From alchemy to the present day - the choice of biographies of Polish scientists

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Introduction

Science should not have borders, however...

...in many publications describing new science achievements it provides not only a workplace of the scientist - university or country - but often the nationality of the scientist. Moreover when new discovery happens sometimes a problem occurs which scientific institution was the first and who was the discoverer.

We all remember the dark years of third and fourth daceades of the twentieth century and totalitarian ideologies such as fascism in Germany and Stalinism in the Soviet Union, where not only the social sciences but also natural sciences, mathematics and logic have become equally ideological doctrines such as the so-called teaching about race ‚Rassenkunde'.

Remembering those dark years of science we try to do research in isolation from ideology and nationality. However, knowledge of the facts and science developments in the country, getting to know the scientists and their discoveries certainly are factors of enabling to understand of the culture of the country and its specificity.

Therefore, we give into your hands a booklet briefly showing the development of science in Poland and presenting a few dozens of Polish scientists. The book was created in frames of some courses realised in the Department of Chemistry and Chemistry Education of the Pedagogical University of Kraków. The portraits of the scientists are prepared by the students of Chemistry, Biology and Geography as one of a tasks which aimed familiarizing them with the history of the natural sciences in Poland, since according to J. Pilsudski: a nation that loses its memory ceases to be a nation - it becomes just a collection of people temporarily occupying one territory.

We hope, that the book will allow to familiarize you with Polish scientific world and allow you to appreciate the role of Poles in the development of world science. We also hope that the publication will be helpful in your teaching process.

Małgorzata Nodzyńska, Paweł Cieśla

A Short History of Science and Education in Poland in the Middle Ages

In order for Polish science to exist, Polish state had to be formed. Hence it is impossible to consider the history of science without even a slightest mention of the history of the state. The first mention of the Polish state, and more precisely of its ruler Mieszko I, was written down by a Saxon chronicler Widukind of the Benedictine monastery in Corvey. It is an undated note describing dramatic events of 963 just before Poland was baptised, whereas in the most valuable Polish annals *Rocznik kapituły krakowskiej* under the date 965 and 966 we find two notes about the Polish state:

- DCCCCLXV – Dubrowka came to Mieszko
- DCCCCLXVI – Mieszko, duke of Poland was baptised.

The Chronicle by **Gallus Anonymus**, the first Polish chronicler, who wrote his oeuvre at the beginning of the 12th century at the court of Bolesław Wrymouth, is the first one to depict a vision of the beginnings of Poland. Although it is a legendary vision, it became a basis for all research on the genesis of the Polish state. According to the Chronicles by Gallus, several generations before Mieszko I, in Gniezno there was a ruler called Popiel, who, on the strength divine providence, was banished from his own country and replaced by Siemowit, a son of a poor duke's ploughman called Piast. Then on the throne in Gnizeno there were Leszek – son of Siemowit, Siemomysł – son of Leszek, after who Mieszko, son of Siemomysł, reigned. As a result of this legend all researchers unanimously held that the process of the formation of the Polish state began several generations before Mieszko I took over the throne and the process went back to as early as the 8th century. These claims are supported by archaeological excavations, which date back the beginnings of urban structure of Gniezno to the 8th century.

Together with its baptism, Poland found itself under the influence of Christian culture. Clergymen, who started to come not only from Czech but also from Italy, France, and Germany, brought with them Latin books, not only religious ones. Among the books there were also ones dealing with law, history, or collections of poems. By copying these books in Poland, their number increased contributing thus to the increase of the number of people who could read and write and enabling the education of more and more candidates for clergymen.

In the beginnings of the Polish state, there were only elementary schools, which were established near bishops' cathedrals and major monasteries. Those willing to broaden their knowledge on a higher level had to go abroad. However with time passing by, along with the organizational development of the Catholic Church in Poland, a more complicated curriculum called trivium began to be taught at cathedral schools. As early as in the second half of the 12th century in two biggest cities: Wrocław and Kraków the whole course of "the seven liberated arts" was introduced.

Writing in Latin developed quickly in Poland. In monasteries lives of saints were copied, whereas at Polish courts historical writings were mainly copied. As early as in the times of the first monarchs of the Piast dynasty west-European annals were brought to Poland to be later enriched with information concerning events in Poland. They de-

scribed battles, births and deaths of prominent people. Initially those notes were quite irregular. Only in the 13th century regular notes in the form of annals started to be written down. The oldest of such books *Cronicae et gesta ducum sive principum Polonorum* was written at the court of Bolesław Wrymouth in the early 12th century. It was written by an unknown chronicler called **Gallus Anonymus**.

The second chronicle writer was **Wincenty Kadłubek**, a Pole educated in France. On request of duke Casimir II the Just, he wrote in Latin four volumes of a book entitled *Kronika polska*, which remains the main source of knowledge about Polish history of that time.

The beginnings of science in Poland date back to the 13th century and are related with the establishment of the milieu of scholars, mainly doctors and lawyers, educated in Polish cathedral schools and foreign universities. In that period many Poles studied and worked abroad. Paris attracted students of theology, Montpellier – students of medicine, while Bologna and Padua – attracted Polish students of law. Starting with 1275-1314 as many as 12 Poles held the chair of rector at the University in Bologna. Education at that time consisted of writing one's own books, teaching, and counselling monarchs, especially in legal issues. It was practical and international in its character. In the second half of the 13th century among the scholars recognized both in Poland and abroad there were:

- **Benedict of Poland** – was the first to describe in his works geography and ethnography of Eastern Europe and *Asia De Itinere Fratrum Minorum ad Tartaros,* which he got to know during his diplomatic mission in Mongolia.

- **Erazm Ciołek** called **Witelo** – a well-known Polish mathematician and physicist, philosopher, optician and founder of rudiments of psychology of observation. He was the first widely recognized Polish scholar who wrote about himself „in nostra terra, scilicet Polonia", which means „from our land that is from Poland". He wrote an oeuvre about optics and physiology of seeing entitled *Perspectivorum libri decem*. This work was reprinted even several hundred years after his death; it was known to for example Leonardo da Vinci, Nicolaus Copernicus, and Johannes Kepler.

- **Franko Polak** – a Polish astronomer who was an author of a treatise published in 1286 on a newly invented instrument torquetum.

- **Martin of Opava** (Martin of Poland) penitentiary and capellanus for Pope Alexander IV and his successors, gained recognition by publishing a general history *Chronicon pontificum et imperatorum* (a chronicle of popes and emperors) as well as a compendium of canonical knowledge *Margarita Decreti;* he wrote also *Sermones de tempore et de sanctis and a collection of sermons*.

- **Nicholas of Poland** – a member of the Dominican Order, educated in France, doctor at the court of the Duke of Sieradz – Leszek the Black, author of medical treatises: *Antyhipokrates and Eksperimenta* had many scientific contacts with prominent people of his age, including Arnaldus de Villa Nova and Albertus Magnus.

- **Jan of Grodków** – a well-recognised doctor, canon of Wrocław and Gniezno; after graduating from philosophical studies he was the head of the cathedral school in Wrocław, and then he developed there his activity as a doctor – what was preserved from this period is his prescription against the plague prepared in collaboration with other do-

ctors from Silesia. In 1371 he became a doctor at the court of the Danish king Valdemar.

In the same period there was also yet another **Jan of Grodków** – a prominent philosopher, rector of the school in Świdnica, author of a popular logic textbook *De clavibus intentionum and commentaries to Thomas Aquinas De ente et essentia*. He was one of the first Polish laymen scholars in the Middle Ages.

At that time in numerous monasteries in Poland dealing with alchemy was very popular; among names mentioned there are alchemists from the Franciscan Order: **Bartłomiej** and **Mikołaj**, canon **Piotr of Brze**g (from the chapter of Wrocław), an Augustinian friar **Grzegorz of Olkusz**. It is believed that balls of fire used by Poles against the Tatars, which in the 13th century were manufactured by a Black Friar **Czesław Odrowąż** were the result of his mastery in alchemy.

Polish scholars were active not only in the territory of Poland, for example as early as in the beginning of the activity of the University in Heidelberg, first contacts with Polish scholars took place. The most prominent figure was **Matthew of Kraków**, a student and professor of theology in Prague, later rector and co-organiser of the University in Heidelberg, also bishop of Worms papal legate in Germany, who became a intermediary of Ruprecht II and his son Ruprecht III, the Holy Roman Emperor. Among other prominent figures there were **Piotr of Brzeg (junior)** – a professor of medicine at the University of Heidelberg and **Nicolaus Magni de Iawor** – a professor of theology who was the rector and vice-chancellor at the university.

The 14th century brought about the period of rapid development of sciences in the territory of Poland. It was an opportunity especially for Polish lawyers who could make a career in the period of power centralization by Casimir the Great. It turned out that there was a huge demand for university graduates, and those could be found beyond the kingdom's borders. It was one of the reasons for founding the university in Kraków in 1364 by Casimir the Great. For this purpose he spent revenues from salt mines in Wieliczka. The Academy of Kraków was the second, after the University in Prague of 1348, university in this part of Europe. The Academy of Kraków followed the model of the University in Bologna and it focused its work on the faculties of law, which is why out of eleven faculties in Kraków as many as eight dealt with legal issues (five of them dealt with Roman law, while the remaining three – with ecclesiastical law). The Academy faced many problems, including financial ones. It was restored only by Queen Jadwiga in 1397. She donated her jewels for further activity of the university, which was the reason for changing the university name from the Academy of Kraków into the Jagiellonian University. The restored university changed its models and began to follow the example of universities in Paris and Prague, which is why studies in the field of philosophy and theology were developed, whereas law was limited only to ecclesiastical law. The university renovated in such a way soon gained international recognition thanks to prominent minds lectured and studied there. One of the most outstanding scholars of the Jagiellonian University was **Paulus Vladimiri**, who faced accusations of Teutonic Knights against Władysław Jagiełło who was said to practise paganism. Polish lecturers of the Jagiellonian University faced this accusation in front of the Pope and the Council that took place in Constance in 1418. The Rector of the Jagiellonian University, Paulus Vladi-

miri, wrote a legal treatise *Tractatus de potestate papae et imperatoris respectu infidelium*. His speech drew attention of members of the Council.

In the second half of the 15th century the university became a international centre of studies – mainly astronomy. Among famous scholars who studied there, there are:

- **John of Głogów** – Polish astronomer, mathematician and scholastic philosopher – follower of Thomas Aquinas philosophy, representative of natural stream of Aristotelianism, today called Albertism (after St. Albertus Magnus). He was an author of works of a textbook character, out of which one has to mention: *Liber posteriorum analyticorum, Exercitium veteris artis, Questiones librorum de anima*. Nicolaus Copernicus was one of his students.

- **Marcin Bylica of Olkusz** – Polish astronomer, astrologer, and doctor. He collaborated with an Austrian astronomer Regiomontanus – together they worked on astronomical tables and *Disputationes inter Viennensem et Cracoviensem super Cremonensia in planetarum theoriae deliramenta* – a criticism to an outdated astronomy textbook. He had close academic contacts with a German astronomer Regiomontanus. He supplied the Kraków Academy in astronomical devices, which are preserved up until now. He also lectured at the Universitas Istropolitana in Bratislava

- **Marcin Król of Żurawica** – Polish mathematician, astronomer, and doctor. One of precursors of humanism in Poland. In Hungary he was a doctor at the court of King John Hunyadi. As a professor of the Kraków Academy, he dealt with astronomy, for which he founded chairs of mathematics and astrology; the latter chair soon gained European recognition. He had close academic contacts with an Austrian astronomer Peurbach and German Regiomontanus.

- **Wojciech of Brudzewo** – Polish astronomer and mathematician, the most prominent representative of Kraków school of mathematics and astronomy, philosopher, educationalist, diplomat. Apart from sciences, he also dealt with explaining Aristotle's philosophy. In 1485 he was appointed the dean of the artium faculty. He was an outstanding professor at the Academy of Kraków where he lectured for 20 years. Among his students there were for example Nicolaus Copernicus, Bernard Wapowski, and Konrad Celtis. Wojciech of Brudzewo was overtly distrustful of the geocentric model. He was the first to notice the Moon travels along an ellipsis and that only one of its sides is always in the direction of the Earth. He compared tables to calculate the location of celestial bodies. In 1482 he wrote a book *Commentum planetarium in theoricas Georgii Purbachii,* which was a commentary to the textbook *Nowe teorie planet Georga von Peurbacha*.

Alchemy as a separate domain of sciences was not lectured at the Academy in Kraków, however in accordance with the practice of the epoch of own production of medicines by doctors, elements of practical "alchemy" accompanied lectures in medicine. Among the professors of the Academy of Kraków dealing with alchemy the following names are mentioned:

- **Stanisław of Skarbimierz** – the first rector of the renovated Academy of Kraków, lawyer, canon of cathedral chapter in Kraków, who together with **Paulus Vladimiri** is considered to be the founding father of the Polish school of international law. His writer's activity consists mainly of sermons (a total of over 500) which he delivered in Polish

though they were written in Latin. In his best-known sermon *De bellis iustis* he tackled upon such issues as: the possibility of forming an alliance with pagan countries, allowed methods of fighting and taking spoils of war, issues related to military discipline, he was against the dominating opinion that alliances with pagans were forbidden. Among his well-known sermons there are also sermons important events of the epoch: *Recommendatio Universitatis de novo fundatae, Sermo ad regem et proceres eius de obitu Hedwigis reginae et vita eius, De bello iusto*.

- **Piotr Gaszowca** – an astrologer, doctor of medicine, professor and rector of the Jagiellonian University, doctor at the court of King Casimir IV Jagiellon. In 1453 he worked out a catalogue of 15 bright fixed stars.

- **Andrzej Grzymała of Poznań** – a famous doctor and astronomer, professor of philosophy and medicine at the Academy of Kraków, student of Marcin Król of Żurawica. He wrote explanations to popular at that time astronomical tables *Canones Tabularum Resolutarum.*

- **Adam of Bochnia** – the rector of Studium Generale in Kraków.

The most mysterious alchemist of the 15th century was *Wincenty Koffski* (Kowski) of Poznań. It is believed that he was a Black Friar acting in Gdańsk. He is supposed to be the author of a treatise on alchemy *Tractatus de prima materia veterum lapidis philosophorum*. However research by some historians prove that such a person never existed, and the name is only a pseudonym of a group of hermetic authors associated with the Assembly of Rosicrucianism in Gdańsk.

At that time geographical studies also developed considerably. At this one point one has to mention **Jan of Stobnica**, who was a famous geographer, philosopher and naturalist, professor at the Academy of Kraków and the first rector of the Lubrański Academy.

A Short History of Science and Education in Poland in the Renaissance

Under the influence of new steams coming from Italy – of the Renaissance, in Poland people began to perceive differently the world including the role of science. In Poland the first elements of new culture appeared at the end of the 15th century, first at courts and universities.

Popularization of print proved to be very important for spreading new ideas. First publishing houses in Poland were established by travelling printers of non-Polish origin. The first of publishing houses acting in 1470s in Kraków was run by a Bavarian journeyman - K. Straube. In the same period in Chełm an anonymous publisher called Typograf ran his activity. In 1480s Schweipolt Fiol (together with J. Turzon, a financial potentate from Kraków) ran the second publishing house in Kraków, which was famous for the fact that it was the first publishing house in the world to use Cyrillic. The oldest centre of publishing in Lower Silesia was Wrocław, where in 1470s -1480s K. Elyan ran his publishing house. In 1475 in *Statuta synodalia* ... Elyan published the first Polish texts of prayers: the Lord's Prayer, Hail Mary, and Credo. In Gdańsk in the late 15th century, there was a publishing house run by K. Baumgarten, and there were also travelling printers M. Tretter and J. Weinreich. As it can be seen on the basis of this short overview, the number of publishing houses in Poland at that time was considerable, which is why the number of books being published kept increasing.

An easier access to books made that in the Renaissance culture, society, and human mentality changed. People ceased to deal with metaphysics and spirituality and turned towards earthly matters. There no longer was general encyclopaedic knowledge but gradually specialists dealing with one particular domain started to emerge. What changed substantially was the approach to gaining knowledge; authority and dogma counted less than facts. Moreover observations and experiments started to be conducted. The turn of the centuries and changes going on had its reflection also in the curriculum of the Academy of Kraków. Reading and commenting on the oeuvres of classical authors as well as dealing mathematics and astronomy were more emphasized. What also met with much interest was the theory of pronunciation – rhetoric, letter-writing, and historiography.

At that time in the circle of university inspirations Annales seu cronicae incliti Regni Poloniae, an outstanding historical oeuvre by **Jan Długosz** was written. This oeuvre consists of *Chorographia Regni Poloniae*, which is a unique document of the epoch and presents a very detailed picture of Polish lands, especially their hydrography. It confirms broad knowledge of Jan Długosz and makes him one of the most prominent Polish geographers. Apart from that, he was also a chronicler, historian, geographer, diplomat, and a tutor of sons of King Casimir IV Jagiellon.

The most prominent and famous Polish scholar of the epoch was undoubtedly **Nicolaus Copernicus**, who dealt with, among others, astronomy, mathematics, law, economy, military strategy, astrology; he was also a doctor and a translator. His most important oeuvre was *De revolutionibus orbium coelestium published* in 1543 in 400-500 copies. This work presented the heliocentric vision of the Universe in a detailed and scientifical-

ly useful manner. With a truly Renaissance versatility in the period of Polish-Teutonic war, Copernicus dealt with defence of castles in Warmia. He strengthened fortifications of the castle in Olsztyn so that coming Teutonic army decided not to attack it. He also dealt with the monetary theory. In 1517 he wrote the first version of a monetary treatise, and in 1519 – its second version entitled *Traktat o monetach*. In 1528 Copernicus finished his work *Sposób bicia monety*. He worked with Bernard Wapowski on a map of the Kingdom of Poland and Lithuania. His contribution into sciences includes also:

- formulation of the Copernicus-Gresham Law (worse money replaces better money);
- formulation of the Tusi-couple (If two coplanar circles, the diameter of one of which is equal to half the diameter of the other, are taken to be internally tangent at a point, and if a point is taken on the smaller circle - and let it be at the point of tangency - and if the two circles move with simple motions in opposite direction in such a way that the motion of the smaller [circle] is twice that of the larger so the smaller completes two rotations for each rotation of the larger, then that point will be seen to move on the diameter of the larger circle that initially passes through the point of tangency, oscillating between the endpoints).

Bernard Wapowski mentioned above is referred to as a father of Polish cartography. His maps were known in the whole Europe. Wapowski made all calculations and astronomical measurements for his maps on his own; they were extremely precise bearing in mind measuring devices that were used at that time.

In that period national law also developed. The main reformer was Grand Chancellor of the Crown – archbishop **Jan Łaski**. In his work, *Statuty Łaskiego*, he collected all Polish acts up until the 16th century. This work became a source of inspiration for a textbook of theoretical law written by **Stanisław Zaborowski**, known under the title *O naturze praw*. Zaborowski dealt also with the issue of the Polish language, by preparing a spelling reform and writing a grammar textbook. Another famous lawyer was **Bartłomiej Groicki**, the author of the first book on law written in Polish. **Wawrzyniec Goślicki** was well-known in whole Europe, and in his political doctrine he was against tyrants and power abuse. He proved that it is necessary to divide the country into three parts, each of them would be governed by a different group: king, senate, and aristocracy. Among authors whose works followed this line of thinking there were:

- **Łukasz Górnicki** – a poet, political writer and historian, author of proposals of the system reform,
- **Krzysztof Warszewicki**, a historian who especially emphasised the danger of the excess of power among aristocracy; he was also an author of a diplomacy textbook.
- Reverend **Stanisław Orzechowski**, one of his books is *Roczniki* describing the years of King Sigismund II Augustus reign.

Frycz Modrzewski was an internationally recognised writer, scholar, and moralist. His best-known work was the book entitled *O poprawie Rzeczypospolitej*, published in a publishing house in Kraków and later on translated into numerous languages. It contains a proposal of reforms of the system, morality, laws, and international policy as well as proposals of changes concerning education and clergymen.

The development of history in Poland in the Renaissance period was also impressive.

Information started to be gathered and catalogued. **Stanisław Górski** was an author of the most famous collection of that type. His work *Acta Tomiciana s* contains historical documents together with commentary. **Ludwik Decjusz** a diplomat, historian, economist, and financier from Kraków, secretary of King Sigismund I the Old; he was an author of a chronicle containing the description of King Sigismund I the *Old reign and treatises on money*. He made also a proposal of monetary reform. **Marcin Kromer**, a historian and writer, theoretician of music, diplomat, bishop of Warmia, one of the leaders of the Polish Counter-Reformation, who wrote both in Polish and Latin, created *Historia Polski*, a book that in a concrete and simple manner gave information on subsequent events in Poland. This book included also the geographical description of Poland as well as information on its socio-political structure and morality of Poles. Memoirs, biography, and heraldry also developed rapidly. **Bartłomiej Paprocki** (or Bartolomej Paprocký) was the most famous heraldist. He was called the father of Polish and Czech heraldry; he was an author of numerous armorials, he was a writer, historian, poet, and translator; he published numerous works on heraldry, including the famous *Herby rycerstwa polskiego*.

The turn of the 15th and 16th century is also the period of activity of **Maciej Miechowita** – a doctor, historian, geographer, alchemist and astrologer, professor of the Academy of Kraków. His publications on geography brought him *European recognition*. He was an author of a treatise on the origin of *Sarmatia Tractatus de duabus Sarmatis*, in which he included many interesting and original observations concerning lands not yet known in terms of geography, together with ethnographic and botanical remarks. However what interested him the most was medicine. He was keen of dietetics, hygiene, and research on mechanisms of epidemic spreading. He is an author of the first Polish printed medical book on epidemics *Contra saevam pestem regimen*, written with reference to the spreading plague. In 1522 he published the first Polish medical guidebook *Conservatio sanitatis*, in which he advised on how to treat teeth and oral cavity diseases. He was the first Pole to describe a case of a venereal disease. Among his other famous works, one has to mention *Chronica Polonorum*, the first printed history of Poland that covers the period of the beginning of Poland until 1506 and that is a summary of many years of Miechowita research on Polish history and geography.

In this period we may speak of "secularization" of alchemy – first industry chemical laboratories were established – as an example we may mention here Camera Separatoria, established in Kraków near Komora Górnicza. It was run by **Kasper Ber** – a technologist of mining, metallurgy, and mineralogy who was well-known and respected both in Poland and Hungary.

At the beginning of the 16th century bishop Jan Lubrański established the Lubrański Academy in 1519. It was a secondary school with a very high level of teaching, which is why it was called Academy. Its first rector was **Jan of Stobnica**. Then the chair of rector was taken over by **Tomasz Bederman** – a theologian and humanist from Poznań (translator of Hesiod's and Aristotle's works). Among the lecturers there were **Jan Kruk** from Gniezno (also a theologian) and lawyers **Mateusz of Szamotuły** (an astronomer, astrologer, author of Efemerydy) and **Grzegorz of Szamotuły** (he wrote ten books, mainly on

law), and **Jakub Skrzetuski**. Humanistic subjects were lectured by **Antoni Feliks Gall** and **Antoni Niger**. The academy started to flourish with the arrival of a new dean of the humanistic faculty – **Krzysztof Hegendorfer** (author of many famous works, including *Encommium terrae Polonia*, a panegyric written on the occasion of Sigismund II Augustus coronation). The building of the Academy is one of the first Renaissance buildings in Poznań and was constructed between 1518 and 1530. Among the most prominent graduates of the Academy there were:

- **Józef Struś** – a doctor, scholar, mayor of Poznań. A man who created Polish medicine, doctor of Kings Sigismund I the Old and Sigismund II Augustus. He also worked at the court of Hungarian king, at the court of Turkish sultan Suleiman II, and was a counsellor of Spanish King Philip II. Struś dealt mainly with examination of pulse and thanks to this he developed physiology. He taught how to recognize pulse and what it may mean in a given test. He emphasized the importance of the blood circulation system for the life of every man, he contributed to the graphical notation of pulse and foresaw that there are motor vascular nerves. He also translated works of Galen. His own work is a description of medicine production *De medicamentorum preparatione*.

- **Klemens Janicki** – a poet, philosopher, author of many works, including political ones *Querella Reipublicae Regni Poloniae* and *Ad Polonos proceras*.

- **Kasper Goski** – a doctor, philosopher, mathematician, and astrologer, graduate of and professor at the Academy of Kraków. In 1569 he published a printed version of treatise *O powietrzu morowym*, in which he presented some rules of efficient counteracting of plagues, which according to him occurred most often in overpopulated, dirty districts of cities. He was mainly known for his astrological predictions, for example in 1571, just before the sea battle of Lepanto, he announced a considerable/overwhelming victory of Christians over Turks.

The 16th century is also the period of the development of pedagogical sciences in Poland. In 1558 **Erazm Gliczer** published a treatise *Książki o wychowaniu dzieci barzo dobre, pożyteczne i potrzebne …* (the book is also known under the title *Rozprawa Erazma Glicznera*), in which he criticized court and individual upbringing, and he recommended school upbringing. Attempts to adjust curricula of Polish schools to requirements of everyday life and plans for the future of Poland were made by **Szymon Marycjusz** from Pilzno, a prominent Polish educationalist, lawyer, philologist, publisher, professor of the Jagiellonian University. He also suggested separation of schools and churches.

The 16th century is also the century of the development of sciences. In 1566 **Stanisław Grzepski** published a geodesy textbook *Geometria, To jest Miernicka Nauka, po Polsku krótko napisana z Greckich i z Łacińskich ksiąg* considered to be the first technical book in Polish. In this book Grzepski began to create Polish terminology of sciences. He was internationally known for his works on ancient coins and measures. **Adam Burski**, a philosopher and philologist dealt with logic. Burski wanted science to be based on experiments and induction; his ideas were innovative and appeared even before Bacon's philosophy. **Marcin Śmiglecki**, a professor of the Academy of Vilnius, was the author of a work *Logica* reprinted later on in Germany and three times in England. This book was used for example by John Locke during his studies in Oxford. Śmiglecki is also an

author of an economy-ethics treatise *O lichwie*, which was published several times. He also published several theological treatises.

In that period natural sciences in Poland also developed rapidly. Among geographers, whose works and research were appreciated as a part of the process of getting to know the east Europe, there were:

- **Marcin Bielski** – a soldier, historian, Renaissance satirical poet, writer and translator, author of numerous works including *Kronika wszystkiego świata* and *Sprawa rycerska*. In the latter work, in book eight there are practical descriptions of how to make race, gunpowder and "dragons of fire."

- **Maciej Stryjkowski** – a historian and poet, diplomat, canon. Among his works one has to mention *Sarmatiae Europeae descriptio*, a book on history and geography, and *Kronika Polska, Litewska, Żmudzka i wszystkiej Rusi* the first printed outline of the history of Eastern Europe; it is a successful compilation of chronicles by Jan Długosz, Maciej Miechowita as well as numerous hand-written chronicles.

At that time alchemy gained much popularity. **Olbracht Łaski**, a diplomat and traveller, was its supporter in Poland. He invited to Poland followers and researchers of this branch of knowledge, which later resulted in his bankruptcy. **Michał Sędziwój**, a counsellor of kings and emperors, was very famous in Poland and whole Europe. At the court of Emperor Rudolf in Prague he made his most famous transmutation of lead into gold. The Emperor commemorated this even by setting a memorial plaque in the wall in the transmutation room: Faciat hoc quispiam alius quod fecit Sendivogius Polonus (that is: May anyone else repeat the deed of the Pole Sędziwój). In 1604 he Sędziwój published his first famous work in alchemy *Novum Lumen Chymicum* . This work became famous in whole Europe; between 1604 and 1778 it was published 53 times in German, French, English, Russian, Dutch, Czech, and Polish. Copies of Sędziwój's work were to be found in libraries of such prominent scholars as Isaac Newton and Antoine Lavoisier. Other works by Sędziwój include: *Dialogus Mercurii, Alchemistae et Naturae, Tractatus de Sulphure, Traittez de l`Harmonie, Traktat vom philosophischen Saltz, Lettre Philosophique, Cinquante-Cinq Lettres Philosophiques, Processus Super Centrum Universi, Statuts des Philosophes Inconnus, Operatie Elixiris Philosophici*. The last book mentioned is the oldest known alchemical work written in Polish (with passages written in Latin).

Michał Sędziwój was the first to describe oxygen. He noticed that it is something thanks to which everything that exists may live. He also held that this mysterious substance immediately gets into the blood circulation system.

Alchemy also found its way to medical sciences. **Wojciech Oczko**, a doctor of medicine and philosophy, doctor at the courts of Kings Sigismund II Augustus, Stephen Báthory, and Sigismund III Vasa, was another doctor widely recognized both in Poland and abroad. He wrote in Polish, and not in Latin as it was foreseen by the medical norms of the epoch. Thanks to this specialist, Polish terminology could develop. On the basis of detailed research he described syphilis – its symptoms, results, and methods of treatment. He was also interested in balneology. He tested and described curative pro-

perties sources in Poland. The date of publishing *Cieplice* (1578) is considered to be the beginning of the health resort in Iwonicz. He was the first in Poland to promote physical exercises as he believed that it brings benefits both for the body and the spirit. He was the author of the saying that Physical exercise may replace almost every medicine, but no medicine may replace physical exercise.

The first Polish pediatrician was **Jan Chrościejowski** from Poznań, who wrote and published a treaty on the treatment of children. Thanks to Andrzej Grutinius, a professor of medicine at the Jagiellonian University, the description of a morbidity called melancholy was made.

The favourable climate for alchemy in Poland made that numerous alchemists came there, including Johann Faust – one of the most famous magus of the Europe of that time, outstanding astrologer, he learnt magic in Kraków. In the 16th century famous Paracelsus stayed in Kraków, Gdańsk, and Vilnius. He had there numerous friends and students, among whom there were:

- **Alexander Suchten** (Zuchta) from Gdańsk, alchemist, doctor, also at the court of King Sigismund II Augustus. He proved by means of quantity research that the transmutation of metals into gold is impossible. He was an author of numerous treatises on alchemy and medicine, he published for example *De Praeparationes i Archidoxine, Concordantia chimica, Collaquia chimica, De secretis antimonii, Explicatio tincturae Paracelsii.*

- **Jan Bretschneider Placotomus** from Gdańsk, a pharmacist, alchemist, and doctor of medicine, was an author of the book *De destillationibus chemicis and the first Polish pharmacopoeia*. He was also an author of a work on hygiene of eating – on nature and content of beer and mead.

- **Andrzej Grutinius Grutyński** – a professor of the Academy of Kraków, author of the following works: *Medicus dogmaticus, Solus philosophus sive novae medicinae et chemiae*. He was sceptical about the possibility of metal transmutation.

- **Adam Schoeter** – known mainly as an author of translations (from German into Latin) *De praeparationibus, Archiodoxae*. In commentaries to these works he made numerous remarks on alchemy and its range.

In the Renaissance period in Poland botany and zoology, sciences that were previously neglected, started to develop.

Botany usually laid within the scope of interest of doctors – they worked on herbals called at that time herbaria; those books concerned mainly the description of curative properties of herbs. The first herbarium in Poland was herbal by **Falimierz** (or according to its first page *O ziołach y mocy jich*). The work is written in Polish and is valuable now mainly due to the terminology used. Another excellent herbarium was written by **Marcin of Urzędów**, in which he did not limit himself to his own observations, but he compared all he wrote to the knowledge of the ancient and he verified it thoroughly. Next famous herbal *O ziołach tutecznych i zamorskich...* was written by **Hieronim Spiczyńki** (doctor of King Sigismund II Augustus, first known author of a printed translation of the Bible from Latin into Polish; he translated also works by Desiderius Erasmus who also took part in dispute for rights of the Polish language, demanding sermons in Our Lady's church to be delivered in Polish). Another herbarium (1550 pages long) was a herbal

of the first professor of botany at the Academy of Kraków, **Szymon Syreniusz**, a doctor and naturalist. He devoted many years to collect materials for this book. His research covered a wide area: Lesser Poland, Tatra Mountains, the Beskids, Podolia, and Pokuttya.

Information concerning animals were caused by veterinary, agricultural, and hunter's needs. Work by **Mateusz Cygański** entitled *Myślistwo ptasze, w którym się opisuje sposób dostawania wszelakiego ptaka* was a book on hunting. It concerned hunt for birds, due to which species of birds living in Poland and methods of hunting them were described. It is also the first treaty on falconry in Polish.

Agriculture was another quickly developing area in Poland. The first Polish textbook on this subject was a book by **Anzelm Gostomski** *Gospodarstwo*. It contained rules of farming and economy hints.

The image of Polish science would not be full without **Andrzej Glaber** – an outstanding erudite and translator, who popularized sciences and contributed to the establishment of scientific terminology in Polish. He also wrote academic treatises on medical issues that were comprehensible for everyone. He mentioned there such problems as preventing the plague, care over women in labour, or blood-letting. Glaber was also famous for his demands concerning women emancipation – they wanted them to have the same right to learn as men.

In the 16th century first permanent publishing houses started to be established. Around 1580 the main centre of publishing was Kraków, where there was a large demand for books on the part of the Academy of Kraków and the Church; this demand was first fulfilled by means of orders in foreign publishing houses. The first permanent publishing house in Kraków was run by a German publisher K. Hochfeder, who published over 30 titles (mainly textbooks), and also the first missal in Poland – ornamented with wood engravings *Missale Vratislaviense* and the first book in Polish *Historia umęczenia*.

In the late 16th century (in 1579) the Academy of Vilnius – the University of Vilnius – was established by King Stephen Báthory and approved by Pope Gregory XIII. The King spent his own funds on transforming Jesuit College in Vilnius into Alma Academia et Universitas Vilnensis Societatis Iesu. Latin was the official language of the University, and the lecturers came from different parts of Europe. This university was the only one in the territory of Grand Duchy of Lithuania. At the turn of the 16th and 17th century among its most prominent scholars there were:

- **Maciej Kazimierz Sarbiewski** – internationally known Polish neo-Latin poet and literary theoretician of the Baroque epoch, preacher at the court of King Władysław IV Vasa, Jesuit, professor of theology and rhetoric.

- **Wojciech Wijuk Kojałowicz** – lectured logics, physics, mathematics, and ethics at the Academy of Vilnius; he was an author of the first *Historia Litwy*,

- **Marcin Śmiglecki** – a philosopher, logician and theologian, religious polemicist, Jesuit, author of the popular and large work (as many as 1632 pages) entitled *Logica*, which for a long period of time was one of the best and most popular textbooks in western Europe, especially in England, where it was still in use in the mid-19th century. Śmiglecki is also an author of an economy-ethics treatise *O lichwie*, he published also several theological treatises.

- **Piotra Skarga** – a Jesuit, theologian, writer and preacher, one of the most important Polish representative of the Counter-Reformation, preacher of King Sigismund III Vasa, rector of Jesuit College in Vilnius, the first rector of the University of Vilnius. The most famous and appreciated work of the royal preacher is entitled *Kazania sejmowe*. However *Żywoty świętych* was widely read and appreciated from the time of its first publication until the mid-19th century.

- **Jakub Wujek** – a rector of the Academy of Vilnius. His most important achievement is the translation of the *Bible*, which was characterised with precision and many-sidedness, is written in a simple and clear, but yet serious and dignified, language. This translation was the main Catholic Bible translation in Poland for over three centuries. Jakub Wujek published also two other important works: *Postylla catholica, to iest Kazania na każdą niedzielę i na każde święto przez cały rok* and *Postylla mniejsza*, which were translated into many languages.

Soon afterwards (in 1594) Jan Zamoyski founded the Zamojski Academy in Zamość. In the same year Pope Clement VIII confirmed its establishment. The Academy was the first private university and the fourth university in Poland – after the Jagiellonian University (1364), the Lubrański Academy in Poznań (1519), and the Academy in Vilnius (1578). 15 professors lectured there, for example:

- **Melchior Stefanides** (the first rector; logics, metaphysics, law),
- **Wawrzyniec Starnigel**,
- **Adam Burski** (already mentioned philosopher, philologist, logician, speaker, and publisher),
- **Tomasz Drezner** (lawyer, author of valuable books on Polish law, e.g. Processus iudiciarius Regni Poloniae),
- Jan Niedźwiecki-Ursinus (doctor - author of treatise on human skeleton and of a Latin grammar textbook Methodicae grammaticae libri IV),
- **Maciej Jaworowski** (lawyer and philosopher),

and in the later period also **Stanisław Staszic**.

A Short History of Science and Education in Poland in the Baroque

The Baroque covers the period from the end of the 16th century till the beginning of the 18th century. In Europe the second half of this period is considered decisive for the development of modern sciences. At that time substantial changes in the understanding of natural sciences took place, mainly due to new scientific methods: experiments and induction. Unfortunately, this period in Poland was not that much splendid. The 17th century in Poland was the century of wars as well as political, social, and religious (the Counter-Reformation) conflicts. It did not create a favourable atmosphere for the development of sciences and progress. However, if we bear in mind these restrictions and take a closer look at the achievements of this epoch, it turns out that the development of science was amazing.

As for sciences such as mathematics and physics as well as in technology of the 17th century, there were many prominent scholars in Poland. However, the situation in Poland caused that many of their works were lost. What was lost for example was almost the whole academic output of **Stanisław Pudłowski**, a professor of law at the Jagiellonian University, mathematician and physicist. He was the first mathematician to propose basing units of gauge on physical phenomena and size of the Earth. Together with **Tytus Liwiusz Buratini**, he suggested basing the unit of length on the phenomenon of mathematical pendulum; this unit was supposed to be called a catholic metre. The majority of works by **Grzegorz Knapski**, an outstanding Polish lexicographer, was also lost. Knapski was an author of a three-volume dictionary *Thesaurus Polonolatinograecus seu Promptuarium linguae Latinae et Graecae*. The third volume contained proverbs and was entitled: *Adagia Polonica, Przysłowia polskie wybrane, zdania moralne i powiedzenia dowcipne, przyzwoite, po łacinie i grecku odtworzone, którym, zwłaszcza ciemniejszym, przydano światła i wyjaśnienia z różnych pisarzy i w ogóle zaprawiono je różnorodnemi wiadomościami naukowemi*.

Another famous scholar of the 17th century was **Jan Brożek**, a doctor of philosophy and theology at the Jagiellonian University as well as of medicine in Padua; he was the first historian of Polish science. He wrote for example the first outline of the history of science in Poland entitled *O starożytności nauk w Polsce*. However, he had his greatest achievements in the field of mathematics. He published over 30 mathematical works, originally solving scientific problems. One of the most famous problems whose solution we owe to Brożek is an answer to the question: Why do bees build combs with hexagonal cells? In his reflections he proved that this shape guarantees the biggest volume with the smallest use of material. In the book *Arytmetyka liczb całkowitych* he presented the whole knowledge of the epoch of mathematics, including logarithms. 42 years earlier than Pierre de Fermat, an outstanding French mathematician, Brożek formulated one of the most basic theorem concerning numbers; unfortunately nowadays it is called Fermat's little theorem. His student **Jan Toński**, an astronomer, doctor, and mathematician was an author of one of the most interesting and independently written overview that contains explanation of simple and spherical trigonometry. He also wrote a treatise invalidating astrological predictions, voiced with reference to the appearance of a comet in

1652. Even 100 years after his death students still used his works.

In the second half of the 17th century there lived **Adam Adamandy Kochański** - a Jesuit, mathematician, mechanic as well as philosopher and physicist. He dealt with numerous problems, for example to calculate longitude he used an experiment with magnetic pendulum, he presented new concepts in the field of statistics and mechanics, he conducted research on change of magnetic declination processes of stretchability of different types of paper, circular motion of the Earth, theory of dynamic moments, etc. Kochański was not only a theoretician, but also a constructor – he made many improvements in clock mechanisms and wrote numerous works on clocks. He worked on a counting machine, he thought of flying machines and machines able to sail underwater, and he also spent much time seeking for a perpetuum mobile, meanwhile constructing various interesting devices. He sought for a medicine against oldness, he pondered over the introduction of one language that would be common for the whole humanity, he tried to create encoded writing. He was also a keen Orientalist, lover of Chinese culture, and precursor of Polish sinology.

Bartłomiej Keckermann - a philosopher, historian, Calvinistic theologian, and educationalist, was a superb commentator of Aristotelian physics. He also left an enormous, survey work on natural phenomena as well as treaties on earthquakes and atmospheric electricity. Among his best known works there are his lectures on metaphysics published in print and the first in Poland compendium of sailing and navigation Brevis commentatio nautica.

Doctor **Izrael Conradt** is supposed to be the first cryogenist in Poland, who dealt for example with the influence of cold on human organism, conducted numerous experiments with freezing birds and fish as well as various body fluids (mainly blood). He conducted research on coagulation and freezing of different solutions; he discovered for example the phenomenon of over-cooling a liquid. As for physiology, Conradt presented his ideas on blood circulation that were more accurate than other opinions in that period; he also differentiated the double inflow of blood into liver.

Works on terminology and theoretical mechanics by a Jesuit **Stanisław Solski** from Kalisz gained a strong position in technical writing. Until the 19th century his Architekt polski was the only textbook written in Polish that accurately and modernly described the structure and work of building machines and hydromechanical devices.

Among the experts of military technique there were for example:

- **Adam Freytag** from Toruń, a doctor who fought in the Dutch army against Spain, studying at the same time Dutch war construction. The result of these studies was an internationally known work *Budownictwo wojenne nowe i rozszerzone*, in which for the first time Freytag described theoretical and practical rules of the so-called old-Dutch system of fortification and discussed some elements of urban and spatial planning.

- **Fryderyk Getkant** – an artilleryman, war engineer, cartographer, from 1660 – colonel in Polish artillery. In 1625 he prepared a plan of fortifications of Pilawa, and in 1634 he prepared the environs of Puck and Tczew to the war against Sweden. He was an author of, for example, a map of Puck Bay of 1637 with fortifications near Władysławowo and Kazimierzowo. He designed the fortress Kudak upon the Dnieper River and

made its plans. His most famous work is *Topographia practica conscripta et recognita per Fridericum Getkant, mechanicum* of 1638.

The most outstanding representative of the Polish technical thought of the 17th century was the brilliant inventor **Kazimierz Siemienowicz**, a theoretician of artillery, precursor of ideas accomplished as late as in our epoch. In 1650 he published his famous work *Wielka sztuka artylerii część pierwsza* written in Latin, and translated for example into French, German, and English. This work was the most important one on the subject in European literature until the beginning of the 19th century. What is interesting is the fact that this book was on an obligatory reading list of British officers as late as in 1920s.

Selenography was also born in Poland. Its main creator was **Johannes Hevelius** – an astronomer, mathematician, and constructor of scientific devices from Gdańsk who thought himself to be "a citizen of the Polish world" (civis Orbis Poloniae). Hevelius made regular observations of the Moon through a telescope. Their result was a book published in 1647 *Selenografia, czyli opisanie Księżyca....* In this work Hevelius described the structure of his telescopes, presented the results of the observation of planets, the moons of Jupiter, and sunspots. The most important part of the work consisted of observations and detailed maps of the Moon as well as observations of eclipses and covering of celestial bodies by the Moon. *Selenografia ...* gained recognition in Europe. Later on, Hevelius made observations of planets, eclipses, and librations of the Moon. As a result the subsequent treatises were published: *Rozprawa o rzeczywistej postaci Saturna, Merkury widoczny na Słońcu, Rok zwrotny.* It is difficult to overestimate Hevelius's contribution into the development of astronomy. That is why in 1664 he was appointed the first non-British member of the Royal Society in London. He was also the most famous brewer from Gdańsk.

Among prominent graduates of the Lubrański Academy in the 17th century there was **Jan Mikołaj Smogulecki** a missionary, Jesuit, mathematician, and astronomer. When he was 16, he presented a treatise on sunspots Sol illustratus ac propugnatus. Smogulecki offered himself to go to China as a missionary. He became famous there under the name of Mu Ni-Ko and passed on the Chinese the rudimentary achievements of European sciences of the epoch, especially in the field of mathematics (including logarithms that were unknown to Chinese mathematicians). Together with a Chinese scholar Xue Fengzuo, whom he made acquainted with the rules of European mathematics, Smogulecki published the work entitled *Obliczanie zaćmień według metod zachodnich*. According to some sources, Smogulecki himself wrote the treatise *Mappa mundi elliptica*.

The first in-depth book on chemistry in Polish was published in 1624; it was written by **Kasper Schwertner**: *Vade Mecum Chymicum – Albo opisanie mocy y pożytków lekarstw chymicznych …* . **Jakub Barner** from Elbląg can be considered to be the co-founding father of modern chemistry in Poland; he was the first one to notice that the reaction of an acid with a base leads to the creation of a salt. In 1698 he published the book *Chymia philosophica*, which soon was thought to be one of the best chemistry textbooks.

The only centre that managed to maintain a high level of natural and medical sciences in Poland in the early 18th century was Gdańsk with its association of doctors called Izba Lekarska and the famous Academic Gymnasium. In 1613 **Joachim Oelhaf**, coming from

this intellectual milieu, made the first in Central Europe correct autopsy of an abnormal newborn baby, commencing thus anatomopatological research. **Jan Adam Kulma**, also from Gdańsk, wrote and published an anatomy textbook that gained a considerable recognition and was translated into 7 languages. Another doctor who became famous in the whole Europe was **Janusz Abraham Gehema** – a precursor and reformer of military medicine who came from a Polonized Dutch family. His modern, at that time, postulates with respect to care over sick and injured soldiers were taken into consideration only at the turn of the 18th and 19th century.

In the second half of the 18th century **Jakub Breyne** from Gdańsk became famous in the whole Europe due to his work on exotic and rare plants.

Another famous naturalist from the Jagiellonian University was **Szymon Syreński** – a professor at this University, doctor, botanist, researcher in the field of curative properties of herbs. He began his medical practice in Lviv and there he started to study local flora, he travelled also to Podolia, Pokuttya as well as the environs of Bieszczady Mountains and Babia Góra. Then he moved to Kraków where he lectured medicine at the University. In 1602 he took the chair of the newly established faculty of botanic (one of the first in the world) at the Jagiellonian University and became its first professor. He combined didactic activity at the university with charity – he worked as a doctor for the poor; he also compiled the work of his life, *Zielnik*. This 1584-page-long work was often quoted by Polish florists until the beginning of the 19th century, when it lost its scientific significance. This book was also known and popular in Russia. **Gabriel Joannicy**, a doctor and mathematician was Syreński's student and friend; he described plants from the environs of Kraków in *Katalog roślin* and published *Zielnik* by Szymon Syreński. He also commenced research on the history of learning and education on Poland.

By contrast, in Warsaw, **Marcin Bernhardi-Bernitz**, a doctor, established one of the first in Poland nature room and worked on a catalogue of plants of royal gardens and flora of Warsaw environs (he described as many as 750 species).

Polish balneology was developed by a doctor, medical writer, historian, and historiographer – **Jan Innocenty Petrycy** in his works: *O wodach w Drużbaku i Łęckowej. O zażywaniu ich i pożytkach, przeciwko którym chorobom są pomocne, Przydatek do wód* where he described waters known to him.

Wojciech Tylkowski, a Jesuit, stood out from the characteristic for the epoch authors of encyclopaedic works. He can be called a populariser of sciences. He contributed also to mathematics, theology, mineralogy, aesthetics, and especially music acoustics; he may even be considered the precursor of the latter science in Poland.

At the end of the 17th century, in 1661 in Lviv king John II Casimir founded a university, the so-called Academy of Lviv

Later on the scientific life in Poland was mainly influenced by the royal patronage, for example at the court of King Władysław IV Vasa there was **Tytus Liwiusz Burattini** – a physicist, architect, geographer, Egyptologist, diplomat, author of common measure. During his journey to Egypt he made maps of such cities as Alexandria, Memphis, and Helipolis; he also made a triangulation map of Egypt. At that time he also conducted excavations in Giza and Memphis, where he tried to classify artefacts. Upon his return

he established an optical workshop, where he produced for example lenses for Hevelius telescope. He constructed ornitopterer – a prototype of an aeroplane and experimented with a parachute. He established an astronomical observatory thanks to which he discovered spots on the Venus. He constructed also many devices, for example he invented micrometre, a wind-powered machine to water gardens, he worked on a calculating machine and other inventions. In 1675 in Vilnius he published a treatise *Misura universale*, in which he presented his theory of common measure, common for the whole world which he referred to as catholic metre.

In the 17th century a considerable number of descriptions of foreign lands was published. These were not only geographical descriptions, but also of the system and political customs, of inhabitants and their life, of economy, religion, and sometimes of a history of a given country. The following books were written then:

- by a publisher **Daniel Vetter** – *Islandia albo krótkie opisanie Wyspy Islandii* (published in Polish in 1638, and then translated into and published in German, Czech, Danish and finally Icelandic),

- by a Jesuit naturalist and cartographer **Michal Piotr Boym** – a description of China published in several works:

  - in an 18-page-long *Atlas of China*, in which he presented his contemporaries the size and precise localisation of China and showed drawings with Chinese flora, fauna, buildings, and scenes from the life of the Chinese; unfortunately this book did not appear in print.

  - *Flora Sinensis (Chinese Flora)* was the first book on Chinese flora to be published in Europe; the term "flora" itself was also used for the first time in the title of a book on plants of a particular region.

  -in *Specimen medicinae Sinicae* - the books describes Chinese medicine and presents its readers for example acupuncture, and primarily with the methods of diagnosing on the basis of the pulse.

Jan Jonston from Szamotuły was undoubtedly the greatest naturalist of the Polish Baroque. He was a naturalist, historian, philosopher, educationalist, doctor, and natural and medicine writer. He was an Encyclopaedist of unprecedented and outstanding knowledge and diligence, he spoke 15 languages. He dealt with many fields of sciences but rather as a theoretician than an empiricist. Jonston's main natural work was *Historia naturalna*, the third big natural encyclopaedia of the Renaissance and Baroque, after works by Konrad von Gesner and Ulisses Aldrovandi. Then Jonston wrote *Dendrographias* – the first Polish textbook on dendrology, next *Wiadomości o królestwie mineralnym czyli podziemnym*, in which he presented his own, new classification of minerals and rocks. In the latter book Jonston pointed to the curative properties of some minerals and metals. In the field of medicine he left a huge compendium on general medical knowledge of his epoch in the book entitled *Ogólne problemy medycyny praktyczne*. The book dealt with for example hygiene, treatment of many diseases, pathology. Jonston also promoted prevention and presented a new branch of medicine – occupational health care. He got the achievement of medicine of the previous centuries in order; he was an author of the modern diseases classification. He was friends with Jan Amos Komen-

ski when the latter one stayed in Leszno. He wrote in Latin, but despite his foreign origin he considered himself a Pole.

Polish geography also developed during this period. The first Polish outline of common economy geography was published by an Arian **Andrzej Rutkowski**, while the works that commenced regional geography in Poland was written by **Andrzej Święcicki** and the first description of Tatra Mountains by **Michał Hrosieński** – *Opisanie ciekawe gór Tatrów* (1650).

Szymon Starowolski in his work entitled *Poloniae sive status Rei Publicae descriptio* made an attempt to create a popular compendium on Poland. This book was a collection of information on the Polish state and its political system, on culture, religion, traditions, geography, people, and economy. Starowolski initiated the history of Polish literature by publishing an outline of national literature entitled *Setnica pisarzy polskich*. The book contained 172 biographies (and in the second edition – 232) of the most prominent Polish writers. He also wrote biographies of statesmen, speakers, diplomats, as well as military leaders.

Interest in history played an important role on the humanities of the Polish Baroque. The researchers started to be interested in new fields of knowledge – for example history of science and culture, history of particular regions in the country, history of different institutions, the studied and developed history of various nations. The most prominent and creative scholar was the historian at the court of King Władysław IV and John II Casimir - **Joachim Pastorius** from Głogów. He was also a writer, doctor, priest and poet. In 1641 he published *Florus polonicus seu polonicae historiae epitome nova*, a textbook on Polish history, recommended by **Stanisław Konarski** to be used at schools as late as in the 18th century. Moreover, he published *Historia powstania Chmielnickiego* and a treatise *O godności historii*.

The beginnings of Polish historiography go back to the 17th century. **Abraham Bzowski** became an outstanding European historian of the Church; he gained recognition as a historian-chronicler, who described in detail the life of Pope Paul V. Up until now his notes from that period are quoted by historian and researchers of the Vatican library collection. In Vatican he worked on the continuation of church annals by Cardinal Borromeo who took this work up to the year 1198. Bzowski published subsequent volumes of the annals that cover the period from 1198 to 1534.

The 17th century was probably the last century when a more eminent human mind could still grasp the majority of the store of knowledge. Together with the development of sciences, a specialisation of particular scholars became a prerequisite for a creative thinking.

Another revival of sciences in Poland is linked with the Enlightenment. In the mid-18th century Warsaw became to play the central role in Polish academic life. It stemmed mainly from the attitude of King Stanisław August Poniatowski as he was a patron of people dealing with sciences.

In 1721 an encyclopaedic work *Ciekawa historia przyrody Królestwa Polskiego i Wielkiego Księstwa Litewskiego*, written by **Gabriel Rzączyński** was published. It contained descriptions of flora, fauna, and natural resources of Polish and Lithuanian lands. For many years this book was the main source of physiography. It contained for example

quite modern views on the origin of rocks and the nature of fossils – due to this fact Rzączyński may be called a precursor of dynamic geology in Poland.

The beginning of the development of cultural institutions was the opening of the Załuski Family Library in Warsaw in 1747; it was one of the few public libraries in Europe. It was the centre of intellectual life in Warsaw and it focused also on bibliographical and editorial activities.

Another very important event was the establishment of Collegium Nobilium in 1740 by **Stanisław Konarski**, a precursor of the Polish Enlightenment. It was an elite school exclusively for children of aristocracy. It was characterised by a modern pedagogical thought, comprehensive education as well as upbringing in a patriotic atmosphere with an emphasis civic care for the country. The school focused on natural sciences, mathematics, modern languages, and philosophy. Modern methods of teaching were introduced, the curriculum was complemented with additional subjects (for example history, law, economics, sciences), and Polish lessons were given priority over Latin lessons. What was important in the education process was the development of clear, precise manner of speaking and argumentation based on the rules of the ancient "Ciceronian" rhetoric. Among famous teachers of this school there were:

- **Onufry Kopczyński** – educationalist, precursor of research on Polish grammar, author of the first Polish grammar textbook. His greatest achievement as a grammarian was the textbook *Gramatyka dla szkół narodowych* written upon the request of Komisja Edukacji Narodowej (Commission of National Education) and *Przypisach dla nauczycieli* describing methods of teaching. In the latter book he introduced grammar terminology in Polish. He was also an author of: *Nauka czytania i pisania, Elementarz dla szkół parafialnych narodowych, Gramatyka języka polskiego*.

- **Antoni Wiśniewski** – a physicist, mathematician, theologian, and educationalist - from 1752 he published an almanac *Kolenda warszawska*, in which he included numerous pieces of information on natural sciences, bearing in mind fighting against ignoramuses and superstitions, spreading thus the Enlightenment thought.

- **Teodor Ostrowski** – a historian and lawyer – author of: *Inwentarz nowy praw, traktatów i konstytucji, Prawo cywilne narodu polskiego, Dzieje i prawa kościoła polskiego*, translator of the work by an English lawyer Blackstone *Angielskie prawo kryminalne wraz z komentarzami i odniesieniami do prawa polskiego*.

- **Ignacy Zaborowski** – a mathematician and geodesist, professor of geometry, member of Towarzystwo do Ksiąg Elementarnych (Society for Elementary Books), author of the textbook *Geometria praktyczna* and *Logarytmy dla szkół narodowych* – the first Polish logarithmic tables.

- **Edmund Andraszek** – a natural sciences amateur, philologist – he organised natural museums near the Piarists schools, he organised and established libraries.

In addition to this, a famous student of the school was **Stanisław Kostka Potocki** – a pioneer of art history and archaeology in Poland, author of a book in three volumes *O sztuce u dawnych czyli Winkelman polski*.

Another initiative of King Stanisław August Poniatowski was the establishment of Szkoła Rycerska, also called Korpus Kadetów (Corps of Cadets), in 1765; it was the first

Polish public school established in Warsaw. Maintained from funds from Polish and Lithuanian treasury, it was addressed mainly for poor aristocratic teenagers. Its aim was to prepare the youth to military service and civil services; what was emphasised was the atmosphere of love, patriotism, and sacrifice for the country. The teaching staff consisted of two groups – officers teaching theory and running practical military exercises and professors teaching such subjects as history, geography, law, economics, modern languages (it may be mentioned here that the teacher of French was Mikołaj Chopin – father of Fryderyk Chopin). The Chief of Szkoła Rycerska was duke **Adam Kazimierz Czartoryski**, who was also an author of *Katechizm Kadecki* – a collection of recommendations from the field of individual and civil ethics that was intended for students of Szkoła Rycerska. About 650 students learnt at this school. Some of them took part in Kościuszko Uprising in 1794.

A Short History of Science and Education in Poland in the period of Poland's partition

The first partition of Poland (1772) stopped the activities of the reformers' grouping and curbed King's official activities. However during the session of the Partition Sejm on 14th October 1773, upon the request of King Stanisław August Poniatowski, Komisja Edukacji Narodowej (KEN, the central organ of education authorities) was established. Komisja Edukacji Narodowej was the first ministry of public education in Poland and most probably the first ministry of education in Europe (according to some sources the first ministry was Education Commission in Vienna). Until 1773 primary and secondary education was run in Poland by the Jesuit Order. This system was characterised with a peculiar conservatism and lack of tolerance, and simultaneously complete lack of any connection with the real educational needs. As in 1773 the Jesuit Order was dissolved by Pope Clement XIV, Poland faced the threat of the collapse of the education system. The establishment of KEN gave an impulse to profound reforms of the education system. In Poland an original and modern system of education was created. It was the work of prominent reformers of the epoch, members of Komisja Edukacji Narodowej: Hugo Kołłątaj, Ignacy Potocki, Andrzej Zamoyski, Grzegorz Piramowicz. KEN shaped a new model of teaching and by creating a multi-stage system of education it contributed to the development of education in Polish society. It started to organise post-Jesuit education system in Poland, by establishing new institutions of education starting from parish schools, through faculty and department schools, to universities, called general schools. Members of Komisja Edukacji Narodowej wrote new curricula emphasising in them the level of teaching Polish as well as mathematics, geography, history, and natural sciences. During the whole period of its activity, Komisja Edukacji Narodowej fought for real aim, methods, and contents of educating pupils in patriotic atmosphere.

At that time Towarzystwo do Ksiąg Elementarnych (Society for Elementary Books) was also established; it dealt with providing schools with textbooks adjusted to the new, reformed curriculum. This curriculum, stemming from the Enlightenment rationalism and empiricism, aimed at educating and upbringing citizens who could combine individual happiness with the wealth of society, who could defend their country and work for it, who would be tolerant and would reject old superstitions and social prejudices.

The reform of the Polish education system had a significant influence on the development of sciences in that period. Thorough education of teachers, especially of academic teachers, led to the creation of a milieu of people who taught and at the same time participated in the intellectual life. The most prominent figures at this period were:

- **Hugo Kołłątaj** – a politician, reformer, publicist, satirist, geographer – in 1802-1808 he wrote a large book on geography *Rozbiór krytyczny zasad historii o początkach rodu ludzkiego*, at that time it was an outstanding system of general geography, full of fresh and creative thoughts. Kołłątaj clearly defined the notion of geological time and analysis of geological processes, in which he a step before Charles Lyell, and his analysis of the environment influence of society he created foundations for the system of anthropo-geography outstripping thus for example Friedrich Ratzel.

- astronomer **Marcin Poczobutt-Odlanicki** – in his book *Cahiers des observations astronomiques faites à l'observatoire royal de Vilna en* he announced the discovery of a new constellation which he called Ciołek Poniatowskiego to honour King Stanisław August Poniatowski. For 34 years he conducted a systematic astronomical observations of for example fixed starts and the Mercury, which brought him European fame.

- **Jan Śniadecki** – an astronomer, mathematician, philosopher, organised of academic life, educationalist. He was the founder and the first director of the astronomical observatory in Kraków. From 1801 he was a member of Towarzystwo Przyjaciół Nauk (Society of Friends of Science) in Warsaw. He revived sciences in Poland. He also published several basic textbooks on mathematics. His main works include: *O nauk matematycznych początku, znaczeniu i wpływie na oświecenie powszechne, Rachunku algebraicznego teoria przystosowana do linii krzywych*. He was an author of the well-known treatise *O Koperniku*. He distinguished himself with his remarks concerning observation of newly discovered planetoids.

In the field of astronomy he made a visible return to Copernicus heliocentric theory, especially when **Józef Aleksander Jabłonowski** managed to make Copernicus book removed from the index of prohibited books.

Chemistry also met with researchers interest; famous chemists of the epoch were Jędrzej Śniadecki (Jan's brother) and Jan Jaśkiewicz.

Jędrzej Śniadecki was a prominent naturalist, philosopher, chemist, doctor and educationalist. He was one of the greatest scholars of his times. He was characterised with openness of ideas and beautiful style of writing. He dealt with different researches. For example, he worked on the theory of dissolution processes. In the work *Rozprawa o nowym metalu w surowej platynie odkrytym* he announced the discovery of a new element with the atomic number 44 (ruthenium), however this discovery was not confirmed (nowadays the discovery of ruthenium is attributed to Karl Claus). His greatest achievement was the creation of the basis of Polish chemical terminology. His terminology differed much from the terminology used abroad and was used in Polish textbooks until late 1970 and up until now it is present in atypical Polish names of chemical elements such as hydrogen, carbon, silicon, sulphur, which in other European languages were taken directly from their Latin equivalents. Śniadecki wrote the first Polish chemistry textbook *Początki chemji*. He was also an author of original and innovative work entitled *Teoria jestestw organicznych*, in which he described metabolism, a unique characteristic of living organisms. Śniadcki also had outstanding achievements – he was the first to describe the method of treating rickets with the prolonged exposure on sunlight. He also promoted hygiene and dietetics as well as physical education in Poland. He was a member of Towarzystwo Przyjaciół Nauk in Warsaw.

Jan Jaśkiewicz was a chemist, geologist, mineralogist, professor of chemistry and natural history at Szkoła Główna Koronna, doctor at the court of Stanisław August Poniatowski. He was an author of Polish terminology in the field of mineralogy. He introduced to Polish chemistry recent achievements of world science. He was the first in Poland to support the quantitative theory by Antoine Lavoisier. He also conducted research on metallurgy. In 1784 (one year after the Montgolfier brothers) together with Jan Śniadecki he constructed the first balloon in Poland.

Polish natural sciences developed well. The majority of achievements in this field belonged to **Krzysztof Kluk**. He was not related to with any academic centre. His main contribution was the conduction of decent research on Polish flora and fauna. He was an author of many books and textbooks, for example: *Rośliny potrzebne i pożytecznie opisanie, Rzeczy kopalnych osobliwie zdatniejszych szukanie, poznanie i zażycie, Zoologia czyli zwierzętopismo, Zwierząt domowych i dzikich, osobliwie krajowych, potrzebnych i pożytecznych, domowych, chowanie, rozmnożenie, chorób leczenie, dzikich łowienie, oswojenie, zażycie, szkodliwych zaś wygubienie*. Basing on Linnaeus system he prepared *Dykcjonasz roślinny*. His works make him equal to the best botanists and zoologists of his epoch. Kluk tried to use his observations in practice, attempting at formulating practical recommendations for agriculture on the basis of his knowledge.

Paweł Czenpiński, a doctor and zoologist co-wrote with Kluk such textbooks as *Botanika dla szkół narodowych...* and *Zoologia, czyli Zwierzętopismo dla szkół narodowych ....* For many years he was also an active member of Towarzystwo do Ksiąg Elementarnych, for example he participated in writing guidelines for school inspectors and acts of Komisja Edukacji Narodowej. Together with **Walenty Gagatkiewicz** he established School of Academy and Surgery in Warsaw.

Scholars were interested in physics:

- **Józef Rogaliński**, acted in Poznań as a head of an astronomical museum and observatory, which was almost totally built and equipped by his family. Leonhard Euler, a famous Swiss scholar, who visited it in 1765 said that it was the best equipped observatory in Poland. Rogaliński worked on the reform of the educational system and he is considered to be the founding father of the centre of research on physics and mathematics in Poznań. He was a precursor of free of charge public lectures, which, apart from students of the Lubrański Academy and Jesuit College, in Poznań were attended by citizens, mainly craftsmen. Those lectures were on experimental physics. He also organised "shows," during which pupils discussed technical inventions and their application. It may be claimed that he was a precursor of popularization of knowledge in Poland. He was an author of a textbook on experimental physics *Doświadczenia skutków rzeczy pod zmysły podpadających*.

- **Michał Jan Hube**, a mathematician and physicist, head of Szkoła Rycerska in Warsaw. He was an author of textbooks on physics written on the request of Komisja Edukacji Narodowej: *Wstęp do fizyki dla szkół narodowych* (1783) and *Fizyka dla szkół narodowych. Część I. Mechanika* (1792). Michał Hube from Toruń was also a prominent mathematician of that time. He not only developed the theory of differential calculus, but also was interested in technical issues, which was characteristic for the epoch.

- **Józef Herman Osiński** - an educationalist, author and translator of many works on physics, chemistry, and metallurgy, often called the first Polish electrician. He dealt also with botanic and was the pioneer of physiology of plants in Poland; among his works one has to mention: *Fizyka doświadczeniami potwierdzona; Opisanie polskich żelaza fabryk; Gatunki powietrza odmiennego od tego, w którem żyjemy, Robota machiny powietrzney p. Mongolfier; Sposób ubespieczaiący życie y maiątek od piorunów, Fizyka naynowszemi odkryciami pomnożona; Dyssertacya o wzroście nauk fizycznych w drugiej połowie wieku osiemnastego*. He established in Warsaw the first Polish chemical laboratory. He publi-

shed also *Opisanie polskich żelaza fabryk*.

In this period the level of medical knowledge in Poland increased significantly. It was mainly due to the reform of medical departments in General Schools. What was particularly important was the modernisation of medical studies in Kraków conducted by **Andrzej Badurski**. He used the school in Vienna as a point of reference, but he also voiced his own postulates – he suggested the establishment the faculty of anatomy, anatomy laboratory, and museum of anatomy. On his initiative the first research hospital was established. Such a centre provided students of medicine with the possibility of getting to know particular cases of diseases.

Rafał Czerwiakowski, the founding father of the first modern school of surgery in Poland and professor at the Jagiellonian University, was another prominent figure. He made attempts to introduce the Polish language into the academic writing (author of a number of works, for example: *Wywód o narzędziach cyrulickich, Dyssertacyja o szlachtności, potrzebie i użytku chirurgii, Narząd opatrzenia chirurgicznego, Chirurgia praktyczna*). He invented several surgery tools, for example a knife with a round ending used to cut wounds and a traction to heal broken bones. He is called a "father of Polish surgery".

Under King Stanisław August Poniatowski auspices cartography developed; mainly due to military needs. However, the map of all Polish land, prepared on the King's initiative, was not completed. Only west parts were worked out by **Karol Perthees**.

Scholars tried to use the rules governing the world of nature in social life. This trend was especially strong among economists, in particular Piarists **Antoni Popławski** and **Hieronim Stroynowski** saw the main sources of national wealth in agriculture.

The removal of the supernatural factor from the research on the development of societies led to the revival of historiography. **Feliks Łojko-Rędziejowski** took on the defence of Polish rights to lands lost during the first partition using well-selected historical arguments. He tried to introduce statistical methods into historical research. However it was **Adam Naruszewicz** who laid foundations of modern historical research; he also undertook the challenging task of writing a book on the whole history of Poland. His book *Historia narodu polskiego* describes the events until 1386; it is characterised with an old style of a chronicle though it is based on source materials and presents critical attitude towards Naruszewicz's predecessors. The materials he gathered, the so-called *Naruszewicz's Files* (a collection of 38,270 copies of documents in 230 volumes) are one of the most important collection in the field of research on Polish history.

What was also important was the activity for the general public run by publicists, translators, and writers. Information on progress and achievements of sciences could be also found in all the press of that time, although there were special publications dealing mainly with popularisation of knowledge. In this respect the activity of **Piotr Świtkowski** and his *Pamiętnik Historyczno-Polityczny* played an important role.

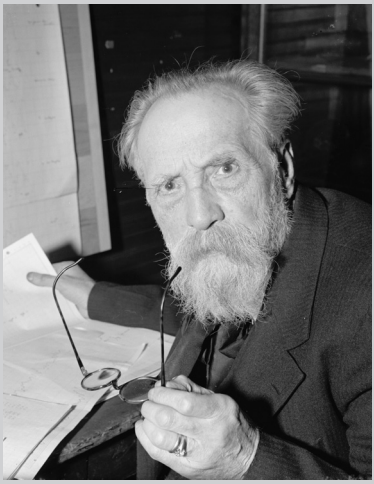
In Poland after the defeat of January Uprising the so-called Warsaw Positivism began. This movement took the conceptions of Positivism as its point of departure. What was particularly emphasised was science based on experiments and reason. Its ideal was sought in the model created by natural sciences and it was accepted as a fundamental point of reference while interpreting the phenomena in real world. Moreover, concepts con-

cerning man and society voiced by the Warsaw Positivism had biological foundations. Society was treated as a living organism, and the evolution in the world of nature was a reference for social development. The most important slogans included: work at the grass roots, that is (a programme of spreading literacy and popularizing science among the masses, launched by the Polish positivists, and organic work, that is well-organised, harmonic cooperation of all society and social milieus in order to ensure development of the country, modernisation of the economy, development of science in relation to the latest European achievements, popularisation of vocational education, women emancipation, legal equality of all citizens regardless of their nationality and religion.

Until 11th November 1918 when Poland regained its independence Polish science developed under Russian, Prussian, or Austrian rule, or in foreign centres.

Portraits of scientists

Henryk Arctowski



– July, 15th, 1871 - born in Warsaw
– 1897-1899 - took part in the Belgian Antarctic Expedition on the ship „Belgica„
– 1903-1909 - was the chief of the weather station „Observatoire Royal de Belgique" in Belgian city Uccle
– 1910 - was the member of the French expedition to Spitsbergen
– 1910 - 1918 - was in charge of the Science Department at the Public Library in New York
– 1920 - returned to Poland and started work at the Lviv University
– 1935 - became a member of the Polish Academy of Learning
– 1939 - due to the Second World War left Poland and moved to USA
– 1958 - died in Washington

He studied geology,
and meteorology
of Antarctica and the Arctic.

He explored Antarctica and the Arctic. He wrote many publications on these regions as well as of meteorology and geology. In 1920 he returned to Poland and had an impact on the development of science in the nineteenth and twentieth centuries. Thanks to him and his work Polish science has become much better known. He conducted the first meteorological observations year-round in Antarctica. He described also the specific phenomenon, in which a halo resembling a rainbow, with two other partial arcs symmetrical to the main one forms around the sun. This phenomenon was called the Arctowski Arch.

In tribute of his scientific achievements his name has been given to a number of geographical discoveries. For example in Antarctica there are: Arctowski Peninsula, Arctowski Peak, and in Spitsbergen: Arctowski Glacier. Additionally in recognition of this great scientist Polish Antarctic Station on King George Island, off the coast of Antarctica, was called Henryk Arctowski.

References:

– http://www.audiovis.nac.gov.pl/obraz/82075/h:393/
– http://ofwzipo.igf.edu.pl/broszura.pdf
– http://www.polish.polar.pan.pl/ppr01/1980_1_151-152.pdf

 Author: Justyna Liszka

Tadeusz Baranowski

He was the first man who conducted crystallization of proteins. He discovered an enzyme, phosphoglycerol dehydrogenase, called Baranowski's enzyme.

In 1939 Baranowski as a first man carried out crystallization of proteins.

In 1950th he helped to start industrial production of ACTH (Adrenocorticotropic hormone) preparations in Poland. On the basis of isotopic studies he showed that the rest of the phosphate of ATP

is transferred to fructose-6-phosphate and he identified enzymes involved in these reactions (1938).

– 1938: was the assistant professor of physiological chemistry at the University of Jan Kazimierz in Lviv
– 1940-1941: was a professor of physiological chemistry, Medical Institute in Lviv
– 1942-1944: was a professor at Medizinische und Staatliche Naturwissenschaftliche Fachkurse in Lviv
– 1950-1981: was a professor at Wrocław Medical University
– 1955-1970: was a professor at Biochemistry Institute of Immunology and Experimental Therapy PAN (Polish Academy of Science)
– 1965-1968: was the Rector of Wrocław Medical University

References:

– http://www.khm.cm-uj.krakow.pl/wydzialy.html
– http://pl.wikipedia.org/wiki/Tadeusz_Baranowski_(chemik)

Edward Bekier

– 1904-1905 - studied at the Medical Faculty of Warsaw University
– 1912 - studied in the laboratory of physical chemistry at the University of Gottingen
– 1913-1914 - studied at the Technical University of Charlottenburg in Berlin
– During the Polish-Bolshevik War he joined the volunteers serving in the Polish Army as a gunner in Ist Zenit Artillery Regiment.
– During World War II, he taught physical chemistry at the secret Stefan Batory University in Vilnius.

The main direction of his research concerned the chemical kinetics of heterogeneous and homogeneous systems.

His scientific achievements consist of 29 items published in the foreign and domestic chemical literature. These are works in the field of electrochemistry and radioactivity, as well as properties of metals and their alloys. The main direction of his research concerned the chemical kinetics of heterogeneous and homogeneous systems.

He was a co-founder and, for many years, the president of the Polish Chemical Society branch in Vilnius and a member of the Friends of Sciences and the Societe de Chimie Physique in Paris. He organized and directed the chemical library of Vilnius University. He was also the founder and curator of the „Circle of Chemists".

In 1905, he was expelled from university for participating in the boycott of Russian schools.

References:

– http://pl.wikipedia.org/wiki/Edward_Bekier [12.04.2012]

Grzegorz Białkowski

Author of works on the dispersion relations and the damped cascade model of hadronic interactions with nuclei

He was the author of many publications in the fields of physics, including the popular science books and monographs:

„The Elementary Particles" (1971),

„Classical Mechanics" (1974),

„Old and New Ways of Physics" (1980-1985),

„Quantum Mechanics - What Is It?" (1982).

Currently, the award in his name is granted for the most outstanding doctoral thesis in mathematics, physics, computer science, astronomy and chemistry.

As a poet he debuted in 1962. He has published three collections of poetry:

„Mgła" (1964),

„Odwijanie ze źródła" (1967),

„Przemienienie"(1973).

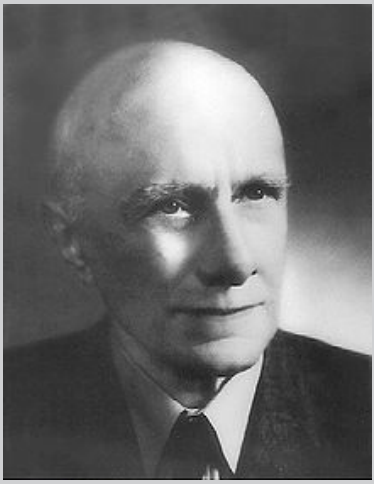
He participated in the Round Table on the side of Solidarity.

– 1955 - graduated from the Warsaw University
– 1959 - received his doctorate
– 1965 – received his habilitation
– 1971 – was a professor at the Warsaw University, head of the Department of Theoretical Physics and High Energy IFT
– 1980 - was in the group of founders of TPKN (Towarzystwo Popierania i Krzewienia Nauk; ang. Society for the Promotion and Propagation of Sciences)
– 1985 –was the Rector of Warsaw University
– 1989 –was elected a Senator of the first term to Polish parliament

References:

– http://pl.wikipedia.org/wiki/Grzegorz_Bia-%C5%82kowski#cite_note-0

Czesław Białobrzeski



– 31st August 1878 – born in Powszowice, Russia
– 1896 – 1901 – studied at the University of Kyiv
– 1908 – 1910 – studied at College de France in Paris
– 1914 – became a professor at the University of Kyiv
– 1919 – 1921 – work at the Jagiellonian University
– 1921 – became a member of the Polish Academy of Ability
– 1922 – became a member of the Warsaw Science Company
– 1923 – became a member of the Technical Science Academy
– 1931 – founded a modern laboratory at the Warsaw University
– 1934 – 1938 – served as a president of the Polish Physics Company
– 12 October 1953 – died in Warsaw

He was the first man who drew attention into the influence of radiation pressure on stellar equilibrium

Czesław Białobrzeski published his work about the internal construction and radiation of stars.

The physicist worked out and published a dissertation about the properties of dielectrics.

He worked on the theories of dissipating light through water and conduction of metals as well as quantum theory. Białobrzeski worked on optics, carried out research into conduction induced in solid and liquid dielectrics.

Białobrzeski occupied himself with the topic of the actual absorption of ligth.

The physicist is an author of a principle concerning fluctuation.

He became interested in research into cosmic rays.

He wrote about 100 works on thermodynamics, the theory of relativity, the quantum theory, the theory of equilibrium and evolution of a star, spectrography, astrophysics and philosophy of physics. His hypotheses are used in science on all the world.

References:

– Ryszard Sobiesiak, Poczet wielkich fizyków, Warszawa 1975,
– Włodzimierz M. Ścisłowski, Czesław Białobrzeski, Postępy Fizyki 1954

 Authors: Ewelina Komańska, Jakub Krzak

Adam Bielański

Creator of Cracow School of Catalysis, Initiator of research into heterogenic catalysis at the Jagiellonian University

He deals with problems of catalysis and physical chemistry of solid substances. He organized and supervised a team of researches, who conducted investigations into this branch of science.

Professor Bielański co-created Cracow School of Catalysis.

Third generation of students use academic textbooks written by him.

He received lots of state and international awards for his scientific and didactic achievements, inter alia Złoty Krzyż Zasług (Grand Cross of Merit of the Republic of Poland) or Krzyż Kawalerski (Knight's Cross of Merit of the Republic of Poland), *Doctor honoris causa AGH* (1983).

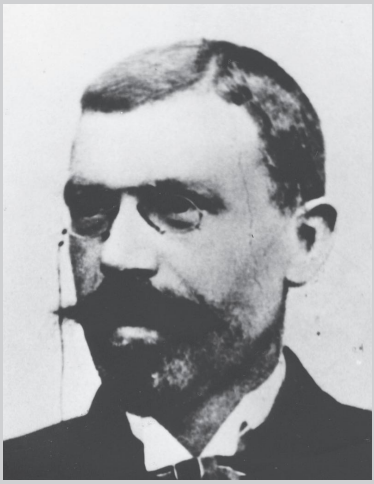
His brother, Władysław (1911–1982), was professor of biology and his sister, Zofia Bielańska-Osuchowska, is professor of biology, as well.

– December 14, 1912 – born in Kraków
– 1931 – started to study chemistry at the Jagiellonian University
– 1936 – received Master's degree
– 1944 - received his doctorate
– 1945-1950 – worked as an older assistant lecturer in physical chemistry department at AGH (University of Science and Technology)
– 1955 – received an academic title of associate professor
– 1962 – received academic title of professor
– 1983 - retired from the Jagiellonian University
– Recently he works in Institute of Catalysis and Physical Chemistry of Surface at PAN (Polish Academy of Sciences) on physicochemistry of heteropolyacids.

References:

– Card of Dzieje Naukowego Koła Chemików
– Złota Księga WCh UJ tom 2 (Golden Book of Faculty of Chemistry Jagiellonian University)

Edmund Faustyn Biernacki



– December, 19th, 1866 - born in Opoczno
– 1884 – graduated from High School for men in Lublin
– 1889 – graduated from medicine at the University of Warsaw
– 1889 – chief of internal medicine clinic
– 1890 – went abroad for further education in Giessen, Heidelberg and Paris
– from 1902 he lived in Lwów
– 1907 – was appointed extraordinary professor of general pathology. From that year he practiced in Karlsbad during the summers and achieved great repute as an internist
– December, 29th, 1911 - died in Lwów

Discoverer of the erythrocyte sedimentation rate

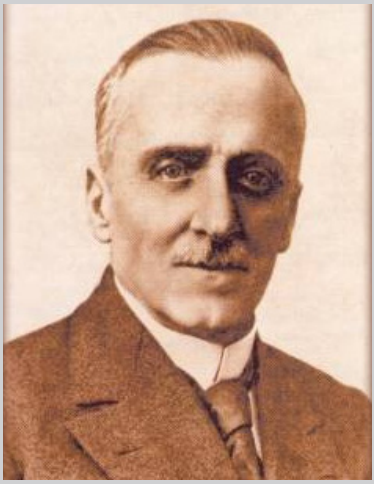
Biernacki was a Polish pathologist. He was the first one who note a relationship between the sedimentation rate of red blood cells in a human blood sample and the general condition of the organism. The method, known as the Biernacki Reactions, is universally practiced in all laboratories in the world.

References:

– Whonamedit? A dictionary of medical eponyms online
– http://www.whonamedit.com/doctor.cfm/2783.html

Józef Jerzy Boguski

He carried out pioneering studies in chemical kinetics and formulated „Boguski's rule" concerning the speed of dissolution of solids in liquids.



It was at a laboratory run by Boguski in the Museum of Industry and Agriculture at *Krakowskie Przedmieście 66* in Warsaw that his cousin Maria Skłodowska -Curie, future investigator of radioactivity and future double Nobel laureate, in 1890–91 began her practical scientific training.

While examining the effect of temperature on the electrical conductivity of N_2O_4, Bogucki suggested that the cause of short-term increase in conductivity of this compound during heat-ingare the movements of atoms, accompanying the dissociation.

1922 - He got the Commander's Cross of OPR; 1926 - Honorary Member of Polish Chemical Society; 1926 - Honoria Causa Doctor of Jagiellonian University (Kraków) and Warsaw University of Technology; 1928 - Honorary member of the Poznan Society of Friends of Science.

He wrote the first Polish article about the chemical kinetics - „The speed which chemical transformations occur with".

- September 7, 1853 - born in Warsaw
- 1871 - graduated from II high government school and real school
- 1871-1875 - studied physics and mathematics at the University of Warsaw
- 1876-1878 - was an assistant of Dmitri Mendeleyev at the University of Petersburg in the Department of Inorganic Chemistry
- 1878- 1898 - started work in the school of Pankiewicz in Warsaw
- 1887-1895 - was a head of the physical laboratory at the Museum of Industry and Agriculture in Warsaw
- 1898-1899 - was an editor- in--chief of the newspaper „Light"
- 1899-1915 - was the chair of chemistry at the Technical University of Warsaw
- 1919-1929 – was in a headuarters of the laboratory in Weapons Materials Research Institute in Warsaw
- April 18, 1933 - died in Warsaw

References:

- Popularna Encyklopedia Powszechna,
- Uczeni polscy XIX – XX stulecia tom I Andrzej Śródka

Author: Maria Krzeczowska

Karol Bohdanowicz

– November, 29th, 1864 - born in Lucyn
– 1881 - graduated from military gymnasium in Niżny Nowogród.
– 1886 - graduated from academic education in Saint Petersburg.
– 1921 - became an associate professor at University of Science and Technology (AGH).
– 1922 - published a textbook „Areas and oil-pool".
– 1927 - published report about mineral resources in Poland.
– 1935 - AGH gave him a doctorate honoris causa and honorary professor title.
– 1937 - became a director of Geological Institute at AGH in Krakow
– 1938 - became a director of National Geological Institute.
– June, 5th, 1947 – died in Warszawa

Karol Bohdanowicz discovered a substantial gold deposits in Siberia.
He was the first author of polish textbook about oil geology.

He was a Polish engineer, geographer and geologist. He authored of about 200 scientific papers, many textbooks and 2 monographs:

- Mineral resources on the world

Iron stone

His researches allowed to estimate a oil-pool in Caspian Plain. He made many geological maps.

His scientific discoveries became a basis for the development of Eurasian plate tectonics scheme.

References:

– http://www.geol.agh.edu.pl
http://pl.wikipedia.org

Stanisław Bretsznajder

He was an author
of an original method
of producing
metallurgical alumina.

He created the concept of an original method of producing metallurgical Al_2O_3, breaking the global monopoly of Bayer's method. Ministry of Defense took action associated with the construction of the Al_2O_3 factory according to this concept. The building was interrupted by the Second World War. At those time Bretsznajder produced chemical warfare agents.

He took part in the formation of the Silesian University of Technology in Gliwice. He created the Technical Design Department in the Technical University of Warsaw. In the Institute of Physical Chemistry Polish Academy of Sciences, he was analyzing rational use of domestic raw materials, modelling and kinetics of reaction mechanisms occurring in technological processes.

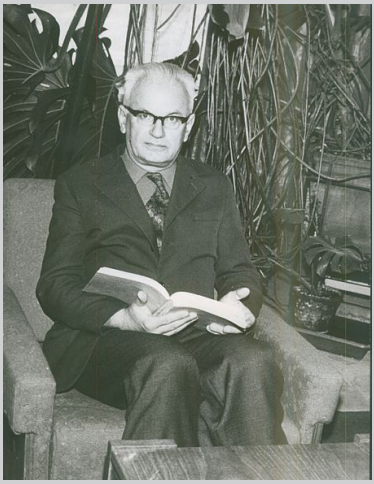
In his scientific achievements there are among others: 171 publications in national and international journals, 17 monographs, books and chapters in collective publications of books, 36 patents and many awards.

– July 19, 1907 – born in Mikołajewo
– 1930 – finished his chemical engineering graduate studies in Warsaw and complementary technical studies in electrochemistry in Vienna
– 1933 - obtained his doctorate
– 1934-1945 - worked with the 'AK' (Home Army) under the pseudonym 'Chemist'
– 1936 – received his habilitation
– 1931–1939, 1945–1967 - worked in the Warsaw University of Technology
– 1945-1949 - worked in the Silesian University of Technology as a teacher and a scientist cooperating with chemical industry
– 1955 - obtained the title of professor
– April 14, 1967 - died in Warsaw

References:

– http://pl.wikipedia.org/wiki/Stanis%C5%82aw_Bretsznajder
– http://www.ichf.edu.pl/gen_inf/gen_pl/07.pdf

Stanisław Bursa



– November, 9th, 1921 – born in Skierniewice.
– 1941-1942 – was a student at the Wawelberg and Rotwand's School and after that he studied at the Chemistry Department at Warsaw PWST.
– 1945 – started work as an assistant at Department of Agricultural Chemistry at SGGW
– 1946 – restarted his studies at Warsaw Technical University. In the same year he was sent with a group of students to Denmark where he worked in the Organic Chemistry laboratory.
– 1948 – obtained Master Degree with a grade A.
– 1951 – finished his PhD
– 1952 – became a head of Department of Physical Chemistry at Szczecin Technical University. He was also dean of Department of Chemistry and vice-rector of Technical University.
– June 7th 1989 – died in Szczecin

He was interested in using the Physical Chemistry to solve the problems of Chemical Technology. He wrote a book 'Physical Chemistry'.

Stanislaw Busra, a lecturer in physical chemistry course, chemical thermodynamics and process physical testing methods of organic compounds. He was advisor of 45 theses. He served as supervisor of 11 doctoral thesis. Issued opinions on 12 habilittaion disertation and was a reviewer of 43 doctoral thesis. Stanislaw Bursa authored or co-authored 76 scientific articles and published five books. He was involved in the study of oxidation of the waste hydrogen chloride and nitric acid chlorides, using waste ferrous sulphate for the preparation of ammonium sulphate of potassium and iron oxides, the recovery of N, N-dimethylformamide and methyl ethyl ketone from aqueous solutions, deodorization gas and sewage. Stanislaw Bursa was awarded the Gold Cross of Merit (1956), Knight's Cross of the Order of Polish Rebirth (1964), Officer's Cross of the Polish Revival (1974), the Medal of the National Education Commission (1980), Medal of 40 years (1984), Commander's Cross of the Order of Polish Rebirth (1985), Medal of Distinguished Teacher (1987).

References:

– www.wikipedia.pl

Jan Czochralski

Polish chemist who invented the Czochralski process - a method of crystal growth used to obtain single crystals of semiconductors, metals salts and synthetic gemstones

He was an assistant of Wichard von Moellendorff, with whom he published his first work on crystallography of metals (1911 – 1914).

Czochralski Process was discovered while investigating the crystallization rates of metals (1916). The method is used for growing single crystals and in the poduction of semiconductor wafers.

He developed and patented bearing alloy B for railway (1924).

He organized the Department of Metallurgy and Metals Science in the Warsaw University of Technology and Institute of Metallurgy and Metal Science.

– October 23, 1885 - born in Kcynia, where he later graduated from „Seminarium Nauczycielskie"
– 1904 - moved to Berlin where he worked at pharmacy
– 1907 - educated at Charlottenburg Polytechnic in Berlin
– 1916 - discovered the „Czochralski Method'"
– 1917 – 1928 – organized and directed the research laboratory „Metallbank und Metallurgische Gesellschaft"
– 1918 - published a paper on his discovery in the „Zeitschrift für physikalische Chemie"
– 1928 - moved to Poland and became a professor of the Warsaw University of Technology
– 1946 - returned to Kcynia
– 1953 - died in Poznań

References:

– „Jan Czochralski i jego metoda" Tomaszewski Paweł;
– http://pl.wikipedia.org/wiki/Jan_Czochralski

Ignacy Domeyko

– July 31st, 1802 born in Niedźwiadce Wielkiej
– 1816-1822 studied Physics and Mathematics of the University of Vilnius
– 1819 was admitted to the Society of Philomath
– 1831 he took part in the November Uprising
– 1832 hit the road by Frombork, Malbork and Frankfurt to Dresden
– 1837 studied and worked in mines in Alsace
– 1838 professor of chemistry and mineralogy in Coquimbo
– 1846 observed the eruption of Antuco
– 1848 he received Chilean citizenship
– 1867 created the modern university in Chile
– January 23, 1889 died in Santiago de Chile

He initiated a number of mineralogical and geological research, which developed the mining industry in Chile

Polish geologist, mineralogist, mining engineer and researcher in South America. A close friend of Adam Mickiewicz Domeyko contributed to the spread of education in Chile and improve its level. He published two major works on natural resources in Chile and Peru, Bolivia and Argentina. He studied meteorites collected during the expedition to the Atacama desert. He also described the earthquake in Chile. One of the asteroid was called 2784 Domeyko. The mountain range was called Cordillera de Domeyko and there is also the city Domeyko. His name created a term for the mineral domeykite. Domejko is the patron of mine in Zloty Stok

References:

– http://www.wikipedia.org/
– http://www.polonialife.ca/

Tadeusz Estreicher

He appointed a boiling point and melting point of hydrogen chloride,
he constructed a device for liquefying hydrogen.

Tadeusz Estreicher established and was a chairman of the Society for the Promotion of Pharmaceutical Sciences.

He was the author of numerous works on linguistics of chemical and pharmaceutical terminology. He organized the cryogenic laboratory in Freiburg, studio inspired by Olszewski, and conducted research into the low-temperature calorimetry.

His father, Karol Józef Estreicher, was an outstanding historian of literature and the chief librarian of the University. His brother, Stanisław, was a historian of Law and his sister, Maria, was one of the first women in Austria-Hungary to earn a doctorate (in English Philology).

On 6th November 1939, along with his brother Stanisław and other professors of the University, Estreicher was caught in Sonderaktion Krakau.

– 1871 - born in Krakow
– Studied at the Jagiellonian University, in Berlin, Leipzig and London, where he worked under the guidance of Nobel Prize winners.
– 1899 - returned to Krakow and became an assistant of Olszewski
– 1901 - built a device for the liquefaction of hydrogen
– 1904 - after his habilitation he conducted research in the laboratory of physical chemistry in Wrocław Abegg
– 1906-1907 – worked as professor of mineral and general chemistry at the University of Freiburg
– 1919 - took the position at the Jagiellonian University, proceeded at once to rebuild the Olszewski's cryogenic laboratory
– 1939 - arrested and sent to Sachsenhausen concentartion camp
– 1940 - returned to Krakow
– 1952 – died in Kraków

References:
– Wielkie biografie, PWN, Warszawa, 2008
– Grzybowska K., Estneicherowie, Kronika rodzinna, Kraków 1999
– Encyklopedia Krakowska, Warszawa- Kraków 2000

Kazimierz Fajans

– 1887 - born in Warsaw in an assimilated Jewish family
– 1904-1909 - studied chemistry in Germany, first at the University of Leipzig, then in Heidelberg and Zurich
– 1910-1911 - took a year training in Manchester, in the laboratory of E. Rutherford, where he studied radioactivity
– 1917 - became a professor in Munich
– 1935 - left Germany
– 1936 - assumed the chair at the University of Michigan
– 1975 - died in Ann Arbor, Michigan, USA.

He formulated radioactive displacement law (rule Soddy-Fajans), independently by Frederick Soddy; He discovered protactinium and new isotopes of lead and rhenium.

He discovered the two-way decomposition (α and β) of one of the isotopes of bismuth (the phenomenon of bifurcation (branching up) radioactive series);

He designated periods of half-life of some radionuclides;

Together with his student, Osvald H. Göhring, he discovered the element with atomic number 91 - brevis, which was later given the name 'protactinium';

On the basis of the analysis of the series of radioactive isotopes he discovered the existence of persistent (non-radioactive);

As a result of ion adsorption studies of radioactive elements he formulated general rules for the precipitation of substances from solutions;

His method of assessing the nature of the ion-covalent chemical bond is known today as Fajans rule.

References:

– http://pl.wikipedia.org/wiki/Kazimierz_Fajans[25.03.2012]

Jan Flis

The author of many books, inter alia: Physical Geography of the World (1964), Cartography at a Glance/in Outline (1966) and Introduction to Physical Geography (1969)

He authored and co-authored in total 134 publications, supervised more than 300 masters and 13 doctors thesis. In his literary output the prominent place belongs to academic books, among which special attention deserve: Physical Geography of the World (1964), Cartography at a Glance(1966) and Introduction to Physical Geography (1969). He translated to Polish from English the works of JN Baker (1959), PE Strzelecki (1960) and O'Dell (1961). He was an initiator of study summer field practice of the program. He developed teaching programs for numerous majors in WSP and WSN.

– July 20th, 1912 - born in Nowy Sącz
– 1930-1935 – studied geography and pedagogy at the Jagiellonian University
– 1933 - a junior assistant in the Department of Geography, Jagiellonian University.
– 1938-1939 - an assistant in the Department of Anthropology, University of Warsaw
– 1939 - participated in battles in defense of Lwow. In recognition of his military campaigns he received numerous military medals
– Since 1960, he was a head of the Department of Physical Geography WSP, then a head of the Department of Geography WSP
– 1970 -received the title of the associate professor of the Earth sciences
– December, 9th, 1993 died in Krakow

References:

– http://pl.wikipedia.org/wiki/Jan_Flis

Kazimierz Funk

– February 23, 1884 - born in Warsaw
– 1900 - finished junior high school in Warsaw and after that he moved to Switzerland in order to study biology in Geneva and then chemistry in Bern
– 1904 - received his PhD
– 1911 - isolated the B1 vitamin
– 1912 - introduced the actual term of 'vitamin'
– 1920 - acquired the US citizenship
– 1923 - 1928 – worked in the National Institute of Hygiene in Warsaw; after that he went to Paris where he was conducting research into hormones
– 1936 - signed a contract with Vitamin Corporation in New York
– 1939 - emigrated to US where he studied the causes of cancer
– January 19, 1967 - died in Albany (USA) at the age of 83.

Biochemist,
Author of the 'vitamin' concept

He isolated the B1 vitamin and also introduced the actual term of vitamin, which is still used in everyday life.

He conducted research into using vitamins for medicinal purposes.

He was involved in the treatment of patients with vitamin deficiency. Thanks to his discoveries the causes of such diseases as beriberi, rickets, scurvy and pellagra were revealed.

He worked on isolation of the insulin hormone.

He conducted research into nicotinic acid and causes of cancer.

He is an author of several hundred scientific publications.

In his honor the Funk Foundation for Medical Research was founded.

References:

– http://bialoczerwona.pl/start/index.php?option=com_content&view=article&id=33&Itemid=34

Jan Harabaszewski

He was an author
of two fundamental books
for Polish
Didactics of Chemistry:
„Metodyka chemii" (1932)
and „Dydaktyka chemii" (1936)

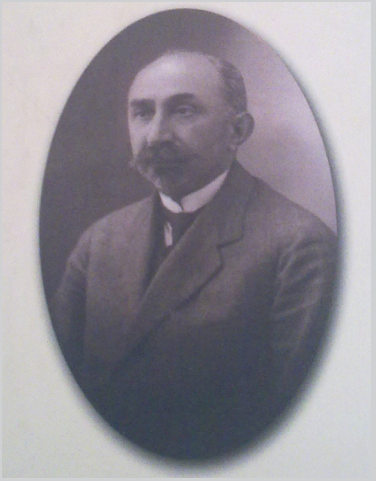
Jan Harabaszewski is the author of two fundamental books for Polish Didactics of Chemistry: „Metodyka chemii" (1932) and „Dydaktyka chemii" (1936). The first one includes all issues related to the theory and practice of teaching chemistry. „Dydaktyka chemii" explains the relationship between the methodology of science and methodology of teaching, the role of inductive and deductive thinking in chemistry, schools and educational value of teaching chemistry.

Futhermore, it indicates a difference in purpose of education at various levels of learning.

His main purpose was to teach through experiments. He believed that chemistry was the best way to inductive thinking and development of student's personality. Because of his comprehensive knowledge he was one of contributors of the first Polish scientific journal of chemistry - „Chemik Polski". He was also a translator, editor and author. Among his books there are: „Ćwiczenia laboratoryjne z chemii dla gimnazjum wyższego"and „Woda".

References:

– A. Galaska-Krajewska, R. Piosik, N.W. Skinder, J. Soczewka, Twórca polskiej dydaktyki chemii Jan Harabaszewski i jego czasy (1875-1943), wyd. WUW, 2009



– September, 1875 - born in Radom
– He attended the secondary school in Radom, then he moved abroad to Riga to continue his education.
– 1895 - passed a matura exam
– Enrolled to Riga Polytechnicum (Chemistry Department), however, in 1899 expelled for some disciplinary issues.
– Studied at Lviv Polytechnic National University.
– After graduating hired as an assistant at this University, but during one of family visits arrested. In 1905 arrested one more time, because of taking part in strikes for the right to be taught in Polish. Got out of jail, but was forbidden to be a teacher again.
– 1910 – together with dr A.J. Goldsobel opened a laboratory.
– Became a member of the Scientific Association of Chemists.
– 1943 – year of his death

Johannes Hevelius

– January 28, 1611 – born in Gdańsk (Danzig)
– 1618 - began teaching at the Academic Gymnasium Danzig
– 1622 - continued his studies at the faculty of liberal arts at the University in Królewiec
– 1630 - studied jurisprudence at Leiden
– 1641 - began regular astronomical observations
– 1643 - became a member of the old beer-brewing guilt
– 1653 - inherited from his parents house and brewery
– 1664 - elected a member of the Royal Society of London
– 1641-1651 - was a juror and town councilor of Stare Miasto, Gdańsk
– January 28, 1687 - died in Gdańsk

He was an astronomer, 'the founder lunar topography'. He described seven new constellations.

He elaborated a map of the Moon.

Has appointed an angular average of the Mercury. In 1644 he discovered phases of this planet.

He applied the pendulum to observe the solar eclipse.

He discovered a new pair of double stars.

He described seven constellations, among other called by him: *The Lizard's Constellation* (*Lacerta*), *The Smaller Lion's Constellation* (*Leo Minor*), *The Hunting Dogs' Constellation* (*Canes Venatici*), *Sekstant's Constellation* (*Sextans*). They were approved in the XX centuries by the International Astronomical Union and are still actual in use.

He was an author of the following famous works: „Selenographia" (1647), „De nativa Saturni facie ejusque varis Phasibus" (1656), „Cometographia" (1668), „Machina coelestis" (1673-1679).

In 1678 he started to work on a catalogue of stars and an atlas of sky.

References:

– http://pl.wikipedia.org/wiki/Jan_Heweliusz#cite_note-Januszajtis2-5

Roald Hoffmann

He is a theoretical chemist who developed rules for elucidating reaction mechanisms

Hoffmann has investigated both organic and inorganic substances, developing computational tools and methods such as the extended Hückel method, which he proposed in 1963. Together with Robert Burns Woodward, he also developed rules for elucidating reaction mechanisms (the Woodward-Hoffmann rules). He introduced the isolobal principle, as well.

The Nobel Prize in Chemistry 1981 was awarded jointly to Kenichi Fukui and Roald Hoffmann "for their theories, developed independently, concerning the course of chemical reactions".

– July 18, 1937 - born in Zolochiv, Poland (now Ukraine) in Jewish family
– 1949 - his family emigrated to United States
– 1955 - finished education in New York City's Stuyvesant High School
– 1958 - graduated from Columbia University
– 1960 - earned his Master of Arts degree from Harvard University
– 1962 - received a doctoral degree in chemistry, working under the direction of another Nobel laureate, William N. Lipscomb
– 1965 - went to Cornell and has remained there, becoming professor emeritus
– 1981 - won Nobel Prize in Chemistry

References:

– http://www.nobelprize.org/nobel_prizes/chemistry/laureates/1981/hoffmann.html http://en.wikipedia.org/wiki/Roald_Hoffmann#Escape_from_the_Holocaust

Leopold Infeld

– August 20, 1898 – born in Kraków
– 1920 - studied physics at the Jagiellonian University
– 1921 - awarded a doctorate at the Jagiellonian University
– 1930-1933 - worked as an assitant and docent at the University of Lwów
– 1933 - left for England, then USA and Canada after the death of his first wife
– 1936-1938 - worked together with Albert Einstein at Princeton University
– 1950 – returned to communist Poland
– January 15, 1968 – died in Warsaw

He was a theoretical physicist, he first proposed the Born–Infeld model

He was interested in the theory of relativity. He worked together with Albert Einstein at Princeton University.

After the first use of nuclear weapons in 1945 Infeld, like Einstein, became a peace activist.

The Born–Infeld model was named after Max Born and Leopold Infeld, who first proposed it.

1995 University of Toronto made amends and granted Infeld the posthumous title of professor emeritus.

Infeld was one of the 11 signatories to the Russell–Einstein Manifesto in 1955, and is the only signatory never to receive a Nobel Prize. Infeld also wrote with Einstein „*The Evolution of Physics*", a widely read history of physical theory from the 17th century to the 20th.

Infeld is the author of „Quest: An Autobiography" and the biography „Whom the Gods Love: The Story of Evariste Galois."

References:

– Infeld, Leopold (2006). Quest: An Autobiography (Reprint ed.). American Mathematical Society.

Aleksander Jabłoński

Professor Jabłoński is an author of the schema levels and transitions of quantum in molecules, so called Jabłoński diagram.

He worked on the atomic and molecular optics. In 1933 he published in „Nature" message, which contained a diagram of energy levels of the pigment particles. Jablonski had assumed that the dye molecule, showing the ability to fluoresce and fosforyzowania, must have at least one meta-stable state of M. This scheme has allowed to explain the occurrence of different forms of luminescence observed in solution and was then called Jablonski diagram. He also investigated the effect of pressure expansion of the spectral lines. While staying at the Stefan Batory University attempted to investigate the relationship between the limiting cases proposed by the general theory of extending the line pressure, based on the Franck-Condon principle and the classical models. General theory of pressure broadening of spectral lines described in the years 1944-1945 and published in 1945 in „Physical Review".

– February 26, 1898 - date of birth
– 1916 - began his studies in physics at the University of Kharkov
– 1917 - joined the Polish I Corps
– December 1918 - went to Warsaw to join the Polish Army, taking both his studies at the University of Warsaw
– 1921 - finished his musical studies
– 1930 - received the degree of Doctor of Philosophy
– 1930 – 1932 - postdoc at Humboldt University in Berlin and the University of Hamburg
– 1934 - qualified as professor
– 1938 - Work at the University of Stefan Batory
– September 19, 1939 - was interned in the camp and placed in Kołotowie
– 1946 - received the title of professor
to 1968 - headed the Department of Experimental Physics at the University of Nicolaus Copernicus
– 1980 - date of Death

References:

– http://pl.wikipedia.org/wiki/Aleksander_Jab%C5%82o%C5%84ski
– http://www.fizyka.umk.pl/wfaiis/?q=node/686
– http://www.fizyka.umk.pl/~lum98/aj.html
– http://www.faj.org.pl/?go=aleksander_jablonski

Konstanty Jelski

– February 17th 1838 - born in Liady (Łada)
– 1865 - traveled to French Guana
1868 - began the study of fauna in Peru
– 1873 - 1878 - was the curator of a Museum in Lima
– 1880 - returned to Poland to become the curator of the Natural History Department of Academy of Learning in Krakow
– November 26th, 1896 - died in Krakow

Polish ornithologist and zoologist. He conducted many important studies in Guiana and Peru from 1866 to 1875 collecting specimens of flora and fauna.

On the basis of the specimens which he collected many new species of plants and animals (including approximately 80 new bird species described by W. Taczanowskiego) were described . Botanical collections (herbaria and a collection of dendrochronology) are located in Herbarium of the Institute of Botany of the Jagiellonian University and in the Museum of the Botanic Garden of the Jagiellonian University, whereas zoological collections is placed in the Zoological Institute of the Polish Academy of Sciences. He published memories of the journey under the title „Natural popular stories of staying in Guyana French and partly in Peru 1865-1871" („Popularno-przyrodnicze opowiadania z pobytu w Gujanie francuskiej i po części w Peru 1865-1871")(1898).

References:

– Encyklopedia „Ultima Thule", 1933;
Polski Słownik Biograficzny t. XI, Wrocław- Warszawa- Kraków 1964-1965.

 Author: Katarzyna Łabuda

Bogumił Jeziorski

He is a world-famous chemist involved in:
– Theory of intermolecular forces
– Coupled cluster theory
– Gaussian geminal theory
– Theory of exotic molecules

The main Jeziorski's achievements are:

– development of symmetry-adapted perturbation theory (SAPT) and the explanation of its convergence properties, discovery and first studies of dispersion-exchange and induction-exchange effects in intermolecular interactions, formulation and computational implementation of many-body SAPT, numerous applications of many-body SAPT to van der Waals clusters and hydrogen-bonded systems,

– development of explicitly correlated many-body theory, first formulation and implementation of coupled cluster theory with explicitly correlated basis, completeness proofs for Gaussian geminal bases, benchmark studies involving Gaussian geminals,

– theoretical studies of muonic molecules relevant for the understanding of muon catalyzed fusion,

– theoretical studies of molecular effects in the beta decay of gaseous and solid tritium relevant for neutrino-mass experiments, theoretical studies of antiprotonic helium.

– April 29, 1947 – born in Radomsko,
– 1969 - received his M.Sc. in chemistry
– 1975 - received his Ph.D in chemistry
– 1978-1981 - was making practise in University of Utah and University of Florida
– 1981-1990 – was conducting research at the University of Waterloo, University of Delaware, University of Colorado and Harvard University
– 1987 – was awarded for scientific achievements by International Academy of Quantum Molecular Science prize
– 1991 – received the title of professor
– 1999 - became a member of International Academy of Quantum Molecular Science

References:

– http://www.fnp.org.pl/program/laureaci_nagrody_fnp/prof_dr_hab_bogumil_jeziorski

Kazimierz Kalinowski

– 1906 – born in Pabianice
– 1926 - 1930 - studied pharmacy at University in Poznań
– 1930 - became a master of pharmacy
– 1932 – received doctorate from pharmacy and philosophy
– 1936 – received a scholarship and left for two – year internship and work for the University of Paris
– 1936 – 1939 –was a scientific associate of the Pharmaceutical Encyclopedia
– During World War II he was a soldier of the Home Army (the Armia Krajowa) and organized the secret teaching
– 1944 – awarded the academic title of professor, co–organized Maria Curie – Skłodowska University in Lublin
– 1952 – 1965 - was a head of the Department of Pharmaceutical Chemistry of Medical Academy of Łódź
– 1977 - died in Olsztyn

He introduced new methods of drug testing. He was the builder of a new apparatus used for testing therapeutic substances.

He was a member of many scientific societies, among others Polish Chemical Society.

He introduced new methods of drug testing using manganometry, coulometry and high--frequency currents.

He meant permittivity and dipole moments of therapeutic substances.

He was the builder of a new apparatus used for testing therapeutic substances. E.g. using high-frequency currents he meant the concentration of glucose and atropine in ampoules.

He studied the anthelmintic and antibacterial activity of new sulphonamide derivatives.

Kalinowski was the creator of the modern pharmaceutical curriculum.

References:

– http://pl.wikipedia.org/wiki/Kazimierz_Kalinowski
– Encyklopedia PWN

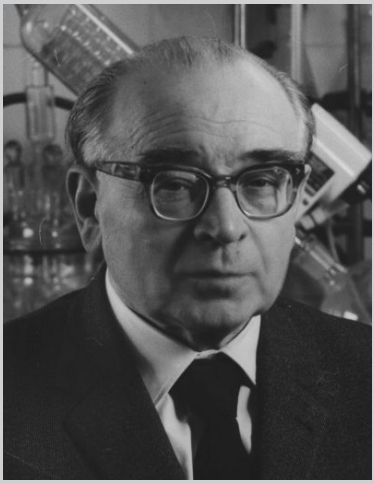
Wiktor Kemula

POLAROGRAPHY
Electroanalytical chemistry
He developed a hanging mercury drop electrode (HMDE).

His achievements have been made in the field of analytical chemistry especially in cyclic voltammetry, oscillopolarography and anodic stripping voltammetry. He led pioneering work on chromato-polarography (1953).

In his rich scientific career he was :

– Member of: PAU; PAN; IUPAC
– Chairman of Polish Chemistry Association (1955-1959, 1972-1974) and its honorable chairman position (1976-1985)
– Member of American Chemical Society (1979)
– Member of Royal Society of Chemistry (1979)
– Doctor honoris causa of Warsaw University
– Editor of: Chemistry Yearbooks (1950-1985), Analytical Chemistry (1956-1968), Polish Journal of Chemistry (1972)
– Author of monography (with A. Hulacki): Spectrum Emission Analysis (1956)



– Born on November 6th, 1902 in Izmail
– In 1921 started his chemistry studies at John Cazimir University in Lvov
– 1927 he obtained his Ph.D.
He was appointed an associate professor at 1936
– On October 1, 1939, He supposed to became a full professor, but because of the start of the World War II he started his appointment in 1945
– Died on October 17th, 1985 in Warsaw

References:

– http://www.chem.uw.edu.pl/people/AMyslinski/kolo/kemula.html

Włodzimierz Kołos

– 1928, September 6th born in Pinsk during the Second World War he was working in a local photo laboratory
– 1947 graduated secondary school from 1947 to 1951 he was studying chemistry and physics in the University of Poznań
– 1950 M.Sc. in chemistry
– 1953 Ph.D at University of Warsaw
– 1958 he went to Robert Mulliken's laboratory at the University of Chicago
– 1969 he became professor and member of the Polish Academy of Sciences
– on 3 June 1996 Włodzimierz Kołos passed away.

One of the founders of modern quantum chemistry

His work:

– Development of methods and publishing the results of very accurate computations on small systems, in particular on various states and various properties of the hydrogen molecule.

– Development of the unique computer program which solved the electronic Schrödinger equation for the hydrogen molecule with spectroscopic accuracy.

– Development of perturbation theory approach to intermolecular interactions

– Performance of very accurate computations which provide information on possible fusion yields in muon catalysed fusion reactions

References:

– Bogumił Jeziorski, Lucjan Piela, Włodzimierz Kołos (1928--1996), Polish Journal of Chemistry, 1998, Vol 72, nr 7S, s. 1283-1287

 Author: Katarzyna Bochniarz

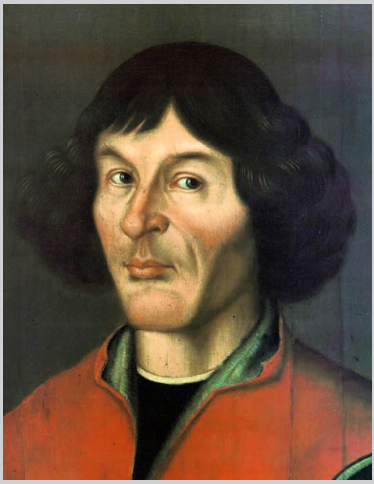
Mikołaj Kopernik

Developed the heliocentric model of the solar system, according to which the Sun is at the center, the Earth is a planet, and like the rest of the planet orbits the Sun on a circular orbit.

Copernican theory about heliocentric influenced the way of looking at the place of the earth and human beings in the universe, and became the basis for the development of science.

Copernicus-Gresham's Law is a principle that if at the same time there are two kinds of money, legally ,but one of them is perceived as better (for example, a higher content of gold), this „better" money will be collected , and circulation will remain mostly the „worse". In short, the worse money displaces better. The law is used in banks and exchange of money between countries.

Copernicus law says that if within a large circle rolls without slipping a circle with a radius of two times smaller, is arbitrary, but fixed point of a small circle moves rectilinearly at large in diameter. This law is used in mathematics

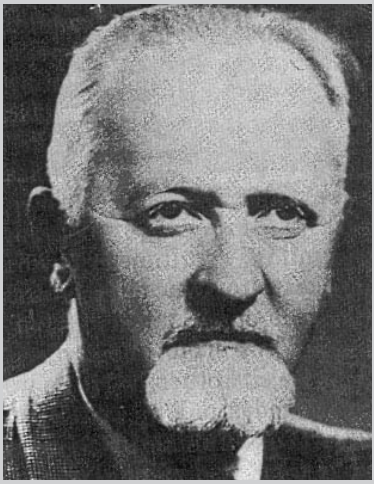


– February 19th 1473 - was born in Torun
– 1491-graduated from the parochial school at St. John's in Torun.
– 1491/1492 – began studies at the Cracow Academy.
– 1495 - Watzenrode arranged Copernicus's election as canon of the chapter of Frombork of the Cathedral Chapter of Warmia, an administrative position just below that of bishop.
– 1537 - was approved by the king as one of four candidates for bishop of Warmia.
– 1543 – publication of the first edition of epochal work „De revolutionibus orbium coelestium".
– May, 24th 1543 - died as a result of a stroke in Frombork.

References:

– On the Revolutions, 1992, trans. E. Rosen, Baltimore: The Johns Hopkins University Press
– http://pl.wikipedia.org/wiki/Miko%C5%82aj_Kopernik

Aleksander Kosiba



– January, 18th, 1901 – born in Libuszy.
– 1945-1971 - professor at the University of Wroclaw.
– 1946 - founded the Observatory and Department of Meteorology and Climatology, and was a member of the Polish Academy of Sciences.
– 1971- retired and became a lecturer of Meteorology and Climatology for students of geography at the University of Wroclaw.
– 1981 – died in Wroclaw.

Polish geographer, geophysicist, glaciologist and climatologist.

He studied geography, geology and geophysics at the Jan Kazimierz University in Lvov, and geodesy at the Technical University of Lwow. In the years 1945-1971 he was professor in University of Wroclaw, founder and head of the Department and the Observatory of Meteorology and Climatology at the university. He was also a member of the Polish Academy of Sciences and the Polish Geographical Society, honorary member of the Norwegian Geographical Society.

Of particular relevance to his career was the second expedition to Greenland. After this expedition, Kosiba published his first book „Greenland" (1937). On the basis of measurements, was also developed accurate map of part of the island on a scale 1:500000 (1939). He also gave many geographical names such as Polonia Glacier, Mount Eugene Romer, Wawel Dybowski. In the years 1957-1960 he organized four expeditions to Spitsbergen, where he and a group of Wrocław scientists did glaciological research.

References:

– http://pl.wikipedia.org/wiki/Aleksander_Kosiba

Stanisław Kostanecki

Organic Chemistry
Laboratory synthesis of vegetable dyes – flavonoids.

1896 - He developed the theory of dyes and studied the natural vegetable dyes.

1899 - Laboratory synthesis of vegetable dyes (flavonoids). This method is used in organic synthesis to form chromones or coumarins by acylation of o-hydroxyaryl ketones with aliphatic acid anhydrides, followed by cyclization. This reaction is called Kostanecki acylation.

Synthesis of lutein. Lutein is used as colorant in dyeing technique.

1910 - Stanisław Kostanecki with W. Lampe and J. Miłobędzka the first identified structure of curcumin.

He published approximately 200 theses in German and Polish. Among his many students were famous scientists: Kazimierz Funk and Wiktor Lampe.

– 16 IV 1860 - born in Myszaków in Poland
– 1871-1881 attended to gymansium in Poznań
– 1881 – started studies at University in Berlin
– 1886 – worked in Ecole de Chimie in Miluzia
– 1889 – got a doctorate of Philosophy at University in Basel
– 1890 –professor at University in Bern
– 1907-1908 - fellowship in council of German Chemical Association
– 15 XI 1910 – died in Würzburg

References:

– http://www.chemia.uni.lodz.pl/pdfz/S_%20Kostanecki_%20Ber_Deutsch_Chem.%20Ges_1912.pdf

Bogumił Krygowski

– December, 20th, 1905 – born in Błażowa near Rzeszow.
– 1927-1931 – graduated from the University of Poznan.
– 1932 - received his Ph.D. in geography (silver medal honored).
– 1931-1937 - worked a full-time as a professor of geography in Secondary School in Poznan.
– 1937-1939 – was a teacher in Pedagogium in Poznan.
– 1939 – traveled through Germany, Denmark, England, Holland and Switzerland.
– 1951-1953 - the organizer and first dean of the Faculty of Biology and Earth Sciences.
– September, 20th, 1977- died in Poznań.

Krygowski's academic achievements includes 272 publications on Quaternary geology, geomorphology, sedimentology, hydrology, cartography and geography didactics. He was advisor for 150 masters' and 10 PhD students .

For his achievements Krygowski has been repeatedly awarded and honored:

– 1955 The Medal of the 10th Anniversary of People's Poland
– 1956 The Knight's Cross of The Order of Polonia Restituta
– 1969 The Badge of the Millennium
– 1973 The Officer's Cross of The Order of Polonia Restituta
– 1973 The Medal of The Greater Pole of the year 1972

References:

– http://pl.wikipedia.org/wiki/Bogumi%C5%82_Krygowski

Marian Witold Kryszewski

Physics and physical chemistry; Development of a new class of conductive polymer materials with the use of organic molecular crystals.

He developed a new class of conductive materials composed of polymers and organic molecular crystals arranged in a "reticulate--doped" conductive network.

He was author and co-author of over 360 original articles and 50 reviews in renowned international journals, 2 monographs, co-editor of 3 books and co-author of 22 inventions patented in Poland and abroad.

He was author of the fundamental monograph on electrical properties of polymer systems entitled Semiconducting Polymers, first published in Polish in 1968; its enlarged English language edition was co-published by Elsevier and Polish Science Publishers in 1980.

In recognition of his achievements, he received numerous awards and distinctions.

References:

– Nowa encyklopedia powszechna PWN, tom 3, I-Ł, wyd. PWN, Warszawa 1997.
– http://materialsscience.pwr.wroc.pl/index.php?id=5&vol=vol23no3&abst=25

Eugeniusz Kwiatkowski

He made a great contribution to the development of the Polish chemical industry: nitrogen plants in Tarnow and Chorzow

Initiator and supervisor of one of the biggest economic projects of the Second Polish Republic – creation of the Central Industrial District - Significantly contributed to the establihment of the city Stalowa Wola.

Contributed to the development of the Polish Merchant Navy and sea trade.

Iinitiated the construction of Gdynia seaport.

Contributed to the strengthening of the independence of the Polish economy.

After the World War II he supervised the projects of reconstruction of the Polish seacoast.

Contributed to the development of Polish chemical industry.

References:

– http://pl.wikipedia.org/wiki/Eugeniusz_Kwiatkowski [01.04.2012r]

Joachim Lelewel

Polish historian, bibliographer, numismatist, linguist (he knew 12 languages) as well as a political activist. One of his works: „Géographie du moyen âge"

Lelewel's works:

„The Scandinavian Edda", 1807

„Joachim's Lelewel geogrphcal reasearch about antiquity",1818

„Essai historique sur la législation polonaise civile et criminelle, jusqu'au temps des Jagellons, depuis 730 jusqu'en 1403. Paris, 1830"

„Numismatique du Moyen-âge, considérée sous le rapport du type. Paris, 1835."

Numismatique du Moyen-âge, considérée sous le rapport du type. Paris, 1835."

„Gilbert de Lannoy and his trips"

„Histoire de Pologne"

„La Pologne au moyen", 1846

„Géographie du moyen âge" , 1852

„Géographie des Arabes", 1851

„Geografija. Polish country's description", 1851

- March, 22nd, 1786- born in Warsaw
- educated at the Imperial University of Vilna
- 1814 - became a lecturer in history
- 1818-1821-came to Warsow, where he joined the Warsaw Society of friends of Learning
- 1830 - joined the November Uprising
- 1831- emigrate to Paris
- 1833- the French government ordered him to quit French territory at the request of the Russian ambassador Went to Brussels
- 1847- together with Karl Marx and Friedriech Engels, became a founding member and vice president of the Democratic Society for Unity and Brotherhood of All Peoples
- May, 29th, 1861 - died in Paris

References:

- www.en.wikipedia.org

Ignacy Łukasiewicz

– 1822 – born in Zaduszniki
– 1836 -1846 – practice in pharmacy
– 1848 -1852 – studying pharmacy at Jagiellonian University ,graduated from the University of Vienna
– 1853 – with Jan Zeh distill clear kerosene from seep oil; constructed first kerosene lamp
– 1854 – opened the world's first oil „mine" at Bóbrka
– 1856 – opened industrial oil refinery
– 1868 -1881 - founded a spa resort in Bóbrka, a chapel in Chorkówka and a church in Zręcin; elected to the Galician Sejm
– 1877 – organized the first Oil Industry Congress and founded the National Oil Society
– 1882 – died because of pneumonia

The inventor of the kerosene lamp

Ignacy Łukasiewicz in the pharmacy of Piotr Mikolash conducted research on crude oil distillation with Jan Zeh. At the turn of 1852/1853 Łukasiewicz and Zeh received kerosene by fractional distillation of seep oil . He found a practical use for kerosene by constructing first kerosene lamp which lit up the exhibition of pharmacy and it was used as emergency lighting during the night surgery operations in the general hospital in Lviv. He founded the world's first oil mine in Bóbrka near Krosno, which is also open today. Moreover, he opened the first oil distillery. The plant produced kerosene, lubricants, lubricating oils and asphalt. A discovery of Łukasiewicz is considered the starting point of modern oil industry.

References:

– Literatura: http://pl.wikipedia.org/wiki/Ignacy_%C5%81ukasiewicz

 Author: Justyna Żebrak

Ignacy Malecki

Author of the books: „Acoustics in building", „The theory of waves and acoustic systems", „Physical Foundations of Technical Acoustics", „Theoretical foundations of quantum acoustics"

He was the long-time director IPPT PAN. Doctor Honoris Causa of the:

– University of Budapest,
– AGH University of Science and Technology in Krakow,
– Gdansk University of Technology,

He was the outstanding acoustician, teacher and tutor, honorary member of the PTA and many foreign companies. The scientific activity brought him full recognition in the form of: a member of the Polish Academy of Sciences.

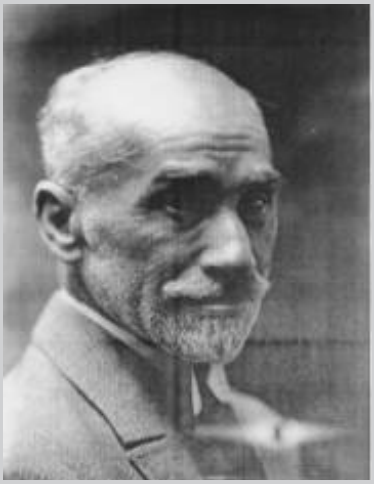
In 1936 he became a member of Union Internationale de Radiodiffusion

– 1912 - he was born in Pokiewna
– 1935 - he graduated from the Polytechnic of Warsaw
– 1950-1983 professor at the Warsaw Polytechnic.
– 1969-1972 Director of Science Policy and Science of UNESCO in Paris
– 1956-1980 member of the Polish Academy of Sciences
– 1962- 1968 deputy secretary of the Academy
– 2004 - he died

References:

– http://pl.wikipedia.org/wiki/Ignacy_Malecki

Leon Paweł Marchlewski



– 1869 – born in Włocławek.
– 1888-1890 chemistry studies in Zurich
– 1892 – defense of thesis in Zurich.
– 1892-1898 – work in laboratory in Kersal as an assistant and then branch manager of dyes and pharmaceutical preparations.
– 1905 – sworn in as an expert chemist in the district court in Krakow.
– 1925 – elect chairman of the Polish Committee of National Union of Pure and Applied Chemistry.
– 1926-1928 – elect rector of the Jagiellonian University in Krakow.
– 1930 – receive an honorary doctorate at the Jagiellonian University.
– 1946 – death in Cracow.

He was a father of Polish School of Biochemistry.

He wrote a thesis about structures of glycosides and plant colours.

He determined a structural formula of glucose.

He carried out resarch about chlorophyll with Marcin Nencki. He determined a fine line structures of chlorophyll and hemoglobin.

References:

– „Poczet wielkich chemików" Aleksandra Sękowska, Stefan Sękowski

 Author: Aneta Małkusiak, Monika Binczycka

Krzysztof Matyjaszewski

Chemistry of polymers
The Atom Transfer Radical Polymerization (ATRP)

The Atom Transfer Radical Polymerization (ATRP) is among the most effective and most widely used methods of conducting a controlled radical polymerization (CRP). The Matyjaszewski Polymer Group continues to improve ATRP and prepare materials with controlled topology and composition suited for many applications, including automotive, building materials, medical, military and environmental fields using this robust technology.

Research in the Matyjaszewski Group has led to the publication of 14 books, 73 book chapters, over 600 peer-reviewed scientific papers, and 36 U.S. and 107 International patents. He is one of the most cited chemists in the world – over 39000 citations.

In addition to fundamental research, the Matyjaszewski Research Group has impacted industry by two research consortia which have interacted with 34 industrial companies from around the world interested in creating novel polymeric materials for their markets.

He has been awarded and honored 35 times.

– born in 1950
– 1967 – 1972 studies of The Technical University of Lodz,
– 1976 - receiving doctorate from the Center of Molecular and Macromolecular Studies of the Polish Academy of Sciences,
– 1981 - Award of the Polish Academy of Sciences,
– 1994 – elaboration of The Atom Transfer Radical Polymerization,
– 1999 - Humboldt Prize for Senior Scientists,
– 2004 – obtaining title academic - University Professor at Carnegie Mellon,
– 2004 - Prize of the Foundation for Polish Science,
– 2009 Presidential Green Chemistry Challenge Award (EPA)
– 2011 - Wolf Prize in Chemistry.
– 2012 - Société Chimique de France Prize

References:

– http://www.cmu.edu/maty/matyjaszewski/index.html

Władysław Midowicz

– May, 28th, 1907 – born in Mikuliczyn
– 1925 - graduated from the Real Gymnasium. A. Asnyka in Bielsko Biala and began studying at the Law Faculty of the Jagiellonian University, in parallel with his studies and academic work, was active in the Polish Tatra Society.
– 1927 - became a member of the Krakow Branch of PTT.
– 1930 - published Babia Gora tourist monograph.
– 1931 - married Antonina Ćwiek.
– 1936 - received a master's degree in geography with a specialization in meteorology and climatology.
– 1937-39 - served as director the National Institute of Meteorological Observatory in Czarnohora.
– 1944 - the rank of captain in the Polish and British air bases.
– February, 11th, 1993 – passed away in Wieliczka.

Marked all Polish hiking trails in the area of Babia Gora, including one of the few high moutains in the Beskid Mountains - so called - Perć Akademików to Diablak (Babia Gora).

Polish geographer and meteorologist, tourism activist and mountain hiker with a passion.

Published travel guides, and numerous scientific articles and tours, guiding materials, novels and short stories related to mountain (including „Wierchy").

He put his great contribution to the field of nature protection in Babiogórski region.

He was one of the designers of national park in the Beskid Mountains.

References:

– http://pl.wikipedia.org/wiki/W%C5%82adys%C5%82aw_Midowicz

Tadeusz Miłobędzki

Tadeusz Miłobędzki as the first one (in collaboration with Stanislaw Kostaniecki) described the chemical composition of turmeric

He conducted research on phosphorus compounds.

The author of textbooks of qualitative (7 issues) and quantitative (4 issues) analysis .

As the first one (together with Stanislaw Kostaniecki) described the chemical composition of turmeric.

Turmeric is used as a seasoning for many dishes. It is also a component of various mixtures including curry, in which it is responsible for the yellow color. Turmeric started to be of interest to pharmaceutical companies because it was discovered that it contains substances which have potential antiviral, antibacterial and antifungal properties. It is tested for use in prevention and treatment of rheumatoid arthritis, diabetes, Alzheimer's disease.

References:

– J. Piłatowicz: Tadeusz Benon Miłobędzki (1873-1959). Warszawa: Pracownia Historyczna BGPW, 1990, seria: Sylwetki profesorów Politechniki Warszawskiej

– 2. Mały słownik chemiczny. Warszawa: Wiedza Powszechna, 1976.

– 3. J. Radziewicz. Tadeusz Miłobędzki – specjalista z zakresu chemii nieorganicznej. „Rolniczy Magazyn Elektroniczny". 27, wrzesień 2008. ISSN 1734-3070

– June 16, 1873 - born in Koło
– 1918 – obtained a Ph.D. in chemistry
– Since 1917 - a professor of Agricultural University, Warsaw
– 1920 - 1921 - the first rector of the Agricultural University, Warsaw
– 1922 - 1929 - a professor of the University in Poznan
– up to 1939 – a professor of Warsaw University of Technology,
– 1933 - 1934 - a dean of the Faculty of Chemistry, Warsaw University of Technology
– 1945-1946 – a professor of the Jagiellonian University,
– since 1946 – again a professor of the Warsaw University of Technology
– August 13, 1959 - died in Warsaw

Marian Mięsowicz

– November 21st,1907 – born in Lwow
– 1930 - graduated wit PhD from Jagiellonian University
– 1931 - worked in Department of Physics at the Mining Academy in Cracow
– 1941-1946 - teacher in Medium School of Mines,
– 1946 - professor at the Mining Academy
– 1959 – member of the Polish Academy of Sciences (PAN)
– 1989 - member of the Polish Academy of Arts and Sciences (PAU)
– April 5, 1992 – died in Krakow

Physics of anisotropic fluids (liquid crystals). Measured the viscosity coefficients for liquid crystal molecules.

He was a pioneering specialist in the physics of liquid crystals who discovered the anisotropy of their viscosity and also defined and measured the viscosity coefficients for liquid crystal molecules, known as „Mięsowicz's coefficients". He initiated new research methods in elementary particles and cosmic ray physics and in nuclear physics applications. Mięsowicz played an important role in the organization of science in Poland. He was elected a member of the Polish Academy of Sciences (PAN) and resuscitated Polish Academy of Arts and Sciences (PAU).He was a laureate of several prestigious Polish prizes and was awarded the honorary doctoral degrees by the Jagiellonian University and the AGH University of Science and Technology.

References:

– Doctoranty honoris causa nadane przez AGH, Kraków 2011

Ignacy Mościcki

CHEMISTRY
An author of a novel method of preparation of HNO_3

Ignacy Moscicki was a politician and a scientist. He was an author of several patents. In 1900, Ignacy Moscicki invented a method of synthesis of nitric acid on the basis of nitrogen obtained from the air. To use his methods Moscicki has to personally produce high voltage capacitors(50 kV). Soon he built a glass high voltage capacitor and patented it.

He discovered and described a method for allocating water emulsion and oil by heating under high pressure.

He was awarded several times both in Poland and outside the country.

– December 1, 1867 – born in Mierzanów
– Studied chemistry at Riga University of Technology
– 1912-1936 – professor of Lvov University of Technology
– 1925 – rector of Lvov University of Technology
– 1925-1926 – professor of Warsaw University of Technology
– 1925-1936 - President of Poland
– September 30, 1939 – resigned from the presidency and moved to Switzerland
– October 2, 1946 – died in Versoix in Switzerland

References:

– http://www.if.uj.edu.pl/Foton/91/pdf/10%20moscicki%20po%20jb.pdf
– http://www.if.uj.edu.pl/Foton/91/pdf/10%20moscicki%20po%20jb.pdf

Marceli Nencki

– January 15, 1847 – born in Boczki, Zduńska Wola;
– 1863 – finished school in Piotrków Trybunalski;
– 1863 – studied philosophy at the Jagiellonian University, Kraków
– 1864 –65 – studied philosophy and foreign languages, University of Jena and Humboldt University of Berlin (Germany)
– 1867-70 – studied medicine, Humboldt University of Berlin
– 1870 – obtained his Ph.D. The title of dissertation: „The oxidation of aromatic bodies in the animal organism."
– 1872 – worked at the University of Bern (assistant professor)
– 1884-86 – was a dean of the medical faculty of the University of Bern
– October 14, 1901 – died in Petersburg

MEDICAL CHEMISTRY, BACTERIOLOGY.

The most important Nencki's discovery was a medicine - Phenyl salicylate. It is suitable for the decontamination of the gastrointestinal tract and urinary system.

His scientific interest concentrated on nitrogen compounds, uric acid, urea and their derivatives. He was commissioned to combat the cholera epidemic. While studying the chemistry of bacteria, he discovered bacteria viable in oxygen-free atmosphere.

Additionally he invented a new remedy called *Phenyl salicylate* (organic chemical compound from the ester group; medicine used to decontaminate the digestive system and urinary tract).

Nencki received the doctor's degree for his doctoral thesis entitled "The oxidation of aromatic bodies in the animal organism". While still being a student, he proclaimed the research of sugar production in the human body and results of studies on urea.

One of his achievements was the thesis that urea is formed in the body from amino acids with the participation of carbon dioxide, instead of forming from the oxidation of the protein molecule.

References:

– www1.nencki.gov.pl/pl/o_instytucie/marceli-nencki.html
– Szwejcerowa A., „Marceli Nencki", Warszawa, 1977

Henryk Niewodniczański

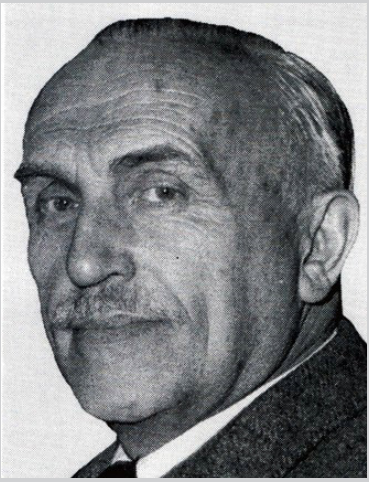
NUCLEAR PHYSICS
discovery of magnetic dipole radiation

He studied the influence of the magnetic field on the fluorescence of mercury vapor. This allowed him to discover magnetic dipole radiation.

He proved the atomic nature of the excitation of band fluorescence.

In 1955 he created the Institute of Nuclear Physics in Cracow.

Niewodniczański was a creator and a director of the Institute of Nuclear Physics in Kraków as well as a director of the Institute of Physics of the Jagiellonian University



– December 10, 1900 – born in Wilno
– 1924 - graduated from the Stefan Batory University in Wilno
– 1926 - received his doctor's degree
– 1927 - was awarded a fellowship at Tübingen University
– 1934 - worked in the Royal Society Mond Laboratory and in the Cavendish Laboratory in Cambridge.
– 1937 - worked at first at the Adam Mickiewicz University in Poznań and later in Vilnius at the Stefan Batory University.
– 1955 - created the Institute of Nuclear Physics of the Jagiellonian University
– December 20, 1968 – died in Kraków

References:

– Andrzej Kobos: Henryk Niewodniczański. Mini-wspomnienie ucznia, Zwoje 4/32, 2002

Michał Oczapowski

– May 11, 1788 - born in Pociejki near Nowogródek
– 1812 –graduated in mathematics and physics at the University of Vilnius, obtained the degree of doctor
– 1812-19 - was the administrator of the property of Baron Ronne in Lithuania as well as the Polish Kingdom.
– 1819 -22- made scientific journey to Germany
– 1822 - was a professor of agriculture at the University of Vilnius (announced a number of scientific papers and books in various branches of agriculture)
– 1836-1853 – was a director of the Institute of Agriculture and Forestry in Marymont
– Januray 9, 1854 – died in Warsaw

AGRICULTURE
The precursor of the modern agriculture in Poland. Author of a book entitled „Principles of Agricultural Chemistry"

Michał Oczapowski was a Polish agronomist and the professor of the University of Vilnius.

He is recognized as a precursor of the modern agriculture in Poland.

He published series of articles in "Dziennik Wileński" (The Vilnius Daily) being mini-lectures from his works.

He published a book „Principles of Agricultural Chemistry" (1819), where he presented the phenomena of chemical processes in agricultures.

He is an author of a 12-volume handbook entitled „A farm" .

He introduced the term „humus".

He made agricultural experiments in estates belonging to the University of Vilnius.

He promoted the rational cultivation and processing of flax and hemp.

References:

– Lipoński W.,; British patterns in polish agriculture of the early 19th centry
– www. pl.wikipedia.org

Bolesław Olszewicz

Co-founder of the Polish Geographical Society
author of books:
„Polish military cartography"
„List of loss of Polish culture"
„Nine centuries of Polish geography"

In Warsaw, he joined the founding group of the Polish Librarians Association.

In 1938 published „Picture of Polish today. Facts. Numbers. Arrays".

He was the organizer and a director of the Cartographic Department of the Central Military Library.

He was an organizer of scientific activity related to the Recovered Territories.

Part of his rich collection of books, cartography and manuscripts has been transferred to Ossolineum Library.

Bolesław Olszewicz was also an outstanding teacher and social activist.

– January 5, 1893 – born in Warsaw
– 1910-1913 - studied geography and history, Sorbonne, Paris
– 1918-1925 – co-founder of the Polish Geographical Society
– 1918 – 1921 - assistant at the Cathedral of Geography at the University of Warsaw
– 1926 – lecturer at the High School of Economics in Poznań
– 1933-1939 – the curator of the Library of the University of Warsaw,
– 1945 – taught history at the Jagiellonian University
– 1946 – became the chair of Historical Geography Department at the University of Wroclaw
– January 24, 1972 – died in Wrocław

References:

– http://pl.wikipedia.org/wiki/Boles%C5%82aw_Olszewicz

Karol Olszewski

– January 29, 1846 – born in Broniszów, Galicia.
– 1866–1872 – studied chemistry and physics at the Jagiellonian University, Kraków
– defended his doctoral dissertation at Heidelberg University
– From 1876 - professor and the head of the Department of General Chemistry and then the Department of Inorganic Chemistry.
– 1883 – (together with Zygmunt Wróblewski) liquefied oxygen, nitrogen and carbon dioxide from the atmosphere in a stable state.
– From 1896- member of the Academy of Science, Kraków.
– March 24, 1915 - died in Kraków

He made the condensation of oxygen, nitrogen and carbon dioxide from the atmosphere (with Zygmunt Wróblewski)

1884 – liquefied hydrogen in a dynamic state, achieving a record low temperature of -225 °C (48 K).

1895- liquefied argon.

1896- first Polish x-ray photograph.

References:

– Andrzej Szytuła. 125 rocznica skroplenia składników powietrza. „Foton". 101, s. 14–17, 2008.
– M. von Smoluchowsky. Karl Olszewski – ein Gelehrtenleben. „Naturwissenschaften". 5 (50), s. 738–740, 1917.
– Encyklopedia Polski słowo wstępne Tadeusz Chrzanowski, Kraków, Wydawnictwo Ryszard Kluszczyński, 1996.

Bohdan Paczyński

ASTRONOMY,
ASTROPHYSICS

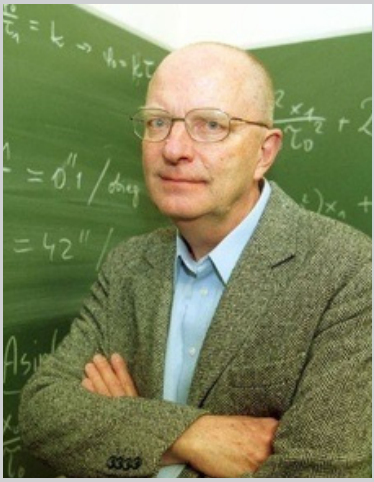
Found techniques of discovering cosmic objects and measuring their mass by using gravitational lenses

In the 60s he began the study of stellar evolution in binary systems with mass exchange between the components.

He wrote the software for modeling of the evolution of stars. The mentioned software was available to the public.

The method of gravitational microlensing observations led to the discovery of a multitude of interesting objects - among them dozens of planets, and even an isolated black hole.

He received many awards and medals and was honored with the title of Doctor Honoris Causa by: Wrocław University and Nicolaus Copernicus University, Toruń.



– February 8, 1940 – born in Vilnius, Lithuania
– 1958 - published his first scientific article in Acta Astronomica
– 1959 - 1962 - studied astronomy at the Warsaw University
– 1964 - received his Ph.D. in astronomy, the Warsaw University
– 1962 - became a member of the Centre of Astronomy of the Polish Academy of Sciences
– 1974 - received habilitation
– 1979 - became a professor
– 1976 - became the youngest member of the Polish Academy of Sciences
– 1981 - visited United States and than decided to stay abroad. Obtained a position of Jr. Professor of Astrophysics at Princeton University
– April 19, 2007 - died of brain cancer, Princeton, New Jersey

References:

– http://www.uni.wroc.pl/o-nas/godno%C5%9Bci-honorowe/doktorzy-honoris-causa/bohdan-paczy%C5%84ski
– http://www.ebib.info/content/view/575/

Stanisław Pilat

– January 25, 1881 - born in Lvov
– 1899 - began to study at the Lvov Polytechnic
– 1904 - started to work in oil industry
– 1909 - became a director of mineral oils factory in Drorobycz,
– 1910 - invented the way of cold fractioning of oil mixtures known as a „Pilat Process",
– Since 1924 - was a professor at the Lvov Polytechnic at the Faculty of Oil and Natural Gas
– 1935 get married with Ewa Neyman
– July 03, 1941 - was executed by Nazis

Petrochemistry
Cold fractioning of oil mixtures known as a „Pilat Process"

Stanisław Pilat was one of the most prominent Polish chemists. The results of his work made a big difference for the oil industry. His projects and discoveries were used in many countries. He was a member of many scientific societies like Polish Chemical Society, American Chemical Society in Washington, Institute of Petroleum in London.

His method for removing contaminants from petroleum was used in the USA. He was an author and co- author of 51 publications, 2 manuals and 18 licenses.

Pilat developed the process of production of carbon black from the natural gas. What is more, he conducted research related with composition of gasoline and racing their octane numbers , structure of ingredients of crude oil, looking for the way to make a synthetic gasoline.

References:

– Chemia- encyklopedia szkolna pod red. dr hab. Tadeusza Marka Krygowskiego, WSiP Warszawa 2001,
– http://www.miesiecznikchemik.pl/index.php?option=com_content&view=article&id=2204-:stanisaw-pilat&catid=108:kalendarium-chemikow-polskich-i-europejskich&Itemid=168
– http://pl.wikipedia.org/w/index.php?title=Plik:Pilat_S.jpg&filetimestamp=20090627191812#filelinks

Wincenty Pol

Introduced field trips in the teaching of Geography

Introduced the field trips in the teaching of Geography

One of the first Polish studies in the field of political geography

Performed studies related to the landscape of the Polish lands

Introduction of plant geography

Introduction of lectures on universal geography of trade - the beginning of Anthropogeography

Described the historical distinctiveness of Polish territory

Attempted to draw the Holy Land geography - the beginning of geography of religion

Sign of recognition:

– was named after him shelter of in the Valley Roztoki (1876).

– Fudation Vincent Pol Biographical Museum in Lublin (1972)

– Fundation of Vincent Pol Memorial House in Gdansk-Sobieszewo (1977)

References:

– Red. Jackowski A., Liszewski S., Richling A. Historia geografii polskiej, Wyd. Nauk. PWN. Warszawa, 2008

– http://pl.wikipedia.org/wiki/Wincenty_Pol

– http://portalwiedzy.onet.pl/7084,,,,pol_wincenty,haslo.html

– 20.IV.1807 - born in Lublin

– 1824-1827 - studied in Lwow

– 1831 – participated in the November Uprising

– 1841-1844 – travel, fieldwork in the Eastern Carpathians, in Pokucie, Volhynia Polesie, in the Tatra Mountains, Wielkopolska and Pomerania Kujawy

– 1849 – appointed extraordinary professor at the Jagiellonian University

– 1850 – introduced the field trips

– 1853 – removed from the university because of alleged disloyalty to the occupation authorities,

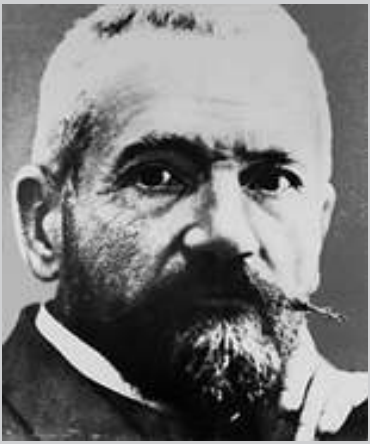
– 1861/1862 - directed the restoration of the Cathedral Chapel Drohojowskich Przemysl

– 1869 – attempt to determine the extent of the Polish lands

– 1872 – member of the Academy of Sciences

– 2.XII.1872 – died in Krakow

Adam Prażmowski



– October 25, 1853 - born in Siedliska-Kasztel,
– 1876 - finished studies at the Wyższa Szkoła Rolnicza in Dublany,
– 1879 - described bacteria from the butyric fermentation, and distinguished them from the *Bacillus Subtilis*,
– 1880 - obtained a doctorate,
– 1880-1881 - in place of Emil Godlewski taught botany and plant physiology at the school in Dublany,
– 1882-1892 - a professor in the agricultural school in Czernichow,
– 1884 - described the construction and development of *Bacillus Anthracis*,
– 1892 - he co-founded the Association of Commercial Agriculture in Krakow and was its president,
– 1893 - became a member of Akademy of Learning,
– 1919 - became a professor at Uniwersytet Jagielloński,
– 1920 - he died.

Polish microbiologist, agronomist, a social activist. He described bacteria of butyric fermentation, and distinguished them from the hay bacillus.

He was a Polish microbiologist, agronomist, a social activist, one of the most outstanding personalities from the Polish scientific community in the period of Partitions of Poland.

He is considered one of the founders of the Polish microbiology.

He dealt with the problems of fundamental importance not only for biology but also for agricultural chemistry.

In addition to intensive scientific work he also led intense social activity. With a friend of professor Franciszek Stefczyk they created the Farmers' organizations and the first co-operative banks in Poland.

References:

– Żabko-Potopowicz, Antoni Pionierzy postępu w rolnictwie polskim. Warszawa : LSW, 1977;
– Marszewska-Ziemięcka J.: Adam Prażmowski (1853-1920). Nauka Polska 1961 nr 2 s. 201-206. ;
– Kunicki-Goldfinger W.: Adam Prażmowski (1853-1920). Postępy Mikrobiologii 1978 z.2 s. 5-7. ;
– Mieczyńska-Nowotny A.: Dzieło i życie Adama Prażmowskiego oraz Seweryna i Heleny Krzemieniowskich. Studia i Materiały z Dziejów Nauki Polskiej Ser. B 1972 z.23 s. 101-104.

 Author: Małgorzata Głowacka

Lech Ratajski

Cartographer,
professor of University
of Warsaw

Set a new direction in educational activity of Department of Cartography at University of Warsaw – developing socio-economic and complex wall maps;

Contributed in establishing polish geographical names;

Formulated structural scheme for modern cartography, esp. in terms of generalization and standardization of cartographic signs.

– April 16th, 1921 born in Rawa Mazowiecka
– 1946-1950 – studied geography at Jagiellonian University in Krakow
– 1950 – junior assistant in Department of Anthropogeography at University of Warsaw;
– 1962 – PhD
– 1966 - habilitation
– 1968 – editor in Chief monthly „Poznaj Świat";
– 1972 – Associate Professor; assistant director Geography Institute of University of Warsaw
– November 22nd, 1977 died in Warsaw

References:

– Jerzy Ostrowski, Zbigniew J. Wójcik, Leszek Ratajski w: Polski Słownik Biograficzny, tom XXX, 1987.

Eugeniusz Romer

– February, 3rd, 1871 was born in Lwow.
– 1894 - earned a doctorate in philosophy at Lwów University.
– 1909 - went to Switzerland, to study Alpine glaciers.
– 1911 - became professor of Lwów University.
– 1916 - while in Vienna, Romer started work on the Great Statistical and Geographical Atlas of Poland.
– 1921 - founded Cartigraphical Institute Ksiaznica-Atlas in Lwów.
– 1929 - decided to retire from the University, concentrating his activities on the Institute
– 1946 – professor at Jagiellonian University.
– 1952 - became a member of Polish Academy of Sciences.
– January, 28th, 1954 - died in Kraków and was buried at the Salwator Cemetery

Polish geographer, cartographer, founder of modern Polish cartography. Developed the Great Statistical and Geographical Atlas of Poland.

Eugeniusz Mikołaj Romer was a distinguished Polish geographer, cartographer and geopolitician, whose maps and atlases are still highly valued by Polish experts.

In 1916 Romer started work on the „Great Statistical and Geographical Atlas of Poland". This atlas, published in Vienna in 1916, was crucial with establishing borders of the Second Polish Republic. He was a member of the Polish delegation at the Paris Peace Conference, 1919, helping with drawing western border of Poland. A second edition of his Atlas was published in Lwów and Warsaw in 1921.

In 1941, when Lwów was captured by the Germans, he hid in a monastery. Soon afterwards, the Home Army decided to move him to Warsaw, from where he was to be transferred to England, to work as an advisor of the Polish Government-in-Exile. However, Romer stayed in Poland because of his weak health. Thus, he remained in Warsaw, using fake name Edmund Piotrowski. Romer survived the Warsaw Uprising and German Nazi transit camp in Pruszków.

References:

– http://www.lwow.home.pl/semper/romer.html
– http://en.wikipedia.org/wiki/Eugeniusz_Romer

Ludomir Sawicki

Research on geomorphological studies of the Carpathians, with particular emphasis on karst processes, glacial, morphogenetic. Hewas the pioneer in the development of anthropogeography

Polish geographer, traveler and publisher. Author of numerous publications - about 150 positions in several languages, including: „Z fizjografii Zachodnich Karpat" (1909), „Rozmieszczenie ludności w Karpatach Zachodnich" (1910), „Wiadomości o środkowopolskiej morenie czołowej" (1921), „W narożniku Azji" (1924), „Z geomorfologii centralnego Cejlonu" (1925), „Przełom Wisły przez Średniogórze Polskie" (1925). He was the first editor of the „Przegląd Geograficzny".

– September 14th, 1884 born in Vienna
– 1903-1907 - studied at the University of Vienna, geography , history and geology
– 1910 – moved to Cracow and became a pioneer in the development of geoanthropology
– 1918 - co-founder of the Polish Geographical Society
– 1919 - was given the title of professor
– 1919 - The founder of modern presses and bookstores, 'Orbis'
– Since 1916 - head of Department of Geography at Jagiellonian University
– October 3rd, 1928 died in Krakow

References:

– www.kolo.geo.uj.edu.pl/

Michał Sędziwój

– 1566 - born in Łukowica near Nowy Sącz, the son of a Polish nobleman Jakub Sendzimir;
– studied at the Cracow Academy, moreover studied also in Vienna, Altdorf, Leipzig and at Cambridge;
– 1593 - moved to Prague, was a courtier;
– 1595 – became the personal secretary of the Polish King Sigismund III Vasa;
– 1598 - became an advisor of the court of Emperor Rudolf II;
– died between May 20 and August 12, 1636, in Olomouc

His studies led to the discovery of oxygen. He found that air is not a single substance. He developed a revolutionary theory based on the chemical properties of ammonium nitrate.

In 1604 Sedziwoj published his first famous work of alchemy : Novum Lumen Chymicum (New Chemical Light); Prague

„Novum Lumen Chymicum „ (New Chemical Light) was translated on to several languages: German, French, English, Russian, Dutch and Czech. His work was found in the libraries of great scientists like Isaac Newton and Antoine Lavoisier;

In 1607 the next work of Michał Sędziwój entitled „Talks between Mercurius, alchemist, and Nature" was published; Cologne

In 1616 „Treaty of sulfur" was published; Cologne

References:

– http://pl.wikipedia.org/wiki/Micha-%C5%82_S%C4%99dziw%C3%B3j [19.04.2012]
– http://www.wiz.pl/main.php?go=1&op=2&id=147 [19.04.2012]

 Author: Sandra Rozmysłowska

Maria Skłodowska-Curie

18 July 1898
announced the existence of a
new element – Polonium, Po
26 December 1898
announced the existence of a
new element – Radium, Ra

„During The First World War, she procured x-ray equipment, vehicles, auxiliary generators and developed mobile radiography units, which came to be popularly known as petites Curies („Little Curies")". In that way soldiers could be treated with the x-ray.

She was the first woman who win the Nobel Prize.

She was the first woman Professor at the Sorbonne.

Has won many medals and awards, among others are:

1903 - Davy Medal
1904 - Matteucci Medal
1909 - Elliott Cresson Medal
1921 - Franklin Medal of the American Philosophical Society.

– November 7, 1867 - born in Warsaw
– 1866/1867 - began attending the boarding school of J. Sikorska;
– June 12, 1883 – graduated with a gold medal of a gymnasium for girls in Warsaw
– 1891 – moved to Paris and started her studies, Sorbonne
– 1893 - was awarded a degree in physics, Sorbonne, and began work in the industrial laboratory of professor Gabriel Lippmann
– 1894 – obtained a degree in math
– June, 1903 - was awarded her doctorate from the University of Paris.
– December, 1903 - the Nobel Prize in Physics,
– 1911 - the Nobel Prize in Chemistry
– July 4, 1934 - died from aplastic anemia contracted from her long-term exposure to radiation.

References:

– Eugenie Cotton: Rodzina Curie i promieniotwórczość, Wiedza Powszechna, Warszawa 1965
– http://en.wikipedia.org/wiki/Marie_Curie

Marian Smoluchowski

– May 28, 1872 – born in Vorderbrühl,
– 1890-1894 - studied physics at the University in Vienna,
– 1894-1895 - did the military service,
– 1895 – was awarded his doctorate (with the highest distinction) for the thesis entitled „Acoustical studies of elasticity of soft materials",
– November 1895 - July 1896 - undertook research on heat radiation in Paris, the laboratory of Gabriel Lippman at the Sorbonne,
– 1912 – became a professor at the Jagiellonian University, Department of the Experimental Physics.,
– July 15, 1917 – became a Rector of the Jagiellonian University
– September 5, 1917 – died in Kraków

He found the theoretical explanation of Brownian motion

Smoluchowski was a classic of the statistical mechanics.

His scientific work concentrated, among others, on the explanation of Brownian motions. He found the theoretical explanation of them. The pointed equations bearing his name „Smoluchowski equations". What is worth to add, at the same time Einstein independently proposed the same explanation for Browian motions.

Smoluchowski explained the fluctuations in the refractive index of a fluid, liquid or gas.

He conducted researches in laboratories all over the world (e.g. in Paris, London, Glasgow, Berlin, Vienna, Lvov, Krakow)

References:

– A. Teske- Marian Smoluchowski, Leben und Werk. Zakład Narodowy im. Ossolińskich, Wrocław 1997.

Stanisław Staszic

Author of the first geological map of Poland.
Initiated construction of the Old Polish Industrial Area.

He is seen as the father of Polish geology, statistics, sociology, Tatra Mountain studies and exploration, mining and industry.

He worked with Jan Chrystian Hoffmann on a geological map of Poland. He is remembered for his political writings during the „Great (Four-Year) Sejm" and for his support of the Constitution of May 3, 1791, adopted by that Sejm.

From 1816 he was involved in mining research and projects. He also actively supported industrial development in Poland. He was one of the first to see the importance of coal, and supported the development of metallurgy-related projects, from mines to zinc and steel mills.

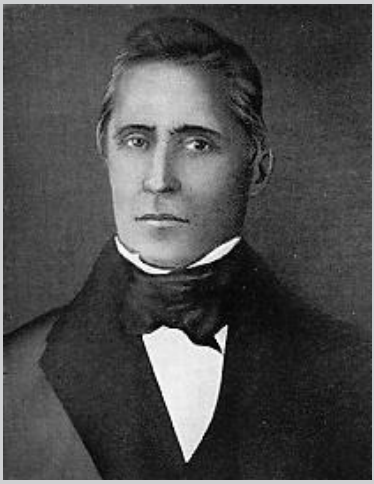
He was also involved in the development of ceramic and textile industries, and improving the transport infrastructure (roads, canals). He discovered coal deposits in Dąbrowa Górnicza, where he initiated the building of a coal mine.

– November, 6th 1755 born in Piła
– 1778 - graduated from a Jesuit school at Poznań and was ordained a Catholic priest.
– 1779 - 1781 - sudied at the College de France.
– 1782 - he received a doctorate from the Zamoyski Academy.
– From 1808 - president of the Society of Friends of Learning.
– 1816 - 1824 - he was the minister of industry of the Congress Poland and initiated construction of the Old Polish Industrial Area
– 1816 - founded the Hrubieszów Agricultural Society.
– 20 January 1826 died in Warsaw.

References:

– http://en.wikipedia.org/wiki/Stanis%C5%82aw_Staszic, http://pl.wikipedia.org/wiki/Tatry, http://www.planeta.bo.pl/Lekcje/Konspekt/l1.htm

Paweł Edmund Strzelecki



Polish explorer, geologist, geographer, and discoverer.

– July, 20th, 1797 – born in Gluszyna.
– 1812-1816 - disappeared from his home.
– 1829 - received a fortune that allowed him traveling around the world.
– 1834 - set out from Liverpool in the nine-year journey around the Earth.
– 1834-1835 - He led the Shock scientific research in North America. The most important discoveries of this period is a copper ore in Canada. In South America, while the rustic studied volcanoes and mineral deposits.
– 1836 - conducted geological and meteorological observations in South America (Brazil, Uruguay, Chile).
– October, 6th, 1873 - died of liver cancer in London.

During his stay in Australia examined the highest mountains of the continent - the Great Dividing Range. He named it's highest peak in honor of the leaders of the insurrection Mount Kosciuszko. On the south-eastern side of the mountains he discovered land, called by them Gippsland. It turned out that he discovered the Latrobe Valley - rich in deposits of brown coal, oil and gold. Strzelecki has also developed the first such detailed and accurate geological map of New South Wales and Tasmania.

His name was given to the Australian mountain range, two peaks, a lake, river and town. Mount Strzelecki (Strzelecki Ranges) - Victoria Mountain Rifle - 636 m asl - Northern Territory Top Strzelecki (Strzelecki Peaks) - 756 m asl - Flinders Island River Strzelecki (Strzelecki Creek) - 190 km long South Australia Strzelecki Desert - west of Lake Eyre. Strzelecki Nature Reserve (Strzelecki Regional Reserve) in the Strzelecki Desert. The town of „arms". In northern Canada, there is also the Gulf of Strzelecki.

References:

– http://pl.wikipedia.org/wiki/Pawe%C5%82_Edmund_Strzelecki

Michael Szwarc

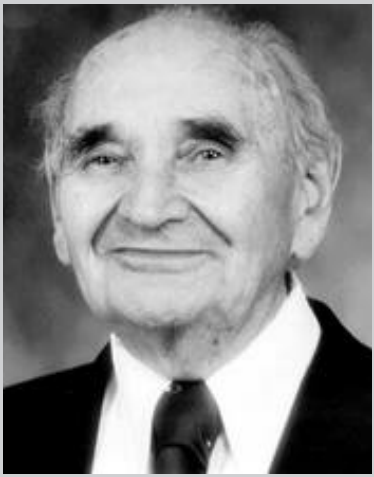
Discovered living polymerization. Chemistry of polymers.

Found methods to measure the binding energy decay in the pyrolysis reactions of organic compounds; found the new reactions type: molecular cracking

Discovered the mechanism of the formation of poly(paraxylene) in the pyrolisys reaction of the p-xylene. Proposed methods for industrial synthesis such polymers.

Investigated the effect of Brownian motion on the behavior of polymers in solution.

Discovered the living polymerization. The reaction is used to produce copolymers with amphiphilic properties, patterns of polymers, fibers with good mechanical properties, hydraulic oils, precision machinery, materials with a high transparency, additives, lubricants with particularly good properties etc.



– 1909 – born in Będzin, Poland
– 1932 – received an academic title „the engineer in chemistry", Warsaw University of Technology
– 1935 – emigrated to Palestine
– 1942 – defended his Ph.D. in organic chemistry, Hebrew University in Jerusalem
– 1945 – started his work at the University of Manchester, defended his Ph.D. in physical chemistry and then got the title of D.Sc.
– 1952 – moved to United States and assumed the Professor's position at the University of New York
– 1955 – created research team and investigated living polymerization
– 1964 – founded the Center for Polymer Research
– 2000 – died in San Diego

References:

– wikipedia.pl;
– esf.edu

Jędrzej Śniadecki

– November 30, 1768 - born in Rydlewo
– 1786-1791 – studied at the Jagiellonian University (the School of Crown) and obtained a doctorate in philosophy.
– 1793 – after two years of studies in Pavia, Italy, obtained a Ph.D. in philosophy and medicine.
– Became a professor of chemistry and medicine, Lithuania
– 1806-1836 - was the Head of the Scientific Society of Medicine.
– May 11, 1838 - died in Wilno

He wrote the first Polish textbook of Chemistry (The Beginnings of Chemistry).

Śniadecki's most important book was Początki chemii (The Beginnings of Chemistry). It was the first Polish-language chemistry textbook.

Śniadecki was also a co-founder of Towarzystwo Szubrawców (the Wastrel Society),

He also wrote copiously in Wiadomości Wileńskie (The Vilnius' News), the largest and most prestigious daily in Vilnius.

It is believed that Śniadecki is the original discoverer of the element ruthenium in 1807, thirty-seven years before Karl Klaus.

In 1822, as the first scientist he described a method of treatment of rickets with increased exposure to sunlight

References:

– http://pl.wikipedia.org/wiki/J%C4%99drzej_%C5%9Aniadeck
– Garard Ira D., „O chemii i chemikach", 1973

 Author: Anna Rosiek

Wojciech Świętosławski

He was a creator of a modern thermochemistry, designer of innovative calorimeters for testing heat of vaporization and heat of fusion, as well as instruments for precise measurement of the boiling point of the liquid.

Wojciech Świętosławski was nominated twice for the Nobel Prize. He developed a static method of calorimetric measurement and a new method of testing of coal. Świętosławski was the Vice-Chairman of the International Union of Pure and Applied Chemistry (IUPAC) and created the foundations for a new branch of physical chemistry.

He was a honorary doctor of eight national universities (among others: the Jagiellonian University, the University of Lodz, the Warsaw University of Technology). Moreover, he was a member of the Polish Academy of Arts and Sciences and the Polish Academy of Sciences.

– 1881 – born in Kiryjówka
– 1899 - graduated high school in Kiev
– 1906 – received a diploma as an engineer technologist at the Department of Chemistry, National Technical University of Ukraine
– 1919 - was appointed as professor of physical chemistry, Warsaw University of Technology
– 1938 –was appointed as the chairman of the International Commission on Physicochemical Patterns
– 1939 - moved to the United States, became a professor at the University of Pittsburgh
– 1946 - returned to Poland, was head of the Department of Applied Physical Chemistry at the Warsaw University of Technology
– 1968 - he died

References:

– http://pl.wikipedia.org/wiki/Wojciech_Alojzy_Swietoslawski
– http://swpk.republika.pl/wspom\wzk21.pdf

Filip Walter

– May 31, 1810 born in Cracow
– 1825- 1827 studied history and chemistry at the Jagiellonian University, Kraków
– 1827-1830 studied chemistry at Humboldt University of Berlin
– 1830 defended his doctoral dissertation on the oxalic acid, Berlin
– 1831 was granted the title of professor at the Jagiellonian University, Kraków
– 1831 moved to Paris
– 1847 - received the Cross of the Legion of Honour
– April 9, 1847 - died in Paris

Distillation of liquid paraffin from petroleum Discovery of toluene.

He distilled liquid paraffin from petroleum. The liquid paraffin became very popular after that Polish pharmacist Ignacy Łukasiewicz had constructed a kerosene lamp.

Walter discovered toulene and other 24 chemical. Toluene is a solvent capable for dissolving of paints, silicone sealants, rubber, adhesives , lacquers, leather tanners and disinfectants.

Walter's research covered products of the distillation of plant resins, essential oil, wax and resin .

He proposed the Polish names of chemical elements e.g. azot for nitrogen, chlor for chlorine, bor for boron etc.

References:

– Literatura: http://pl.wikipedia.org/wiki/Filip_Walter

Rudolf Stefan Weigl

Inventor of the world's first effective vaccine against typhus

He was the precursor to the use of insects, mostly clothing lice for typhus germ culture. He described the typhus germ and introduced the method of artificial infection of typhus to lice .Since 1930, had several nominations for the Nobel Prize.

– September 2nd, 1883 – born in Přerow
– 1930 - member of the Polish Academy of Sciences
– 1920-1939 - professor of biology at the University in Lwow
– 1941-1944 - director of the Research Institute of typhus and viruses
– 1945-1948 - professor at the Jagiellonian University
– 1948-1957 professor at the University of Poznan
– August, 11ṭh, 1957 - died in Zakopane

References:
– Encyklopedia podręczna, Kluszczyński
– http://pl.wikipedia.org/wiki/Rudolf_Weigl
– http://portalwiedzy.onet.pl/126198,,,,weigl_rudolf,haslo.html

Author: Magdalena Jurkowska

Aleksander Wolszczan

– April, 29th, 1946 – born in Szczecinek
– 1969 –graduated from Mikołaj Kopernik University in Torun.
– 1975 - received a doctorate in physics for his work on Pulsars.
– 1990 - discovered the first three planets outside our Solar System.
– Since 1992 he conducts research and teaches as a professor of astronomy and astrophysics at Pennsylvania State University and at the Mikołaj Kopernik University.
– 2008 – it was revealed that in the years 1973-1986 Wolszczan collaborated with the secret service.
– 2008 - resigned from work at the University of Torun.

He is the co-discoverer of the first extrasolar planets and pulsar planets.

Aleksander Wolszczan discovered the first three planets outside our Solar System. The discovery was officially presented at the congress of the American Astronomical Society in Atlanta. In 1992 he received the Award of the Foundation for Polish Science for the discovery of the first extrasolar planetary system.

He is highlighted by Nature magazine as the author of one of the 15 fundamental discoveries in physics.

In 1996 received the Beatrice M. Tinsley Prize from the hands of the American Astronomical Society. By order of President Aleksander Kwasniewski for his outstanding contributions to Polish science, was awarded the Commander's Cross of the Order of Polish Rebirth.

In 2007, together with a group of Polish astronomers he discovered another planet outside our Solar System.

In 2007 a film documentary called „Gwiazdor - Aleksander Wolszczan". Film shows the interest of the researcher and the stories about his early life in Poland.

References:

– Encyklopedia PWN
– www.wikipedia.org

 Author: Jakub Maciążek

Zygmunt Wróblewski

He made the condensation of oxygen, nitrogen and carbon dioxide from the atmosphere (with Karol Olszewski)

He was investigating the properties of gases and metals at low temperatures, and diffusion of gases.

He made several research trips around Europe, establishing contacts with leading European scientists, and organizing scientific equipment unavailable in Poland.

Zygmunt Wróblewski and Karol Olszewski were the first in the world to liquefy oxygen, nitrogen and carbon dioxide from the atmosphere in a stable state.

He discovered the CO_2 hydrate and estimated its composition, finding it to be approximately $CO_2 \cdot 8H_2O$.

He died in a hospital after an accident in his laboratory.

In 1976 a crater on the Moon was named Wróblewski

– 1845 - born in Grodno.
– He studied at Kiev University.
– 1963 – He joined the January Uprising
– He ended studies in Berlin and Heidelberg.
– 1876 - became an assistant professor at Strassburg University
– 1880 became a member of the Polish Academy of Learning.
– From 1882 – professor of Jagiellonian University
– 1883 - liquefying gases from air.
– 1888, April 16th - he died in a hospital in Krakow.

References:

– http://pl.wikipedia.org/wiki/Zygmunt_Wróblewski

Józef Zawadzki

– July 14 , 1886 – born in Warsaw
1909 - published the first results of his research regarding the balance of metal sulfides in aqueous solutions
– 1910 - graduated from the Jagiellonian University and received the degree of Doctor of Philosophy
– 1911- obtained degree of Chemical Engineer for the work of electrochemistry (Karlsruhe)
– 1929 - received the degree of full professor, Warsaw University of Technology
– 1936-1939 - was a rector of Warsaw University of Technology
– 1947 - The Senate of Warsaw University of Technology awarded him the title of Doctor Honoris Causa
– Since 1947 - was a member of the Polish Academy of Learning
– 1951- died in Zalesie

On the basis of his studies the method of production of sulfuric acid from the gypsum and anhydrite was obtained.
He defined the electrokinetic potential of sulfur (together with S. Glixellim).

He worked on contact oxidation of ammonia, naphthalene and anthracene and the reduction of sulfur dioxide by methane.

He studied the possibility of using aluminosilicate from Poland to produce of aluminium oxide as well as Polish anhydrite and gypsum deposit to produce sulfuric acid.

He studied the kinetics of thermal dissociation

Together with prof. Bretsznajder and Jerzy Grzymek developed a method which allow for obtaining pure aluminum oxide from kaolin and clays, rather than from imported bauxite. Aluminum oxide was used to the production of metallic aluminum.

He wrote „Technologia chemiczna nieorganiczna" vol. 1–2 (1948–1949).

References:

– http://bcpw.bg.pw.edu.pl/Content/916/sylw_prof_095.pdf
– http://en.wikipedia.org/wiki/J%C3%B3zef_Zawadzki_%28chemist%29

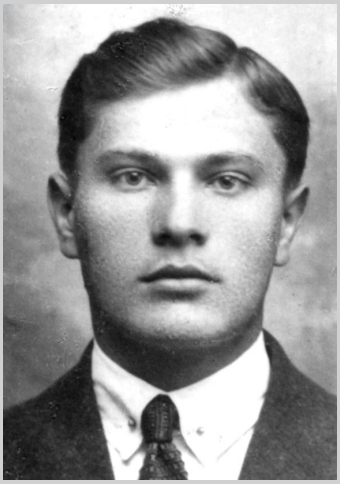
Jan Zeh

Pioneer of the oil industry

Zeh was a Polish industrialist, a pioneer of the oil industry and the only one who obtained a license for chemical treatment of petroleum in Galicia. His invention was initially used for lightning in houses and streets.

Actually the oil obtained from petroleum is mainly used as a solvent and for cosmetic purposes. Moreover, petroleum is being diverted to the other products in the processes of cracking and reforming.

He also produced paraffin candles from fraction of ozokerite and its derivatives.



– 2 July 1817 – born in Łańcut, Poland
– 1830 - begun his practice in pharmacy, Sambor
– 8 August 1847 – received his M.Sc. in pharmacy, University of Vienna
– 1852 - obtained transparent, odorless distillate named „oil„
– 2 December 1853 - received a patent for chemical treatment of petroleum and started production of oil in his own refinery in Lwów. He received a license to open a store petroleum in Lwów.
– 1854 - was awarded a honorary diploma and medal for excellent distillate oil, Munich
– 1875 – received a license to open a pharmacy in Borysław, Ukraine
– 26 January 1897 – died in Borysław, Ukraine

References:

– http://www.libuszamuzeum.iap.pl/?id=51091&location=f&msg=1&lang_id=PL
– http://pl.wikipedia.org/wiki/Nafta

Spis naukowców