László Detre and the Konkoly Observatory

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Prelude

In the seventh decade of the XIXth century changes occurred in astronomy, amounting to a revolution. Gustav R. Kirchhoff and Robert W. Bunsen discovered spectral analysis, which is the method whereby it is possible to draw valid inferences about the composition and physical properties of the emission source from its spectrum. Until then astronomy was to do mainly with measuring the time, the determination of the geographical position of earthly locations, that is with cartography and navigation or with mathematics through the study of celestial mechanics (for example Karl Friedrich Gauss was nominally earning his emoluments as the director of Göttingen Observatory).

The introduction of spectrum analysis into astronomy made it possible to study those physical processes, which produce the electromagnetic radiation observed through the telescopes. The epoch-making importance of this discovery was immediately recognized by Miklós Konkoly Thege, who decided right from the beginning to adopt observational astrophysics as the primary objective of his private observatory at Ógyalla established in 1871. He made regular observations of sunspots, organized a network for the observation of meteors, studied the structural changes visible on the surface of planets, and measured the spectra of some bright comets and stars. He was not satisfied with simply observing the phenomena, he also attempted to analyze them and find their explanation.

The 1860-1870s saw the beginning of the systematic study of stellar spectra. The Ógyalla Institute took the study of the spectra of stars brighter than 7.5 magnitude, and observable between $-15°$ and $0°$ of declination as its contribution to the programme. Between the years 1882-1885, the lion's share of the work was done by Radó Kövesligethy, who was working at the institute as a graduate trainee, on secondment from the University of Vienna, where he was completing his studies. Later he became a professor at the University of Pest, acquiring a world-wide renown as an authority on seismology.

With the passing of the years, Konkoly became increasingly worried about the future of his institute. On the one hand, he was apprehensive – and rightly so – that after his death his stellarium may share the fate of similar initiatives in Hungary, that is falling standards and general decrepitation. On the other hand, he also appreciated the fact, that his financial resources were insufficient to finance a modern observatory in competition with the outside world, mainly America. Nationalisation appeared to be the only solution. He has already mooted a plan to this effect in the eighties, but it was not before 1899 that, using his parliamentary influence (in the interim he also became an MP), he could realize his intention. After the signing of the necessary papers on 16 May, 1899, the observatory became state property on 20 May, 1899. There were some people of the opinion, that Konkoly's timing was intentional. 21 May, 1899 was the fiftieth anniversary of Buda's liberation from the Austrians during the Hungarian War of Independence, that set the final seal on the sad fate of the observatory on St. Gellért's Hill.

The new National Observatory (full name: Royal Hungarian Astrophysical Observatory of the Konkoly Foundation) selected astronomical photometry as its principal field of exploration. Konkoly chose photometry as the principal field of study for his observatory because at the end of the XIXth century it became more and more obvious that, in the field of spectroscopy, even the state-financed establishment would be unable to keep pace with the rapidly growing observatories operating in the wealthy Western countries. To be able to employ the methods of photometry, it was necessary to establish a system of reference, covering the whole celestial sphere, which could serve as etalon for future measurements. The direction of this program went to the observatory of Potsdam, near Berlin. It was an international effort, and Ógyalla undertook to collect data on more than two thousand stars brighter than 7.5th magnitude, in the segment of declination -10° to 0°. Photometry was applied not only for creating the system of reference, but also for the study of stars of variable brightness. Konkoly realized that time passes equally fast for the rich and the poor, so, in some fields of study, the advantage of rich, well endowed observatories can be cancelled out, and more modestly equipped observatories could remain competitive. For this reason, the study of variable stars was chosen, in addition to contributing to the photometric reference system, as the primary task of the institute. This decision was to be the main determining factor in the further operation of the observatory.

At the First World War's end Hungary was also buried under the ruins of the defunct Austro-Hungarian empire, and both Ógyalla and the observatory found themselves under alien rule. By the end of 1918 the relevant ministries began to discern the victors' plans for the new Europe, so the Ministry of Education ordered the dismantling and repatriation of all the instruments and equipment in the state's possession. By January 1919 all the dismantled material was safely back in Hungary.

In 1921 the Hungarian government, acting on the recommendation of the Minister of Education, Dr. József Vass, accepted plans for a far-reaching program for the promotion of education and science. The observatory on the Svábhegy (Schwabian Hills) was built under the aegis of this programme. Budapest's local government voted to place twelve acres of land at the disposal of the state government with the proviso, that it may only be used for the building of the new observatory. Construction works started in the autumn of 1921, and one year later observations already started in the first dome. The order for the 24 inch reflector, sent originally to Heyde, but cancelled because of the war, was renewed. The installation of another dome was completed with the financial support of the Budapest local government in 1928. So, in the company of a 16 cm refractor from Ógyalla (in another, smaller dome), and of a meridian instrument, which was used among other things for providing accurate time-signals for the railways, the reincarnated Konkoly institute could also start its scientific work.

Next year, in 1929, László Detre joined the scientific staff of the institute.

Years of study

László Detre was born on April 19, 1906 in Szombathely (Steinamanger). His father, Dr. János Dunst (Detre changed his name in 1933) was a city councillor who died when Detre was only 2 years old. His mother educated him on her very modest widow pension. He studied in the secondary school of the Premonstratensers of Szombathely and had taken his final examination in 1924. Already in these years he showed a very keen interest in natural sciences and in the age of 13 he founded a study circle of natural sciences in his school. Above all, he was a skilled mathematician and he won a Hungarian contest in mathematics. As a consequence he was admitted to the Eötvös Collegium and studied at the Pázmány Péter University of Budapest between 1924-29. After completing three years at this University, he received a fellowship at the Friedrich-Wilhelm University in Berlin.

At that time this University had excellent professors in astronomy, mathematics and physics. According to Detre's university record he studied astronomy from Paul Guthnick, Ernst Kohlschütter and August Kopff. Albert Einstein and Max Planck were his professors in theoretical physics.

The 1920s were famous for the birth of quantum mechanics which made some kind of a revolution in physics. At the same time astronomy also experienced a revolutionary change. Following Hubble's discovery, the concept of the large stellar islands in the Universe, like our Milky Way, became widely accepted. These new results gave a new stimulus to the statistical studies of the space distribution of the stars.

László Detre made acquaintance with these studies in Berlin and prepared his PhD theses on stellar statistics under the leadership of A. Kopff and E. Kohlschütter. He defended his Theses on July 25, 1929. His dissertation was published as the first issue of the institute's communications series (*Fig. 1*).

Before starting the regular work in the institute at the Svábhegy, he made six-month study trips in Vienna and Kiel.

Research fellow at Svábhegy

The science of astrophysics, born in the last three decades of the XIXth century continued its explosive growth all through the subsequent decades. This rate of growth was almost compatible with the growth of physics itself. In the 1920s it was proved by observational astronomy that stars tend to agglomerate in gigantic clusters (galaxies), and these galaxies are getting further away from each other at a rate proportional to their distance. This is a direct consequence of the relativistic models of the universe. The dynamic exploration of galaxies – including our own Milky Way system – also took place at an ever accelerating pace. The list of these achievements would not be complete without mentioning theoretical investigations on the internal structure of the stars, and their confirmation by observations.

Stars of variable brightness are important members of the family of stars. One of their important sub-groups is formed by those stars, whose changes of light emission are caused by oscillations propagating in the body of the star itself. When the oscillations reach the stellar surface, they cause a characteristic pattern of light changes, which carry important information about the internal structure of the stars. The first comprehensive treatment of this subject was the book written by Sir Arthur Eddington. He showed that the pulsation period of a star (P) and its average density (ρ) are related by a simple

A KONKOLY-ALAPITVÁNYÚ BUDAPEST-SVÁBHEGYI M. KIR.
ASZTROFIZIKAI OBSZERVATÓRIUM CSILLAGÁSZATI ÉRTEKEZÉSEI
I. kötet. 1. füzet

ÜBER DIE RÄUMLICHE VERTEILUNG DER STERNE

VON

LADISLAUS DUNST

INAUGURAL-DISSERTATION
ZUR ERLANGUNG DER DOKTORWÜRDE
GENEHMIGT
VON DER PHILOSOPHISCHEN FAKULTÄT DER
FRIEDRICH-WILHELMS-UNIVERSITÄT ZU BERLIN

Referenten: Professor Dr. A. Kopff.
Professor Dr. E. Kohlschütter.

Tag der mündlichen Prüfung: 25. Juli 1929.

BUDAPEST, 1929

Figure 1: Cover page of the first issue of the institute's communications series containing Detre's PhD Theses on the space distribution of stars.

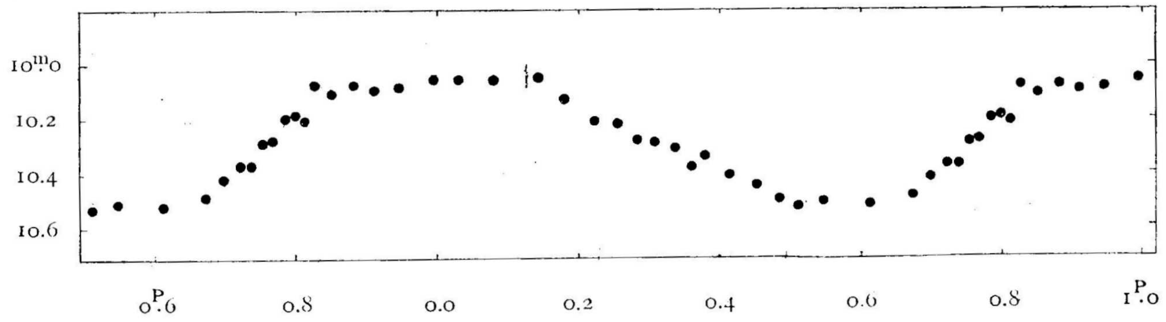

Figure 2: Light curve of RU Piscium as published in the Astronomische Nachrichten in 1931.

formula: $P\sqrt{\rho} = C$, where C is constant within the limits of the theory. Variable stars of short (0.5-1 day) period undergo several tens of thousands of periods during a generation. So their period can be measured to the accuracy of 10^{-5} s. Consequently, the processes, which would take several millions of years to complete, can cause an observable difference in the star's period in only a few decades. Research papers, devoted to the study of period changes caused by the evolution of stars, started to appear in the 1930s.

The Astronomische Gesellschaft, which was dominated by the Germans, held its 1930 General Meeting in Budapest, where some of the leading lights of the Anglo-Saxon astronomical community were also invited. Arthur Eddington was one of those invited, and he, according to the testimony of contemporary photographs, also paid a visit to the observatory in the Svábhegy. We do not know whether they discussed Eddington's new theories about the pulsation of variable stars and their observable consequences, but we know that, with the work of László Detre and later Júlia Balázs in the 1930s, the study of period and light curve variations of short period, RR Lyrae type pulsating variable stars, became one of the most important research fields of the institute at the Svábhegy.

It soon became obvious that the problem was not as simple as it first appeared, because there exist some period changes which cannot be attributed to the passage of time and the ageing of the star. The first task was to eliminate those from the changes studied. The study of variable stars provided decades of work for the institute, and it is still going strong.

I think it is not by chance that Detre changed his research field from stellar statistics to the study of period changes of short periodic pulsating variables. His first paper on this subject was published on the RR Lyrae star RU Piscium in 1931 in the Astronomische Nachrichten (*Fig. 2*). Detre used visual photometry in this work obtained with a Graff photometer attached on the 24 cm Heyde refractor (*Fig. 3*). In 1933 the visual technique was changed onto photographic observations. The 16 cm Merz was replaced by a 19 cm Cook refractor equipped with a 6 inch astrograph for photographic observations (*Fig. 4*). This instrument became the main observing facility for the further variable star research in the institute.

The photographic observation of globular clusters was another new departure for the institute which was initiated by Detre, made possible by the installation of the 24 inch telescope. In these clusters, hundreds of thousands of stars, among which there are many variable ones, are squeezed together in a relatively small volume. This makes it possible to record quite a few hundred variable stars on a single photographic plate. During the 1930s the globular clusters became very important. From their spatial distribution it became

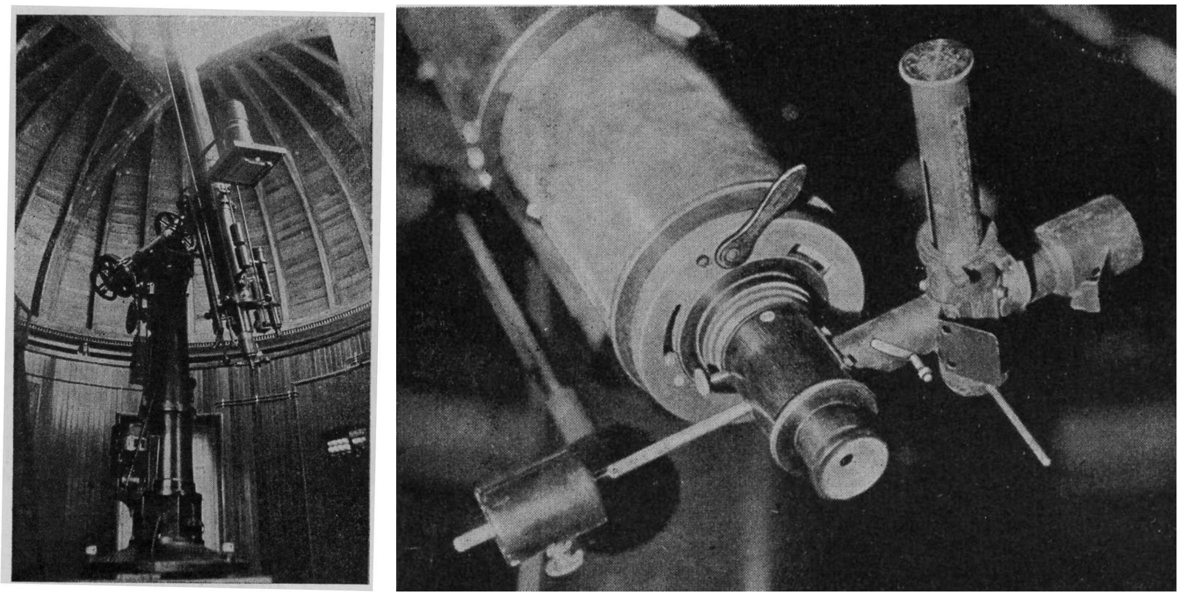

Figure 3: The 20 cm Heyde refractor of the institute (left) and the Graff visual photometer attached to the telescope (right).

possible to deduce the location and distance of the center of our Milky Way system. Subsequent studies revealed that, according to our present knowledge, these clusters are the oldest objects in the Universe, and their age is an excellent clue as to the verification of modern models of cosmological theories.

László Detre as director of the institute

On December 31, 1943 László Detre was appointed director of the institute.

The institute in the Svábhegy did not survive WWII without serious consequences. From 1943 onwards conditions rapidly deteriorated. Most of the periodicals and scientific publications published abroad failed to arrive. From the summer of 1944 the allied air offensive became more and more dangerous. On the top of Csillebérc, in the close neighbourhood of the institute, an AA battery was installed and, as it was a legitimate target, the director was, not unreasonably, worried about suffering collateral damage, should the allied flyers attempt a counterstroke. The 24 inch mirror was dismantled, but with the smaller telescopes observations continued until the early days of December, 1944. On the 25th of December, 1944 the institute was occupied by Soviet troops, specifically by a battery of field artillery, with the strength of about six hundred soldiers and one hundred horses. The soldiers were billeted in the main building, the domes were used as stables for the horses and as field kitchens.

Three days after the occupation Detre reached an agreement with the Soviet command, to the effect that the library and some of the laboratories were declared 'off limits' and free from billeting. When I was a young researcher, I heard some rumors about one of the Soviet officers having been a fellow astronomer and that the quick and favorable response to the institute's request was due to his intervention. While we were preparing for the centenary of the institute in 1999, I tried to verify this story, but I could not find anybody either to confirm or to deny it.

Today it is with pride that we show our library to our visitors, and the exemption

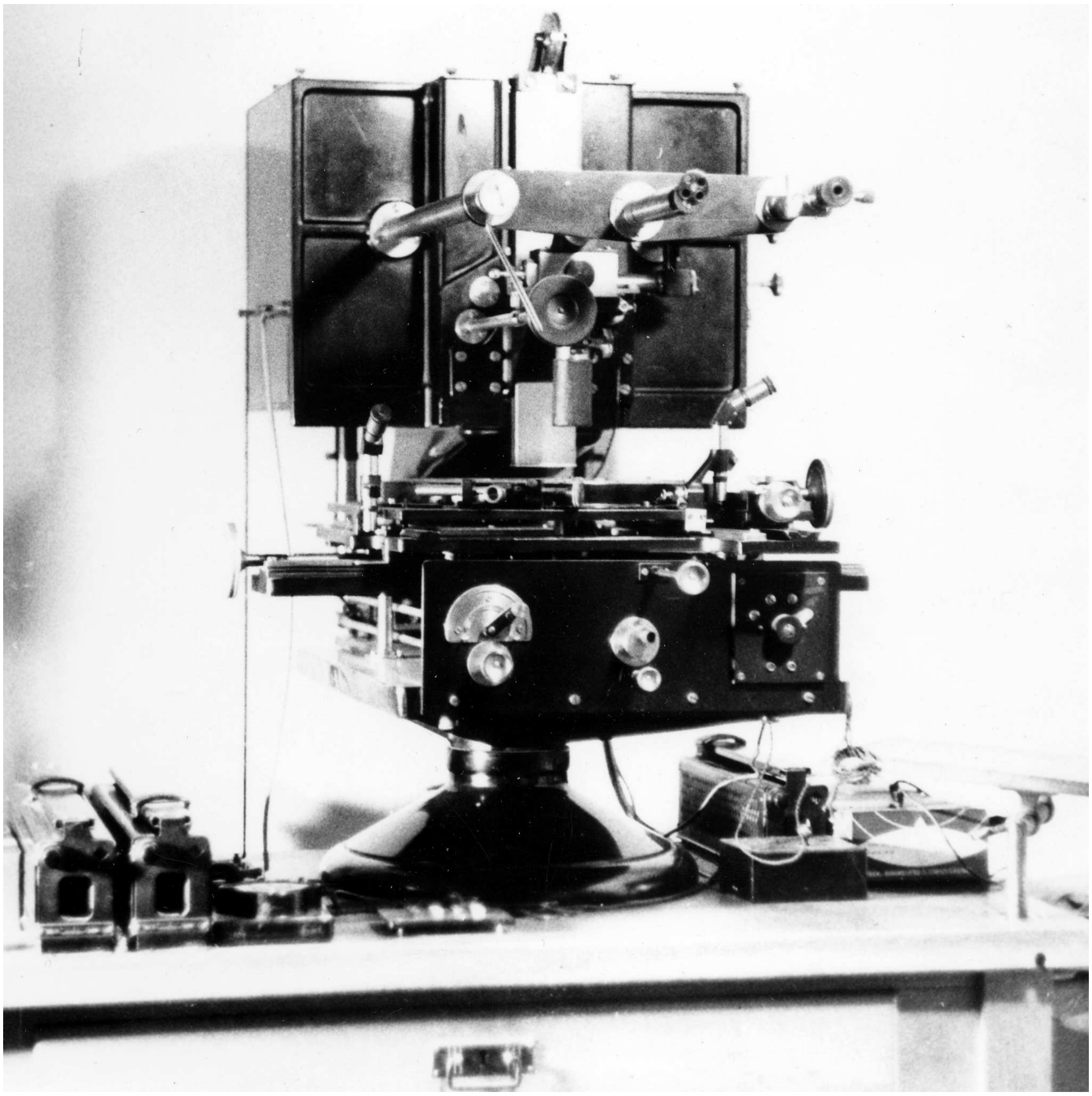

Figure 4: Photometer used for measuring the plates obtained with the 6 inch astrograph.

from billeting was a decisive factor in this. In spite of the turbulent history of Central Europe, complete sets of all the important astronomical publications (the Astronomische Nachrichten from 1823, the Astronomical Journal from 1851, etc.) can be found in our library. Publications not received during the war were successfully replaced soon. Thanks to the Rockefeller Foundation, the library received the missing volumes of the Astrophysical Journal and Astronomical Journal of 1941-46 and 1941-47 years, respectively.

As an acknowledgement of his internationally respected scientific results, László Detre was elected a corresponding member of the Hungarian Academy of Sciences in 1947.

In 1946 a decision was made on establishing a department of solar physics. For making heliophysical observations a photo-heliograph and Konkoly's 25 cm telescope were installed. The regular observations were started in March 1950. The whole solar disc and those parts covered with spots and prominences were regularly observed photographically. Based on their observations, the members of the department informed the National Meteorological Service by phone, when it was necessary, on the development of the solar activity. Beside the observations the statistical investigations made a significant part of the activity of the department. In 1957 a decision was made on moving the Department of Solar Physics into Debrecen where it started to work on January 1, 1958 as an independent institute on a location provided by the Kossuth Lajos University of Sciences.

Astronomical Institute of the Hungarian Academy of Sciences

At the foundation on the Svábhegy the institute belonged to the Ministry of Cultural Affairs but after that it joined the "Collection University" and in 1934 the Pázmány Péter University of Sciences. In 1948 the Ministry of Cultural Affairs received it back again. On the occasion of changing the political system, in 1948 a decision was made on establishing a network of research institutes, independent of the universities and organized within the framework of the Hungarian Academy of Sciences. On February 1, 1951 according to the 10/1951/I.6./M.T. decree of the Council of Ministers the Academy took over the institute under the name of Astronomical Institute of the Hungarian Academy of Sciences (widely known as the Konkoly Observatory abroad). Two departments were formed at the astronomical institute of the Academy: the astrophysical and the heliophysical.

After WWII the advance of astrophysics re-started at a very fast pace indeed. One of the most decisive factors in its advance was the appearance of radio astronomy. The discovery of the theoretically predicted radiation of the neutral hydrogen at the wavelength of 21 cm was its first great achievement. The appearance of computers also produced revolutionary changes. The traditional field of astronomy, optical observations were also significantly influenced by these changes. The giant 5 m reflector at Mt. Palomar started its operations in 1949. There was another reflector there with 180 cm mirror diameter. This telescope of the type Schmidt has a wide field of view (6.5°). With this instrument, the mapping of the whole firmament (up to about 21st magnitude) was completed in a few years. The result of this work, the Palomar Sky Atlas served as a starting point for many important explorations.

This rapid advance resulted in a dilemma for Hungarian astronomy. The problem was to find a compromise between the challenges presented by these advances, and the impoverished state of the Hungarian economy. One element of the solution was the introduction of photoelectric photometry. In the field of optical astronomy, the photoelectric multiplier played the leading role. In comparison with the conventional photographic plate, which

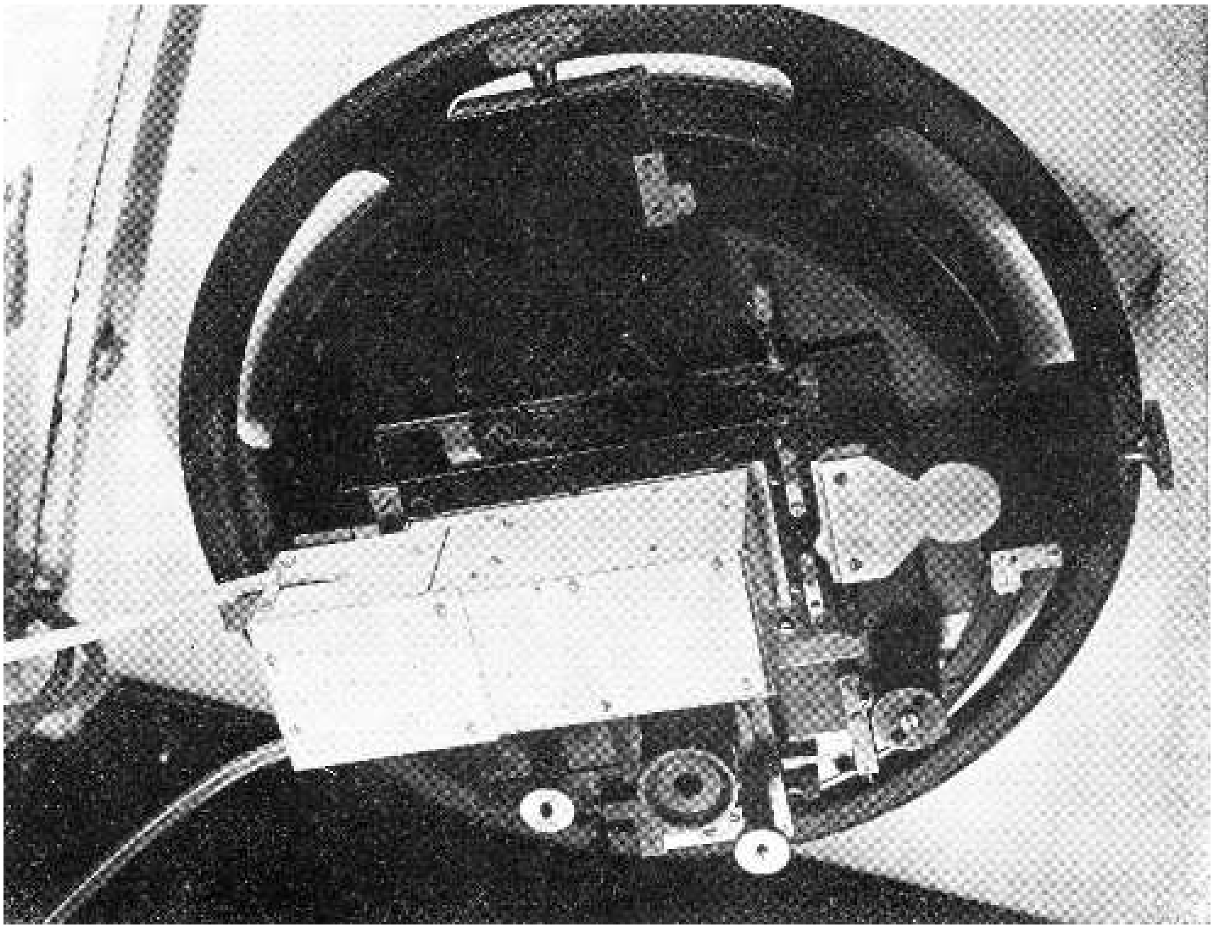

Figure 5: Photoelectric photometer attached on the Newtonian focus of the 60 cm telescope. The instrument used the 1P21 tube obtained from H. Shapley in 1948.

had the disadvantages of a less than one per cent quantum efficiency and the non-linear characteristics of its light sensitivity, the new instrument had a high quantum efficiency, linear characteristics and a much reduced level of noise.

After the war the institute and the firm 'TUNGSRAM Ltd.' conducted some joint experiments to develop a photomultiplier for astronomical purposes, but these failed to yield the desired results. In 1948 the then director of the institute, László Detre, received a 1P21 type multiplier from Harlow Shapley. This equipment made it possible to build a new photometer, which, fitted to the 24 inch telescope, enabled the institute to carry on with its work using really state-of-the-art technology (*Fig. 5.*). The first results were published on the photoelectric observations of the 1950 eclipse of ζ Aurigae in the No. 29 issue of the communications of the institute (*Fig. 6.*).

In 1954 they obtained a further 1P21 tube enabling them to observe down to 13th magnitude. Following the suggestion of the Dutch astronomer Theodor Walraven they rebuilt the amplifier of the photometer in 1955. Two further 1P21 tubes arrived in 1956 and László Detre received a further amplifier as a gift on the occasion of his visit in Leiden which made it possible to establish another photometric observing site based on a 25 cm reflector, so photoelectric photometry became one of the routine methods of observation.

Putting on orbit the first artificial satellite of the Earth in 1957, a new era started in the technical civilization which naturally had an impact on astronomical research.

MITTEILUNGEN
DER
STERNWARTE
DER UNGARISCHEN AKADEMIE
DER WISSENSCHAFTEN

ИЗВЕСТИЯ
АСТРОНОМИЧЕСКОЙ
ОБСЕРВАТОРИИ
АКАДЕМИИ НАУК
ВЕНГРИИ

BUDAPEST—SZABADSÁGHEGY

Nr. 29.

PHOTOELECTRIC OBSERVATIONS OF THE 1950 ECLIPSE OF ZETA AURIGAE

by

L. DETRE and T. HERCZEG

The eclipse of the B-type component in the remarkable binary system ς Aurigae occured for the last time in 1950 August and September. On this occasion observations were secured with a photoelectric photometer attached to the 24-inch reflecting telescope of the Budapest Observatory. The photoelectric equipment was an R. C. A. multiplier phototube with a d. c. amplifier and with a galvanometer of low sensitivity. The multiplier phototube was presented us by Dr. *H. Shapley*, Director of the Harvard Observatory, at the Zürich meeting of the I. A. U., 1948. The equipment will be described in another paper of this series.

Figure 6: The first published result based on photoelectric measurements carried out in the Konkoly Observatory

The Astrosoviet (Astronomical Council) of Moscow asked our institute to participate in the observations necessary for computing the orbits and donated 40 telescopes for visual observations well suited for installing a satellite tracking station. Besides Budapest such stations were installed in Baja, Miskolc and Szombathely which did not belong to the Academy, the professional coordination, however, was carried out by the institute. Following Detre's initiative, the station of Baja joined the institute but the others kept their independence.

In the field of artificial satellites the cooperations were realized within the framework of the INTERCOSMOS. In 1965 COSPAR had already two Hungarian members. The first computer program made in the institute in 1961 was related to the motion of the artificial satellites.

In 1970 László Detre received a State Award.

New station at Piszkéstető

The building of the observation station on Piszkéstető was a decisive impact of Detre's activity on the institute's life. The story of the Piszkéstető station had its commencement in the 1950s.

After the change of regime in 1948, a decision was made to set up of a network of research institutes under the general guidance of the Hungarian Academy of Sciences. One of the spectacular steps in this programme was the establishment of the Central

Research Institute for Physics. Following a decision made by the Council of Ministers, the Observatory in the Svábhegy also became part of this scientific network. In the context of the programme of extensive investment in science, it also became feasible for the institute to make a substantial capital investment.

At the beginning of the 1950s the improvements made to Budapest's public lighting and its increasing pollution made any further development of the observational facilities in the Svábhegy observatory pointless. In the early 1950s the Academy approved the acquisition of a wide angle telescope of the Sonnenfeld type, and the order was placed with Zeiss of Jena. Shortly afterwards the order was cancelled and a new order was placed for another wide angle telescope of the Schmidt type. This Schmidt telescope has a 900 mm mirror and a 600 mm correction plate, which makes her exactly half the size of the Mount Palomar Telescope, its sister, commissioned a few years earlier. The telescope was supplemented by the planned purchase of a 600 mm objective-prism, which was only marginally smaller than her biggest, 800 mm companion, the instrument installed at Hamburg. With the Schmidt telescope, Hungarian astronomy came again to possess a world-class instrument.

The Council of Ministers allocated nine million Hungarian Forints to astronomy. The construction of the new observatory started in 1958, at Piszkéstető, which is the third highest peak in the Mátra Mountains, 100 km NE from Budapest. The telescope itself became operational in 1962.

The development of astrophysics, that started after WWII, gained considerable momentum by the 1960s. In this, one of the decisive factors was the infusion of the revolutionary new microelectronics into the realms of astrophysics. With the appearance of electronic computers, numerical simulations (or modelling) became feasible. This enabled the scientists to replace their analytical approximations with more exact quantitative models, whose results could be directly compared to observational results. The turn of the 1950s saw the birth of models describing the evolution of stars. One of the interesting achievements of modelling techniques was, that with their help it was possible to verify the Hertzsprung-Russell diagram, which was discovered early in the century and relates the surface temperature of the stars to their absolute luminosity. Curve-fitting using these models can also yield the age of the cluster and its distance from Earth. The number of open, or galactic, clusters in our Milky Way system is estimated as several thousand. The examination of the HRD of these clusters is one of the important investigations carried out with the new telescope at Piszkéstető.

Perhaps the most spectacular touchstone of the stellar evolution theories was the theoretical clarification of the background to the explosion of supernovae. One of the most important problems concerning this subject is the determination of the stellar mass necessary to end up as a supernova. As the last supernova observed in our galaxy was observed by Kepler, our up-to-date knowledge must be based on observations of extragalactic supernovae. With the systematic survey of extragalactic events we might get a reasonable picture of the frequency of such events. With its 5° field of view, the Schmidt telescope at Piszkéstető is capable of regularly surveying areas rich in galaxies. It was in 1964 that the first supernova was observed. This was followed by the finding of 48 more, so it was at Piszkéstető, where almost ten per cent of the known supernovae were discovered in the era of photographic supernova patrols.

The Schmidt telescope also made the observation of special stars possible, such as the flare stars, showing sudden increases of light emission occasionally, or young stars at the beginning of their existence, showing a significant emission in the Hα line. The distribution of stars showing Hα emission yields important supporting data for the investigation of physical processes, occurring in molecular clouds active in the formation of new stars. In 1966 the Mátra station's instrument park was enriched by a Cassegrain-type telescope of 50 cm mirror diameter. The attachment of a photometer, developed within the institute, made it possible to utilize the favorable conditions prevailing around the Mátra station also in the field of photoelectric photometry.

At Piszkéstető the last and largest capital investment was the acquisition of an RCC telescope of 1 m diameter. In the beginning, the telescope was operated using CAMAC modules and a TPAi minicomputer, which were developed by the Central Research Institute for Physics. They were used for digitally positioning the telescope and collecting and storing the observed data. The telescope, augmented by the photoelectric photometer – developed by the institute – was in all respects up to contemporary world standards.

Unfortunately, László Detre did not live to see the inauguration of the RCC telescope at the end of 1974 since he died weeks before, on October 15.

International relationships

The institute had traditionally good relationship with German astronomy. Until 1942 it issued a summary report on the annual work to the Vierteljahrsschrift published by the Astronomische Gesellschaft.

Following the World War I to compensate the international reputation of the AG, the Anglo-Saxon powers established the International Astronomical Union (IAU). Since Hungary was fighting on the defeated side, its researchers were excluded, along with the Germans. Our relationship to the IAU was normalized only after the World War II. Although there were some efforts to establish American relationships (e.g. on the occasion of a longer study visit of Károly Lassovszky, later director of the institute), the young researchers typically had fellowships at German institutes. Of course, there were some efforts on the part of the scientists to remove this discrimination. The AG had its general assembly on August 8-12, 1930 in Budapest with the participation of several distinguished scientists from Anglo-Saxon countries (e.g. Arthur Eddington, Otto Struve).

The international relations of the institute were changed drastically after the war. As an opening of the new era, László Detre was admitted to the IAU, as the first Hungarian astronomer. After the change of the political system in 1948 international relations started preferring the Soviet Union. Until this time Hungarian astronomers had little contact with their Soviet colleagues, but then it changed drastically. Short and longer study trips to the Soviet Union became regular. In 1950 Boris V. Kukarkin, having an international reputation in the field of variable star research, suggested to start a cooperation in the main research field of the institute. In 1952 the Institute of Theoretical Astronomy of Leningrad requested us to cooperate in the precise determination of positions of minor planets having uncertain ephemerides. Even in this year a third scientific department of the institute was founded under the leadership of István Földes. The Department of Positional Astronomy and Stellar Statistics, however, stopped its operation after two years, since due to the recession of the economy, the reduction of the staff was ordered in the institute. This was solved by putting an end to the young department in 1954 (by dismissing the head and two coworkers).

Due to the bilateral cooperation agreements between the Academies of the socialist countries, personal contacts also became possible in astronomy. As a natural consequence,

Information Bulletin on Variable Stars
of Commission 27 of the I. A. U.
Number 1

Konkoly Observatory
Budapest.
1961 October 4

TWO VARIABLES OF BETA LYRAE TYPE WITH LONG PERIODS

Recomended for spectrographic and photoelectric observations are the two variables of Beta Lyrae type, EP Lyrae and HP Lyrae. Both objects have been formerly classified as RV Tauri type stars according to their periods when no spectrographic observations were available. Objective prism plates taken with the Sonneberg 50/70/172 cm Schmidt telescope revealed the early supergiant spectral types of both stars.

Data of the two stars:

	period	spectrum	range primary	range second.	max. brightness
EP Lyr	$83^d.315$	AI + GI	$0^m.6$	$0^m.2$ vis.	$9^m.9$ vis.
HP Lyr	140.75	AI + AI	0.5	0.5 pg.	10.5 pg.

Noteworthy are the secondary variations of brightness during primary minimum of EP Lyrae. These lead to the conclusion that the G component of this pair is intrinsically variable.

For further details see MVS 499 - 500 and 586 - 588 (forthcoming).

Sonneberg Observatory of German Academy of Sciences,

W. WENZEL

Figure 7: The first issue of the IBVS in 1961

not only our researchers travelled to these countries but a high number of colleagues visited our institute from there. In 1959 an opportunity was presented to establish contacts with Chinese astronomers. In the framework of this, the institute donated a photoelectric equipment to the Observatory of Nanjing. In order to strengthen the cooperation with Romanian astronomers, an 1P21 photoelectric multiplier was donated.

Starting in the second half of the fifties, the cold war started to turn milder and in the life of the institute an apparent sign for it was Detre's participation at the general assembly of the IAU in Dublin in 1955. The 27th Commission of the IAU (Variable Stars) supported the widening of the international cooperations in a special resolution.

A very high reputation of the Hungarian variable star research and the work of László Detre, was an international conference held in 1956 August 23-28 in Budapest dealing predominantly with period and light curve variations of RR Lyrae and δ Cephei stars.

The revolution in 1956 shocked the institute dramatically. The migration wave following the revolution resulted in the leave of three excellent researchers (Tibor Herczeg, Imre Izsák, and István Ozsváth) who started their career with great promise. Although, they were soon replaced by young people starting out on a career but the loss of their expertise had a long lasting effect on the institute.

It was an important milestone of the international appreciation when the IAU commissioned our institute to edit and publish the Information Bulletin on Variable Stars, on the occasion of the participation of László Detre at the IAU General Assembly in Berkeley in 1961 (*Fig. 7.*).

There were two further events of international importance in the life of the institute in the last years of Detre's directorship in which he played a leading role. In 1968 the Hungarian Academy of Sciences hosted an IAU colloquium on non-periodic phenomena in variable stars in Budapest. Following the initiative of Soviet astronomers, the scientific academies of the socialist countries signed a cooperation agreement on the physics and evolution of stars in 1974.

One has to pay special attention to the agreement with the Armenian Academy of Sciences. It was quite uncommon that a member republic of the Soviet Union established international relationships getting round Moscow. This agreement obviously was a tribute of Victor Ambartsumian, the president of the Armenian Academy of Sciences and an astronomer of very high international reputation. He visited our institute many times and also had a good personal relationship with László Detre and our researchers. Following this cooperation agreement, signed in 1968, the Armenian and Hungarian astronomers had a very tight contact until the collapse of the Soviet Union.

Epilogue

On the occasion of Detre's centenary, the drawing of conclusions and the recapitulation of the lessons learned is almost inevitable. Many of us are having our minds exercised by the problem of trying to find the source of strength that kept our institute in existence, in spite of the trials and tribulations it was exposed to. How typical was this of the intellectual and scientific life in Hungary? An important element of the success was the finding of a 'window of opportunity' between the international scientific challenges and the material resources of Hungary, but this is not the whole secret.

There is also an independent factor behind the success, which may be called the human factor. It is a loose concept and may include everything that happens inside us and influences our decisions, but remains invisible to the contemporary onlookers and even to history. I have been struck by an idea, found in the writings of István Bibó[1], that there is no natural law which could guarantee success in the development of human societies. The evolution of any social structure is a possibility, which can be achieved by making the right decisions, but the other outcome is also possible.

During the years of Detre's activity, the institute was faced with many crises, but managed to survive them successfully. Does this fact have a special meaning for the intellectual life of Hungary? It is my firm belief that the answer is an unqualified 'yes'. The other important question, which may be even more important than the first one is: Where to go and how to get there. Science will be one of the most important defining factors of any future society. The Hungarian society must develop the inner strength to answer this challenge. What this answer will be, and how effective it will be, is also going to be a determining factor for the future of the Konkoly Observatory, but the heritage of László Detre's work has a significant impact on it.

[1]István Bibó, Hungarian social scientist, one of the spiritual fathers of the Hungarian revolution in 1956