

The Beginning of the Nat.Lab.

When Holst had been appointed the Natuurkundig Laboratorium (literally the Natural Science (Physics) Laboratory) was formed. It was soon to be known throughout Philips as the Nat.Lab.

The original Nat Lab was located in the lamp factory in the Emmasingel, a street near the centre of the town of Eindhoven. Four rooms were partitioned off for the laboratory a large working room, a study, an instrument-making workshop and a room to house accumulators. Holst arrived very shortly after the introduction of the gas-filled lamp and found there were a number of problems that desperately needed to be solved. As Holst later said:

.... they were not very obvious problems, not at all simple for the group of people then at the factory. These were mainly chemists..... they had done fine work in the construction and development of machines for making lamp components. But in the case of the half-watt lamp the most serious problem was photometry.

In 1914 the consistency of manufacture of electric lamps left much to be desired and in order to select lamps into different categories of voltage and candle-power, the actual light output had to be measured for each lamp using a photometer. A photometer, as its name suggests, is used to measure light and the photometers in Philips could only do this accurately for light coming from one direction. This was quite satisfactory for the old lamps with a single folded filament which emitted approximately the same amount of light in every direction at right angles to the lamp axis, but it failed for the new gas-filled lamps with coiled filaments hung from supports in one plane. These

emitted light which varied with angle making accurate measurement time consuming and therefore costly.

Holst soon found a solution - using an integrating sphere photometer of the type pioneered by Ulbricht. This was a sphere pointed white on the inside into which the bulb to be tested was placed. A small window, screened from direct light from the bulb, allowed light to escape. This light was a known fraction of the total light emitted by the lamp and was measured using a conventional photometer.

The integrating photometer did all that was expected of it, the immediate problem was solved. But as Holst said:

When you begin one problem more soon come along. We soon found that there were so many important things that should be investigated that I suggested to Gerard Philips that we take on another person.

So Holst's first colleague was appointed and he joined the laboratory on 16 April 1914, just three and a half months after Holst. The man was Dr Ekko Oosterhuis^x and was also a physicist, a graduate of Groningen University. Oosterhuis had worked as an assistant to two of Holland's great physicists, Zeeman and Kamerlingh Onnes. He received his doctorate in 1911 - the title of his thesis was 'On the Peltier Effect and the iron-mercury thermocouple'. As in the case of Holst's doctoral thesis, it bore no relation to his subsequent work in the Nat Lab - a common experience, as we shall see later, of Nat Lab scientists.

Oosterhuis was the same age as Holst. His first job in the Nat Lab was to help Holst with the integrating sphere photometer. This instrument came as something of a surprise to him:

I had never seen such a thing before, but it was obviously necessary. For half-watt lamps it was

^x Golfers may be interested to know that Peter Oosterhuis is a grandson of Dr Ekko Oosterhuis

certainly necessary because in those days all the lamps were sorted by photometry.

As we shall see, Oosterhuis was destined to play a leading role in the Nat Lab during the following 32 years. He had a very special relationship with Holst which began soon after Oosterhuis came to the laboratory as Holst recognized when he wrote to Fokker:

Our laboratory is almost complete and is gradually acquiring a variety of instruments. We have really good equipment and will be envied by many people in the universities. It is much more convenient now because the two of us (Holst and Oosterhuis) can talk things over more easily and we can utilize the instruments better.

So the Nat Lab came into being. Small beginnings - but as Dryden wrote 300 years ago:

By viewing nature, nature's handmaid art
Makes mighty things from small beginnings grow.