 (1935), with 30mtr. Daylight spool loading features, as opposed to 15 mtr. magazine.

This was a much larger and heavier camera and was never incorporated into any housing, to my knowledge.

3<sup>rd</sup>. Film:

'Abenteuer in Rotem Meer'  
(Adventure to the Red Sea)  
80 mins B+W 16mm

First screened in Vienna and then Germany in September 1951.

It was awarded First Prize for long documentary films at the Venice Film Festival. The film covered the 1949 Red Sea Expedition and the subsequent mid April 1950 Red Sea (Port Sudan) Expedition with Lotte Baierl.

In the first Expedition to the Red Sea, Hans departed from Vienna by air on October 14, 1949, alone.

His equipment 'manifest' is shown on Page 17 of his 3<sup>rd</sup>.Book 'Under the Red Sea' ('Manta: Teufel in Roten Meer') Published in English in 1952.

In it is shown the 'brass-plate' housing, maker unknown, which is on display in AQUAZOO

(Housing 'C')



(Interior of Housing 'C')



It is probable that a Siemens camera was also used in that housing.

In the later Red Sea Expedition (1950) we know that Hans used three Siemens cameras, of a special 'Limited Edition' Model BII.

This camera was designed to accept interchangeable lenses, c-mount fitting (which was now Universal, as distinct from Kodak, Zeiss and Agfa who each had their own unique design of mounts for their lenses).

Two of the cameras were fitted with wide-angle lenses and the third with a tele-lens, (believed to be 50mm (?) focal length).

This was a 'special' Siemens camera to use the c-mount interchangeable lenses. Three other models would follow later, in the Siemens camera range, all with the c-mount lens fitting feature.

The housing(s) used for this camera were constructed of brass sheet (painted black).

The main body of the housing was tubular in shape and the sides were bow-shaped with handle-grips fitted, as well as external controls to wind the spring motor, alter the film running speeds, alter the focus and aperture and run/stop the camera motor

(Housing 'D')



The above Housing is in the AQUAZOO Museum in Dusseldorf.

Another example of this Housing, with an extended Lens Port (suitable for tele-lenses as well as the Standard 25mm lens), is owned by HDS, USA and was previously purchased/owned by the Canadian Underwater Diver/Photographer Jack McKenney.

(Housing 'D' with camera)



It comes with one of the Siemens Model BII (limited edition models) cameras.

This camera and lens are each stamped with numeral '4'. Presumably the two other Siemens cameras are stamped '3' and '2' (?).

The Serial Number of the camera is BII/7003.

I am suggesting that the Serial Numbers of the other two cameras are BII/7000 and BII/7001 (?).

(Siemens Model 'BII' camera from USA HDS housing)



The camera in the U.S.A. is in poor condition but does have a 25mm Schneider Kreuznach lens with a serial number suggesting it was manufactured between June 1942 and September 1948. The likely date of manufacture of this lens is late 1947 or early 1948.

The cameras for this Housing (three in total) were adapted with 'studs' fitted at three points on the 'mechanism side', which in turn protruded through the side-wall of the housing, when the camera was positioned in the housing, and these studs were secured by 'nuts' on the outside.

Each of these 'holes' needed to be made 'water-tight' with rubber o-rings or a sealant.

The same would be true for the 'winding shaft', 'speed change lever' and 'start/stop control'.

All these 'penetrations of the Housing side-wall' are potential points where water can enter, so extreme care must be taken in the 'gasket design' for each one.

On the front face of the Housing one of the lens gear controls is carried to the exterior to allow changing of the lens aperture.

On the opposite 'bowed' side-wall, which is the removable cover of the housing, is fitted the other lens gear control for altering the focus.

Because the camera is rigidly secured in position, changing of film magazines (cassettes) is done without removing the camera, unlike in other housings using Siemens cameras. It does, however, mean that the camera is 'permanently fixed within the housing'.

The same Housing in AQUAZOO Museum has a simple lens port (for standard or wide-angle lenses).

There is no camera accompanying this housing.

The whereabouts of the other two(2) Siemens BII cameras, used on the Expedition, is unknown. Hopefully they still survive !.

The Housing is also fitted with a Schraeder Valve to allow air to be pumped into it, giving an 'internal positive pressure'.

In the event of a minor leak developing underwater small bubbles will emerge through that 'point' and the Diver can surface to avert total flooding and thereby secure the safety of the camera, with minimal damage.

Judging from the condition of Camera '4' it is evident that such 'leaks' did occur but the camera was salvaged in time.

Some discoloration of the metal and leather did occur on the camera but the mechanism continues to function. An example of a 'new' version of that same camera is shown below.

(New Siemens Model 'BII' camera)



This camera was 'custom-made' by the Company in order to accept interchangeable c-mount lenses, thus satisfying the use of Wide-angle, Standard or Tele lenses by Hans Hass.

There are reputed to be only a maximum of ten(10) examples of the Siemens BII manufactured.

I can account for a total of six(6).

4<sup>th</sup>. Film: 'Xarifa' 86 mins.  
16mm Colour

Filmed in the Caribbean,  
Galapagos Islands and Cocos  
Islands.

The camera used on this Expedition was an Arriflex, overwater and also in a custom-built housing, underwater. Artificial lighting was used extensively in this film. The Arriflex may have been 16mm or 35mm.

Book: 'I photographed under Seven Seas' ('Ich fotografierte in den 7 Meeren')  
Published in 1955 (in English 1956).

This book includes several photographs of the HDS/AQUAZOO housing with the Siemens BII camera and also shows the Arriflex camera in it's underwater housing.  
(Pages 72; 126; 129; 137; 138; 152 refers)

Book: 'We come from the Sea' ('Wir kommen aus dem Meer')  
This book Published in 1957 (in English 1958) and relates the experiences of Hans Hass since 1951 and refers to the three(3) Siemens cameras which had been used on the Red Sea Expedition (Page 75).

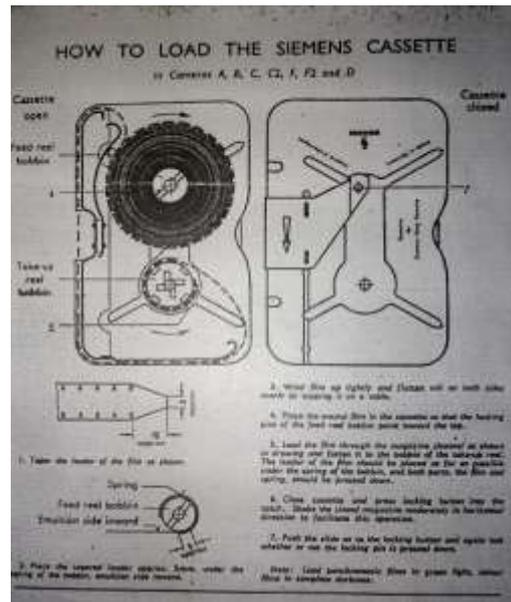
In conclusion, it is evident that Hans had favoured the compact and reliable Siemens 16mm cameras for many of his earlier films.

They offered the range of features that he needed, such as 24 fps filming speed which was desirable for adding sound to the film, post-production.

They were compact and light, yet durable and reliable.

They also offered a simple, yet reliable, film cassette, which could be re-loaded easily, unlike the Kodak magazine.

(Siemens 16mm cassette)



SIEMENS KINO Technik continued manufacturing Schmalfilm (16mm) cameras only up to 1951.

They continued with a 16mm 'Laboratory' / 'Security' model Recording camera until 1968.

They developed a prototype Underwater Housing for the camera in the early 1950's BUT never went into production.

(See photograph below)

(Siemens Underwater Housing)



(Interior of Siemens housing



It is possible that Hans Hass may have collaborated with the Company in the development of the prototype model (!).

This Housing was developed with the Model BII camera in mind BUT it is also possible that it could be made to suit their existing Model F camera.

(Siemens Model 'F' camera)



It is of interest to note that Hans Hass had requested a Siemens Model F camera, from his Supplier in Vienna, Walter Lochmann, in March 1950 before his departure for his second Red Sea Expedition.

The Model F camera was only manufactured between 1936-1938, hence we do not know if he did acquire a Model F or if instead the three 'Specials' - Model BII, were manufactured instead to satisfy his requirements.

Whether the Model F camera was, in fact, ever used in any Underwater Housing and on any Expedition, remains to be confirmed.

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