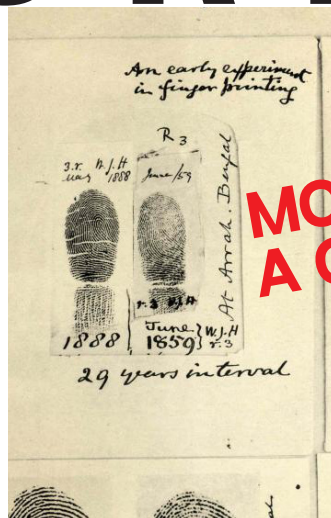


SRĐAN VASILJEVIĆ, IVANA KRSTIĆ-MISTRIDŽELOVIĆ

FORENSICS



**MORE THAN
A CENTURY**



MUSEUM OF SCIENCE AND TECHNOLOGY



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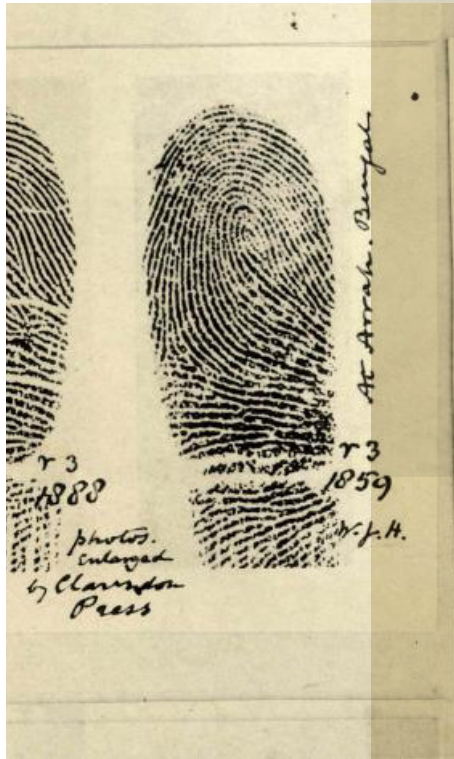
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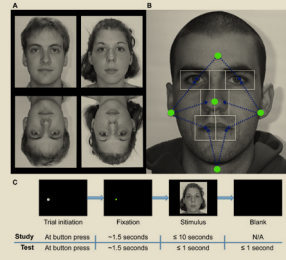
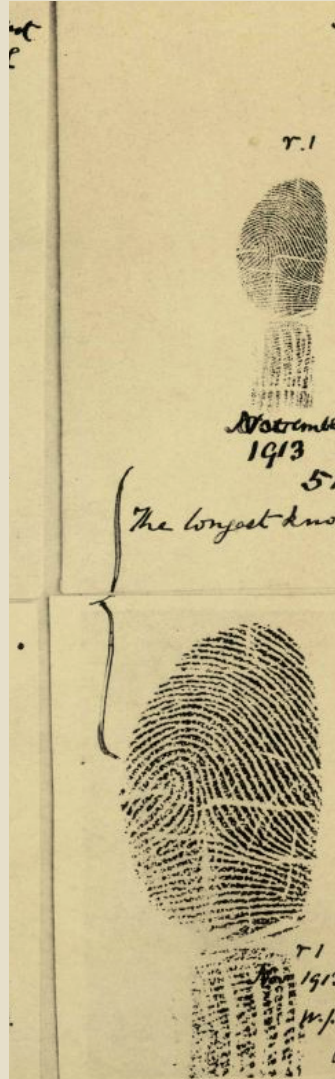
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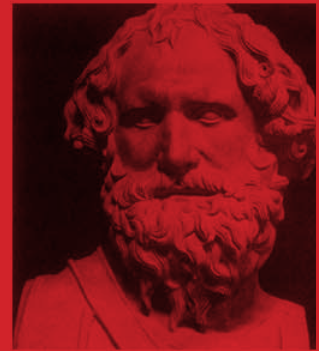


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Striving towards achieving the ideal of justice, as well as the battle against injustice, is innate to human communities since the ancient times. Throughout its entire history, human society has been making efforts, through laws and their implementation, to create a foundation for a more just society and in those efforts, it is sometimes more and sometimes less successful. However, justice is still an unreachable ideal. Since ancient times, the courts have been judging by customs, unwritten and written laws, however, that is not enough to relieve the victims, judges, jury nor even community from posing the following difficult question to themselves: "Was the right person punished? Was the sentence fair? Was an innocent person convicted?" People had been trying to make the evidence undeniable and the path to that went via solutions offered by science.

Mention¹ of the case of Archimedes² who, by applying practical scientific method, found a way to establish the composition of metals in the crown of King Hieron, by measuring the difference in weight of the metal and the volume of the water pushed out of the container, can be considered the oldest written trace of the application of a scientific forensic method. From then onwards, the human kind has come a long developmental way. The science has become an inseparable companion and foundation of numerous human activities, while the development and flourishing of the science have unavoidably also marked the paths towards the achievement of truth and justice. A wide range of applied scientific knowledge and techniques have been developed, which in everyday and professional talk, we call forensic techniques or simply, forensics.



ARCHIMEDES OF SYRACUSE SOLVED THE CASE OF GOLDEN CROWN BY USING SCIENTIFIC METHOD, TODAY KNOWN AS THE ARCHIMEDES' PRINCIPLE.

(Source: <https://time.graphics/event/108856>)



WHAT IS FORENSICS?

Forensic science or a set of forensic techniques implies an application of a wide range of sciences in order to obtain relevant answers to questions posed by the legal system. It involves identification, gathering and interpretation of evidence that can be used in criminal or civil lawsuits. Forensic techniques are also used for monitoring of implementation of international political or economic agreements related to the control of development, production and distribution of certain substances and technologies. In other words, forensics is an application of theoretical and scientific methods with the purpose of verifying doubts or claims regarding the subject of investigation, all with the purpose of establishing facts regarding a certain event.

Forensic scientists use methods and techniques from all branches of science, from natural sciences, through technological, medical, agricultural and social sciences to humanities.³ Among other things, they apply knowledge and principles of chemistry, biology, physics, geology, medicine, meteorology, psychology and other sciences. Besides the basic ones, there is also a whole set of derived scientific disciplines and techniques.



Forensic procedure implies examination of traces such as fingerprints, blood, hair, skin, toxins, weapons, tools and colour samples, found at the scene of a crime, offence or forensic evaluation.

Origins of the word forensics take us back to Ancient Rome. It has been derived from the Latin adjective *forensis*, which is in this case, interpreted as “before the public”, i.e. “before the publication”, and in a wider sense, as “a scene of event”. In Ancient Rome, criminal or civil charge implied public discussion in front of the official public persons and interested citizens at the Forum. The defendant and the plaintiff would publicly speak and state the facts in their own favour, and often also present material evidence. The person who was better prepared and more skilful in presenting the facts would take the win. Therefore, the person who had better forensic capabilities would have had the advantage. Two remaining meanings of the word forensics also stem from this ancient practice: 1. form of legal evidence, 2. category of public presentation of evidence.

Today, the terms forensics, forensic sciences and forensic techniques are being used interchangeably.

Although presenting certain circumstantial forensic evidence has been part of the practice in numerous proceedings throughout the past, it took a long time and a lot of effort for the forensics to take its place as part of the evidence hearings and court proceedings. It is known that in the 13th century Song Ci⁴ published his work *Xi Yuan Ji Lu* and some of his observations regarding the traces of cartilage injuries made by strangulation are still valid.





Development of society and science also created preconditions for development, acceptance and application of forensics. French revolution⁵ brought a prohibition of the use of force in collecting evidence. Of course, this practice has remained long after and it is still present in certain systems, but after the French revolution, the evidence obtained in such a manner was never again considered as necessarily acceptable. That made the judicial systems look for new ways to search for legally and scientifically irrefutable evidence.

Development of science and communications helped this quest. Important articles in the fields of toxicology⁶ and other fields of medicine and chemistry were published in the late 18th and during the 19th century. Anthropology⁷, and then photography⁸, also developed. Statistics⁹ became unavoidable in the scientific method, as well as the state institutions, while the invention of telegraph¹⁰ and telephone¹¹ enabled a quick exchange of information. Still, the most important thread that binds all of the above-stated are the development of civil society and introduction of the idea of human rights. The new social circumstances gave rise to the idea that it is necessary for the judgement that would take away someone's freedom and civil rights to have an exact material foundation.

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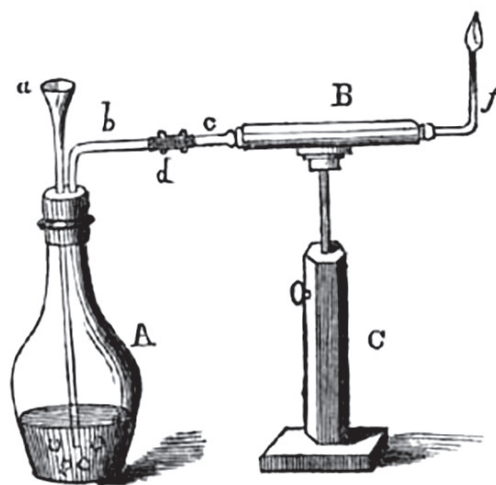
WITH THE HELP OF SCIENCE – MODERN FORENSICS

Development of societies and science in the 19th century created a fertile ground for the development of modern forensics. Social community, through its fight for free and public expression of opinions, science with its continuous development and state as the bearer of the legal and lawful constitution are strong footholds in the process of development and acceptance of forensics as a principle, method and a legal norm. In a civil society, the public puts pressure on the legal system to build a practice in accordance with the proclaimed citizens' rights. Unavoidable part of this process is the advancement of investigative procedure and forensic evaluation in order to prevent convictions of innocent people. By applying scientific discoveries, it becomes possible to find traces of poison, recognise and determine the time of death and make ballistic¹² calculations.



EARLY EXAMPLES AND DEVELOPMENT OF FORENSIC METHODS

In 1836, English chemist James Marsh¹³ discovered a method for determining the presence of arsenic in tissues — the so-called Marsh test¹⁴, which was at the same time the first application of toxicology in a criminal legal proceeding.¹⁵ In 1851, Belgian chemistry professor Jean Servais Stas¹⁶ successfully identified herbal poisons in bodily tissues. In 1889, professor of forensic medicine Alexandre Lacassagne¹⁷ tried to identify a bullet based on the number of notches and scratches left after the firing. In France, Bertillon's¹⁸ manuscript analysis was the key evidence for conviction of Alfred Dreyfus¹⁹ for treason in 1894. Since the renewed trial showed that the document based on which he was originally convicted had been forged, in the revision proceedings, Dreyfus was rehabilitated and a shadow of a doubt was cast on the reliability of Bertillon's system. Thanks to German chemist Paul Jeserich²⁰, photo-micrography was successfully applied to identify a fired projectile and in 1898 a murderer convicted. Georg Popp²¹ was the first in the world who used geological evidence in the investigation of criminal offenses (1904).



ILLUSTRATION, ORIGINAL MARSH'S APPARATUS FOR DETECTION OF ARSENIC

Source: Хемијски преглед, год. 54, бр. 4, стр. 98)

In his book *Jāmi' al-Tawārīkh* or *Compendium of Chronicles*²², Iranian physician Rashid al-Din Hamadani noted that there are no two persons in the world that have an identical fingerprint. In his work *Anatomical Illustrations (etchings) with Accompanying Explanations* from 1788, German anatomist Johann Christophe Andreas Mayer²³ made a claim about the uniqueness of the layout of papillary ridges. In 1823, Czech anatomy professor Jan Evangelista Purkyně²⁴ described nine combinations of fingerprints in his thesis on fingerprints. In 1829, Thomas Bell²⁵ described the occurrence of pink teeth in cases of violent death caused by hanging or drowning. In 1831, Erhard Friedrich Leuchs²⁶ noticed the activity of enzymes in human saliva, which would enable determination of the presence or previous use of poison by chemical analysis.²⁷ In 1839, British Army physician John Davy²⁸ tried to determine time of death by measuring the temperature of the bodies of dead soldiers using a mercury thermometer. The first case of a conviction of a murderer based on forensic evidence was recorded in the United State of America in 1850, after the jury was presented with the time of death.²⁹

All of the above-stated required involvement of the state in the whole process, so state laboratories and institutes in the fields of chemistry, physics, forensic medicine and police departments specialised in application of anthropometry³⁰, dactyloscopy³¹, ballistics and photography began to appear. Institutions and legal regulations have been adjusted to the growing possibilities and importance of forensics.



REGISTRATION OF PERSON'S LOOKS BY PHOTOGRAPHING.

(Library of the UCIPS, Album of Anthropometric Department of MIA)

Of course, specialised criminology and forensic institutions were preceded by the development of scientific disciplines and institutions of general importance and use, first of all in Europe and North America, which have been continuously developing:

- 1872 Photographic laboratory of Scotland Yard
- 1874 Photographic laboratory of the Paris Police Prefecture
- 1885 Photographic laboratory of the Chicago City Police
- 1899 Photographic laboratory in Lausanne
- 1906 Police laboratory in Lausanne
- 1910 Police laboratory in Lyon (Edmond Locard)
- 1912 Laboratory at the Alexandrovskaya Military Law Academy in Petrograd
Cabinet for Scientific-forensic expertise in Petrograd
- 1913 Cabinet for Scientific-forensic expertise in Moscow



LABORATORY OF THE PARIS POLICE, PHOTOGRAPH MADE IN THE 1920S.

(Source: Historical Collection of SASA 4202_V_2f 77.1)

Over time, the need had arisen for the systemic specialist education of the staff, so the schools also began to appear:

- | | |
|---|---|
| <p>1902 School of Scientific Police in Rome (which has been operating continuously since 1919)</p> <p>1903 School of Scientific Police in Madrid</p> <p>1905 School of Criminology at the Faculty of Law in Paris</p> <p>1909 Institute of Scientific-Technical Police in Lausanne (A. Reiss)</p> <p>1912 Criminology University at the University in Graz (Hans Gross)</p> <p>1921 School of the Ministry of Internal Affairs in Belgrade (A. Reiss in the former building of the Anthropometric Department)</p> <p>1921 School for Criminology and Police Technics in Belgium</p> <p>1922 Institute of Criminology at the University of Paris</p> | <p>1923 Institute for Criminal Legal Sciences and Criminology in Vienna (Gleispah)</p> <p>1927 Institute of Criminology at the Faculty of Law in Belgrade (Živanović–Tregubov)</p> <p>1930 Prussian Police Institute in Berlin</p> <p>1929 International Academy of Criminology in Vienna</p> <p>In Serbia, education of police staff began at the level of courses:</p> <p>1880–1884 Tasa Milenković (he held lectures for candidates for gendarmerie officers)</p> <p>1899–1900 At the Gendarmerie School in Dorćol</p> |
|---|---|



START OF THE DEVELOPMENT OF FORENSICS IN SERBIA

In the young, newly liberated Serbia of the first half of the 19th century, the state and the people started breathing again with the sense of long forgotten freedom and a desire to build a just society. The people's great expectations were in collision with the interests of the government and bureaucracy. Still, the Serbian society was steadily marching towards the progress. Serbia, which gained its independence in 1878, was still unstable both from the outside and the inside, while the society was still in turmoil and still maturing. Despite all that, Serbian police gradually implemented scientific methods in legal proceedings and determinately kept up with the world in the application of the latest scientific achievements.

After the Hati-i-Shariff from 1831, they began a systemic organisation of education. Also, the state sent scholarship holders to foreign universities, who upon return, took important roles in the society. Since the establishment of Ivan Jurgović's Great School in 1808–1813, then Lyceum 1838–1863 and the Great School in 1863, the schools in Serbia served to educate civil servants, and later, the scientific staff as well. In that way, with each generation, the base for the development of science and new staff which would be up to the task continued to expand. This process also reflected on the development of laboratories, as well as forensic methods and techniques, and also education of specialist and professional staff.

In the beginning, the police staff was sent to be educated abroad, mostly sporadically and upon personal initiative. That practice became regular after Serbia had accepted its international obligations by signing the final document of the International Congress against Anarchism.³² In Serbia, they began organising courses on the application of technology in police: 1880–1884, Tasa Milen-



TASA MILENKOVIĆ (1852–1918). LONG-TERM EMPLOYEE AND HEAD OF THE POLICE DURING THE REIGN OF MILAN AND ALEKSANDAR OBRENOVIĆ. HE HELD LECTURES FOR CANDIDATES FOR GENDARMERIE OFFICERS FROM 1880 TO 1884.

(Source: Memorial of the St. Sava Society 1836–1936, p. 460)

ković held classes for the candidates for gendarmerie offices, while a similar course was organised at the Gendarmerie School in Dorćol from 1899 to 1900.

This was followed by the establishment of the School of Ministry of Internal Affairs in Belgrade in 1921, led by Archibald Reiss, and establishment of the Institute of Criminology at the Faculty of Law in Belgrade in 1929.

THE FIRST SOLVED CASE IN SERBIA

A mention of the first case solved with the help of forensics was preserved in an anecdote. Namely, Prince Miloš Obrenović, who was a rich man, owned several horses, and in his service, he also had a “prince’s cobbler”. It happened from time to time that a horse would die without previously showing any signs of being ill. Since Prince Miloš Obrenović often visited Vienna in his later years, he spoke of this problem with prominent people who told him that perhaps, there were some “chemists” who might be able to help him with his problem. The very next time a horse had died, Prince Miloš ordered for the horse’s intestines to be sent to Vienna. Soon he received an answer that the horse died due to poisoning by cobbler’s glue³³, which served as leather adhesive for opanci. Although the motive remained unknown, it was clear that the prince’s cobbler became the main suspect. It is not known what happened to the cobbler, but supposedly after that, Prince Miloš Obrenović ordered the establishment of state chemical laboratory “which would perform forensic expert analysis and analysis of mineral waters”.³⁴

Therefore, 19th-century Serbia was not outside the European mainstream. Even though the first step in the institutionalization of forensics in Serbia was made “from the top”, solving Prince Miloš’s private problem still led to the establishment of the State Chemical Laboratory.

ESTABLISHMENT OF THE STATE CHEMICAL LABORATORY

In 1833, Prince Miloš Obrenović began sending Serbian mineral waters for analysis to Vienna “to establish for which diseases they can be used, as well as which of these waters can be used to treat barren women”.³⁵

Later, starting from 1837, these analyses were performed at the State Pharmacy by the state pharmacist Pavle Ilić³⁶, while in 1859, the state founded the State Chemical Laboratory for emergency medical needs.³⁷ Prince Miloš appointer Pavle Ilić as the first state chemist and in 1861, he gave an oath that he would perform his duties as the state chemist properly. The State Chemical Laboratory was moved to the State Pharmacy and later to the laboratory of the Lyceum, until in 1882, a building was constructed at the corner of Kralja Milutina i Njegoševa streets to be used solely by this institution. The new building was intended to be the place “for gathering of all the chemists in Serbia”.³⁸ The State Chemical Laboratory performed various expert analyses for the purpose of water supply, spa medical centres, quality control of food, as well as police and prosecutor’s office and parties in civil proceedings.



SCIENCE AND FORENSICS

Advancements in an entire spectrum of sciences and scientific disciplines and techniques in the world and in Serbia as well, were important for the development of forensics.



CHEMISTRY

The importance of chemistry as the basic science for the development of forensics is obvious. A wide range of forensic disciplines are directly or indirectly based on chemistry. In Serbia, the study of chemistry as a separate science did not begin until the opening of the Great School. Chemical analyses for the presence of poison, blood or traces of semen as evidence were performed at the State Chemical Laboratory and later at the institutions that continued its work:

- State Chemical Laboratory (1859–1926),
- Chemical department of the Central Institute of Hygiene (1926–1941),
- Science and Research Institute of the Central Directorate for Medical Production (1944–1948),
- Chemical Institute of the Serbian Academy of Sciences (1948–1954)
- Chemical Institute (1954–1961),
- Institute of Chemistry, Technology and Metallurgy (1961–)

The State Chemical Laboratory was an autonomous institution and police departments used to hire it to perform chemical analyses of evidence and those services were paid from the budget of police departments.

MEDICINE



AĆIM MEDOVIĆ (1815–1893). HE WAS A MEMBER OF THE SOCIETY OF SERBIAN LETTERS, SERBIAN LEARNED SOCIETY, SERBIAN MEDICAL SOCIETY AND HONORARY MEMBER OF THE SERBIAN ROYAL ACADEMY. HE IS THE INITIATOR OF THE MODERN FORENSIC MEDICINE IN SERBIA.

(Source: MST Collection Museum of Serbian Medical Society, MST.T:11.7.1126)

Medicine also plays an important part in forensics. From the very start, the physicians were included in the investigations of bodily injuries or death of citizens. Development of the forensic medicine holds the credit for a more purposeful application of medicine in criminalistics. In Miloš Obrenović's Serbia, the examination of the dead was done by someone appointed by the police chief (*muselim*): "If a man was found ... [who] died under suspicious circumstances, he was not buried until *muselim's* man arrived...".³⁹ The information on the first performed forensic expert analysis of blood stains in Serbia come from 1830, while the routine performance of forensic medical autopsies dates to 1880. In this period, forensic medicine in Serbia developed constantly, following all modern European trends. Based on the so-called "Ottoman" Constitution from 1839, on June 9, 1839, the Department of Quarantine and Health Service was established within the Ministry of Internal Affairs. On March 27, 1839, Prince Miloš appointed Dr Karl Pacek⁴⁰ the secretary of the Health Service Department of the Ministry of Internal Affairs, and from 1845, this position was held by Dr Emmerich Lindermayer. These two physicians played an important role in the development of the forensic medicine in Serbia.

The start of education in the field of forensic medicine was first planned by the Law on the Establishment of Great School (Academy), which Prince Mihailo Obrenović signed on September 24, 1863. Namely, the Law proscribed that "the Faculty of Law shall [among other things] also teach forensic medicine". Emmerich Lindermayer⁴¹ noticed Dr. Aćim Medović⁴² and transfred him from the position of the physician of the Požarevac County to Belgrade, where on May 15, 1853, he was appointed permanent secretary of the Department of Health Service of the Ministry of Internal Affairs. As a part-time professor at the Great School, Aćim Medović was the initiator of the modern forensic

medicine in Serbia. His lectures were carefully recorded by an intern at the Ministry of Justice, M. Protić, who, in 1865, published them as lithographic scripts with 40 “stonemason images” under the title *Forensic Medicine*. The following year, Medović published his main work — *Forensic Medicine for Court, Police and Health Officials, Lawyers and Other Legal Workers*. Milan Jovanović Morski⁴³, who was employed as a part-time professor of hygiene and forensic medicine at the Great School in 1867, made a forensic medicine curriculum, which he elaborated for school years 1866 and 1867.

On March 30, 1881, Prince Milan Obrenović signed the Law on Organisation of Health Profession and Protection of Public Health, which included the establishment of an Anatomical pathology department in Serbia.⁴⁴

However, it wasn't until 1896 that the Health Department of the Ministry of Internal Affairs sent Dr Eduard Mihel⁴⁵ as a scholarship holder to study pathology and forensic medicine in Vienna. He specialised under the famous Head of the Viennese Institute for Anatomy and Pathology Dr Hans Kundrat⁴⁶, as well as at the departments for forensic medicine of Dr Eduard Hoffman⁴⁷ in Vienna and Dr Paul Hippolyte Brouardel⁴⁸ in Paris. After returning to Belgrade in 1897, Mihel put in operation the Anatomical Pathology Department of the General State Hospital.



MILAN JOVANOVIĆ MORSKI, (1834–1896). SERBIAN PHYSICIAN AND A MEMBER OF THE SERBIAN ROYAL ACADEMY. HE TAUGHT FORENSIC MEDICINE STARTING FROM 1865.

(Source: Photographic Archive of the Library of SASA—F 223, 2231–4)

Anatomical Pathology Department with the Department for Autopsy was located in wooden barracks within the General State Hospital in Vidinska Street (today, Džordža Vašingtona Street). During 1907, an adequate new building for the Anatomical Pathology Department was built as part of the new General State Hospital in Vračar, and apart from Dr. Mihel, it also employed Dr. Milovan Milovanović⁴⁹. The two of them began conducting forensic medical and anatomical pathological investigations, as well as pathohistological and bacterial examinations.



EDUARD MIHEL (1864–1915). SERBIAN PHYSICIAN OF CZECH ORIGIN, SPECIALIST IN PATHOLOGY AND FORENSIC MEDICINE, FOUNDER OF THE AUTOPSY OF THE STATE GENERAL HOSPITAL.

(Source: Institute of Forensic Medicine "Milovan Milovanović" of the Faculty of Medicine of Belgrade University)



MILOVAN MILOVANOVIĆ (1884–1948). SERBIAN PHYSICIAN, REGULAR MEMBER OF THE SERBIAN MEDICAL SOCIETY AND LONG-TERM HEAD OF THE DEPARTMENT OF PROSECTION OF THE GENERAL STATE HOSPITAL.

(Source: Institute of Forensic Medicine "Milovan Milovanović" of the Faculty of Medicine at the University of Belgrade)

With the establishment of the Faculty of Medicine in Belgrade in 1919, a Department of Forensic Medicine was formed, which transformed into the Institute of Forensic Medicine of the Faculty of Medicine in Belgrade.⁵⁰ The founder of the Department was Prof. Dr. Milovan Milovanović, who is rightfully considered to be the founder of the modern forensic medicine in Serbia. Apart from Belgrade, nowadays Serbia has a wide network of institutes. Faculties of medicine in Novi Sad and in Niš began operating in 1960, while faculties of medicine in Priština and Kragujevac were opened a little later. All of these faculties formed their own departments of forensic medicine, which later transformed into institutes.

PHYSICS – MATHEMATICS – STATISTICS

Physics is another basic science from which the forensics draws knowledge and methods and it is unavoidable, especially thanks to its auxiliary scientific disciplines. Development of physics directly contributed to the ballistics and analysis of material properties, as well as numerous calculations applicable in forensics.



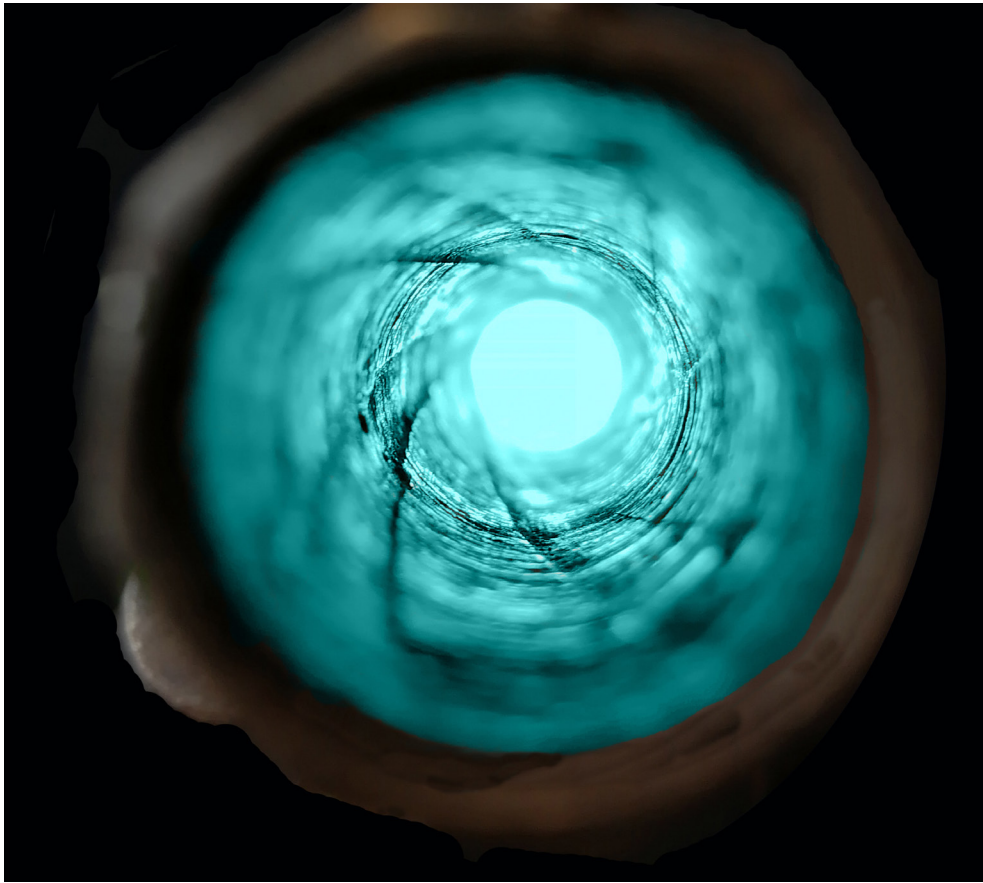
DEFORMED BULLET WITH MARKS FROM A RIFLED BARREL OF THE “STATE-MILITARY” REVOLVER NAGANT M.1891. THE BULLET WAS EXTRACTED DURING THE AUTOPSY FROM THE BODY OF QUEEN DRAGA OBRENOVIĆ ON MAY 29, 1903 (DATE ACCORDING TO JULIAN CALENDAR).

(Source: MST Collection Museum of Serbian Medical Society, MST.T.11.7.481)

Apart from physics and auxiliary physical sciences, mathematics and mathematical methods have an important place in forensic science, the same as statistics, which is an unavoidable tool in all the sciences. Statistics, as a compulsory companion of the state apparatus in Serbia, took its rightful place in Serbia with the first population census, ordered by Prince Miloš in 1819. Although in 1834, regular population censi were introduced every five years, the first State Statistical Service was not introduced until Prince Mihailo gave an order for its establishment on April 18, 1862. According to this order, Department of Economy of the Ministry of Finance was in charge of all the statistical affairs of the state administration, according to the *Rules for inventory of people, properties and income*⁵¹ up until 1864, when a special department for statistics was formed within the Ministry of Finance. The Authority for Official Statistics was established in 1881 and it consisted of a statistical bureau and a central statistical board.

Since the formation of the Ministry of Internal Affairs in 1839, the data regarding the crime statistics were handled by the local police offices. In periodical reports by the police offices to the Ministry, they presented the accounts of the committed crimes

(description of the perpetrator, time and place of the crime, fatalities), weather disasters and natural catastrophes (with the description of potential casualties and damages), as well as the movement and control of foreign nationals and possible occurrence of banditry. This practice continued and from 1862 until the onset of the First World War, 31 editions of special books and 17 themed volumes dedicated to criminal trials titled *Criminal Trials 1888–1900* were published. Apart from these publications, they also produced local reports. In the period 1914–1918, the Service ceased to operate and then from 1918 onwards, the Statistical Service has been performing its duties through various institutions. Today, that includes the Statistical Office of the Republic of Serbia, as well as numerous local and relevant organisations.



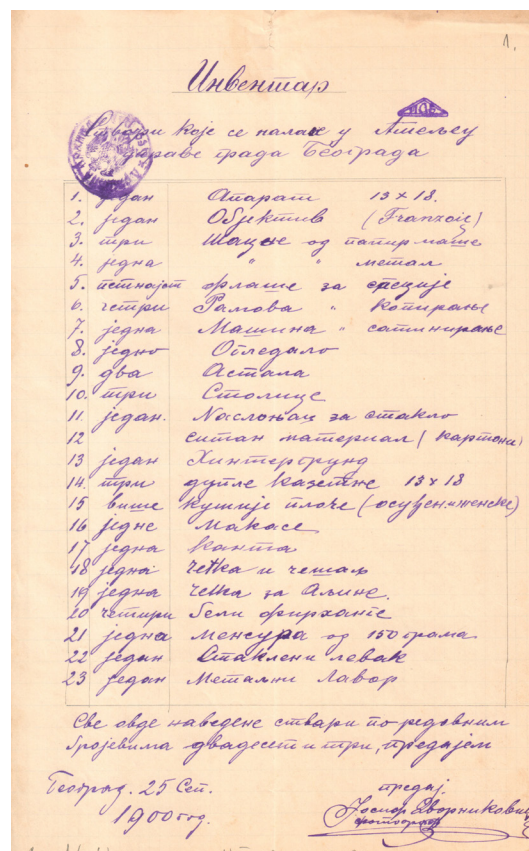
**RIFLED BARREL OF A
REVOLVER, NAGANT M.1891,
FABRIQUE D'ARMES ÉMILE
ET LÉON NAGANT, BELGIUM,
LIÈGE.**

(Source: Private property)

PHOTOGRAPHY

Photography as a technique was developed in the 18th century and immediately after its discovery it found its place in police work. Photography is considered to be an auxiliary forensic technique. At first, in Serbia, police used the services of the local photographic studios which multiplied the photographs of wanted persons that came from abroad. Soon, they realised that they should organise photographic departments within the police offices.

The same as in the other European countries, until 1904 in Serbia, photography was mostly used in the investigation of criminal events in the penal system⁵². In order to make the most efficient search for a large number of fugitives from the penal institutions who committed crimes, compulsory photographing of all convicts in the Kingdom of Serbia was introduced in 1897. The photographs were often taken on the expense of the police employees, but due to the high price of the production of photographs, that situation could not last for long. By the writ of the minister of internal affairs Đorđe Genčić⁵³ from 1899, all the local police offices were ordered to procure photo-albums of “all the convicts photographed so far, as well as other bad people” using a sum allocated by the budget for “unforeseen needs” and “office expenses”.⁵⁴ Since there was no money in the state budget for this purpose, the expense overspilt to county and municipal budgets and it was split into several instalments.



HANDOVER INVENTORY OF A PHOTOGRAPHIC STUDIO OF THE BELGRADE CITY ADMINISTRATION HANDED-OVER BY PHOTOGRAPHER JOSIF DVORNIKOVIC ON SEPTEMBER 25, 1900.

(Source: Historical Archive of Belgrade UGB-1-K2127-562)

All prisoners at the Belgrade Penal Institute were photographed during 1897 and in the following period, the prisoners at the prisons in Požarevac and Niš were photographed as well. Photography gave results since the very start. That was confirmed by the increasing number of offenders found thanks to the use of photographs, which were distributed via *Policijски glasnik*⁵⁵, as well as internal courier service.

N° _____

Nom et prénoms : M. Bertillon Alphonse

Surnoms et pseudonymes : _____

Né le 22 Avril 1853, à Paris cant. H^e dép. _____

Fils de Declar Louis Adolphe et de Marie Zoé Guillaud. Profession : _____

Antécédents : _____ Motif de la détention : _____

Marques particulières et cicatrices.

I. _____	III. _____
II. _____	IV. _____
	V. _____
	VI. _____

Main gauche

Auriculaire g. Annulaire g. Médius g. Index g. Pouce g.

Age app^r _____ Age déclaré 59 N^e en 1853

Taille 178.0 long^r 19.4 Pied g. 27.4 n^e de cl. 3 Cheveux ch. m. gao

Voies 16.8 larg^r 16.8 Médius g. 11.9 aur^e 7.02 m Barbe d.

Enverg. 181 xye^s 14.7 Auric^e g. 9.9 père cacl v m Teint P^e g S^e bl.

Buste 95.2 Oreille dr. 6.7 Coude^e g. 47.9 Carte de l'iris le _____ Main dr. _____

Notes _____

Distance du sujet 2 mètres : Réfraction 5 = Point de vue de la photographie n^o 40.

Pressé à Paris, le 7 Octobr 1912, par M. _____

Main droite

Pouce dr. Index dr. Médius dr. Annulaire dr. Auriculaire dr.

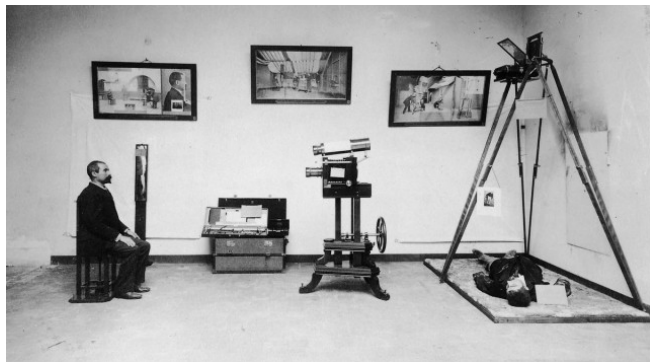
ANTHROPOMETRY

The understanding of the importance of criminal records that included individual features of the offenders has grown thanks to the photography. One of the methods for individualisation of offenders that came into use thanks to Alphonse Bertillon was anthropometry (an auxiliary anthropological discipline that deals with the physical measurements of people). The data obtained by measuring certain parts of the body using special measuring instruments with the added description of specific physical characteristics — specific marks and photographs of profile and full-face in 1:7 ratio, created a Bertillon's card. This whole procedure was called “bertillonage” and it was introduced in Serbia by the *Law on Measurement, Description and Identification of Perpetrators*. In 1900, Ministry of the Internal Affairs of the Kingdom of Serbia sent the Belgrade City Administrator Dušan Alimpić to Bucharest, with the task of studying the Bertillon's system of identification of offenders at the Romanian Ministry of Justice. Based on the Alimpić's ample report, they made a proposal for the Law on Measurement, Description and Identification of Perpetrators, which was accepted by the National

EXAMPLE OF BERTILLON'S ANTHROPOMETRIC RECORD CARD (FILE). THE PHOTOGRAPH SHOWS THE AUTHOR OF THE SYSTEM, ALPHONSE BERTILLON (1853–1914). HE WAS A FRENCH POLICE OFFICER AND BIOMETRICIAN, KNOWN AS THE PIONEER IN THE USE OF ANTHROPOMETRIC TECHNIQUES IN IDENTIFICATION OF PEOPLE.

(Source: en.wikipedia.org/wiki/File:Bertillon,_Alphonse,_fiche_anthropom%C3%A9trique_recto-verso.jpg)

Assembly and confirmed by the king in 1904⁵⁶. According to this law, an Anthropometric Police Department for measurement and identification of offenders “according to the Bertillon’s system” was established at the Ministry of Internal Affairs and its scope of activities was determined, while establishment of other anthropometric departments was planned in all towns that had a court of first instance, as well as the initiation of a training course for police officers. Dušan Alimpić⁵⁷ was appointed the first Head of the Anthropometric Department. Bertillonage remained in use after the introduction of dactyloscopy, up until the 1920s.



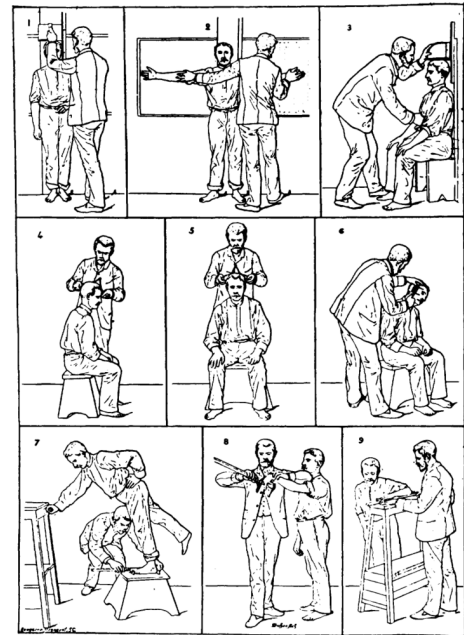
BERTILLON'S STUDIO. BERTILLON SITS ON THE LEFT, PHOTOGRAPHIC CAMERA FOR TAKING PHOTOGRAPHS OF THE PERPETRATOR IS IN THE CENTRE AND BERTILLON'S CAMERA FOR PHOTOGRAPHING CRIME SCENE IS ON THE RIGHT. ON THE FLOOR, RIGHT BENEATH THE CAMERA, THERE IS A DEMONSTRATOR IN THE ROLE OF A CORPSE.

(Source: en.wikipedia.org/wiki/Alphonse_Bertillon)

FROM THE LECTURE „THE SPEAKING PORTRAIT“, LECTURER ALPHONSE BERTILLON, PARIS, FRANCE, EARLY 20TH CENTURY.

(Source: en.wikipedia.org/wiki/Alphonse_Bertillon)

RELEVÉ
DU
SIGNALEMENT ANTHROPOMÉTRIQUE



1. Taille. — 2. Envergure. — 3. Buste. —
4. Longueur de la tête. — 5. Largeur de la tête. — 6. Oreille droite. —
7. Pied gauche. — 8. Mèdus gauche. — 9. Coudée gauche.

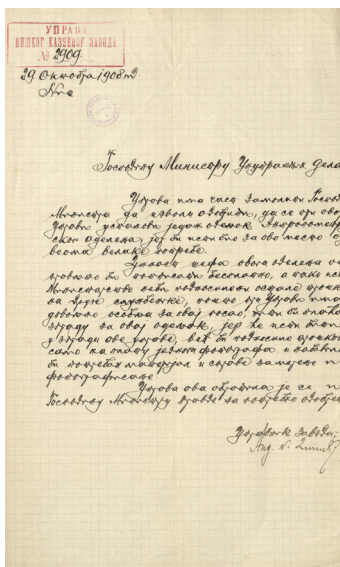
POSTER, INSTRUCTIONS FOR TAKING ANTHROPOMETRIC PHYSICAL MEASUREMENTS OF THE PERPETRATOR ACCORDING TO THE BERTILLON'S SYSTEM.

(Source: en.wikipedia.org/wiki/Alphonse_Bertillon)



PETITION TO THE MINISTER OF INTERNAL AFFAIR BY THE HEAD OF THE PENAL INSTITUTION IN NIŠ, ANDRIJA DINIĆ, TO ESTABLISH AN ANTHROPOMETRIC DEPARTMENT AT THE INSTITUTION.

(Source: State Archives of Serbia, MIA-B, 1908, 5767)



DUŠAN Đ. ALIMPIĆ (1873–1930). THE FIRST CHIEF OF THE ANTHROPOMETRIC POLICE DEPARTMENT IN BELGRADE, 1905.

(Source: Политика, photo documentation)

OLD BUILDING OF THE BELGRADE CITY ADMINISTRATION, THE LOCATION OF THE FAMOUS “GLAVNJAČA”, ON THE SITE OF TODAY’S FACULTY OF NATURAL AND MATHEMATICAL SCIENCES. VIEW FOR THE FIREFIGHTING LOOKOUT ON THE ROOF OF CAPTAIN MIŠA’S MANSION, EARLY 20TH CENTURY.

(Source: from the Collection of Miloš Jurišić)



ENTRANCE TO THE BUILDING OF THE TECHNICAL DEPARTMENT – ANTHROPOMETRIC UNIT OF THE DEPARTMENT OF PUBLIC SAFETY (IN THE COURTYARD BEHIND THE OLD BUILDING OF THE CITY ADMINISTRATION ON THE SITE OF TODAY’S FACULTY OF CHEMISTRY).

(Source: Library of UCIPS, Album of the Anthropometric Department of the MIA)

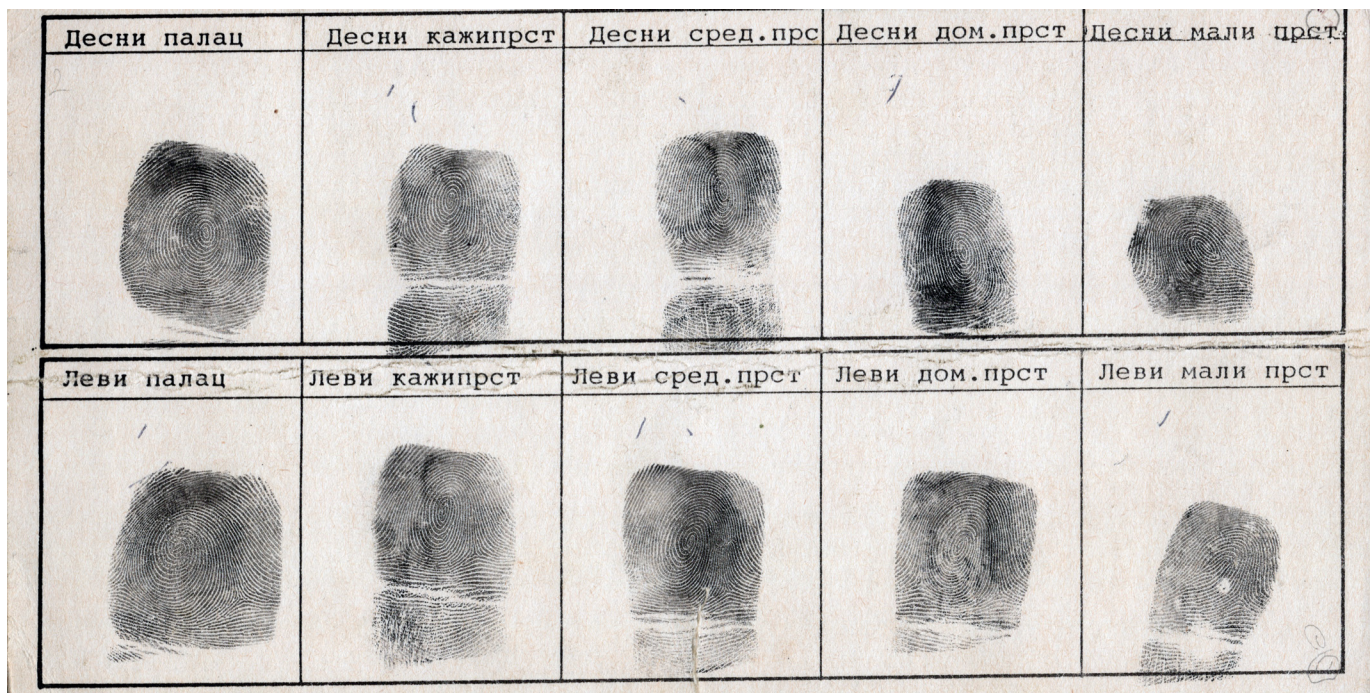
DACTYLOSCOPY

The first thought that comes to mind when we mention forensics is a fingerprint. The uniqueness of an individual fingerprint was already noticed in the first half of the 19th century, however, there was no method for definite confirmation of the identification. The first method for classification of the fingerprints was developed in 1891 in Argentina by Ivan Vučetić⁵⁸ who named it “dactyloscopy” in 1896. In 1892, based on the Vučetić’s system, a murderer was found and convicted in South America.⁵⁹



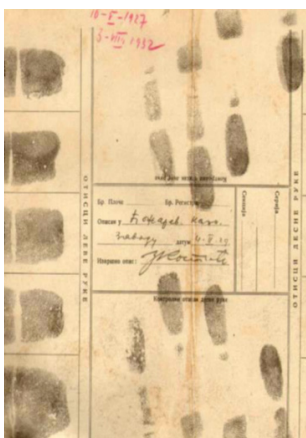
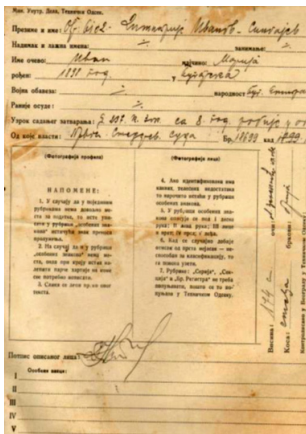
ESTABLISHING DACTYLOSCOPY COLLECTION IN SERBIA, DETAIL FROM TRAINING, TAKING THE PERPETRATOR’S FINGERPRINTS.

(Source: Library of the UCIPS, Album of the Anthropometric Department of the MIA)



EXCERPT FROM A DACTYLOSCOPIC CARD – FINGERPRINTS OF THE LEFT AND THE RIGHT HAND.

(Source: Library of the UCIPS)



FRONT AND BACK SIDE OF A DACTYLOSCOPIC REGISTRY CARD, FILLED IN 1919. PHOTOGRAPHS ARE MISSING.

(Source: Historical Archive of Pozarevac, uncategorized material 1927, box 25)



IVAN VUČEĆIĆ (JUAN VUCETICH KOVACEVICH, 1858–1925). ARGENTINIAN ANTHROPOLOGIST WHO DEVELOPED THE FIRST USABLE IDENTIFICATION SYSTEM USING A DACTYLOSCOPIC METHOD (BASED ON FINGERPRINTS). HIS SYSTEM FOUND APPLICATION DURING THE INTRODUCTION OF DACTYLOSCOPY IN SERBIA.

(Source: www.policia.mseg.gba.gov.ar/gacetilla_policial/julio2020/20-07-20.html)

A little later, in 1896, Edward Richard Henry⁶⁰ developed his own fingerprint classification system, which was soon accepted in most of the countries in Europe and in North America and known as the Henry-Galton system. As the Chief of Scotland Yard, Henry advocated dactyloscopy completely replacing the Bertillon's identification system, which happened in 1901. Over time, other European countries also gave preference to dactyloscopy so it gradually suppressed bertillonage, which stayed on the longest in France, until 1914. Dactyloscopy implies the procedure of taking and processing fingerprints of offenders for their registration, as well as searching for fingerprints at the crime scene or taking the prints of the suspects in order to determine the identity of the perpetrator. Therefore, the aim of dactyloscopy is to register and identify a guilty party using fingerprints. The first is the subject of registration, while the second is the subject of identification dactyloscopy.

In 1911, the Ministry of Internal Affairs sent 2nd class clerk at the Anthropometric Department, Aleksandar J. Andonović⁶¹ to a professional course of forensics held by Dr Rodolphe Archibald Reiss⁶² at the Faculty of Law in Lausanne. Together with Vasa Lazarević, Andonović was one of the main advocates of dactyloscopy, which was introduced in Serbian police in 1912 according to Vučetić's system.

S EXPERIENCES FROM THE FIRST WORLD WAR



PHOTOGRAPH FROM THE REPORT BY A. RICE, "COMMENT LES AUSTRO-HONGROIS ONT FAIT LA GUERRE EN SERBIE OBSERVATIONS DIRECTES D'UN NEUTRE", PARIS, 1915.

(Source: ia800201.us.archive.org/27/items/commentlesaustr00reisuoft/commentlesaustr00reisuoft.pdf)

The First World War was the first great conflict in which in some places, the number of dead civilians was greater than the number of dead soldiers. Because of this, Government of the Kingdom of Serbia invited Dr Archibald Reiss as a neutral expert, to investigate war crimes committed by the Austrian-Hungarian army during its first attack on Serbia. In the fall of 1914, Archibald Reiss and a couple of experts from Serbia did an investigation of the committed crimes, which included exhumation of victims, forensic and ballistic analysis and interviews of the witnesses and captured Austrian-Hungarian soldiers. These data were supplemented by ample photographic documentation as evidence material. Reiss published the first results of his investigation in late 1914 as a war correspondent for influential magazines. In that way he introduced European and global public to the enormous scope of brutal war crimes and indicated the violation of international conventions by Austria-Hungary. Reiss disclosed the detailed results of his investigation to Serbian government and later in an extensive study titled *Comment les Austro-Hongrois ont fait la guerre en Serbie: observations directes d'un neutre*.⁶³ Reiss' report was the first legally corroborated forensic and criminology report on the crimes of an army in wars ever. After the end of the war, Reiss remained in Serbia where he continued to investigate the crimes of enemy armies on the territory of Serbia and arrange and supplement extensive documentation that would serve the Serbian government as evidence in the following peace conference. However, the opportunity to use that material for raising

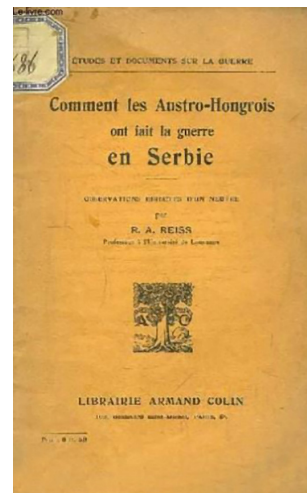


DR RODOLPHE ARCHIBALD RICE (1875–1929). SWISS FORENSIC EXPERT, WHO CAME TO SERBIA DURING THE FIRST WORLD WAR UPON THE INVITATION OF THE SERBIAN GOVERNMENT TO LEAD THE INVESTIGATION OF THE CRIMES COMMITTED BY THE OCCUPATION ARMY AGAINST THE PEOPLE OF SERBIA. AFTER THE WAR, IN 1921, HE BECAME THE HEAD OF THE SCHOOL OF THE MINISTRY OF INTERNAL AFFAIRS AND A LECTURER.

(Source: Historical Collection of SASA 14204_V_2f15)

charges against those responsible for the crimes was missed because the politics prevailed over law. Due to the lack of agreement between the great powers on the acceptance of jurisdiction of international criminal courts that were yet to be established, crimes in Serbia in the Great War remained mostly unpunished.

Character and size of the crimes showed that Serbia does not have the capacity to independently investigate numerous crime scenes. It lacked staff, equipment, transportation and financial means. On the other hand, these investigations and their results gave a powerful moral support to Serbia and proved the correctness of applied techniques and investigation methods.



FRONT PAGE OF THE RICE'S REPORT ON THE CRIMES COMMITTED BY THE AUSTRIAN-HUNGARIAN ARMY AGAINST THE PEOPLE OF SERBIA, PARIS, 2015.

(Source: ia800201.us.archive.org/27/items/commentlesaustr00reisuoft/commentlesaustr00reisuoft.pdf)

6 DEVELOPMENT OF FORENSIC INSTITUTIONS IN THE KINGDOM OF SERBS, CROATS AND SLOVENES AND YUGOSLAVIA



**ALEKSANDAR J. ANDONOVIĆ (1881–1942).
LAWYER, POLICEMAN, LONG-TERM HEAD OF
THE TECHNICAL POLICE, IMPORTANT FOR THE
DEVELOPMENT OF FORENSICS IN SERBIA.**

(Source: Politika, photo documentation)

Anthropometric Police Department renewed its work after the end of the war mostly thanks to the efforts of Aleksandar Andonović and Archibald Reiss.

The need for the Technical Police in the Kingdom of SCS to be modelled by foreign models was stronger than the post-war difficulties and numerous problems that plagued the newly created state. The lack of unity in organisation and functioning of the police in the new state had been overcome by metropolisation of Belgrade Police. Belgrade Technical Police had jurisdiction on the entire territory of the Kingdom of SCS, i.e. it worked within its scope of activities in all corners of the country that didn't have that kind of service and after 1921, it also kept the register all the convicts in the entire country.

By performing the duties of the head of the Section for identification, the fifth section of the Department of Technical Police (located at the 14–16 Kralja Petra Square, corner of the Braće Jugovića and Višnjićeva streets), Reiss modernised the Technical Police. It is thanks to his efforts that the laboratory was completely equipped in 1922, which enabled the Technical Police to successfully perform its main task: “taking care of photographing criminals and other dangerous persons, registering criminal world and being a forensic-medical laboratorium”.⁶⁴ In the work of Technical Police, they used different kinds of cameras and equipment

for different kinds of photographing:

1. Camera for photographing perpetrators according to Bertillon's system
2. Camera for photographing crime scenes, burglaries, corpses and prints
3. Camera for production of various reproductions for photographing in a studio, letters, sketches, cards and foils with fingerprints
4. Camera for vertical photographing of objects that cannot be placed in a frame, such as tools, devices and objects made of glass and iron
5. Camera for magnification of images, fingerprints, other photographs or necessary parts of photographs
6. Camera for instantaneous photographing on the street for photographing masses, protests, buildings and for all situations in which it is not possible to use a camera with a stand
7. Camera for direct photographing of fingerprints on the scene
8. Projector (epidiascope) for projection of diapositives and paper
9. Camera for permanent and unnoticeable photographing of persons or buildings
10. Micro camera for photographing fingerprints on glass, in the dust, biological traces and small objects.

Additional devices also included copy machines and devices for washing and drying of photographs.

We should bear in mind that after the Balkan wars and before the onset of the Great war, newly liberated territories of Kosovo and Macedonia were not included in the administrative-legal constitution of Serbia. After the war, that unsolved problem also extended to territories of Montenegro, Sandžak, Bosnia, Dalmatia and all other former territories of Austria-Hungary. This led to practically parallel functioning of various administrative and legal systems, which also included police and judicial system. Although the above-mentioned metropolisation of Belgrade Police somewhat resolved these problems, it was clear that better solutions must be found.



**DEPARTMENT OF TECHNICAL POLICE IN
BELGRADE. MICRO CAMERA, CLOSET
WITH CHEMICAL PREPARATIONS, SAFE,
SPECTROMETER.**

(Source: Library of the UCIPS, Album of the Anthropometric
Department of the MIA)

7

ESTABLISHMENT OF THE FIRST SCHOOL OF THE MINISTRY OF INTERNAL AFFAIRS



BUILDING OF THE SCHOOL OF THE MINISTRY OF INTERNAL AFFAIRS, LATE 1930S.

(Source: Historical Collection of SASA 14204_V_2e 20.1)

Police reform, already advocated before the war in Serbia, became an exigent need in the Kingdom of SCS. The awareness that the reform, besides political will, also required professional staff, led to the establishment of the first School of the Ministry of Internal Affairs. The Police School which was planned in 1904 by the Law on Measurement, Description and Identification of Perpetrators, was not established due to the lack of sufficiently educated staff for holding classes and lack of material means, but also because of the doubts of the conservative Serbian society regarding the justification of the need to introduce such a school and its success. The Police School in the new state was expected to educate staff that would be capable of carrying on the police reform. The Police School was founded by a special Directive⁶⁵ and it was officially opened on February 8, 1921. Conceptual creator, founder, teacher and the first head of the School was Archibald Reiss. The School was located in a restored and upgraded building of the Department of Technical Police next to the old building of Belgrade City Administration, so the students did all of their practical exercises in the laboratory of the Technical Police.

Teachers at the School were professors at the University and senior officers at the Ministry of Internal Affairs: full-time assistant professor at the University Dr Ivan Đaja, Head of the Department for suppression of venereal diseases Dr Đorđević, Head of the Department of technical service Aleksandar

Andonović, editor of *Polijski glasnik Živojin Simonović*, inspectors of the Ministry of Internal Affairs Kosta Katić and Aleksandar Kuzmanović, editor of the magazine *Policija Vasa Lazarević*, French language professor A. Polić and many others.⁶⁶

The curriculum was adjusted for the police officers of various levels of education. The curriculum, determined by the Directive on the establishment of Police School included 15 subjects: Criminal law, Criminal procedure, Laws, Police ordinances with their application, General political knowledge, Practical exercises in criminal law and procedure, Practical exercises in chemistry and physics, Anatomy and hygiene, Forensic medicine, Scientific police, Identification and description of perpetrators, Criminology and general police issues, Practical exercises in technical police, Practical exercises in description and identification, Special gymnastics and French language.⁶⁷

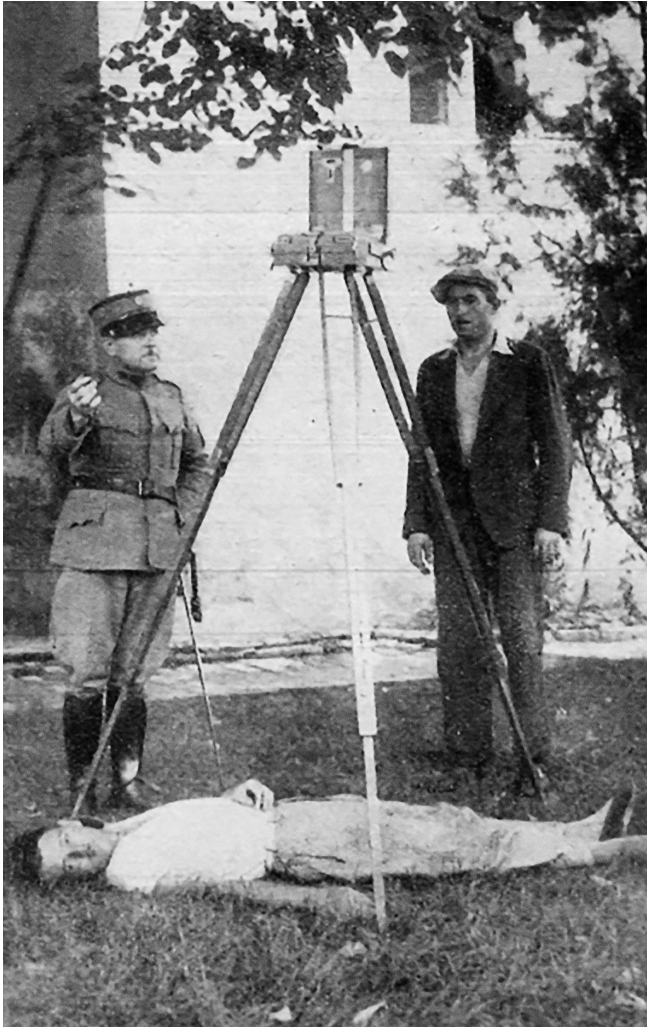
During the second course Reiss resigned, so inspector K. Jovanović became the Head of the Police School. The School continued to work until 1923, when it ceased to operate after the completion of the fourth course. The vacuum created by the closure of this school lasted until February 10, 1931, when the Central School for Executive Police Officers, established by the Directive of the minister of internal affairs, began to operate. The first head of the School was the Chief of the Department for State Protection of the Ministry of Internal Affairs of the Kingdom of Yugoslavia, Branko Žegarac. The headquarters of the School were located in Zemun, at 1 Tvornička Street. The complex consisted of one two-storey building and two auxiliary buildings with courtyard, with the total area of 7050 m² bought for the purpose of the MIA from the Serbian Farmers' Cooperative for 1,300,000 dinars.⁶⁸ This School successfully educated staff until the April war in 1941 and the capitulation of the Kingdom of Yugoslavia:

The pre-war practice of professional advancement of police officers abroad continued in the Kingdom of SCG. The following people were sent for professional advancement in Lyon, Brussels and Rome: Vladeta Milićević⁶⁹, Dragoljub Savić (inspector at the Ministry of Internal Affairs), Živojin Simonović⁷⁰ (advisor at MIA) and Jovan Savić⁷¹ (senior commissioner in Skopje). In Lyon, Savić was an assistant to famous Dr Edmond Locard⁷²



**FROM THE CLASS, SCHOOL OF
THE MINISTRY OF INTERNAL
AFFAIRS.**

(Source: Historical Collection of SASA
14204_V_2f 57)



DEMONSTRATION OF TAKING PHOTOGRAPHS IN THE FIELD IN A MURDER INVESTIGATION USING BERTILLON'S CAMERA.

(Source: Tregubov and Andonović, *Kriminalna tehnika*, Belgrade, 1935)

for a while. Simonović also successfully completed all seven terms at the Reiss' Institute of Scientific-Technical Police in Lausanne. Milićević and Đorđević graduated at the School of Scientific Police in Rome, located right next to the central prison in Rome Regina Coeli. After Rome, Đorđević continued his education at the Reiss' Institute, while Milićević spent a while working as an assistant volunteer with the famous Dr Enrico Ferri⁷³.

Upon the initiative of professor at the Faculty of Law in Belgrade, Dr Mihajlo Čubinski⁷⁴ and Dr Toma Živanović⁷⁵, Institute of Criminology at the Faculty of Law⁷⁶ was established in 1927. It taught officers at the Criminal justice department and police as well as graduated students and PhD candidates at the Faculty of Law, according to different curricula, in the fields of criminalistics and criminal politics. The Institute of Criminology had a Department for theory and practice, which was, together with library and the Head's office, located in a rented apartment at 19 Topličin Venac Street, and Experimental department, which was located at the Institute of Physiology at the Faculty of Medicine. Experimental research was conducted in the laboratories for criminal technology, criminal physiology and criminal psychology, criminal chemistry, microphotography and roentgenology and psychotechnology. The equipment for the Institute was procured using the means from German war reparations in the amount of 69,000 marks in gold. The greatest part of the instruments arrived in March 1929 from Germany, while a smaller part was procured from France in 1929 and 1930.⁷⁷

The development of forensics in Serbia, together with its continuity and results, had not remained unnoticed, which was testified by the review of the work *Criminal Technique (Scientific-Technical Examination of a Criminal Act)* by Sergey Tregubov⁷⁸ and Alexander J. Andonović

SERGEY TREGUBOV (1866–1945). FAMOUS RUSSIAN LAWYER, PROFESSOR OF CRIMINAL LAW, CRIMINOLOGIST, SECRET ADVISOR, PUBLIC PERSONA. HE CONTRIBUTED TO THE ORGANISATION OF THE TECHNICAL POLICE OF THE MINISTRY OF INTERNAL AFFAIRS OF THE KINGDOM OF SCRS. HE WAS ONE OF THE FOUNDERS AND PROFESSORS OF THE INSTITUTE OF CRIMINOLOGY AT THE FACULTY OF LAW IN BELGRADE (1929) AND COUNSELLOR AT THE MINISTRY OF INTERNAL AFFAIRS.



by internationally acclaimed criminology expert and professor Boris Brasol, who thought that Andonović “had set the foundation of scientific, forensic examination in the Balkan countries”, while his technical police laboratory was one of the best equipped and managed on the European continent.⁷⁹





POST-WAR AND MODERN DEVELOPMENT



EQUIPMENT FOR DISCOVERING AND COLLECTING FINGERPRINTS AT A CRIME SCENE.

(Source: Museum of the Ministry of Internal Affairs of the Republic of Serbia in the making)

In the period after the Second World War, crime investigations were directly led by the Prosecutor's office. On all the levels of the republics, republic state prosecutors insisted on founding the fight against the crime on scientific basis. It was assumed that that kind of approach would lead to a more humane and a more just procedure. Given that the public prosecutor's office was not involved in the investigations and the investigative courts were understaffed, the weight of the investigation had fallen on the Internal Affairs Service. It should be mentioned that not all of the republic centres were in the same position regarding the staff and the equipment. Belgrade had the advantage, but due to the fact that it was the capital, it had a problem with mobilisation of the staff in federal bodies, especially the national security. In 1946, the inherited system of Technical Police in Belgrade was renamed to Bureau of Forensic Technology. The data regarding its establishment are still not available to the public. In 1973, the Bureau was transformed to the Department of Forensic Technology of the Republic Secretariate of Internal Affairs. The Department was located at the College of Internal Affairs in Zemun. By the decision of the Interrepublic Committee, republic forensic technology centres were formed in 1979 at the republic secretariates of internal affairs. In the period after 1946, forensics in Serbia and Yugoslavia kept up with the modern global trends. Modern technologies, such as voice recognition, polygraph tests and antibody analysis were introduced.

Specificity of the social development after the war also affected the criminological service, and by that, forensic technology as well. Education and training of staff, as well as preparation and publishing of textbooks, were priorities, but realisation of these tasks had to wait for the introduction of a systemic solution — establishment of regular educational institutions. Forensic technicians were educated through courses at the Institute of Criminology and in practice. In the conditions of a quick technological development, the need for staff that was capable of dealing with the complexity and the scope of work,



ENTRANCE TO THE BUILDING OF THE POLICE ACADEMY - IN BANJICA, BELGRADE. (THE BUILDING WAS DESTROYED IN THE BOMBING OF 1999)

became evident. Upon the proposal of the Minister of Internal Affairs, on August 30, 1948, the Government of the Federal National Republic of Yugoslavia reached Decision on the establishment and scope of activities of the College of the Ministry of Internal Affairs of the FНРY. The main task of the College, which was located in Belgrade, was education of professional, qualified staff. The College had three departments and as a rule, the education lasted for three semesters. The classes at the College were attended by the administrative and forensic staff of the Ministry of Internal Affairs, as well as members of the National Militia, who graduated from high school and passed the advanced course exam.

By the Decision from October 18, 1952, the College of the Ministry of Internal Affairs of the FНРY became a College for Internal Management, which operated until 1964. It had various auxiliary educational institutions — institutes, cabinets, laboratories, museum, library and space for practical exercises. The education lasted for four semesters, and the College only enrolled employees of the Ministry of Internal Affairs and officers of the National Militia who completed high school and served in the Internal Affairs Service for at least one year. After graduation, the students at the College for Internal Management gained higher level of professional education and they could enrol at the Faculty of Law.

The practice showed that the Ministry of Internal Affairs needed its own high school for education of staff that would work in the service, but at the same time, continue its education after gaining basic professional knowledge and skills. Therefore, according to the Law on High School of Internal Affairs, which was passed by the National Assembly of the Socialist Republic of Serbia on July 12, 1967, the High School of Internal Affairs *Pane Đukić* was established in Sremska Kamenica.

Decentralisation of the state administration also led to the decentralisation of the police education. After the College of MIA of the SFRY ceased to operate in 1964, the only school of the same level remained in Zagreb. Education of new staff with the higher level

of education in Serbia was evidently stagnating, so on July 13, 1972, the National Assembly of the Socialist Republic of Serbia passed a Law on College for Internal Affairs, taking into the account all of the problems with the staff and the needs of the Internal Affairs Service.

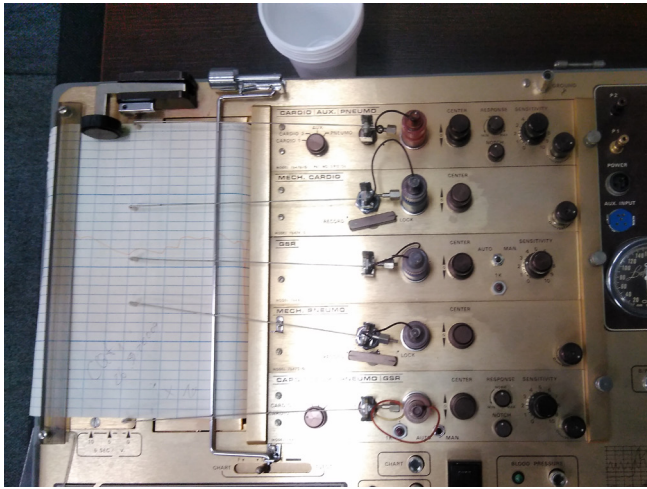
The College for Internal Affairs began operating on October 18, 1972, and already the following year, the first textbook, *Forensic Technology* by Kamenko Jovanović, came out of the print. Within the fruitful publishing activities of the College in the following period, we should also mention the following textbooks: *Forensic Technology* by Vlastimir Mitrović from 1988 and *Criminology — Technology* by Vlastimir Mitrović and Ljubinka Stupar from 2002. The studies at the College lasted for four semester and from 1977, five semesters.

After the social changes in 2000, the complete police education was reformed, which also included the College of Internal Affairs. Since its foundation until 2006, when the Government of the Republic of Serbia reached a decision to integrate the College with the Police Academy and form the Academy of Criminalistic and Police Studies, the College for Internal Affairs educated over 6,000 lawyers. In that way, the core of the professional staff at the Ministry of Internal Affairs has been educated according to modern curricula for both theoretic and practical education.

Apart from higher education, it was also necessary to establish education that would provide conditions for scientific work and further professional advancement. Police Academy, as an institution of higher education specialised for educational-scientific activities of importance for security and police affairs, was established by the Law on Police Academy, which was passed by the National Assembly of the Republic of Serbia on June 30, 1993. The Academy began operating on October 1, 1993 and as part of its publishing activities, it published two textbooks in the field of forensic technology: *Criminology — Technology* by Radojica Maksimović and Uglješa Todorić in 1995 and *Forensic Technology* by Radojica Maksimović in 2000.



BUILDING OF THE FORMER COLLEGE FOR INTERNAL AFFAIRS, LATER ACADEMY OF CRIMINALISTIC AND POLICE STUDIES AND TODAY, UNIVERSITY OF CRIMINAL INVESTIGATION AND POLICE STUDIES, AT 196 CARA DUŠANA STREET IN ZEMUN.



ANALOG POLYGRAPH LAFAYETTE DIPLOMAT. IT WAS IN USE FROM THE BEGINNING OF 1980'S UNTIL 1997 WHEN DIGITAL TECHNOLOGY WAS INTRODUCED.

(Source: Museum of the Ministry of Internal Affairs of the Republic of Serbia in the making)

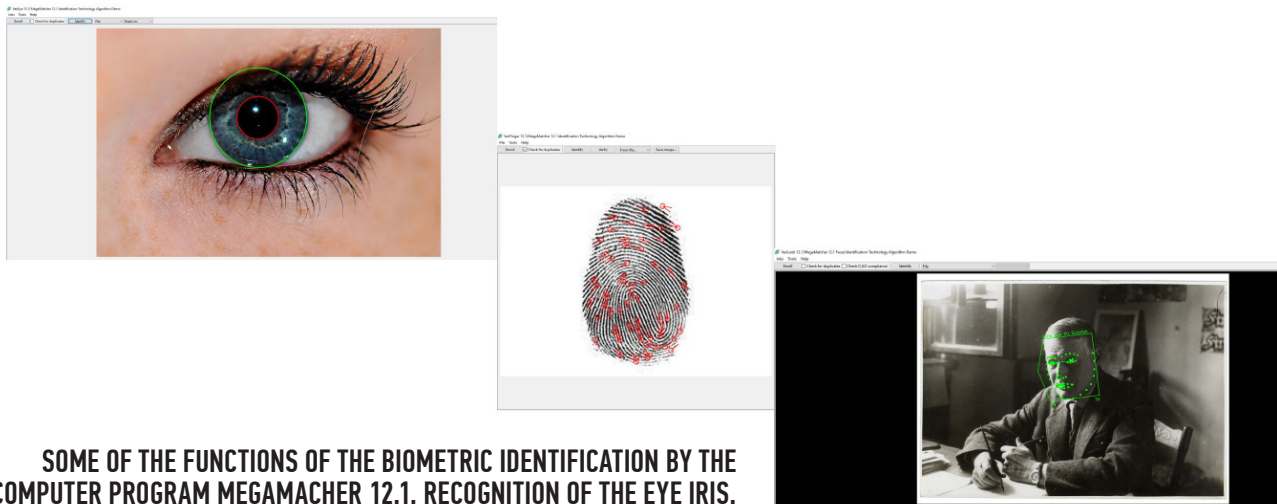
During the NATO bombing of the Federal Republic of Yugoslavia in 1999, the facilities used by the Police Academy were destroyed. From then on, until the Academy was integrated with the College for Internal Affairs into the Academy of Criminalistic and Police Studies in 2006, the work of the Academy took place in several locations — Hotel N, Military High School and Military Academy.

The Academy of Criminalistic and Police Studies was established on October 2, 2006 in the space of the former College for Internal Affairs in 196 Cara Dušana Street in Zemun. Keeping up with the trends of modern development, in 2013, it published an electronic edition of the textbook *Forensic Technology* written by Ljiljana Mašković (CDROME).

Development of basic scientific disciplines and techniques whose knowledge is applied by forensics (as the parent scientific discipline) led to the rise of a need for further improvement and development of the Academy. That is why on March 7, 2014, the Government of the Republic of Serbia reached a Decision on establishment of the University of Criminal Investigation and Police Studies for the purpose of police education.

In 2018, the Academy of Criminalistic and Police Studies transformed into the University of Criminal Investigation and Police Studies. The University has three departments: Department of Criminalistics, Department of Informatics and Computer Science and Department of Forensic Engineering. The start of operation of the University marked a modern moment in the development of higher education and advancement of professional staff specialised for forensic-police and security affairs.

On the foundations of forensic technology, laid by Dr Archibald Reiss with his collaborators, starting from 2005, the work at the Ministry of Internal Affairs of the Republic of Serbia was continued by the National Forensic Technology Centre. In 2020, it changed its name to National Forensic Centre. The Centre operates under the auspices



SOME OF THE FUNCTIONS OF THE BIOMETRIC IDENTIFICATION BY THE COMPUTER PROGRAM MEGAMACHER 12.1. RECOGNITION OF THE EYE IRIS, FINGERPRINT RECOGNITION AND FACIAL RECOGNITION.

(Source: Print screens)

of the Criminal Force Directorate and it essentially represents an institution of reference in the country for all forensic technology works. Its work is closely related to the modern development of forensics in Serbia. In 2005, the National Forensic Technology Centre employed only 30 experts, but nowadays, their number grew to around 130, which testifies of the constant growth of the scope of forensic work.

The main task of the National Forensic Centre is to perform forensic examinations, both at the crime scene and in laboratories. Laboratories of the National Forensic Centre are located in Belgrade, at 103 Kneza Miloša Street, at the Belgrade City Police Directorate, as well as forensic centres in Niš and Novi Sad. The laboratories analyse traces and objects that might help in discovery of perpetrators and solving crimes, as well as traces that belong to the suspect or have some other connection to the case.

Data for 2017 show that in average, per year, the National Forensic Centre was involved in around 16,000 cases, which differed in character and complexity, kind and scope of engagement of staff, equipment and material technical means. By entering the Information Age during the 1990s, forensics in the world, as well as Serbia, continued to quickly develop. After 2000, the National Forensic Centre developed and expanded its human and technical base, initiated international cooperation and numerous initiatives



**DEPARTMENT FOR DNA ANALYSIS
AND MANAGING OF THE DNA PROFILE
DATABASE, NFC.**

(Source: arhiva.mup.gov.rs/cms_lat/ukp.nsf/odeljenje_za_dnk_analizu.h)

and, thanks to its continuous development, successfully kept up with the forensic centres in Europe, per level, type, quality and number of examinations.

However, lack of modern equipment and devices and especially the staff, is still evident. Thanks to international cooperation, but also partly to local funds, the National Forensic Centre has had one of the most modern DNA laboratories in Europe since 2007. Regional network of centres also develops in parallel. They also founded a laboratory for voice examination, the so-called audio forensics, as well as toxicology laboratory.

Modern development of forensics can be traced as a parallel stream to the modern development of informatics. A whole spectrum of forensic disciplines has made a huge improvement in the last decades precisely thanks to the implementation of new information technologies. Development and accessibility of the data bases, as well as the explosive growth of telecommunications and the internet, are quickly changing a large number of human activities, including forensics.

Analogue approach in acquisition, processing, analysis, storage and exchange of data is being abandoned. The development of digital photography and video material is offering new possibilities, as well as new challenges. In parallel, new types of crime begin to appear – cyber-crimes become visible in all the global statistics. That leads to the development of new disciplines, so digital forensics⁸⁰ begins to grow in importance. New algorithms⁸¹ that are used for facial recognition on different grounds — movement, facial features and emotional state, are being developed. But the traditional techniques also experience new youth, so dactyloscopy enters a completely new phase of the development. Formation of fingerprint databases is not just pure copying from old analogue archives, but using modern mathematical algorithms, the data are being transformed into unique numbers that in a reverse process give a logically legible matrix. All of this significantly speeds up the search in the databases and shortens the time needed for access and exchange of data.

Of course, “Hollywoodization” of forensics has created sometimes unreal expectations in the public and the government. However, development of science and technology is a strong motivation that supports the belief that everything that we dream of today, can tomorrow become a reality.

9

FUTURE CHALLENGES



Quick growth of information technology, as well as development of other sciences and technologies, enabled so far unthinkable speed and scope of access, acquisition, storage and processing of data. The aforementioned development of digital photography and video material, as well as powerful algorithms for recognition of individual features of the population in real time on video footage, together with the possibility of tracing emotional state of individuals and groups and their movement, as well as the development of DNA analysis, unavoidably make us wonder: Can all that be misused and get out of control? Isn't personal freedom more valuable than fear and safety? Who uses these data and in what way and do they have the right to do that?

Answers to these and many other questions are still unknown. Apart from their indisputable advantages, the very accessibility of the new technologies also opens the path to easy trespassing into person's intimate life. The concern is there and the existing and future legal frameworks are yet to prove their efficiency in finding balance between the protection of human rights and protection against the crime. Regardless of the open questions, the importance of new technologies for the quality of people's lives is undeniable. It is also noticeable in forensics, and through forensics also in the protection of the citizens' rights, especially that innate right to justice and fair judgement. And in its core, that is precisely the main purpose of forensics.

1. **Marcus Vitruvius Pollio** (80–70 B.C. – a little after 15 B.C.) mentions this event in his work *De architectura*.
2. **Archimedes** (from Ancient Greek: Ἀρχιμήδης, 287 B.C. – 212 B.C.) was a Greek mathematician, physicist and astronomer from Syracuse, Sicily.
3. Division of scientific branches according to the recommendation by OECD.
4. **Song Ci** (Chinese: 宋慈, 1186–1249) was a Chinese physician, judge, forensic medical scientist, anthropologist and writer of the Southern Song dynasty. He was the first known anthropologist who wrote a groundbreaking book titled *Collected Cases of Injustice Rectified* (*Xi Yuan Ji Lu*).
5. **French Revolution** (1789–1799) was an important event for the history of France, Europe and Western civilisation. In that period, Republic took over from Absolutistic monarchy as a form of government, while the Roman Catholic Church was forced to make radical reorganisation. The Revolution is considered to be the greatest turning point in the history of the West — from the time of absolutism and aristocracy to the era of civil society as the driving political force.
6. **Toxicology** (from the Ancient Greek words τοξικός “poisonous”, and λόγος “subject matter”) is a scientific discipline that involves the study of the adverse effects of chemical substances and poisons on living organisms. It studies symptoms, mechanisms, treatment and diagnosing of biological poisoning, especially of humans.
7. **Anthropology** is a science that studies the human similarities and differences, including the origins of humans, their traditions, beliefs and other social and cultural norms. Anthropology is a collective name for disciplines that study human being from biological, social and linguistic point of view.
8. **Photography** is a medium obtained by the reaction of light-sensitive surface to light. Photography may exist in physical form (on paper, glass, sheet, etc.) or in electronic form (on a screen, by projecting on a certain background, etc.). The same name is used for both technical activity and artistic discipline.
9. **Statistics** is a field of mathematics that deals with acquisition, analysis, interpretation, explaining and presentation of data. It is applied in a wide range of scientific disciplines.
10. **Telegraph** (from the Ancient Greek words τῆλε «at a distance» and γράφειν “to write”) represents any device or a system for long-distance transmission of messages using a special signalling system. The transmission technique is called telegraphy. In 1837, Samuel Morse did the first successful experiment with electromagnetic telegraph. Today, when we say telegraph, we think of electromagnetic telegraph. As a means for signal transmission they used copper wire. In Serbia, the first electromagnetic telegraph was put into operation in 1855. A special police service which protected the telegraphic poles was formed that same year.
11. **Telephone** (from the Ancient Greek words τῆλε «at a distance» and φωνή “sound”) is a long-distance communication device, which receives and transmits sound (mostly human voice). Basically, the telephone operates by transmitting electrical signal across a complex system of telephone networks which allows communication of almost all telephone users with any other telephone user.
12. **Ballistics** is a science concerned with motion of projectiles under the influence of propellant charge. It is divided into internal and external ballistics.

13. **James Marsh** (1794–1846) was a British forensic chemist who invented the so-called Marsh test for detecting arsenic.
14. **Marsh test** is a highly sensitive method in the detection of arsenic, especially useful in the field of forensic toxicology when arsenic was used as a poison. It was developed by the chemist James Marsh and first published in 1836.
15. **Criminal proceeding** is a legal process according to criminal law. Although the criminal procedures largely differ depending on the jurisdiction, the procedure usually starts with raising formal criminal charges against a person that is being judged regardless of whether it is at large on bail or in prison, and it results in conviction or acquittal of the defendant.
16. **Jean Servais Stas** (1813–1891) was a Belgian analytical chemist who co-discovered the weight of carbon.
17. **Alexandre Lacassagne** (1843–1924) was a French physician and criminologist who was a native of Cahors. He was the founder of the Lacassagne school of criminology, based in Lyon and the main rival to Lombroso's Italian school.
18. **Alphonse Bertillon** (1853–1914) was a French police officer and biometrics researcher known as the pioneer in the use of anthropological techniques of anthropometry (later known as “bertillonage”) as a system for human identification. Anthropometry is considered to be the first scientific system that the police used for the purpose of identifying offenders and creating criminal records, therefore, Bertillon is considered to be one of the pioneers of forensics. Bertillon is also known as the inventor of police photography, i.e. photographing of perpetrators from several angles for the purpose of their identification.
19. **Alfred Dreyfus** (1859–1935) was a French military officer, best known for being the centre of the Dreyfus Affair. He was convicted to a life in prison without valid evidence, but after a huge uproar of the public and engaged action by writer Emile Zola, the proceedings were repeated in 1898. His sentence was reduced by 10 years, but in 1906, in a repeated trial, the evidence was compromised by forensic analysis and the true perpetrator was discovered, so Dreyfus was exonerated.
20. **Paul Jeserich** (1854–1927) was a German chemist and a pioneer in the field of blood traces. He was mostly active in the field of forensics, especially biological traces and ballistics, where he was one of the first scientists to match a fired bullet to a correct gun using micro-photography.
21. **Georg Popp** (1861–1943) was a German chemist and University professor in Frankfurt. Popp was one of the founders of microscopic and scientific criminalistics, and by that also of “modern forensic medicine” at the University Johan Wolfgang Goethe in Frankfurt am Maine.
22. **Rashid-al-Din Hamadani** (رشیدالدین همادانی, 1247–1318) was a statesman, historian and physician in Ilkhanate-ruled Iran.
23. **Johann Christophe Andreas Mayer** (1747–1801) was a German anatomist. Mayer worked in Berlin and later Frankfurt. In 1788, he was the first European to recognize that fingerprints were unique to each individual.
24. **Jan Evangelista Purkyně** (1787–1869) was a Czech anatomist and physiologist. In 1839, he coined the term “protoplasm” for the fluid substance of a cell. He was one of the best known scientists of his time. Such was his fame that when people from outside of Europe wrote letters to him, all that they needed to put as the address was «Purkyně, Europe».
25. **Thomas Bell** (1792–1880) was an English zoologist, surgeon and writer.
26. **Erhard Friedrich Leuchs** (1800–1837) was a German editor and agriculture writer. In 1820, he took over the editing of the commercial newspapers in Nurnberg. He independently studied natural and agricultural sciences.
27. Inman and Rudin, *The Principles and Practice of Criminalistics*, Boca Raton, 2001, 329–343.

28. **John Davy** (1790–1868) was a Cornish doctor and an amateur chemist. During his career, Davy discovered phosgene, silicon tetrafluoride, and concluded that chlorine was an element.
29. See more in: Nevenka Knežević-Lukić, *Nastanak i razvoj naučno-tehničke policije u Srbiji (1904-1941)*, unpublished doctoral thesis, University of Belgrade, 2019.
30. **Anthropometry** is a method for measurement of morphological characteristics of human body and its segments. It used to be used in forensics for identification.
31. **Dactyloscopy** (from Ancient Greek words δάκτυλος “finger” and σκοπέω “to look”, which would roughly translate to “looking at a finger”) is a forensic discipline that deals with the study of papillary lines, formed in different ridges on fingertips and on finger knuckles, palms and soles of feet, for the purpose of identifying and proving identity of living and deceased persons, as well as perpetrators based on the traces of papillary ridges.
32. Richard Bach Jensen, „The International Anti-Anarchist Conference of 1898 at the Origins of Interpol”, *Journal of Contemporary History*, No 2/1981, 322–323.
33. **Cobbler’s glue** was made by cooking flour in boiling water. After some time, it would turn sour, get an unpleasant scent and become poisonous.
34. Retrieved from <https://ihtm.bg.ac.rs/rs/o-нама-историја> on February 16, 2021.
35. *Ibid.*
36. **Pavle Ilić** (1810–1874), born in the modern-day Zrenjanin, was the first state scholarship holder-pharmacist, who was given a scholarship by Prince Miloš to complete his studies in Pest and then later another 100 thalers to pick up his diploma, with an obligation to return to Serbia after he completes his studies. Pavle Ilić returned to Serbia as a magister of pharmacy in 1835 and put himself at the Prince’s disposal. The Prince gave him an assignment to perform all preparatory works for opening of a pharmacy in Kragujevac. In 1859, he was appointed Head of the State Chemical Laboratory.
37. Apart from the forensic chemical and medical analyses, which included analysis of stomach contents, blood stains, semen, medicines, poisons, drinking water, food and spices, the Laboratory also analysed agricultural products, soil, fabric, colours, oils, ores, metals, alloys, coals, slack shales, industrial water, wax candles, paper, flammable objects, false money, etc.
38. Retrieved from <https://kultura.rs/objekat/372-државна-хемијска-лабораторија> on February 16, 2021.
39. Retrieved from <http://www.ius.bg.ac.rs/prof/materijali/savsl0/Predavanja%20Pravni%20fakultet%20.pdf> on February 16, 2021.
40. **Dr Karlo Pacek** (1807–1876) was a physician of Slovak origin, born in Mezőberény in Hungary. He came to Serbia in 1833. He was the personal and court physician of Prince Miloš Obrenović and later also of princes Mihailo and Milan Obrenović and one of the organisers of the civil Health service and Medical Corps in Serbia.
41. **Emmerich Lindenmayer** (1806–1884) was born in Austria. He was promoted to a physician in Pest in 1832 and he came to Serbia in 1835. First, he was a physician of the Podrinsko-Savska Command with the headquarters in Šabac, from 1837 a physician at the Military Hospital in Belgrade and then, from 1930 guard physician in Kragujevac and finally from 1845, Head of the Health Service of the Ministry of Internal Affairs. He worked on organisation of military hospitals and quarantine service, as well as building and organisation of medical spas in Serbia. He introduced compulsory chemical analysis in poisoning cases. He died in 1893 in Belgrade.
42. **Aćim Medović** (1815–1893) was a physician and a writer, the first president of the Serbian Medical Society, secretary of the Medical department at the Ministry of Internal Affairs, a physician of Požarevac District and professor of forensic medicine at the Great School in Belgrade.

43. **Milan Jovanović Morski** (1834–1896) was Serbian physician, academician of the Serbian Royal Academy, writer and national worker, world traveller and travel writer. Due to his frequent overseas travels (as a ship's physician for passengers) to Orient and India, he was called "Morski" and "Bombajac". He published numerous professional and popular books, theatre works and travel books. In Serbia, he was a regular member of the Department of Natural and Mathematical Sciences and Department of Arts of the Serbian Learned Society, as well as the secretary of the Serbian Medical Society.
44. **Anatomical Pathology Department** is an institution within the city and state hospitals that solves practical tasks in the field of anatomical pathology. It was established in Serbia as part of the General State Hospital. (*Srpske novine*, issue no. 80, year XLIX, Belgrade, April 10, 1881, 1–50).
45. **Eduard Mihel** (1864–1915) was a Serbian physician and pathologist of Czech origin, public hygiene officer at the Health Service of the Ministry of the Internal Affairs, a regular member of the Main Sanitary Council of the Kingdom of Serbia, one of the initiators of the establishment of the Faculty of Medicine in Belgrade, a member of the Commission for taking exams for physicians, a member of the Serbian Medical Society and as a military doctor, participant in the Balkan Wars and the First World War.
46. **Hans Kundrat** (1845–1893) was an Austrian pathologist born in Vienna.
47. **Eduard von Hofmann** (1837–1897) was an Austrian physician who was a native of Prague. He was a pioneer of modern forensic pathology. In 1875, he became a professor of forensic medicine at the University of Vienna.
48. **Paul Camille Hippolyte Brouardel** (1837–1906) was a French pathologist, hygienist, and member of the Académie Nationale de Médecine. Doyenne of French forensic medicine. From 1884 to 1904 he was chair of the Consultative Committee of Hygiene, and in 1899, he was elected president of the French Association for the Advancement of Sciences.
49. **Dr. Milovan Milovanović** (Negotin, 1884 — Belgrade, 1948) was a Serbian physician, regular member of the Serbian Medical Society, long-term chief of the Anatomical Pathology Department of the General State Hospital, the first professor of forensic medicine at the Faculty of Medicine and dean of the Faculty during the school year 1943/1944, as well as a lecturer in the field of forensic medicine at the Faculty of Law in Belgrade.
50. **Faculty of Medicine in Belgrade** is a member of the University of Belgrade. It was officially opened on December 9, 1920 by Milan Jovanović Batut's speech at the ceremonial hall of the University. After that, the accession lecture by Dr. Niko Miljanić, professor of anatomy, marked the start of the education at the Faculty.
51. The Principality of Serbia adopted the *Rules for inventory of people, properties and income* on March 19, 1862 based on the order of Prince Mihailo.
52. **Penal system** is a prison system, i.e. the system of limiting freedom of movement and actions.
53. **Đorđe A. Genčić** (Veliki Izvor, Zaječar 1861 – Belgrade, 1938) was an industrial, mine owner, minister of internal affairs during the rule of king Aleksandar Obrenović, political "leader" of the conspiracy against the king Aleksandar and mayor of Niš (1894–1899).
54. Welt no. 26248 from December 10, 1899 by the minister of internal affairs Đorđe Genčić to all the county police offices, IAB-1-1899-2119-259.
55. The magazine was founded by journalist Naum Dimitrijević as a professional newsletter for all police organisations. The first issue of the *Glasnik* was published on August 9, 1897.
56. National Assembly adopted it and King Petar I signed it on December 20, 1904/January 2, 1905 (*Srpske novine*, issue no. 278 from December 21, 1904).

57. **Dušan Alimpić** (Barič, June 15, 1873 – Belgrade, October 5, 1930) was a lawyer, clerk, member and administrator of the Belgrade City, inspector and chief of the Ministry of Internal Affairs, as well as the head of the Anthropometric Police Department which was established thanks to his efforts.
58. **Ivan Vučetić** (Juan Vucetich Kovacevich, Hvar, July 20, 1858 — Dolores, January 25, 1925) was an Argentinian anthropologist, police inspector and an inventor.
59. Simon A. Cole, *Suspect Identities: A History of Fingerprinting and Criminal Identification*, Cambridge, 2001, 128–129.
60. **Sir Edward Richard Henry**, 1st Baronet (1850–1931) was the Commissioner of the Metropolitan Police from 1903 to 1918. He is best remembered today as an inventor of the “Henry” method of fingerprint classification system.
61. **Aleksandar J. Andonović** (Valjevo, 1881 – Belgrade, 1942) was a lawyer, police officer and a long-term chief of Technical Police.
62. **Rodolphe Archibald Reiss**, (Hausach, Grand Duchy of Baden, July 8, 1875 – Belgrade, August 7, 1929) was a German-Swiss forensic scientist, writer, doctor of chemistry and professor at the University in Lausanne. He distinguished himself as a criminologist with his work on the investigation of crimes against the Serbian population during the First world War. Thanks to his efforts, Institute of Scientific-Technical Police was founded on September 1, 1909 as a special section of the Faculty of Law at the University in Lausanne.
63. „Comment les Austro-Hongrois ont fait la guerre en Serbie: observations directes d’un neutre“ (1915). Published in France with a print run of 80,000 copies.
64. Nina Kapetanović, „25 godina rada Tehničke policije, ‘Policijskog glasnika’ i Aleksandra Andonovića“, *Pravda*, issue no. 50 from February 22, 1930.
65. *Policija*, issue no. 1-2/1922, 53-55.
66. Ivana Krstić-Mistrizelović, “Archibald Reiss and the first Police School in Belgrade”, in: *Archibald Reiss Days*, Belgrade, 2011, 165–171.
67. *Ibid.*
68. Nevenka Knežević-Lukić, *Nastanak i razvoj naučno-tehničke policije u Srbiji (1904-1941)*, unpublished doctoral thesis, University of Belgrade, 2019, 243.
69. **Vladeta Milićević** (Samaila, 1898 – Belgrade, 1969) was a Serbian intelligence officer, diplomat and politician who distinguished himself in a fight against the Ustasha emigration between the two world wars.
70. **Živojin Simonović** (Belgrade, 1889 – Belgrade, 1952). He began his career as a civil servant in 1908 as a clerk at the National Assembly. From 1910 to 1914, he worked at the State Newspaper Agency, State Council and Ministry of Internal Affairs: during the First World War, he was a clerk at the consulates in Athens and Thessaloniki, commissioner of the port in Corfu (1917) and officer at the Serbian Embassy in Rome. From 1919, he worked at the Anthropometric Department. In 1920, he became a secretary of the Ministry of Internal Affairs and editor of the *Policijski glasnik*. He was one of the founders of Technical Police and the first Police School in 1921. In 1924, he established private police bureau *Bezbednost*. From 1929, he again worked at the MIA as a head of the section, then advisor and in 1936, he was elected one of the vice chairmen of the International Commission of Criminal Police. For a short period, he was the administrator of the Belgrade City (February 9, 1939 – April 20, 1939), then assistant to the ban of Zetska and finally Moravska Banate. He was retired in March 1941, while he was an assistant to the minister of Internal Affairs. During the Second World War, he refused to engage in the work of the local administration, so his pension was discontinued. After the liberation of the country, he worked at the Ministry of Internal Affairs as a criminology expert until he retired in 1951. He died on August 11, 1952. He advanced his education at Ottolenghi’s school in Rome and Reiss’ Institute in Lausanne and wrote about the Italian and French police in the magazine *Policija*.

71. **Jovan Savić** was a graduate lawyer and from 1941, he was the head of the Technical Police Department as a police advisor.
72. **Edmond Locard** (1877–1966) was a French criminologist, the pioneer in forensic science who became known as the “Sherlock Holmes of France”. He formulated the basic principle of forensic science: “Every contact leaves a trace”. This became known as the Locard’s exchange principle.
73. **Enrico Ferri** (1856–1929) was an Italian criminologist and politician. From 1884, he was a professor of criminal law at the universities in Italy. From 1886, he was a member of the Italian Parliament. In 1919, he was the head of a commission for production of a draft of criminal law and many of its provisions were included in the Fascist Italian criminal law in 1930. He made a significant contribution to the development of the ideas of the school of positivist criminology.
74. **Myhaylo Chubynsky** (Михайло Павлович Чубинський, 1871–1943) was a lawyer, specialist of criminal law and criminologist, representative of the sociological school of criminal law and criminology. As a part-time professor at the University in Belgrade he held a course in penal politics. At the same time, he worked at the Permanent Legislative Council with the Ministry of Justice of the Kingdom of SCS, and later he worked at the commission for production of a new criminal law. From 1922, he was a full-time professor at the Department of Criminal Law, branch of the University of Belgrade, located in Subotica. With the help of Chubynsky, Institute of Criminology and museum were established in 1925 in Belgrade. During this period, Chubynsky prepared and published his works *Tasks of Unification of Criminal Laws* (1921), *New Reforms of the Justice System* (1924) and *Education in Criminal Sciences and a Need for New Institutions* (1924). Together with Serbian criminal law expert Toma Živanović, M. Chubynsky developed a draft of the Criminal Law of the Kingdom of SCS in 1929.
75. **Toma Živanović** (Paraćin, February 6/18, 1884 – Belgrade, March 31, 1971) was a professor at the Faculty of Law in Belgrade, theoretician of criminal law and a philosopher of law, known for introduction of three-party system in the criminal law (criminal act — guilt — punishment), which contributed to the objectivization of criminal law. He participated in the establishment of the Institute of Criminology at the Faculty of Law in Belgrade in 1929.
76. Upon the initiative of Myhaylo Chubynsky, the Institute of Criminology at the Faculty of Law in Belgrade was established in 1929. The Institute’s main goal was scientific research of crimes, professional advancement and education of court and police staff.
77. Ivan Janković, „Kriminalistički institut Pravnog fakulteta u Beogradu, 1927-1945“, *Pravni zapisi*, issue no.2/2015, 326–346.
78. **Sergey Tregubov** (Sankt Petersburg, October 24, 1866 – Birkenverder, near Berlin, July 29, 1945). Famous Russian lawyer, professor of criminal law, criminologist, secret advisor, senator and public persona. In 1910, he was sent to Berlin, Dresden and Lausanne to get acquainted with the organisation of their dactyloscopy bureaus and in 1911, he led a group of officers at the Law Department of the Russian Ministry of Justice, who took Reiss’ scientific police course in Lausanne during July and August. Thanks to him, in 1912, a Laboratory for forensic examination was established at the Alexandrovskaya Military Law Academy. After the evacuation of Crimea in 1920, he moved to Belgrade. He contributed to the organisation of the Technical Police of the Ministry of Internal Affairs of the Kingdom of SCS. He was one of the founders and a professor at the Institute of Criminology at the Faculty of Law in Belgrade (1929) and advisor at the Ministry of Internal Affairs. As a Yugoslav delegate, he participated in the international criminology congresses.

79. Sergej Tregubov, Aleksandar Andonović, *Kriminalna tehnika. Naučno-tehničko istraživanje krivičnih dela*, Belgrade, 1935. Boris Brasol, „Криминална Техника [Criminal Technique]” review of *Kriminalna Tehnika* [Criminal Technique] by Serge N. Tregouboff and Alexander J. Andonovic, *Journal of Criminal Law and Criminology* (1931–1951) 26, 5 (1936), 799–802.
80. **Digital forensics** marks the application of scientific methods with the aim of identifying, collecting, analysing, interpreting, documenting and presenting digital evidence from different sources of digital data in order to reconstruct criminal acts (most often in relation to the crimes in the field of cybercrime). Digital evidence is every information in a digital format, which can be saved or transferred, and which has a probative credibility (in a court proceeding) and can indicate a connection between a criminal act and the perpetrator and a criminal act and the victim. Forensic tools enable recovery and analysis of some deleted, hidden and temporary files that cannot be accessed in a usual manner.
81. **Algorithm** is a final and precisely defined process, a set of precisely defined rules, which transforms input into output information, or describes the performance of a procedure. Today, the word algorithm is often connected with computer science, but in general, algorithm can be seen as an instruction for performing a certain task or solving a problem. That is how instruction for sending a man on the Moon and instruction for making Russian salad both consist of a series of steps or actions that need to be done and which lead to the fulfilment of a goal or solving of a problem.



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