History of Ophthalmology

https://doi.org/10.31288/oftalmolzh202355962

Postage stamps as a means of propaganda to promote eye examination and vision screening

A. R. Korol [1], O. M. Blavatska [3], K. V. Troianovska [1], I. I. Zheltvai [2],

[1] SI "The Filatov Institute of Eye Diseases and Tissue Therapy of the NAMS of Ukraine"
Odesa (Ukraine)

[2] O.V. Bogatsky Physico-Chemical Institute of the NAS of Ukraine
Odesa (Ukraine)

[3] Danylo Halytsky Lviv National Medical University,
Lviv (Ukraine)

This paper deals with representation of eye examination and eye disease prevention methods in philately. The work represents the primary methods used for eye disease diagnosis and demonstrates the role of stamps in raising awareness among people regarding basic medical knowledge. The article is supplied with illustrative material, explanatory descriptions and comments.

Keywords:
ophthalmology, diagnosis, healthcare, philately, stamps

Philately is a field of collecting which can provide a lot of new information to interested individuals like researchers, science historians and just people who like learning new, interesting and useful things. A small piece of paper (a stamp, block of stamps, envelope or maxicard) can sometimes tell more than a book. Publications on collecting postage stamps can be seen not only in philatelic magazines, but also in reputable academic journals.[1-4] Medicine is no exception, with lots of stamps dedicated to this field of science.[5-6] There are collectors of ophthalmology-related stamps who share their information and experience in journal publications [7-10] and conference reports.[11-12] Most of these publications are related to the history of ophthalmology or commemorate prominent ophthalmologists and historical figures with eye problems.

Before discussing representation of methods for eye examination and eye disease diagnosis, we will consider some stamps which feature an image of the eye. Thus stamps from Mexico and Sweden depict a sectioned human eye with its structural components. The Mexican stamp (1) was issued in 1970 to commemorate the XXI International Congress of Ophthalmology in Mexico City. The Swedish stamp (2) was issued in 1984 to honor David Hubel and Torsten Wiesel as Nobel Prize winners for Physiology or Medicine.

The human eye as an optical system is more advanced and adaptable than the most sophisticated camera in the world. The optical system of the eye comprises a set of lenses (the cornea and crystalline lens), the diaphragm (the iris) and the film (the retina) (3-4). Our ideas about the human optical system were formed as early as the Middle Ages. The French philosopher and mathematician René Descartes (1596 - 1650) (5-6) formulated the laws of light refraction and proposed that a change in the shape of the lens enables accommodation. Johannes Kepler, a German astronomer (1571-1630) (7-9), was interested in optics and explained the role of the crystalline lens in the image-forming process. Points in space were imaged on the retina to form an inverted, real image owing to refraction by the cornea and lens. He (a) established that the image will be blurred if the light is focused in front of or behind the retina and (b) went on to describe how eyeglasses work to correct this ametropia. Many of those prominent scientists who contributed to further understanding of the physiology of vision were awarded the Nobel Prize.

Stamps (10-11) depict Jan Evangelista Purkyně, a Czech biologist and physiologist, who founded the Physiological

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

Fig. 7

Fig. 8

Fig. 9

Fig. 10

Fig. 11

Fig. 12

Fig. 13

Institute in Wrocław, which was the first such institute in the world. His microscope studies of ultra-thin tissue sections contributed significantly to the development of cell theory which refers to the idea that cells are the basic units of structure in every living thing. Purkyně was the first to show that different ocular media differ in refraction and that the size of the image on the retina depends on the curvature of the refractive ocular media. His studies on visual perception provided a foundation for ophthalmometry and ophthalmoscopy and persuaded him that visual system functions were mediated by both peripheral and central nervous structures. Purkyně devised a simple perimeter to make quantitative measurements of the visual field. He was the first to observe that as the light intensity decreases reds appear darker and blues become brighter ("Purkyně phenomenon").

Franciscus Cornelis Donders (1818-1889) (12), a military surgeon and physiologist, set up the first ophthalmic hospital in the Netherlands. In addition, he published a series of works in ophthalmology which became classical, and brought forward the use of prismatic glasses in strabismus.

In 1989, Finland's postal service issued a stamp (13) commemorating the 31st Congress of the International Union of Physiological Sciences (Helsinki, 1989) and depicting silhouettes of Ragnar Arthur Granit (1900-1991) and Robert Adolph Armand Tigerstedt (1853 – 1923). Professor Granit conducted studies on the sensory structure of the retina and was one of the three co-recipients of the 1967 Nobel Prize for Physiology or Medicine for discoveries concerning the primary physiological and chemical visual processes in the eye.

Allvar Gullstrand (1862-1930) (14) was born in Landskrona, Sweden. He was lecturer of ophthalmology at the Karolinska Institute, Stockholm, and subsequently was appointed professor of diseases of the eye at the University of Uppsala. In addition, he was recipient of the 1911 Nobel Prize for Physiology or Medicine for his research on the eye as a light-refracting apparatus.

A child makes the acquaintance of an ophthalmologist very early in life. The aim of vision screening in newborns and early childhood is to detect abnormalities that can lead to severe visual impairment. An absent red reflex, or leukocoria is such an abnormality and may indicate congenital cataract or a more serious pathology like retinoblastoma. Acute purulent conjunctivitis is also common in infants. Regular eye examinations in infants are a must because they help detect eye disorders long before the symptoms are manifested. Stamps (15-19) depict different phases of eye examination in newborns. Stamps showing pictures of this kind remind people on the importance of regular medical examinations. It is interestingly that the two stamps issued in 1950 for Cameroon (16) and Saint Pierre and Miquelon (17) (at that time overseas territories of France) have a common design. At that time it was common for the Post Office of France to issue stamps of a common design for French colonies, protectorates and overseas territories, and these stamps could differ from each other in terms of denomination and/or color. The pictures depicted on stamps (20-22) remind us on the importance of regular eye examinations in teenagers.

Assessment of visual acuity is the first mandatory step to any ophthalmic evaluation. Visual acuity is assessed using the Snellen chart which is composed of rows of progressively smaller letters (23). Fragments of these charts can be seen on the stamps from Malagasy Republic (24), Syria and Macao (25-26). Letter patterns vary corresponding to the alphabet approved in a particular country. The Sivtsev-Golovin chart is used in some post-Soviet countries with Cyrillic alphabets. The artists who designed stamps (27-28) for Hungary and Guyana have demonstrated an imaginative and humoristic approach, displaying Walt Disney's characters as doctors and patients. The stamp from Guyana was valued $30 when issued in 1995 and $5 when re-issued in 1996. It is likely

Fig. 14

Fig. 15

Fig. 16

Fig. 17

Fig. 18

Fig. 19

Fig. 20

Fig. 21

Fig. 22

Fig. 23

Fig. 24

Fig. 25

Fig. 26

Fig. 27

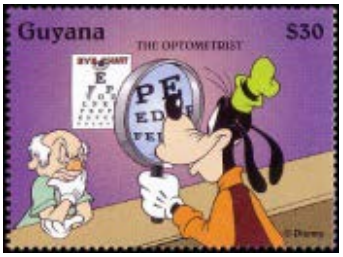

Fig. 28

Fig. 29

that this type of visual acuity assessment is shown on the stamp from Trinidad and Tobago (29), although it is not completely understood what for the ophthalmologist needs a stethoscope. It should be noted that inconsistencies of this kind are common in postage stamp designs, with the identification and research of these inconsistencies making up a particular interesting field of philately.

Hermann von Helmholtz (1821-1894), a prominent German optician, contributed greatly to the practice of examining the eye and diagnosing eye disease. He investigated eye movements and discovered the mechanism by which accommodation (the process by which the eye adjusts to see the near and far objects) is achieved. In 1851, Helmholtz invented the ophthalmoscope, a tool enabling observation of the retina and detection of retinal pathology. The German post office issued a specially stamped envelope (30) with a cachet featuring an ophthalmoscope and a stamp showing a portrait of Hermann von Helmholtz and the cross-sectioned eye to commemorate the centenary of Helmholtz' death. In addition, portraits of Helmholtz can be seen on the stamps issued by German Democratic Republic (GDR) to commemorate 150 years of his birth (31) and 250 years of the establishment of German Academy of Science at Berlin (32).

Albrecht von Graefe (1828-1870) was the first to use ophthalmoscope in medical practice. The GDR stamp (35) depicts his portrait with an early version of the ophthalmoscope, and the Federative Republic of Germany (FRG) stamp (33) features a fragment of his statue located close to the Charite Hospital in Berlin. Stamps (34, 36) show the process of examining the patient's eye with an ophthalmoscope. Interestingly, a stamp issued in

Fig. 30

Fig. 31

Fig. 32

Fig. 33

Fig. 34

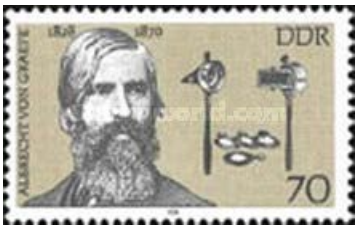

Fig. 35

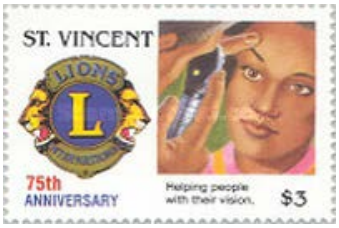

Fig. 36

Fig. 37

Fig. 38

Fig. 39

Fig. 40

Philippines features Dr. Jose Rizal, an ophthalmologist, statesman and the father of modern Philippines, examining the eye with an ophthalmoscope in a dark room.

A slit lamp is an important tool in the ophthalmologist's diagnostic armamentarium, and allows performing biomicroscopy of the conjunctiva, cornea, sclera, eyelids, iris, and lens. The first prototype of a slit lamp appeared as early as 1823, when the physiologist Purkyně (10-11) tried to use one loupe for magnification, and another loupe for focusing strong lateral illumination light. However, the first full-device was developed by Allvar Gullstrand (14). The first country to issue a stamp depicting the slit lamp was Guinea in 1960. Subsequently, it was depicted on the 1976 "Foresight Prevents Blindness" ("Prévention de la Cécité") commemorative stamp of Togo (38) and colourful maxicard from Germany (37). The Bolivian stamp showing the slit lamp was issued in 2011 to commemorate the friendship and cooperation between Bolivian and Cuban physicians (39).

The selected philatelic material outlined in this paper promotes the importance of eye disease prevention and diagnosis. Stamp collecting and research is an important and objective source of information which can be used to promote healthy lifestyle and to teach the history of medicine.

References

1. Miller FA. A Postage Stamp History of Chemistry. Appl Spectrosc. 1986;7:911-24.
2. Ullman AH. Analytical Chemists on Postage Stamps. Anal Chem. 1982 Jun;54(7):780A-785A. doi: 10.1021/ac00244a001.
3. Graham RP. Analytica chimica philatelica. Talanta. 1971 Nov;18(11):1157-61. doi: 10.1016/0039-9140(71)80228-x.
4. Bartet DP, Aguila EG. Teaching the Concepts of Metallurgy through the Use of Postage Stamps. J Chem Educ. 1987;6:526-8.
5. Bluefarb SM. The History of Dermatology as Depicted on Postage Stamps. AMA Arch Derm. 1959 Aug;80(2):171-86. doi: 10.1001/archderm.1959.01560200039004.
6. Gursu HA, Cetin II. The history of paediatric cardiology on stamps. Cardiol Young. 2018 Jan;28(1):1-8. doi: 10.1017/S104795111700141X.
7. Blodi FC. Blindness and the eye in mythology and religion as represented on postage stamps. Doc Ophthalmol. 1988 Mar-Apr;68(3-4):401-21. doi: 10.1007/BF00156446.
8. Dietrich HH. [Ophthalmologists on postage stamps. A contribution to the history of medicine]. Klin Mbl Augenheilkd. 1989 Feb;194(2):133-8. German. doi: 10.1055/s-2008-1046350.
9. Blodi FC. Some famous persons with visual problems as shown on postage stamps. Doc Ophthalmol. 1991;77(4):295-34. doi: 10.1007/BF00156973.
10. Bugaievskii KA, Bugaievskaia NA. [Prominent ophthalmologists represented in philately, phaleristics, numismatics and bonistics]. Vestnik Soveta molodykh uchenykh i spetsialistov Cheliabinskoi oblasti. 2016;3:17-27. Russian.
11. Zeyen T. History of ophthalmology told by postage stamps. Ed. by Lab. Théa. KU Leuven, Belgium;2019.
12. Thakur S, Ichhpujani P. Philately and Ophthalmology. Postgraduate lecture presented at iFocus National Postgraduate Training Program in Ophthalmology. January 8-15, 2017. Hyderabad, India.