



WORLD NEUROLOGY

THE OFFICIAL NEWSLETTER OF THE WORLD FEDERATION OF NEUROLOGY

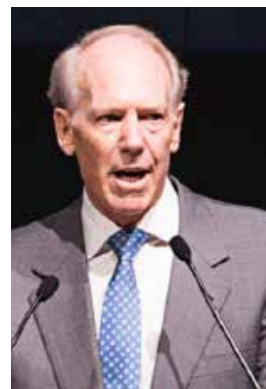
PRESIDENT'S COLUMN

XXIV World Congress of Neurology in Dubai

BY WILLIAM CARROLL

The Dubai World Congress of Neurology (WCN) was held Oct. 27-31 and was an outstanding success. On behalf of the organizing committees, I congratulate all those who worked so hard to ensure it was a successful congress and all those who participated in it to share and contribute to the success. I will first list the statistics that provide the skeleton for this assessment of the congress and then deal with those “intangibles” that make this conclusion certain.

The Opening Ceremony set the stage for the need for an increased effort to meet the burgeoning/looming crisis of non-communicable neurological disorders (NCNDs) confronting the world. In an aptly orchestrated commencement scene, two young Emirati neurologists (Dr. Reem Ahmed Al Suwaidi and Dr. Hamdan Al Zarouni) gave the bald facts of the estimated number of people facing neurological disability from dementia, stroke, migraine and headache, epilepsy,



Emirati neurologists Dr. Reem Ahmed Al Suwaidi and Dr. Hamdan Al Zarouni, and WFN President William Carroll providing their opening comments at the Opening Ceremony to the XXIV WCN in Dubai.

multiple sclerosis, and the other NCNDs, which make them the leading cause of disability and second leading cause of death globally.

Short addresses from the Director General of the Dubai Health Authority, His Excellency Humaid Alqatami, in the presence of His Highness Sheikh Ahmed bin Mohammed Al Maktoum, and

from the presidents of the Emirates Neurology Society (Suhail Al Akrun) and the World Federation of Neurology (myself) echoed the need for action. The closing item was a short but powerful visual presentation highlighting the Emirates Neurology Society and the Pan Arab Union of Neurology, the WCN, and

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XXI DAVIDENKOV READINGS NEUROLOGICAL CONGRESS

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THE FUNCTIONAL NEUROLOGICAL DISORDER SOCIETY (FNDS)

A New Organization for an Old Disorder

BY JON STONE, ALAN CARSON, AND MARK HALLETT

Functional symptoms and disorders should be familiar to any practicing neurologist. The patient has a genuine and disabling symptom, such as limb weakness, tremor, blackouts, or dizziness, but the clinical history and examination shows positive evidence that the symptom is a disorder of function, not structure.

Typically, findings of internal inconsistency, such as Hoover's sign of functional leg weakness or typical findings of a functional (non-epileptic)

seizure, should point the way and allow a positive diagnosis to be made. These are not diagnoses of exclusion, should not be made on the presence or absence of psychological factors, and can be diagnosed alongside neurological diseases that may commonly accompany them.

Studies in many parts of the world have shown that functional disorders are one of the most common reasons for neurological consultation. Despite this, the topic has often been invisible in curricula and training programs for neurologists. Patients commonly remain

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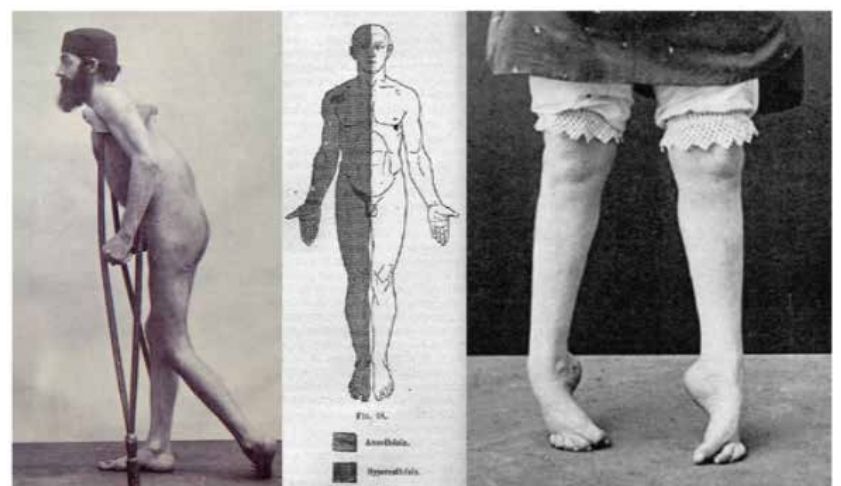


Figure 1. Photos and illustrations of functional neurologic disorders from Volume 1 of *Nouvelle Iconographie de la Salpêtrière*, Jean-Martin Charcot's “in house” journal from 1889 show how the disorder has remained clinically unchanged over time³.

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the current role of the World Federation of Neurology (WFN).

A total of 4,000 participants attended from a record number of 129 participating countries, 800 of whom were from the Middle East and North Africa. As expected, the majority of the 800, numbering some 580, were from the United Arab Emirates (UAE), Saudi Arabia, and Egypt. Despite the volatility in the region, countries such as Iran, Iraq, Lebanon, Syria, Kuwait, and Jordan had between 15 and 70 delegates each, a testament to their determination to attend and the generally helpful assistance in visa procurement from the Dubai Department of Tourism.

Overall, India had the largest number of attendees at about 400 followed by the UAE, Indonesia, the U.S., Saudi Arabia, the Philippines, China, South Korea, Egypt, and Japan with 100 making up the top 10 countries by numerical attendance. Of the total attendees who specified their professional role, 80% were clinicians or clinician researchers. Ten percent were

students or basic science researchers. Of the 64% who specified an age bracket, the age range was spread fairly evenly between those younger than 35 years old, the 35-44 year olds, the 45-54 year olds and the 55-64 year olds. Those aged younger than 45 years comprised 44% while those older than 45 years made up 56%. Altogether, these broad demographic details fit the WFN target population, although a higher percentage of younger attendees would have been more satisfying.

Nevertheless, a record number of bursaries and travel grants, 200 in all, were offered to and accepted by young neurologists from low and low-middle income countries.

Like meetings of any size, the program content and quality of the presenters is paramount to success. From the first plenary session, it was evident this was going to be the case with this World Congress. Prof. Patrik Brunden's lecture on "The Battle to Beat Parkinson's Disease" was outstanding for its clarity and message and will mark a new perspective on the future understanding and hope for disease course

modification. Prof. Russell Foster's lecture "Light, Circadian Rhythms, and Sleep: Mechanisms to New Therapeutics" was another masterful exposition of how a complex topic can be discussed with crystal-clear clarity. He described the identification of a third photoreceptor system based on photoreceptor retinal ganglion cells (pRGCs) using blue light sensitive melanopsin and how these pRGCs control the gene expression of the molecular pathway's primary circadian pacemakers within the supraoptic nucleus and then the sleep wake cycle.

Together with the other plenary lectures delivered each morning of the congress, these provided a veritable banquet of highly informative and interesting topics characteristically beyond the usual fare clinicians are exposed to. (See Figure 1.) They will undoubtedly stimulate young and older attendees to explore neuroscience and "edge" neurology with increased or renewed zeal. It is this blend of cutting-edge material presented alongside new research and clinical practice experience from the regular main topics and the teaching

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PRESS RELEASES DURING AND FOLLOWING THE XXIV WORLD CONGRESS OF NEUROLOGY IN DUBAI

Oct. 28, 2019

Esteemed Panel of World's Leading Stroke Experts Share Breakthrough Research on Relationship Between Stroke Risk and Vascular Dementia During Press Conference Broadcast via Facebook Live from XXIV World Congress of Neurology, Dubai, UAE Potential audience 92.6 million

Oct 28, 2019

New Research on Migraine in the Workplace Unveiled During Press Conference to be Broadcast via Facebook Live from the World Congress Neurology, Dubai, Oct, 8 a.m. GST Potential audience 80.58 million

Oct. 29, 2019

Effect of Climate Change on the Brain, Link to Alzheimer's and Parkinson's, to Be Key Focus of Discussion at XXIV World Congress of Neurology. Potential audience 117.7 million

Oct. 24, 2019

World Federation of Neurology Reveals New Frontiers in Epilepsy Treatment for Children, Pregnant Women and New Links Between ADHD and Epilepsy at 24th Annual World Congress of Neurology, Dubai. Potential audience 75.5 million

Oct. 23, 2019

World Federation of Neurology Joins Forces with the World Health Organization, Announcing "Groundbreaking" Reclassification of Stroke as a Disorder of the Brain; Launches Nine-Country Survey, Leading to Roadmap for Improved Neurological Care. Potential audience 86.02 million

Post Congress releases during the week that commenced Nov. 11, 2019

The Prognosis for MS is Changing Due to Advancements in Treatment and Awareness, Yet Access to Care is Top of Mind for Global Neurologists

Pregnancy No Longer Believed to Modify Trajectory of MS, Experts Say

New Biomarkers Identified in Parkinson's Disease Could Change Entire Trajectory of Parkinson's Diagnosis and Treatment

Social media during the XXIV World Congress of Neurology in Dubai

Website: Over 311K page views from 75K people of whom 78% were new users. The top 5 countries were India, the USA, the UAE, Japan and Indonesia who went to pages on Registration Abstracts and Scientific program.

Targeted Google campaigns generated more than 17K clicks and almost 2.3M views, while social media campaigns generated over 10K clicks and 900K views. •

THE PLENARIES AT THE WORLD CONGRESS OF NEUROLOGY IN DUBAI.

The battle to beat Parkinson's Disease

Patrik Brunden. *See text of President's report.*

Precision Medicine in Neurology: Contributions by the Autozygome

Fowzan Al Kuraya described how populations enriched for autozygosity can contribute through unmasking the recessiveness of informative deleterious alleles.

Reading in the Brain: Mapping the Massive Impact of Literacy

Stanislas Dehaene elaborated on the investigation of several cognitive functional systems in the human brain but concentrated on the effect of the inferior right temporal lobe visual word form area and its relation to reading and to dyslexia.

Into the Grey Zone: Detecting Covert Conscious Awareness in Behaviourally Non-Responsive Individuals

Adrian Owen described research using fMRI, EEG, and functional near infra-red spectroscopy to detect covert conscious awareness in patients in vegetative or "comatose" states and then communicate with some of these through visual imagery thoughts.

Light, Circadian Rhythms and Sleep: Mechanisms to New Therapeutics on the Underlying Mechanisms

Russell Foster. *See text of President's report.*

Treating Huntington's Disease

Sarah Tabrizi described promising disease modifying therapy approaches that target proximal pathogenetic mechanisms ranging from DNA-targeting Zn-finger proteins, transcription activator-like effector nucleases and CRISPR/Cas9, to post-transcriptional huntingtin lowering methods by RNA interference, antisense oligonucleotides and small molecule splicing modulators together with a range of developments in biomarkers and drug delivery techniques.

Imaging Pain

Irene Tracey explained the recent advances in the understanding of chronic pain in the individual by investigating the perceptual and non-perceptual changes in pain perceptual pathways induced by sensitization, amplification or attenuation through functional and structural plasticity. Importantly, chronic pain is now such a burden it is recognized as a disease in its own right in ICD-11.

What is Genomics Teaching Us About Neurodegeneration

John Hardy explained that the gene loci involved in late onset neurodegenerative disease are associated with damage response processes and the observed pathology marks the type of failed damage response.

Multiple Sclerosis

Mar Tintore outlined the advances in understanding MS, its earlier diagnosis, more effective treatments and the influence of lifestyle and co-morbidities all leading to reduced disablement.

Brain Machine Interfaces: From Basic Sciences to Neurorehabilitation

Miguel Nicolelis described groundbreaking research leading to primate brains directly interacting with mechanical, computational and virtual devices without interference of body musculature or sensory organs. Such observations are pointing to the concept that the properties of neurally-controlled robotic limbs or tools can be assimilated by brain representations as if they were extensions of the subject's body.

The Promise of the Brain Initiative for Those With Neuro/Mental/Substance Abuse Disorders

Walter Koroshetz. The changing emphasis of informed interventions based on previously invisible dynamic features of brain circuitry as opposed to the older static disease and treatment paradigms based on anatomy and pathology was highlighted in this visionary account of the impact of evolving technologies through the US Brain Research through Advancing Neurotechnologies and similarly aligned initiatives from around the world. •

XXI Davidenkov Readings Neurological Congress

St. Petersburg, Russian Federation

SERGEI V. LOBZIN, V. GOLDOBIN,
AND N. TCINZERLING

The XXI annual Davidenkov Readings Neurological Congress took place on the Sept. 26-27 in St. Petersburg, Russian Federation. The meeting is named in honor of the prominent Russian neurologist Prof. Sergei Davidenkov (1880-1961), who made substantial contributions to the development of neurogenetics and neuromuscular diseases. He described a new clinical form of myopathy, scapular-peroneal amyotrophy, and founded one of largest scientific neurological schools in Russia.

The congress was organized by S.N. Davidenkov, chair of neurology of I.I.Mechnikov North-Western State Medical University. The chair of neurology was founded in 1893 as the first Emperor Clinical Institution of the Grand Duchess Elena Pavlovna, which has continued since it remains as one of the leaders of neurology education in the Russian Federation.

Thousands of neurologists from different cities and countries from across the world gain more experience in neurology at the university annually. Close scientific and educational relationships connect our institution with the department of neurology at

the University of Bergen (Norway) as a result of great efforts and perseverance of many, especially Prof. Nils Erik Gilhus, Prof. Ole-Bjorn Tysness, Prof. Tiina Rekand, and Prof. Lars Thomassen, among others.

These relationships allowed the establishment of a most creative exchange with university teachers and students as well as PhD postgraduate students.

Cooperative studies of myasthenia, spinal cord injuries, and other disorders of the nervous system were initiated as well as annual seminars about "Neurology in Northern Europe," which bring opinion leaders from Norway and the Russian Federation.

Prof. Vladimir Semenovich Lobzin

This year's Davidenkov Readings Congress was devoted to a celebration of the 95th anniversary of honored scientist of Russia, Prof. Vladimir Semenovich Lobzin, who held our chair from 1982 until 1992.

Prof. Lobzin was the disciple of the legendary Prof. Alexander G. Panov, who in 1935 primarily described tick-born encephalitis in Vladivostok. Prof Lobzin left a huge scientific legacy: 506 scientific publications, 28 books, mostly on challenging questions of clinical



(Left to right) Prof. Alexander Skoromets (Russia), Prof. Nils Erik Gilhus (Norway), Prof. Sergei Lobzin (Russia), Prof. Raad Shakir (UK), and Prof. Wolfgang Grisold (Austria).

neurology, and 22 investigations. In 1957, he described a clinical test in myasthenia gravis (phenomenon of muscular fatigue generalization, oculopalpebral symptom). Prof. Lobzin published the first Russian monograph on myasthenia in 1960, and he managed to organize the All-Union Center for myasthenia investigation in 1971, which provided medical care for many patients with this severe disease from different parts of the

then Soviet Union.

His eponymic reference contains seven symptoms and syndromes described by Prof. Lobzin. Among them were the "three twins syndrome" in migraine (arterial hypotonia, hemicrania, and cholecystopathy, 1977), later completed by his son Prof. S. Lobzin with the "fourth twin" (craniovertebral dysplasia type

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stigmatized and poorly treated.

It was not always so. Neurologists in the 19th century, such as Charcot, Gowers, and Oppenheim, recognized that hysteria as it was known then, was a fascinating, common, and potentially treatable part of their general neurology practice. (See Figure 1.) They devoted long sections to it in their textbooks, took a multidisciplinary

view of its causes and treatment, and offered practical advice to all neurologists in how to manage it. With the rise of psychoanalytic theory and the clinicopathological method, neurologists in the 20th century largely lost interest in the condition, although they never stopped seeing the patients.

Over the last 10 to 15 years, increasingly high quality research on clinical phenotyping and diagnosis, aetiology, mechanism, and treatment has

resulted in more awareness, interest, and evidence¹. Developments in functional imaging have enabled us to study the "dynamic lesion" of FND that Charcot predicted in 1889².

The new Functional Neurological Disorder Society (FNDS) launched in 2019 and affiliated with the WFN represents another important step in neurology and medicine's relationship with these disorders.

An international meeting held in Edinburgh in 2017, generously sponsored by the Movement Disorders Society, the National Institutes for Health, American Epilepsy Society, and others, attracted 550 delegates and highlighted how FND specific services, often originating in neurological centers, have been growing over time. The focus of our organization is providing a forum for health professionals to exchange ideas, and advance research and education for the benefit of patients with FND.

Applications are open to join the new FNDS as a founding member for a limited

period until June 2020. We have organized another international meeting in Boston June 14-16, 2020, after which ordinary membership applications will be received. You are invited to join a multidisciplinary audience from neurology, psychiatry, psychology, allied health, nursing, and others. •

Jon Stone and Alan Carson are from the Centre for Clinical Brain Sciences, University of Edinburgh, in the United Kingdom. Mark Hallett is from the Human Motor Control Section of the National Institutes of Health in Bethesda, Maryland. The three also serve as leadership of FNDS: Hallett is president, Carson is treasurer, and Stone is secretary. For more information, contact Jon.Stone@ed.ac.uk.

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The 4th International Conference on Functional Neurologic Disorders, and the first organized by the new Functional Neurological Disorder Society, will meet in June 2020.

SAVE THE DATE

4th International Conference on Functional Neurological Disorders

June 14 - 16, 2020
Boston University
Boston, MA | USA



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FROM THE EDITORS

BY STEVEN L. LEWIS, MD, EDITOR,
AND WALTER STRUHAL, MD, CO-EDITOR

We would like to welcome all of you to this issue of *World Neurology*, the official newsletter of the World Federation of Neurology (WFN), and the first issue since returning from the very successful 24th World Congress of Neurology (WCN) held in Dubai, United Arab Emirates at the end of October, 2019. As such, much of this issue is devoted to highlighting the many activities of this remarkable Congress, including the detailed report/President's Column from WFN President Dr. William Carroll, who also highlights and details the many outstanding plenary sessions that the thousands of delegates who attended the WCN were privileged to attend, as well as the press releases and activities that informed countless others around the world. Dr Richard Stark, WFN Treasurer, provides his report of the exciting and highly attended Tournament of the Minds that culminated in a nailbiting final event that occurred just prior to the closing ceremony of the Congress. We've also chosen some representative images of the many activities



STEVEN L. LEWIS, MD



WALTER STRUHAL, MD

that occurred during the WCN in a photo montage that we hope provides a flavor of the breadth of this important and remarkable international neurologic event.

With regard to other recent neurologic meetings, Drs Sergei V. Lobzin, V. Goldobin, and N. Tcinzerling report on the many activities, and the historical significance of, the 21st Davidenkov Readings Neurological Congress that was held in St. Petersburg, Russia in September 2019. Dr Martin Krenn and WFN Secretary General Wolfgang Grisold report on the Oxford Muscle Symposium, highlighting the historically significant presentation by Dr. Ikuya Nonaka on neuromuscular diseases in Japan and their discovery. In

addition, Drs Gagandeep Singh, Satish Khadiolkar, and Sita Jayalakshmi provide their detailed report of the 27th Annual Meeting of the Indian Academy of Neurology held in early October 2019 in Hyderabad, India.

This month's history column, by Dr. Peter Koehler, focuses on the history of the concept of the localization of vital neurologic functions, especially related to concepts regarding this localization to the cerebellum versus the medulla. Also in this issue, Drs Jon Stone, Alan Carson, and Mark Hallett announce the creation of a new international organization devoted to functional neurologic disorders, and invite interested neurologists worldwide to join.

In concluding, it was wonderful seeing so many neurologists from around the globe (and of all stages of training and career) in Dubai, and we want everyone to start "saving the date" for the next WCN that will be held in Rome in early October 2021. Planning is already underway for what promises to be another highly attended and highly successful international meeting of the minds for all neurologists from across the globe. •

The Nonaka Lecture at the 2019 Oxford Muscle Symposium

BY MARTIN KRENN AND WOLFGANG GRISOLD

The Oxford muscle symposium is an annual meeting of muscle specialists under the leadership of David Hilton Jones and Monika Hofer. This year's meeting took place July 12-13 in Worcester College in Oxford, United Kingdom.

It is a unique meeting, based on lectures and case presentations in muscle disease (myology). It has a rich history, dating back 44 years. Over the years, the meeting has witnessed the change of techniques and methods and the remarkable switch from histology and morphology toward molecular medicine and genetics. The cases presented are well researched and a highly qualified audience discusses the cases.

One special aspect is the Meryon lecture, which is organized to commemorate Edvard Meryon, by the Meryon Society. Meryon was a contemporary of Duchenne, and the naming of the disease is still controversial for the Meryon society¹.

This year's lecture was held by Prof. Ikuya Nonaka from Japan. It is a rare occasion to be privileged to listen to a researcher who has given the name to a rare disease² Prof. Nonaka, from the National Center of Neurology and Psychiatry in

Tokyo, Japan, gave his special lecture, titled "Special Aspects of Neuromuscular Diseases in Japan."

In his lecture, Prof. Nonaka described neuromuscular diseases in Japan and the great discoveries of Prof. Myoshi, for whom he worked at the time. He also illustrated the history of Japanese neuromuscular departments that catered to neuromuscular patients, often dependent on ventilation. This has a long tradition in Japan and dates back to poliomyelitis epidemics. In this context, Prof. Nonaka told the story of one of his Duchenne patients, who despite his disorder was able to study law and attend university and worked as a lawyer.

In 1981, Nonaka first described a subtype of distal myopathy, which was subsequently named after him (Nonaka Myopathy) and is now more commonly referred to as hereditary Inclusion Body Myopathy (hIBM) due to its hereditary (autosomal recessive) nature and its histological overlaps with classical inclusion body myositis. Later on, in the era of molecular genetics, the disorder was more precisely characterized and found to be caused by mutations in the gene GNE. While being considered as an ultra-rare (orphan) disease, the condition is also encountered outside Japan, most commonly in the United Kingdom, Bulgaria, India, and the Middle East.

From a clinical standpoint, the hallmarks of the disease remained widely unchanged since its first description by Nonaka almost 40 years ago. Neuromuscular symptoms usually start in early adulthood (third decade of life) with weakness and atrophy in distal limb muscles characteristically sparing the quadriceps. In spite of its slowly progressing natural course, it is a debilitating neuromuscular disorder, and most patients become wheelchair users 10 to 15 years



Prof. Nonaka giving the Meryon lecture at the Oxford muscle symposium.

after symptom onset. Although there is no approved treatment so far, modern advances in translational research give rise to the hope that targeted therapies may eventually also become available for GNE myopathy³.

Prof. Nonaka was able to give an overview not only on the detection of a rare neuromuscular disease, with tools of classical myology, which is now almost superseded by genetic studies, he also demonstrated his devotion to myology and above all to patients. •

Martin Krenn is in the department of neurology at the University Clinic of Vienna in Austria. Wolfgang Grisold is Secretary General of the WFN and works at the Ludwig Boltzmann Institute for Experimental and Clinical Traumatology.

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Three giants of myology, discussing after Prof. Nonaka's lecture. (From left to right) Prof. Nonaka, Prof. Hans Hilmar Goebel and Prof. Victor Dubowitz.

HISTORY

Early Ideas on the Localization of Vital Functions

From Cerebellum to Medulla Oblongata

BY PETER J. KOEHLER

Nowadays, physicians know that spontaneous or (rarely) traumatic cerebellar hemorrhage may be lethal by causing hydrocephalus or brainstem compression. In the past, these observations were interpreted in a way that the cerebellum was considered an organ of vital importance. It lasted several centuries before researchers were able to distinguish cerebellar injury from pathology of the medulla oblongata.

Influence of Willis

In a chapter in Thomas Willis' (1621-1675; his name is associated with the arterial circle at the base of the brain) famous *Cerebri Anatome* (1664) titled "De spirituum in Cerebello productorum, propter functionis involuntariae actus varia diataxi, & Exercitio diversimodo," the author states that the cerebellum is responsible for vital and involuntary functions (breathing, heartbeat, bowel movement). Still thinking in terms of the humoral (patho)physiology of the period, he supposed that animal spirits (a hypothetical volatile substance), originating in the cerebellum, passing through the vagus nerves, are conducted to these organs (lungs, heart). So, the medulla oblongata and vagus nerves were just considered to conduct stimuli that originate in the cerebellum.

On the other hand, experiments had been done showing that the heart could continue beating after removal from the body, and the Swiss physician Johann Jacob Wepfer (1620-1695) observed continuing heartbeat for several hours after decapitation, though still believing there is an important influence from the vagus nerves on the heart that continues for a longer period.

Following William Harvey's (1578-1657) discovery of the circulation of blood earlier in that century (1628), indeed new ideas had originated on the function of the brain and its relationship to the

heart. In the past, it was thought that the brain and cerebellum had equal functions, although the ancient ventricular localization theories localized memory in the third cell (our fourth ventricle). This idea was still present in some medical minds of the 17th century [for instance, in the German physician Johan Vesling's (1598-1649) and Dutch physician Nicolaes Tulp's (1593-1674) work].

However, there had already been ideas about the important vital function of this ventricle. Willis was the first to localize vital and involuntary functions in the cerebellum. Experiments seemed to confirm these ideas as injuries and removal of the cerebellum led to arrest of heart and respiration. In contrast, removal of the cerebral hemispheres was sustained much longer. These observations were considered indirect proofs of Willis's speculations.

Experimental Cerebellar Lesions Considered Lethal

Several 17th century experimenters reported the fatal effect of removal of the cerebellum, including the Paris physician (and architect) Claude Perrault (1613-1688), Raymond Vieussens (1641-1717; working in Montpellier), Johannes Bohn (1640-1718, who worked in Leipzig) and German physician Johann Gottfried von Berger (1659-1736).

Charles Drelincourt (1633-1697), a French physician who moved to Leyden, where he preceded Herman Boerhaave (1668-1738) stabbed a needle in the fourth ventricle, which immediately led to "epileptic cramps." (Nowadays, we would probably call it extensor posturing and the differentiation from epileptic phenomena still may be a diagnostic clinical problem.)

"*Acu in cerebelli ventriculum compulsa inter primam vertebra[m] & os occipitis, canis, ceu epilepticus, ter quaterque concussus est universe, sed mox expiravit*" (A needle was driven into the cerebellar ventricle



Abraham Kaau Boerhaave's *Impetum Faciens dictum Hippocrati*.



between the occiput and first vertebra, the dog demonstrated three or four general shocks, but soon expired.) He believed to have confirmed Willis' ideas herewith, not aware that he probably injured the medulla oblongata. However, even in this period, some observers presented results that contrasted with those mentioned before.

French physician and anatomist Joseph-Guichard Du Verney (1648-1730) who did important work on the organ of hearing in his *Traité de l'organe de l'ouïe* of 1683, anticipating the work of Hermann von Helmholtz (1821-1894) for instance, was able to keep animals alive for some time after removal of the cerebral hemispheres and the cerebellum, and Pierre Chirac (1650-1732), who became personal physician of Louis XV, was able to produce survival for a while following removal of the cerebellum combined with artificial respiration (inflation of air).

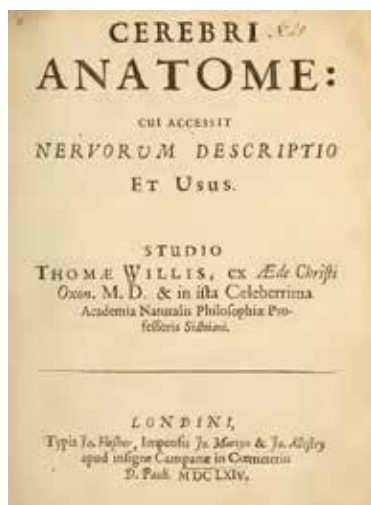
"Mr. Chirac, by several experiments, he has made upon dogs, has clearly proved an animal may live some time wanting the brain and even sometimes de cerebellum."

Experimental Cerebellar Lesions Not Lethal

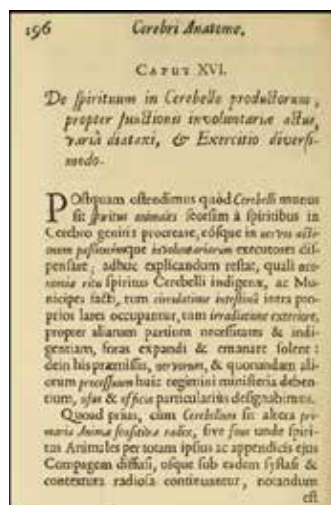
During the subsequent century, several other experimenters observed that animals not always died upon removal of the cerebellum. It seemed that it depended rather on the caution with which the surgery was done. Some experimenters even pointed to the importance of the medulla oblongata.

François Pourfour du Petit (1664-1741) a pioneer in ophthalmology who also described dysfunction of the contralateral hemisphere in injured soldiers, looking for the possible sensory function of the cerebellum, which he could not confirm, observed survival for several days. The Italian anatomist and physician Antonio Valsalva (1666-1723), teacher of Giovanni Battista Morgagni (1682-1771), who described several of his teacher's cases in his famous *De Sedibus* of 1761, removed the cerebellum of pigeons, observing that they did not immediately die. Morgagni observed that isolated injury of the cerebellum was not immediately lethal and confirmed this by pathologic-anatomical examination.

Abraham Kaau-Boerhaave (1715-1758), one of Herman Boerhaave's nephews who moved to St. Petersburg where he became medical superintendent at the navy-hospital, disliked speculation, and after several experiments damaging the brain, the cerebellum ("stylo vel cultro deinde adacto intra cerebellum, non uno momento fuisse actum de cordis & respirationis energia" [then a pen of knife was thrust inside the cerebellum, the cardiac and respiratory function do not stop immediately) or the medulla oblongata, became one of the first to recognize the vital role of the medulla oblongata.



Willis' *Cerebri Anatome* (1664).



From Willis' *Cerebri Anatome*.



Charles Drelincourt.



From Drelincourt's *Experimenta anatomica* (1684).

HISTORY

continued from page 5

French physician Anne-Charles Lorry (1726-1783), one of the founders of the Société Royale de Médecine, and the German physician Justus Arnemann (1763-1806) warned against the technical deficits in many of the previous experiments on the cerebellum, resulting in massive bleeding in the subtentorial space and tried to avoid this.

Lorry, in a memoir on “Les mouvemens du cerveau” [the movements of the brain] presented at the French Académie des Sciences (1760) and experienced that young cats and pigeons were better suited to avoid these complications.

With our present knowledge, the mechanism of the following experiment can be easily comprehended:

Je pressois un jour latéralement & assez fort le cervelet d'un chien gros & adulte, le hasard me fit voir tout d'un coup ce chien tomber & ronfler très-fort & très-notablement: dans mon étonnement, je lui lâchai ce viscère, il fut réveillé au même instant & fit des efforts pour crier. Je repris le cervelet de la même manière, il se rendormit: je recommençai cette expérience plusieurs fois, jusqu'à ce que tout d'un coup une compression encore plus forte lui excita des convulsions. [One day I compressed the cerebellum of a large and adult dog from the lateral side and sufficiently strong, by chance I saw the dog falling and snoring very hard and very strikingly suddenly: in my astonishment, I released that organ, he awoke at the same moment and made efforts to scream. I again took the cerebellum by the same way, he fell asleep again: I repeated the experiment several times, until suddenly an even stronger compression excited convulsions].

No Vital Functions in the Cerebellum

Swiss physician and pioneer experimental researcher Albrecht von Haller (1708-1777) considered the heart almost completely independent (1786), and his followers denied localization of functions in the brain, including the cerebellum. Haller,



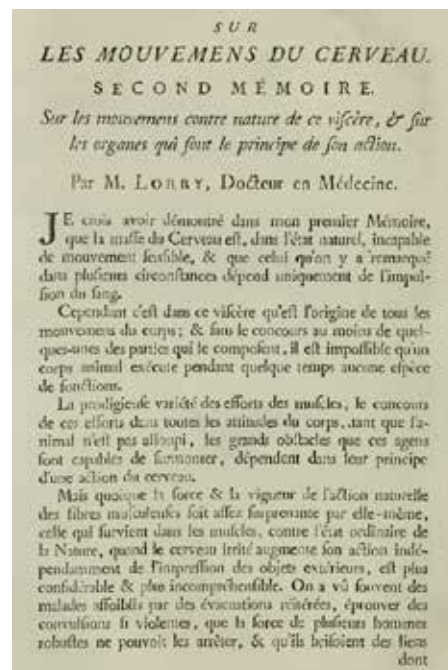
Anne-Charles Lorry. Lorry's 1760 *Memoir on movements of the brain*.

who did many experiments on all kinds of animals with improved techniques, believed Willis' ideas were insufficiently based upon experiments and localized the soul (*sensorium commune*, the place in the brain, where all senses converge and result in a motor reaction) in all parts of the brain.

Disorders of the cerebellum, he thought, do not lead to “certain and speedy death. For certain experiments, even of our own making, show that it has borne wounds and scirrhi, without taking away life; . . . not very rarely, wounds of the cerebellum cure” (Haller, 1786, p.217). He criticized previous physicians stating that “the source of the great error in physic has been owing to physicians . . . making few or no experiments, and substituting analogy instead of them” (Haller, 1755, p. 658).

Ethical Issues

Reading about these experiments and vivisection, one wonders about ethical issues at the time. Haller wrote in the introduction that he examined 190 animals since 1751, “a species of cruelty for which I felt such a reluctance, as could only be overcome by the desire of contributing to the benefit of mankind.” (Haller, 1755, p.



657). Throughout the 19th century, the man-animal relationship, particularly with respect to cats and dogs, gradually became more emotional.

One of the possible explanations that have been presented is that pet-keeping became more common in early industrialized and urbanized countries. More information on the history of vivisection and ethical issues can be found in the work of medical historian Andreas-Holger Maehle and his pivotal article “The Ethical Discourse on Animal Experimentation, 1650-1900” (Maehle, 1993). •

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ANNOUNCEMENT:
Junior Traveling Fellowships 2020

The WFN is offering Junior Traveling Fellowships for young neurologists from countries classified by the World Bank as low or lower-middle income to attend approved international meetings.

Applications for 2020 are welcomed.

There will be 30 awards; applicants should be neurologists in training or early in their careers, have an MD degree or equivalent medical degree, hold a post not above that of associate professor, and be no older than 45 years of age.

Candidates are asked to send:

- the name and dates of the meeting for which they wish to register
- a CV and bibliography
- a letter of recommendation from the head of their department
- an estimate of expenses, to a maximum of £1,000, no excess will be granted.

It is expected that applicants participate actively in the meeting (e.g., presentation, poster) that they attend. The submission of an abstract is expected. A copy of the abstract should also be included. Preference will be given to candidates who have not previously received an award.

Applications are exclusively submitted using the WFN JTF application on the WFN website no later than Friday, Feb. 14, 2020.

All applications will be reviewed by the Education Committee, and the awards will be announced as soon as possible thereafter.

After a successful visit, a report is expected for *World Neurology*.

Please note: Preference will be given to applicants who have not previously been awarded a Junior Traveling Fellowship. The transfer of a successful grant award to a different congress is not possible.

Steven Lewis, Chair of the WFN Education Committee



JOIN THE SPECIALTY GROUP FOR THE HISTORY OF NEUROSCIENCES

Are you interested in become a member of the WFN Specialty Group for the History of the Neurosciences? Send an e-mail to Peter J. Koehler at pkoehler@neurohistory.nl.



Albrecht von Haller. Haller's *Dissertation on the irritable and sensible parts of animals* (1755).



The Future of Neurology in India

A report of the 27th Annual Conference of Indian Academy of Neurology



The Inaugural Ceremony of the 27th Annual Conference of the Indian Academy of Neurology: (From left to right) Prof. Gagandeep Singh, Secretary, Indian Academy of Neurology; Prof. Satish Khadiilkar, President, Indian Academy of Neurology; Prof. Vinod Paul, Member NITI Aayog, India; Mr. Venkiah Naidu, His Excellency, Vice President of India; B Bhaskara Rao, CEO, KIMS, Hospital, Hyderabad; Prof. William Carroll, President, World Federation of Neurology; Prof. Mohan Das, Chairman, Organising Committee; and Dr. Sita Jayalakshmi, Organising Secretary of the Conference.

BY GAGANDEEP SINGH, SATISH KHADILKAR,
AND SITA JAYALAKSHMI

The 27th Annual Conference of the Indian Academy of Neurology took place Oct. 3-6 in Hyderabad, India. The event, the most exalted professional event for the over 2,000 strong neurologists' community in India, lasted for four days.

India is a country with 1.4 billion people. This huge number is served by 2,500 neurologists, amounting to one neurologist for one million people. On the top of it all, the country is going through an unprecedented epidemiological transition commensurate with the recent strides made in the socio-economic sphere.

While neuro-infections and other neurological disorders associated with poverty and underdevelopment

are only somewhat declining, there is a sweeping epidemic of non-communicable neurological disorders to confront. Subspecialty neurological practice is now in place in a few selected centers, but basic neurological care needs to be implemented in vast parts of the country. Clearly, neurologists in India have a formidable job at hand.

The annual conference of Indian neurologists was kicked off by Venkiah Naidu, the vice president of India, in the presence of Prof. Vinod Paul, chair of the Board of Governors, Medical Council of India and Member, National Institute for Transforming India, Prof. William Carroll, WFN president, and Prof. Wolfgang Grisold, WFN secretary general. Both the vice president and Prof. Paul emphasized

the need and strategy for increasing the neurology workforce in India.

"No doubt, the number of training positions has increased from 30 in 1990 by nearly 15-fold – we now have over 450 training positions – but still we need more" said Prof. Paul. And besides, though the number of training posts have increased and there are many more neurologists than there were some 30 years ago, most of the neurologists are concentrated in a few metropolitan and larger cities of India. "We should really be having these neurologists, all equipped with computed tomography machines in the villages of India so that every individual with stroke who ought to be thrombolized is given his/her due" said Naidu. In his speech, Prof. Carroll outlined the philosophy of the World Federation of Neurology.

In fact, he provided a roadmap for the future of neurology. Both he and Dr. Grisold agreed that the way forward was to make CT scanners and basic neurological care accessible to each village in India.

Aside from the inaugural function, the Conference of Indian Neurologists had all of the ingredients for a successful meeting in assisting them to meet the challenges they faced. Themes and topics of over 40 symposia, quasi-workshops, continuing education programs, and hot topics varied from contemporary to futuristic, all cutting edge. Just to cite a few examples, there were symposia on artificial intelligence and continuous dopaminergic stimulation. Really, this meeting of Indian neurologists had something for everyone. There were neuroradiology rounds, grand rounds, panel discussions, a clinico-pathological conference, and even running, Yoga, and singing events for the members of the academy.

The Annual Conference of the Indian Academy of Neurology is always a glorious event, worthy of attendance by neurologists from all corners of the world. We warmly welcome neurologists from anywhere in the world to attend our future annual meetings. Just keep your eyes on www.ianindia.org for more information and updates. •

Gagandeep Singh, DM, FIAN, FICP, FAMS, FRCP, is secretary of the Indian Academy of Neurology. Satish Khadiilkar, DM, FIAN, FRCP, FAMS, is president of the Indian Academy of Neurology. Sita Jayalakshmi, DM, FIAN, is organizing secretary of the 27th Annual Conference of the Indian Academy of Neurology.



Prof. Satish Khadiilkar, president, Indian Academy of Neurology with Prof. Carroll.



Prof. Khadiilkar presenting Prof. Grisold with Honorary Membership of the Indian Academy of Neurology.



A speaker's view of the audience.

DAVIDENKOV*continued from page 3*

Kimmerle and Chiari) in 2001.

The “phenomenon of pale spot” on the face after intravenous injection of nicotinic acid solution in patients with facial nerve palsy was also described by Prof. Lobzin, proving the compressive and ischemic origin of the pathology. Moreover, he described rhombencephalitic syndrome in mumps and myasthenic syndrome in patients following ionizing radiation due to nuclear reactor accidents.

The series of research investigations of Prof. Lobzin concerning hypokinesia and hypodynamy in young healthy adults trained in Cosmonaut Corps for prolonged space traveling is crucial. The disciples of Prof. Lobzin became leading professors of neurology in the Soviet Union and continued developing his scientific ideas. A significant part of Prof. Lobzin’s scientific creativity was devoted to research of neuroses, asthenic conditions, and autogenic training.

The investigations of Prof. Lobzin concerning infectious lesions of the nervous system were extremely interesting. He proposed a classification of meningitis, defined approaches to aetiologic and pathogenic treatment

of these diseases and also for “arachnoiditis.”

Bekchtereve Protege

The evolution of neurology in St. Petersburg owed much to dedicated scientists, such as Prof. Lobzin, who in turn can be considered continuation of the Russian neurological scientific school founded by Vladimir Bekchtereve (1857-1927), because the teachers of Prof. Lobzin were disciples of V.Bekchtereve. Unfortunately, the “iron curtain” and consequent limitations in scientific information exchange did not allow foreign colleagues to be familiar with the unique scientific achievements that Russian scientists made despite meager funding and nearly complete absence of feedback from leading foreign partners.

Fortunately, nowadays neurologists from St. Petersburg and also from other parts of the world have the opportunity for creative exchange of scientific information in most aspects of neurology aimed at further improvement of medical education quality and to provide adequate care to neurological patients. Nowadays, many staff members of the department of neurology named after S.N. Davidenkov are members of the European Academy of Neurology and the World Federation of Neurology, allowing direct exchange of views and experience

in the diagnosis and treatment of a large number of severe pathologies of the nervous system.

The latest Davidenkov Readings Congress in 2019 was attended by 1,153 delegates, during which 117 scientific reports concerning important aspects of clinical neurology (such as stroke, degenerative pathology of the nervous system, neuromuscular diseases, neurooncology, neurocardiology, neuroreumatology, neurogerontology, child neurology, urgent neurology, headaches and migraine, neurorehabilitation, cognitive disorders, Alzheimer disease, Parkinson disease, peripheral nervous system pathology, cerebral and spinal cord injuries and their consequences) were presented. It should be emphasized that participation for neurologists is traditionally free of charge.

The delegates felt the real support from the World Federation of Neurology. The lectures for Russian neurologists from world-leading neurologists was met with a keen interest. The faculty included WFN Past-President Prof. Raad Shakir (U.K.), who devoted his lecture to the relationship between neurology and psychiatry, WFN Secretary General Prof. Wolfgang Grisold (Austria), who demonstrated difficulties in the



Prof. V.S. Lobzin 1977.

differential diagnosis of neoplastic aetiology of cranial and other peripheral nerves, and Prof. Nils Erik Gilhus (Norway), who presented a review of neurological disorders and complications during pregnancy. These scientific lectures were closely followed by the audience with great interest and

see DAVIDENKOV, page 9

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continued from page 2

course material that is at the heart of a successful World Congress.

Altogether 264 invited speakers presented eight main topics, each of three to four 1.5 hour sessions with three speakers, 25 other topics of one to two 1.5 hour sessions, six regional sessions, 25 teaching courses each of three hours, three early morning teaching courses of one hour each, 1,438 posters (370 each day) and the extraordinary Tournament of the Minds. This year, 15 teams entered with each team comprising four members and subjected to carefully prepared questions to remove any language advantage or disadvantage.

The Tournament of the Minds proved a real competition and an immensely enjoyable educational event from its outset until the final as the last event on the Thursday. This too proved to be a hard-fought competition between the teams from Sri Lanka, Malaysia, India,

and Hong Kong, all from the Asian and Oceanian Association of Neurology, until Hong Kong, coming from behind, emerged victorious. Congratulations to Drs. Wing Chi Fong, Ping Wing Ng, Annie Mew, and Andrew Chan and congratulations also to the Tournament of the Minds team of Richard Stark, Nick Davis, Faouzi Belhasen, and Serenella Servidei. (See photos on page 10.)

At the commencement of this column, I mentioned the “intangibles” which I believe are the hallmark of a truly successful congress. Together, these comprise a feeling that permeates all aspects of the congress for almost everyone through the 4.5 days. One sees people relaxed, enjoying the program, interacting with colleagues in an easy confident manner, seemingly relishing all aspects of the meeting. It stems from a good “connected” feeling that is no doubt the result of the quality of the scientific and teaching program, the lecturers and chairs, the congress app, the high quality of the AV and the AV service personnel,

the ease of getting from one lecture room to the next, the exhibition, and the quality of the lunches and tea and coffee break refreshments.

Many other events occurred during the congress. The prestigious WFN medals were presented to Dr. Mustapha El Aloui Faris for service to international neurology and to Dr. Mark Hallett for contributions to neuroscience (see photos below), while the Ted Munsat prize for educational activities had a worthy recipient in Dr. Sarosh Katrak. There were numerous WFN committee meetings, including that of the Global Neurology Alliance, a relaxed meet and greet of young neurologists, and the selection of Montreal as the site for the 2023 WCN. The Montreal bid, led by Guy Rouleaux, defeated those of Mexico City (led by Miguel Osorna Guerra) and Rio de Janeiro (led by Fernando Cendes) for the right to host the XXVI WCN. The WFN is most grateful to all those who prepared their cases so well for this important decision.

For the first time, the WFN made a concerted effort to disseminate important messages emanating from the WCN through our inaugural Press Office, managed by Ashley Logan of Yakety Yak, and through the WFN social media outlets orchestrated by Kenes (Simona Milenkova and Milush Bahanov), the WFN e-communications committee (Walter Struhala and Tissa Wijeratne) and Yakety Yak (Ashley Logan). The WFN is most grateful to all those who contributed to this remarkable effort to showcase important elements of the WCN. (See Figure 2, which details this exceptional output, on page 2.)

At the closing ceremony, Prof. Suhail Al Akrun, president of the XXIV WCN, handed over the XXV WCN in Rome to Prof. Antonio Federico of the Italian Society of Neurology.

The XXIV World Congress of Neurology was an outstanding success, and the World Federation applauds all associated with the event for making it so. •



WFN medal awardees Dr Mustapha El Aloui Faris (contribution to international neurology), left photo, and Dr Mark Hallett (contribution to neurological science), right photo, flanked by WFN President William Carroll and AAN President James Stevens. Dr Riadh Gouider, center top photo, read the citation for Dr. El Aloui Faris, and Dr Jun Kimura, center bottom photo, read the citation for Dr. Hallett on behalf of Dr Hiroshi Shibasaki.



DAVIDENKOV

continued from page 8

generated considerable debates among neurologists from Russia and other countries.

Challenging Discussions

During the congress symposia and roundtable discussions, the leading scientists from Russia and other countries shared views on challenging and difficult issues related to a large number of disease diagnostics and treatment; this is extremely important for the northernmost megametropolis of Europe – St. Petersburg, the population

of which according to unofficial data is more than 7 million inhabitants. The importance of interaction with governmental and municipal services in cases of strokes is clear, and the local neurological community of St. Petersburg is concerned about the frequency, severity, and rehabilitation difficulties of stroke patients despite the setting up of 14 regional neurovascular centers that contain all of the necessary equipment and multidisciplinary teams. In addition, the elderly population of St. Petersburg is over 1 million people, making the situation of provision of care to the elderly more difficult, and creating an urgent need for international

cooperation in cognitive disorders such as Alzheimer disease and other forms of dementia.

Thus, modern neurology in St. Petersburg continues to evolve, and it requires further support from the World Federation of Neurology, which will lead to improvement of neurological care all over the world. The Russian Federation is a unique country due to its multi-ethnic and multicultural background from the West and East. Our experience will certainly be useful for all neurologists across the world. We hope that continuation of the annual “Davidenkov Readings” will draw the attention of neurologists from

all the countries, particularly as the meeting takes place in one of the mostly beautiful cities in the world with a well-developed and modern infrastructure. We invite all those who are interested to participate. •

Professor Sergei V. Lobzin is vice President of the St. Petersburg Association of neurologists, academician of Peter the Great Academy of Science and Art, professor, head of the Chair of Neurology named after S.N. Davidenkov of North-Western state medical university named after I.I. Mechnikov, where V. Goldobin and N. Tcinzerling are Associate Professors.

Tournament of the Minds

A highly competitive tournament tested the wits and smarts of 15 teams

The Tournament of the Minds was held at the 2019 World Congress of Neurology (WCN) in Dubai and was an outstanding success. Fifteen teams participated in the initial round, which was a record. It was particularly pleasing to see teams from several countries that had not previously participated in the event. The teams participating were from Australia and New Zealand, Brazil, Hong Kong, India, Iran, Kenya, Malaysia, Nigeria, Pakistan, Philippines, Republic of Moldova, Sri Lanka, Sudan, United Arab Emirates, and the United Kingdom.

The initial elimination round was an exciting affair with 20 multiple choice questions being asked of the teams. The room was full, and audience participation was possible through a voting app. For every question, the audience's opinion about the answer could be displayed. Many of the questions were challenging, and at the end of this session, the two leading teams were Iran and India. Other teams to qualify for the semi-final round were Australia and New Zealand, Brazil, Hong Kong, Kenya, Malaysia, and Sri Lanka.

The questions which had largely been provided by Faouzi Belahsen and his team from Morocco were entertaining but also highly educational. Several had a local and regional quality to them.

Two concurrent semi-final sessions were run. These required a somewhat different strategy as questions were presented often with information unfolding gradually. The first team to answer correctly scored the points. Points were deducted for teams providing a wrong answer, and of course, premature attempts to answer before all of the information was available ran a significant risk of

providing the wrong answer. A number of the teams adapted their strategy well to this different task, and two teams from each semi-final proceeded to the grand final. These teams were India, Hong Kong, Malaysia, and Sri Lanka.

The final was the most exciting and the closest contest that has ever occurred in the Tournament of the Minds. With 10 points being awarded for a correct answer and 10 points deducted for a wrong answer, the final scores after 20 questions were:

Final Round Score

Hong Kong	50 points
Malaysia	40 points
India	40 points
Sri Lanka	40 points

A tiebreak question resulted in Sri Lanka being declared the runner-up.

The members of the successful Hong Kong team were Drs. Wing Chi Fong, Ping Wing NG, Yuen Ni Annie Mew, and Lung Tat Andrew Chan. They were awarded the cup and medals, and we congratulate them.

The Tournament of the Minds requires considerable effort and input from many sources. The preparation of the questions requires a lot of work, both in sourcing the questions in the first place and also in revising the wording so that the disadvantage some teams have of not having English as their first language is minimized. I would like to thank the members of the Tournament of the Minds Committee who contributed to this process and to chairing the sessions: Nick Davies, Faouzi Belahsen, Serenella Servidei, and Takashi Kanda. The presentation of the tournament is demanding with regard to audio-visual assistance and the support provided by the audio-visual team and Kenes was outstanding.

Finally, there is no doubt that the success of the tournament on this occasion was largely responsible to the generosity of the congress committee in allowing tournament participants

refunds on registration costs.

The tournament has certainly become a popular component of the World Congress, and we look forward to a successful tournament in Rome in 2021. •



The winning team members from Hong Kong.



The runner-up team from Sri Lanka.



Judges at the Tournament of the Minds Final. From left to right: Profs. Faouzi Belahsen, Nick Davies, and Richard Stark.



All team members from the Tournament of the Minds finals.

The Sights from WCN 2019

