



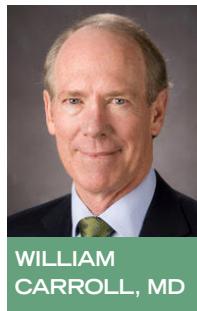
# WORLD NEUROLOGY

THE OFFICIAL NEWSLETTER OF THE WORLD FEDERATION OF NEUROLOGY

## PRESIDENT'S COLUMN

### The Importance of WFN Council of Delegates Meeting

All who receive the World Neurology publication know, the XXIV World Congress of Neurology is almost upon us. It will commence Oct. 27 in Dubai. The World Congress will showcase the most topical subjects in neurology, facilitate the learning experience of all attendees, and provide a forum for wide-ranging discussion of these. The World Congress will also host a range of important business meetings for the WFN. Foremost among these is the Annual Council of Delegates (COD) Meeting.



WILLIAM  
CARROLL, MD

The Global Neurology Alliance will also meet as will numerous WFN committees such as Education, Membership, Finance, Congress, e-Communications and Constitutions, and Bylaws, which all together represent the heart of the WFN.

The Council of Delegates Meeting is held annually, as it must be according to the United Kingdom Charities' Commission. It is at this meeting that decisions critical to the WFN will be made. The Annual COD Meeting that coincides with a WCN, as this one in Dubai does, often assumes greater significance than those in the intervening years. The simple reason is that more national member representatives attend the COD in a WCN. There is no doubt that the larger number of delegates increases the range of opinions that are offered by delegates on the topics discussed. It is also clear that the WFN benefits from this in the quality of the decisions that are made. This year's COD will occur at 2 p.m., Saturday, Oct. 26. Seventy to eighty delegates or their proxies will be present from the 120 member societies, observers, trustees, and the

The World Congress will also host a range of important business meetings for the WFN. Foremost among these is the Annual Council of Delegates (COD) Meeting.

London Office staff. Under the WFN rules, only member societies that are "financial" will be able to vote on resolutions and elections.

At this year's COD, there are critical decisions to be made. Two elected trustee positions are to be decided, the 2023 WCN venue will be resolved and elections to membership of the WFN will be determined. The two trustee positions are those of treasurer, currently occupied by Richard Stark, and an elected trustee

(Steven Lewis). Both are entitled to stand for re-election, and both are exercising this option. You will find their personal statements in this issue. That they are both standing unopposed may be regarded as a testament to the quality of their contribution to the WFN to date. Their personal statements provide important insights into their views of the WFN, its function and future role as the global neurological organization.

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### Migraine in Cameroon:

From the Painful Truth to the Powerful Tribute

BY ALFRED KONGNYU NJAMNSHI, MD, MA,  
DMS, FMH

In 2008, when then-president of the World Federation of Neurology (WFN) Prof. Johan A. Aarli set foot in Yaoundé for the 18<sup>th</sup> Congress of the Pan African Association of Neurological Sciences, (PAANS<sup>1</sup>), Cameroon—fondly referred to by its citizens as "Africa in miniature"<sup>2</sup>—was a peaceful, prosperous, powerful, and promising nation of the central African sub-region. At that time, there were only a handful of neurologists in Cameroon, and there was no training program for neurologists in the medical schools of the country.

In organizing this congress, a great need was felt to reach out for the preparation of future neurologists in the country. This was done through a pre-congress activity that consisted of selecting the best students from some primary, secondary, and university institutions in Yaoundé, introducing them to the neurosciences, and evaluating their performances after a short educational intervention on the epilepsies<sup>3</sup>.

Concerning this innovative program, Prof. Aarli had this to say: "The type of outreach program presented in

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### ECHOS OF KINDNESS

Serendipity brought my mentors together at the EAN regional teaching course in Ouagadougou, and discussions ensued that culminated in the opportunity to begin my formal training in EMG/NCS in Austria.

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### CRITICAL MINDS ON THE BRAIN IN THE 17TH CENTURY

Medical students of human and animal bodies in the 17th century demonstrated a critical attitude toward the knowledge that was taught in books and by their teachers. Inspired by the new mechanistic or iatrophysical physiology of René Descartes, they not only questioned the anatomical and physiological views of previous generations of anatomists and physicians, but also Descartes' own ideas.

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Dr. Mbome Njie Victor, representing the prime minister, delivers the speech at the closing ceremony on WBD.

## CAMEROON

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Cameroon is important because it makes neurosciences not a foreign and exotic subject, but a part of their daily life and of public health.”<sup>1</sup> On the congress proper, he reported, “I had the pleasure to attend the PAANS congress in Yaoundé, Cameroon, in November 2008 ... The PAANS Congress served as an important information and discussion forum for African neurology. The meeting also was attended by local politicians and representatives from the government, which is essential in increasing the visibility of neurology.”<sup>4</sup>

The congress organizers had worked hard to convince the government of the Republic of Cameroon on the importance of neuroscience to national development. Indeed, this was the first time in the 36-year history of PAANS that the government of the host country was the unique sponsor of the entire congress. At the opening and closing ceremonies, several cabinet members accompanied the Vice Prime Minister H.E. Amadou Ali, the chair of the congress, which was held under the highly distinguished patronage of the president of the republic, head of state.

The primary theme of that congress was “The Epilepsies,” and the secondary theme was “Headaches.” It was attended by the then-president of the International League Against Epilepsy, Prof. Peter Wolf. The president of the International Headache Society could not attend due to a last-minute emergency. It was during this congress that Prof. Aarli challenged the government of Cameroon to start residency programs in the neurological sciences that could serve the country as well as the sub-region. This challenge was well received, and two years later, residency programs in neurology, neurosurgery, and psychiatry were established in the Yaoundé School of Medicine in the University of Yaoundé I. More details on the fruits of this development over the years shall be reported subsequently.

Currently, 11 neurologists (two from the Democratic Republic of Congo

[DRC] and nine from Cameroon), five neurosurgeons, and six psychiatrists (one from DRC) have been trained in these programs. Also, our neurology department recently hosted a trainee neurologist from Belgium (now a practicing neurologist) for a period of six months<sup>5</sup>. It is worth noting that one of our youngest trainees just received his award as fellow of the European Board of Neurology on June 28, 2019, as the sole candidate from sub-Saharan Africa, following a tight examination in Oslo with his European counterparts and neurologists of other nationalities, in the international examination organized by the European Academy of Neurology.<sup>6</sup>

### The Painful Truth

In recent years, however, the indescribable beauty of this young and healthy nation, like that of a young headache-stricken patient, has been significantly threatened and bruised by a series of crises that can be described by no other word than migraine, and that is the painful truth.

Indeed, the pain has been throbbing, sparing no part of the country. First is the eastern tropical forest region of the country with the influx of refugees fleeing

from their own internal crises in the Central African Republic and the multiple consequences thereof.

Second, more severe attacks have ravaged the western mountainous region of the Far North, spreading terror, panic, and chronic phobia in the populations.

Third, as if this were not enough, for the past three years, the North-West and the South-West regions of the country are the theater of a hemorrhagic conflict, and the populations of these two regions have been victims of uncountable, painful, persistent, and pervasive attacks, sometimes caught as it were between the hammer and the anvil.

The full extent of the reality of this extremely painful truth has not been and may never be adequately measured, but one thing is certain: the nausea and emesis accompanying the atrocities, the photophobia and sonophobia associated with the increasingly sophisticated firearms, will have long-lasting and far-reaching consequences on brain health and on health and development in general. It is disheartening to note that two-year-old internally displaced children are familiar with and easily recognize the sound of firearms.

You may be tempted to observe that what appeared to be a simple migraine aura, rapidly and unexpectedly developed into a hemiplegic migraine with one whole side of the nation completely paralyzed intermittently through the “ghost-towns,” then to chronic migraine or better still “chronic hemiplegic migraine.” The prevailing situation could best be described as a “chronic familial hemiplegic migraine” as many family members of the people of this one-time peaceful nation are now directly or indirectly affected.

The painful truth is that every part of the whole is seriously hurting. The migraine crisis in Cameroon, which is the most common crisis in the country, has severely impacted every aspect of national life and has been underrecognized, underdiagnosed, thus underresearched,



Dr. Edwige L. Mendo, neurologist trained in Cameroon and serving in the South region of the country, presenting the key message of the painful truth of migraine at the ST Muna Foundation on WBD.

and undertreated (crisis-treatment) despite many laudable efforts.

The country has become peaceless and sleepless, running short of its prosperous and promising nature. Land of promise, where is your promise? Land of glory, where is your glory? Nevertheless, together as a TEAM (Together Each Achieves More), we all can use our brains to make sure that the suffering brains and bodies of the people in Cameroon affected by this migraine receive the help they need as the key messages of the World Brain Day’ 2019 suggest to become once again a peaceful and prosperous land of promise and glory.

May I remark in passing, but seriously so, that the migraine in Cameroon is not unique to Cameroon. Although some of the aggravating factors of these migraines generally tend to be environmental, not easily lending themselves to intrinsic control mechanisms in the context of a total absence of biofeedback mechanisms, it would appear that only a concerted, concentrated, and constant effort for lasting prophylactic solutions, coming from the ingenuity and strong will of endogenous

*see CAMEROON page 3*



Closing ceremony group photograph with representative of the prime minister (4th), BRAIN Board Members (Pr Etya’ale Daniel, 1st, Pr Leke Rose 2nd) and president of ST Muna Foundation (Battonier Benard Muna, fifth from right, in front row).

## CAMEROON

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healthy brains, will be effective.

This would involve a deliberate, directed, and delicate mix of multiple neuronal networks, that work together in synchrony and symphony, in promoting brain health and through brain health, promoting health at large as there is no health without brain health. To ensure success in this endeavor, in terms of effective and efficient neurophysiological mechanisms especially neurotransmission, neuromediation, and neuromodulation, this approach may also involve neuroepigenetics as we are dealing here with a migraine. This process, in itself is not pain free.

### The Powerful Tribute: The novel concept of the “Brain Week in Cameroon”

In the midst of this deeply rooted pain and mounting pressure, Brain Research Africa Initiative (BRAIN) has chosen to hope for peace and to work for peace in this fatherland of Cameroon. Since inception by the WFN, we in Cameroon have always celebrated the World Brain Day (WBD) but this was generally limited to an academic or professional audience. This

year, BRAIN created the concept of the “Brain Week in Cameroon” involving five main BRAIN activities beginning from a week before the WBD and climaxing with the celebration of the WBD. The goal was to have a nationwide campaign of:

- Bringing BRAIN health closer to the populations (diagnosing and treating disease in sick brains)
- Raising BRAIN awareness among the populations (sensitizing healthy brains to remain healthy)
- Activating BRAIN networks with the institutions (building partnerships for brain health)
- Increasing BRAIN capacity in the professionals (training through professional education)
- Nurturing future generations of BRAIN professionals (celebrating excellence to generate interest in neuroscience careers among the youth).

The inaugural “Brain Week in Cameroon” ran from July 15 to 22, 2019, under the distinguished patronage of the Prime Minister, Head of Government, Chief Dr. Joseph Dion Ngute and in partnership with the government of Cameroon.

First, free neurology, neurosurgery or psychiatry consultations in regional or tertiary health facilities took place in

seven of the 10 administrative regions of the country (including some of the migrainous regions), thus bringing brain health care closer to the populations.

Second, multimedia sensitization talks, workshops, and symposia were carried out to raise brain awareness and the national communication media had at least a nationwide audience.

Third, the first two activities provided a forum for networking and building partnerships for the promotion of brain health. Specific public-private partnership agreements were also established between state and private institutions.

Fourth, with the participation of state universities, academic symposia were conducted in two faculties of medicine to increase the capacity of medical students, physicians, and other health personnel in the management of brain disease, particularly migraine.

Finally, a general symposium was conducted in the nation’s capital city of Yaoundé on primary headaches, with special emphasis on migraine, and the icing on the cake was the establishment of the novel concept of “The Monekosso-Muna BRAIN Lecture,” in honor of and as a tribute to the founding fathers of Cameroonian and African neuroscience research.

The late Prof. Gotlieb Lobe Monekosso employed field epidemiological and clinical approaches in the 1960s in Nigeria to study what was variably called at that time, endemic neuropathies, degenerative tropical neuropathies, tropical nutritional neuropathy, or tropical ataxic neuropathy while late Prof. Walinjom FT Muna since the 1990s set the pace for clinical research on HTLV-associated myelopathy, stroke, neuroAIDS, and the epilepsies in Cameroon.

The Monekosso-Muna BRAIN Lecture celebrates excellence in neuroscience and aims to stimulate and attract the young generations to consider taking up careers in neuroscience.

The theme of Brain Week in Cameroon 2019 was, “Promoting Brain Health and Conflict Resolution,” and the core messages highlighted the fact that we all need healthy brains, free from drugs and disease, in healthy bodies, for



Alfred K. Njamnshi, founder and executive director of BRAIN, delivering the inaugural Monekosso-Muna BRAIN Lecture: The Foundations of Neuroscience Research in Cameroon and Africa.

rational use in dialogue, constructive communication, and negotiations, and to resolve interpersonal, intergroup, or even international conflicts. Thus, BRAIN has attempted to extend and contextualize the WFN concept of “World Brain Day” to the concept of “Brain Week in Cameroon.”

Most of the activities of Brain Week in Cameroon were carried out by or under the leadership of brain health specialists or experts trained in Cameroon and serving in the different regions of the country, some of them under extremely difficult conditions. BRAIN received the partnering support of public and private media agencies as well as some private health institutions in this endeavor. Brain Week in Cameroon has come to stay and to grow, and the Prime Minister of Cameroon, writing on brain health, has encouraged BRAIN to “continue to sensitize the government and other partners on this important aspect of human health.”

### The Way Forward

BRAIN, in partnership with the Cameroon Government, has chosen to light a

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## CANDIDATE CITY STATEMENT FOR WCN 2023



## Brazil

With 95 certified residency programs in neurology, offering 375 PGY-1 annually, and 4,300 affiliated members, Brazil is a strong candidate to host the World Congress of Neurology 2023.

Many countries already have given their support to Rio during a meeting in October 2018 at the PAFNS Congress in Sao Paulo, Brazil. Holding the WFN Congress will provide a unique opportunity for this large population of neurologists and professionals in the field to join us in a memorable meeting. Also, holding this Congress in Brazil

will provide the WFN with an excellent opportunity to accomplish its mission to promote education in neurology in Brazil and Latin America. Rio de Janeiro, with a wide infrastructure of tourist services, receives more than 2 million foreign tourists annually.

Rio de Janeiro is ranked among the most popular destinations in the world for hosting cultural, commercial, technical, and scientific events—fairs, symposiums, congresses, and exhibitions.

The convention center is in a safe area of Barra da Tijuca and offers a variety of accommodations, food, entertainment, beaches, shopping areas, and among other things, an intense night. •



Past prime minister and board chair of BRAIN, H.E. Philemon Yang (center), took time off to attend a reception on WBD. He congratulated and encouraged the young BRAIN leaders from the seven regions of Cameroon to continue to work for brain health with courage, determination, and patience.

## CANDIDATE CITY STATEMENT FOR WCN 2023

## Mexico

It is a pleasure and an honor to present Mexico's candidacy to host the WFN World Congress in 2023.

Mexico represents the 15th largest economy in the world and the 15th largest exporting power.

One of the principal economic bases of the country is tourism. According to the World Tourism Organization, Mexico ranks sixth in terms of the number of visits by foreign tourists. Also, it promotes the diffusion of the natural, cultural, gastronomic, and historical attractions of the country.

Mexico has a well-earned reputation for being a hospitable country with people friendly to tourists. We currently have agreements with more than 97 countries whose citizens do not require a visa to visit us.

Due to its geographical location (in the center of the American continent), Mexico is the gateway to Central and South America. Its air connectivity is one of its advantages; today, there are daily direct international flights to 51 destinations so it is highly likely that attendees only have

to take one or two flights to attend the congress. This significantly reduces travel costs for attendees.

Although a WFN world congress has never been held in Central America, we have experience in organizing international congresses, such as the congress of the Pan American Section of the WFN (PANFS) which took place in 2016 in Cancun, Mexico. Other examples of international events held in Mexico City are International Conference on Emergency Medicine 2018 and World Congress of Cardiology and Cardiovascular Health 2016, among many others.

It is important to mention that Mexican government provides the possibility to calculate zero percent VAT for International Congresses when these are carried out by foreign organizations.

In addition to its economic, geographic, and logistical advantages, Mexico City has much more to offer its visitors.

Once known as the "City of Palaces," Mexico City has four areas declared World Heritage Sites by the UNESCO. The first is the "Centro Histórico" or downtown area

where many beautiful religious and historical buildings can be appreciated, including the Metropolitan Cathedral, the National Palace, and the Fine Arts Palace, a beautiful art nouveau style building. The second World Heritage Site is the Xochimilco Ecological Park, considered by many as the "Venice of Mexico," thanks to its beautiful canals that can be visited on board a trajinera (a curious wooden gondola-type vessel decorated with flowers).

The third World Heritage Site is the Autonomous National University of Mexico, and the fourth one is the Luis Barragan' studio. Mexico City offers a large variety of museums, including The National Museum of Anthropology, the National Museum of Art, and the National Museum of History (located in Chapultepec Castle). To the north of the city, you can visit

the Guadalupe Basilica, the second-most visited religious sanctuary in the world after Saint Peter's Basilica in the Vatican.

We hope to count on your support to continue promoting the development of neurology in this region of the world. •



## CANDIDATE CITY STATEMENT FOR WCN 2023

## Montréal

Montréal tops the rankings of host cities in the Americas for most international conferences<sup>1</sup>. Its attractions and qualities have made it a go-to location for business and leisure travellers. As one of the largest hubs for neuroscience in Canada—240 neuroscience professionals and over 40 companies related to neuroscience, Montréal is a first-rate destination for all with a passion for innovation, understanding the brain and treating patients with neurological disorders.

Together with the Canadian Neurological Society (CNS), generous funding for travel grants by the city's convention community will enable a record number of scholars and fellows from emerging economies, such as Latin America and Africa, to attend this major event.

In order to foster innovative care and research on a global scale, The Neuro—McGill University's Montreal Neurological Institute and Hospital—will make its open data platforms available to the members of the WFN and help identify potential Canadian collaborators. Founded by Dr. Wilder Penfield, The Neuro is a world leader in the field and has a rich history of welcoming the international neuroscientific community—trainees, researchers and clinicians alike. A pioneer,

The Neuro is the first Open Science institute in the world, helping accelerate new therapy research and solutions.

The WCN 2023 will also be an opportunity to expand the annual grants and awards program the CNS jointly administers with the World Federation of Neurology. A new program being developed will focus on colleagues from Sub-Saharan Africa.

Montréal is a smart choice for WCN 2023. Recognized as Canada's research and higher education capital, the city has 1,500 institutions active in R&D, 200 research centres, 11 higher learning institutions including four major universities, and two academic health centres—neurology from pediatric to adult, from general to highly specialized—making it a high-tech, artificial intelligence, health and life sciences hub. Among the Top 20 safest big cities in Canada and the United States<sup>2</sup>, Montréal also enjoys one of the most vibrant urban scenes, thanks to its numerous world-class festivals, international cuisine, legendary hospitality and European flair. It is home to a richly multicultural community where 100 languages are spoken. Easily accessible and practical, it is only 20 minutes from the airport, which services 150 direct flights from North Africa, the Middle East, Asia, Latin America, Europe, and North



America. The wide range of downtown accommodations includes 16,000 hotel rooms within a 10-minute walk from the city's convention centre, 4,000 of which are directly linked to the centre. Its proximity to 90 million Northeastern Americans less than a two-hour flight away, or within driving distance, means even more students, young researchers, and clinicians can attend the congress.

Participants will be able to partake in technical tours of The Neuro and several other university and hospital sites during their stay in Montréal. Success, innovation, and expertise await you in Montréal. October is when the city really shows its true autumn colours. •

1. Union of International Associations 2017/2018
2. FBI & Statistics Canada 2018



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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 neurologists to the July-August 2019 issue of *World Neurology*, the official newsletter of the World Federation of Neurology (WFN). This issue includes three well illustrated articles from around the globe reporting from each country's involvement and activities surrounding World Brain Day 2019, including reports from Turkey, Pakistan, and the report from Cameroon where the World Brain Day theme (Migraine: The



**PRESIDENT**

*continued from page 1*

The 2023 WCN will be held in the Americas. It will be hotly contested by the Mexican Academy of Neurology (Mexico City), the Canadian Neurological Foundation (Montreal), and the Brazilian Society of Neurology (Rio de Janeiro). The decision is a crucial matter for the WFN as its signature biennial education event. The promotional summaries from each member society vying to host the WCN are also contained in this issue. During the COD, each contender will have 10 minutes to present their case and 5 minutes to answer questions from the delegates. Kenes, professional conference organizer (PCO) for the WFN, will then present a summary of the pros and cons for each venue, which will be then followed by the vote. While not binding on the WFN, the vote is usually accepted given the democratic principles upon which the WFN functions.

Respect for democratic principles is at the heart of a third matter to be subjected to a vote at the COD. It is on the matter of two neurological societies applying for membership of the WFN. The applications are from the Nepalese Society of Neurology and the Kosovo Neurological Society and will be presented at the Council of Delegates. The process to be followed is first a recommendation from the Membership Committee to the Trustees, which after approval by the trustees, then goes forward to the Council of Delegates to vote on the application.

As judged by the Membership Committee, the application from the Nepalese Society was straightforward. The application from the Kosovo Neurological Society presented some challenges. While the Kosovo Neurological Society is properly constituted and satisfied all the

Painful Truth) is also used as a thoughtful analogy to the author's view of the current situation in the country.

In the President's column, WFN President Prof. William Carroll updates us on important issues at hand to be decided at this year's Council of Delegates (COD) meeting that will be held during the upcoming XXIV World Congress of Neurology (WCN) Oct. 26 in Dubai. Regarding these important issues to be decided at the COD, this issue features the statements from the three cities/countries vying for the site of WCN 2023, to be held within the Americas (in alphabetical order by city): Mexico City, Mexico; Montreal, Canada; and Rio de Janeiro, Brazil. Statements from the candidates for WFN Treasurer and Elected Trustee also appear in this issue.

In the History column, Prof. Peter Koehler discusses two important 17th century figures in the history of the science of the brain who provided critical insights beyond that that had been well



STEVEN L. LEWIS, MD



WALTER STRUHAL, MD

accepted at the time.

This issue also features a thank-you note from a neurologist from Nigeria to his teachers from Austria who dedicated their time to provide him with the benefit of their experience and skills in nerve conduction studies and electromyography.

Finally, we look forward to seeing many of you at the upcoming WCN Oct. 27-31, 2019 in Dubai. Please note the reminders in this issue for WFN member societies to field teams of four—with free registration—for this year's sure-to-be-exciting Tournament of the Minds. •

**There is no doubt that the larger number of delegates increases the range of opinions that are offered by delegates on the topics discussed.**

representative requirements, there was an important additional consideration. This was whether Kosovo should be regarded as a separate independent country. In order for this to be judged fairly, the Membership Committee sought the views of the trustees, and more widely, before making a decision.

Essential to these views was whether Kosovo had the right to apply, whether it was already represented by the Serbian Society of Neurology and whether it had access to membership elsewhere, or placed restrictions on who could be members of the Kosovo Neurological Society. These matters were considered in detail, and formal and informal opinions solicited from other interested parties. The Membership Committee deemed that Kosovo was a separate country according to the WFN Articles of Association, had satisfied all requirements for membership, and that in the interests of fairness for it to represent Kosovo neurologists in the WFN, its application should go forward to the COD where the final decision would be made.

An important consideration in this decision was that the EAN apparently had to decline the same application by the Kosovo Neurological Society because Kosovo did not comply with EAN Bylaws in not being a WHO "European" country. This view differed from that of the WFN. In our situation, a country is determined to be such by the trustees on behalf of the WFN.

I have taken this time to detail the path that this application has followed to

illustrate that these decisions are carefully considered before proceeding to the vote. It is, in some respects, similar to the due consideration given to the membership of the Hong Kong Neurological Society when the Chinese Neurological Society became a member. As long as the reasons are transparent and do not interfere with the function of other member societies, I feel confident that the COD will make a fair decision.

As mentioned at the commencement of this report, the Global Neurology Alliance will also meet at 12:30 p.m. on Monday, Oct. 28. This is an important element of the WCN and for international neurology. By combining the views of the members of the GNA in the WCN program and providing a forum for the GNA, the WFN seeks to maintain a working relationship between all the GNA participants. As I have mentioned before, the Global Neurology Alliance is essentially a topic-based global organization that strongly complements the national and geographic global structure of the WFN. In so doing, it provides world neurology the flexibility, expertise, and credibility to address almost any global matter requiring the attention of neurologists.

Central to this meeting of the GNA are at least three matters of substance. The first is the issue raised at the GNA meeting in Lisbon during the 2018 EAN meeting on the need for the GNA to

## MIGRAINE: THE PAINFUL TRUTH

## World Brain Day 2019 in Pakistan



BY DR. ABDUL MALIK, MD, DCN, PGDN, MBA

The Neurology Awareness and Research Foundation (NARF) in Pakistan organized countrywide activities to mark the fifth Annual World Brain Day, with the theme Migraine: The Painful Truth. Migraine affects one in seven people and, together with other headache disorders, is one of the leading causes of disability worldwide.

Besides countrywide awareness activities in all four provinces across Pakistan, NARF organized the majority of its activities in the largest city of Karachi. Flyers about migraine were distributed for the general public in the family medicine clinics. NARF also prepared migraine signs/ symptoms/ treatment/ diet and lifestyle modifications awareness mounts, which were placed in 1,000 clinics across the country. A month-long Facebook campaign as well as Twitter activities were

executed by placing video messages and awareness posts in local languages as well as the matter provided from the WFN. World Brain Day posters were placed in almost all the major institutes and departments of neurology in Pakistan.

On July 22, under the aegis of the World Federation of Neurology (WFN) in association with the International Headache Society (IHS), NARF celebrated the Fifth Annual World Brain Day with a free migraine clinic and press conference by the renowned neurologists of the country, including Prof. Mohammad Wasay, NARF president; Prof. Aziz Sonawala, former PHS president; and Profs. Arif D. Herakar and Dr. Abdul Malik from the Liaquat College of Medicine & Dentistry in Karachi. In the free migraine clinic, which was held at the Karachi Press Club, a large number of patients attended. They were provided free consultation as well as provided medications for the prophylactic treatment of migraine.

A unique activity was conducted for the awareness of migraine in collaboration with the students of the Masters for the Headache Disorders (MHD) from the University of Copenhagen and Danish Headache Center in Denmark. This activity was done under the patronage of the Prof. Rigmor Jensen, course director. We had prepared and disseminated messages on migraine awareness provided by the WFN. This included almost 20 videos messages in 16 languages from 14 countries (Colombia, Denmark, Greece, Ireland, Italy, Latvia, Nigeria, Pakistan, Philippines, Slovenia, Spain, Sweden, the U.K., and the U.S.).

On July 31, 2019, a Continuing Medical Education (CME) activity on #migraine #thepainfultruth: Diagnosis &



Management was held at Liaquat College of Medicine & Dentistry (LCMD) in context with #worldbrainday. Prof. M. Wasay, Prof. Aziz B. Sonawala, and Associate Prof. Dr. Abdul Malik were the speakers. Prof. Rizwan Azami, director of medical services DSH, and Dr. Rashid Naseem Khan, principal LCMD, were the guests of honor. A large number of undergraduate students, postgraduate trainees, and faculty members attended the interactive session.

The awareness activities were covered in national and local newspapers as well as in the electronic media. There were

TV shows on migraine for public interest as well as a question-and-answer session about migraine signs and symptoms and treatment. In the Urdu language, an article was published in a local magazine about the awareness of migraine.

In short, a comprehensive advocacy campaign for migraine awareness was executed on the occasion of this year's World Brain Day 2019 in Pakistan, keeping in view that migraine is the most common neurologic disorder that is treatable. •

Dr. Abdul Malik, MD, DCN, PGDN, MBA, is associate professor of neurology in Karachi, Pakistan.

## WFN Treasurer: Richard Stark

It has been a great privilege to be treasurer of WFN since 2015. During this time, I have been delighted to see the finances of the federation become even stronger.

WFN's mission statement is: "... to foster quality neurology and brain health worldwide, a goal we seek to achieve by promoting global neurological education and training, with the emphasis placed firmly on underresourced parts of the world."

I strongly support these aims, and my experience on the board of trustees for the past four years confirms that it is applied in practice.

The role of the treasurer is to advise the other trustees about the state of the finances, and thus which programs can be supported. For example, one of our current major programs involves supporting training in Africa and Latin America. The impact on the budget

extends for some years into the future. We must be confident that our position is sound (and will remain so) in order to make the commitment to support training for up to four years in the future.

The income stream for WFN derives in part from member society fees and royalties from the Journal of Neurological Sciences (which are both relatively stable), and more substantially from the Congress (WCN), which is much more volatile. The 2015 meeting in Santiago significantly exceeded expectations, and the Kyoto meeting in 2017 was an outstanding financial success. As treasurer, I must thank all those involved in those meetings for working so hard to ensure success. Early projections for Dubai 2019 are positive also.



RICHARD STARK

The financial success of WCN depends largely on the support from pharmaceutical companies, which depends, in turn, on the stage of commercial development of their products. These factors are outside our control. The management of the WFN's finances, therefore, requires an astute and flexible approach, efficient administration, and conservative estimation of projected income streams.

My experience over the past four years has helped me to have a more in-depth understanding of these issues and should be helpful to the WFN over the next four years. I believe, therefore, that I have something of substance to offer if elected.

I should set out some aspects of my background that have relevance to the position of treasurer of WFN. These include:

- treasurer of the Sydney 2005 WCN, which was a huge financial success
- treasurer of the Australian Association of Neurologists (1997-2003)
- WCN 2005 took place at a time of substantial exchange rate volatility, and the strategies designed to minimize adverse impacts of this contributed to the financial success of the conference. Subsequent experience as treasurer of WFN over the past four years (with the impact of Brexit) has reinforced the necessity to have funds diversified in such a way as to minimize volatility while not excluding the possibility of organic growth.

The WFN has a strong tradition of efficient use of funds. This relies on the generous donation of time from the executive as well as the hard work of administrative staff. This efficiency must continue. If elected to a further term, I undertake to continue to work diligently with the executive to ensure that the financial management of the WFN allows it to pursue its aims and objectives. •

# World Brain Day in Turkey

BY PROF. SEREFNUR OZTURK

The Turkish Neurological Society has been celebrating World Brain Day since 2014. Every year, we follow WFN guidelines and create public awareness by organizing meetings, public service announcements, and newsletters. This year, we partnered with İstanbul, Besiktas municipality, and organized a meeting about this year's theme "Migraine: The Painful Truth."

The meeting took place on July 22, World Brain Day, and was open to public attendance. Migraine is a common disorder in our population (reported as one of five women and one of 10 men). Banners were distributed throughout İstanbul promoting the meeting along with powerful support by social media and the national press.

We appreciate the WFN for supporting societies with toolboxes and webinars every year. We also encouraged our members to organize World Brain Day events, and this year, many meetings were held across Turkey. Furthermore, we collaborated with the International Headache Society to increase awareness for migraine. •

Prof. Serefnur Ozturk is president of the Turkish Neurological Society.





## MEMOIRS OF AUSTRIA

# Echos of Kindness

BY OSIGWE P. AGABI, MBBS (BENIN),  
MWACP, FMCP

Undertaking my residency training in neurology in Nigeria had its advantages. I got to learn and practice in a culture where my expertise would be deployed, and the diversity and sheer number of neurological cases and conditions enabled me to hone my clinical skills. The training also afforded me the privilege of providing answers (and some succor, I hope) to patients whose conditions had been undiagnosed or misdiagnosed, cursorily attributed to “spiritual” forces in the absence of a logical alternative explanation. This was enabled by the increase in availability of some technologies, including brain imaging and support laboratory diagnostics for those who could afford them.

Despite these, however, one gaping void was the absence of expertise and technology for electromyography and nerve conduction study (EMG/NCS) testing. Four decades prior was the last time my training center had functioning EMG/NCS, and the combination of competing financial commitments and lack of expertise ensured this was not revived.

That was until early 2018, when a good natured alumnus donated EMG equipment and conducted a preliminary workshop that whet my appetite. About the same time, serendipity brought my mentors together at the EAN regional teaching course in Ouagadougou, and discussions ensued that culminated in the opportunity to begin my formal training in EMG/NCS in Austria.

As I sat down on the Lufthansa flight bound to Vienna from Lagos, Nigeria, my thoughts wandered. What would Austria be like? What will this experience be? Will I achieve my objectives? Will the weather be kind? Will I have problems

communicating, as I speak no German?

I reached for my phone and looked down at the pictures of Profs. Walter Struhel and Wolfgang Grisold I had downloaded before the journey. It was this duo of renowned neurologists who had graciously agreed to offer themselves to train me in nerve conduction studies and electromyography at no cost that informed this journey. I thought about my family and the neurology unit back at the Lagos University Teaching Hospital in Nigeria. I thought most especially about my teacher, mentor, and boss, Prof. Njideka Okubadejo who had given her all to the actualization of this dream and how lucky I was to have her. I was still in this train of thought when I was jolted into consciousness by the air hostess who was waiting to take my order of refreshment.

I arrived in Vienna and headed straight for the University Hospital in Tullin where Prof. Struhel is head of neurology. Prof. Struhel is a kind gentleman with a calm disposition. I was taken to my apartment that contained most of what I was going to require for the period of my stay.

The next day, I was formally introduced to the neurology department and completed some administrative formalities. Every morning, there was a presentation of all patients, new and old, by the consultants with their relevant investigations and neuroimaging. I looked forward to this exercise every morning not only for its robust intellectual nature but also for the demonstration of genuine patient empathy. I was received warmly by all. I observed the team spirit, astute dedication to duties of all, both young and old.

The synergy between doctors, nurses, and other support staff was exemplary. I worked closely with Drs. Andreas Seiser and Brigit Riemer who were the neurologists in charge of neurophysiology.



They walked me through the rudiments of NCS and EMG. They loved to teach and made the process seamless. I cannot forget the patients who offered themselves freely to this exercise so I could learn. I was glad to observe sessions of transcranial magnetic stimulation, fiber-optic endoscopic evaluation of swallowing, and some autonomic nerve testing, among others.

Twice every week, I commuted by train to Vienna to catch up with Prof. Grisold in his private practice. In his office, he laid bare nerve conduction and electromyography. He taught with uncommon dedication and passion, making sure I had an untainted understanding of the concepts. He taught me many secrets that only years of practice could bring. He had sessions with me as the patient. It is a great privilege to have been tutored by him. I will forever remain grateful.

Prof. Grisold wanted me to broaden my horizons on my many spheres of neurology. He reached out to many of his colleagues, including Dr. Stefan Meng, a radiologist with expertise in nerve and muscle ultrasonography. Dr. Meng was

warm and highly knowledgeable, yet humble. He had some teaching sessions with me at the KFJ hospital in Vienna. Before this experience, nerve and muscle ultrasonography was a distant reality for me.

I also had the rare privilege of visiting Prof. Michaela Auer-Grumbach, a renowned neurogeneticist who added the icing on the cake for me. Before long, my 32-day visit had come to an end.

I am overwhelmed by the unconditional kindness, efforts, and support of Profs. Struhel and Grisold for bringing this dream to reality. This experience has awakened in me a restlessness to develop that which I have acquired and to impart to others after me. Yes, St. Augustine was right when he opined that “the world is a book, and those who do not travel read only one page.” •

Osigwe P. Agabi, MBBS (BENIN), MWACP, FMCP, is a consultant physician and neurologist in the neurology unit of Lagos University Teaching Hospital in Nigeria.

# Statement for Elected Trustee

It has been a tremendous privilege serving as elected trustee of the World Federation of Neurology (WFN). In my current roles as WFN trustee, chair of the WFN Education Committee, and editor of *World Neurology*, I am indebted to this organization and the opportunities it has provided me to help achieve its mission to foster quality neurology and brain health worldwide via the promotion of global neurologic education and training.

My initial involvement with the WFN occurred coincident with my appointment by the American Academy of Neurology (AAN) as editor-in-chief of *Continuum*. This joint program of the WFN and the AAN (and its publisher Wolters Kluwer) provides print and online access to *Continuum* to user groups from more than 40 neurological societies from low- and lower-middle income countries. I have appreciated being involved as our two organizations work closely together to provide this resource for participants who would otherwise be unable to obtain it, including recent and ongoing collaborative efforts to improve and enhance this important global educational program.

As WFN trustee and as chair of

the WFN Education Committee for the last six years, I have become integrated into the critical workings of this organization in education, training, and practice of neurology around the globe. I have learned so much from our talented staff, my esteemed colleagues on the many WFN committees and related organizations, and all of the co-trustees up to the president(s) whom I have been so privileged to work with. Their knowledge and expertise have been invaluable in my continued personal development and improving my effectiveness to our organization. In my additional role as World Neurology editor, I have had the privilege to help report on news about neurology and neurologists worldwide, a role that I cherish continuing as well as honing.

In my roles and experiences with the WFN, I have continued to meet so many remarkably talented neurologists worldwide. I continue to be impressed by the similarities among us all, despite differences in resources and access to care within and between regions. If



STEVEN L. LEWIS, MD

re-elected as trustee, I look forward to continuing to help the WFN achieve its mission via continued partnership with national, regional, and international neurologic societies and disease-based organizations, and the WHO; optimizing our current regional teaching centers for neurologic training—now four African training centers and one in the Americas, with plans for other region(s) as well; growing our department visit programs, which have recently included wonderful partnerships with many European countries for African trainees, and one in the Americas for South American trainees; increasing awareness of travel and research grants for young neurologists from low- and lower-middle income countries; and continuing to react quickly to novel regional or global neurological issues or threats as they arise.

I would be honored to be re-elected as WFN trustee, and if so, I pledge to continue to faithfully serve our delegates and member neurologists for the mutual goal of improved neurological access and the highest quality of neurology and neurological health worldwide. •



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- Our esteemed experts helming the WCN 2019 scientific program will undoubtedly offer a great educational experience.

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## PRESIDENT

*continued from page 5*

formulate its role in raising the awareness of brain health. The second is to report on the success of the 2019 World Brain Day and to deliberate on themes and partnerships for World Brain Day 2020 and beyond. The WFN has previously partnered with a major topic group like the World Stroke Organization and the International League Against Epilepsy and this year with the International Headache Society. Third, the GNA will be asked to contribute to the 2021 WCN in Rome and how best to incorporate activities and topics from the GNA members.

Finally, by the time this issue of *World Neurology* is on your device, the program will have been finalized on the World Congress of Neurology website. The WCN will provide daily highlights throughout the Congress, teaching courses, and cutting-edge topics delivered by expert lecturers. Notable among these are several plenary lectures such as “The Battle to Beat Parkinson’s Disease” by Patrick Brundin; “Sleep and

Circadian Rhythm” by Russell Foster; “Gene Therapy and Neurodegenerative Diseases” delivered by Sarah Tabrizi; “Brain-Machine Interfaces” by Miguel Nicolelis; and “The Promise of the Brain Initiative for Those With Neuro/Mental/Substance Abuse Disorders” by Walter Koroshetz.

Each day will feature main topic lectures on stroke, epilepsy, dementia, demyelinating diseases, movement disorders, neuromuscular diseases, and headache. Interspersed are numerous teaching course sessions, free paper sessions, and poster sessions—all providing a lively interactive environment. The Tournament of the Minds, featuring teams of four, will provide a wealth of clinical learning in a good-natured, competitive spirit. The program will be WCN Congress app-based and social media platforms and the internet will be accessible throughout the Congress including a twitter wall.

The 2019 WCN promises to be an outstanding event, and the WFN is most grateful to all those who have worked to make it so. •

## CAMEROON

*continued from page 3*

candle, rather than curse the darkness of the migraine in Cameroon through the celebration of Brain Week in Cameroon and World Brain Day. BRAIN plans to cover all of the 10 administrative regions of Cameroon in the next edition of Brain Week in Cameroon and World Brain Day and to consolidate and spread this concept and strategy for the promotion of brain health in the region.

Since it has been said that every cloud has a silver lining, BRAIN hopes that the WFN and other partners such as the World Brain Alliance will find an interest in supporting BRAIN in its vision and mission so that as a team, we can work together toward the preventive treatment of the migraine in Cameroon, Africa, and the world, thus promoting brain health. •

*Readers should note that articles in World Neurology represent the opinions of the author and not necessarily the view of the World Federation of Neurology.*

Alfred Kongnyu Njamnshi, MD, MA, DMS, FMH is professor of neurology and neuroscience, faculty of medicine and biomedical sciences at the University of Yaoundé I, (FMBS-UYI), Yaoundé, Cameroon. He is also the founder and executive director of the Brain Research Africa Initiative (BRAIN), Geneva, Switzerland, and Yaoundé, Cameroon. He is head of the neurology department at the Yaoundé Central Hospital, chair of neurology-neuroscience training

programs and head of the neuroscience lab, FMBS-UYI, and past president of PAANS, WFN delegate for Cameroon and emeritus regional director for Africa of the World Federation of Neurology.

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**As long as the reasons are transparent and do not interfere with the function of other member societies, I feel confident that the COD will make a fair decision.**

## HISTORY

Critical Minds on the Brain in the 17<sup>th</sup> Century

BY PETER J. KOEHLER

A number of medical students of human and animal bodies in the 17<sup>th</sup> century demonstrated a critical attitude toward the knowledge that was taught in books and by their teachers. Although inspired by the new mechanistic or iatrophysical physiology of René Descartes (1596-1650), they not only questioned the anatomical and physiological views of previous generations of anatomists and physicians (including Thomas Willis), but also Descartes' own ideas. In this essay, I will discuss two of these critical young men.



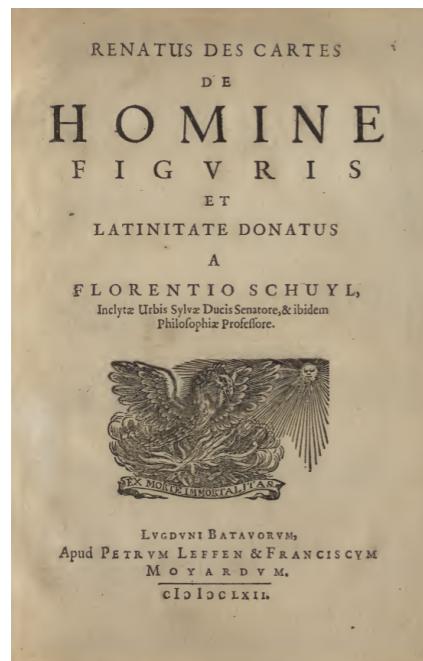
Steno (by Justus Sustermans; public domain).

## Danish Student Discovering a Duct

One was born and raised in Copenhagen, Denmark, where one of his teachers, the physician Thomas Bartholin (1616-1680) advised him to go to Holland, in particular Amsterdam. Armed with a letter of recommendation from Bartholin, the young man was welcomed by Gerard Blaes (Blasius, 1627-1682) who gave him lodging, a frequent custom at the time, and taught him anatomy.

The relationship was soon disturbed, when the young man discovered a new anatomical structure in the head of a sheep, notably the duct of the parotid salivary gland that became eponymously related with his name: Niels Stensen (Steno, 1638-1686). His teacher Blaes, at several occasions, tried to turn the discovery to his own advantage. A few months later, Stensen continued his studies at Leiden University, where he was taught by Johannes van Horne (1621-1670) and Frans deleBoë (Sylvius, 1614-1672); his name is remembered in the term Sylvian fissure, both considered modern professors, stimulating practical research, in contrast to the men of learning, who kept to the old philosophy of Aristoteles.

Although the new philosophy of Descartes, who had stayed in the Netherlands for a large part of his career, had inspired him as well as many other scholars, and his world view incited study of the individual phenomena, Stensen

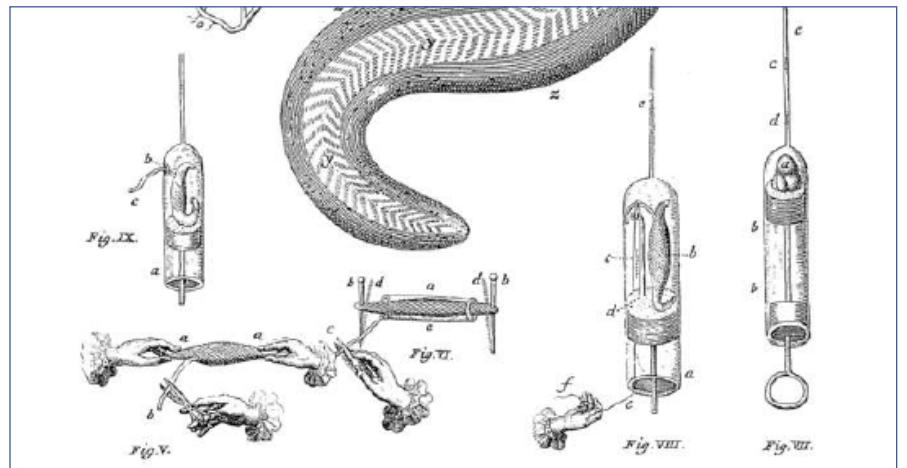
Title page of Descartes' *De Homine* (1662).

found that many of his ideas were speculative. Mathematician/physicist and astronomer Christiaan Huygens (1629-1695), for instance, found that mechanical laws, upon which Descartes founded his physics, were not correct. Descartes obviously had put into perspective the significance of observation as the senses were fallible, but this seemed to be truth also for the power of reason.

The criticism increased by the posthumous publication of Descartes' book on the functions of the human body, *Tractatus de Homine* (1662). Descartes had written the discourse already in 1632, but did not publish it, fearing the inquisition (as Galilei had experienced in Italy, 1632). Descartes had written his discourse to show that the function of the human body could be comprehended in mechanistic terms, controlled by the brain by means of the nervous system.

## Dutch Student Making a Nerve-Muscle Preparation

This inspired Stensen. He decided to study the structure and physiology of the brain. He soon found that the old idea of spirits conducted by nerves to control the muscles, an old Galenic concept, was difficult to prove. Around the same time, another Leiden medical student worked on the same problem. Son of an Amsterdam pharmacist, he started his medical studies in Leiden in 1661, doing research on respiration with Frans deleBoë. The old view was still that the function of the lungs was to cool the blood. According to Galen, the heart had an innate warmth, with which organisms were born and which was the source of body warmth. DeleBoë changed the view based on his iatrochemical ideas, effervescence by the combination of acid and alkaline substances. Working on

Swammerdam's nerve-muscle preparation from the posthumously published *Bybel der nature of historie der insecten* [Bible of nature or history of insects] (1737).

respiration, the student also had to study (frog) muscles and found that touching the nerve, even of a frog leg disconnected from the body, produced muscle contractions.

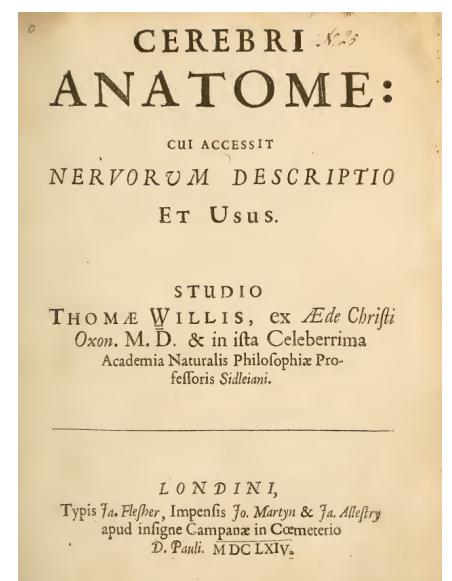
Like Stensen, he realized this was not in accordance with the idea of spirits being conducted by (hollow) nerves to the muscles. He observed similar phenomena while studying the diaphragm of living dogs. How could this be explained by material sent to the muscle from the brain so fast? Therefore, he devised an ingenious experiment with a muscle-nerve preparation in a glass tube, by which he was able to prove that no material was blown into the muscle upon contraction at all. His experiment stirred amazement, and several colleagues, including Stensen, visited his Leiden room, where he, Jan Swammerdam (1637-1680), as some of you may now have realized, demonstrated this and other experiments. Stensen told Bartholin about what he had seen in springtime of 1663.

Clearly, Swammerdam and Stensen had a kindred spirit, both believing in their own critical insights to come to new knowledge, not merely accepting the ideas of previous generations. In this way, Stensen, experimenting with animals, found that the heart was a muscle and not an organ that produced heat.

## Criticizing Willis and Descartes

Another subject Stensen wished to study was the anatomy and function of the brain. He experienced it was difficult to deduct its function from the anatomy. He reacted critically, when Thomas Willis' (1621-1675) *Cerebri anatome* was published (1664). Although it contained accurate anatomical plates (by Christopher Wren), and Willis described the well-known arterial circle (now known by the name circle of Willis) at the base of the brain, suggesting its function ("The joinings together of the Carotides, in most living

see HISTORY page 11

As there is no existing portrait of Swammerdam, the title page of his *Historia Insectorum Generalis ofte Algemeene Verhandeling van de Bloedeloose Dierkens* [General treatise of the bloodless animals] (1669) is shown here.Thomas Willis' *Cerebri Anatome* (1664).

**HISTORY**

*continued from page 10*

Creatures, are made about the Basis of the Skull under the *Dura Mater...*”), Stensen was particular critical about his speculative discussion of the function of the brain.

Both Descartes and Willis still adhered to the concept of *spiritus animalis*, being conducted by the ventricles and nerves, the first explaining it in a mechanical way (iatrophysical physiology), the second by chemical (iatrochemical physiology). He believed the little progress that had been made with respect to the knowledge of brain function was due to the fact that most physicians used the ancient doctrines as points of departure, rather than critically describing what was observed, although he realized that the methods available to study the brain were insufficient due to its soft structure.

These and other comments, Stensen presented in a lecture on the anatomy of the brain in Paris (1665, then 27 years old and already well-known), at wealthy amateur scientist and patron of many scientists Melchisédech Thévenot’s (1620-1692) group. It was published only in 1669 (350 years ago) with the title *Discours sur l’anatomie du cerveau* (à Messieurs de l’Assemblée de chez Monsieur Thevenot). He started the lecture in an unusual way: “Au lieu de vous promettre de contenter votre curiosité, touchant l’Anatomie du Cerveau; ie vous fais icy une confession

sincere & publique, que ie n’y connois rien » [Instead of promising you to satisfy your curiosity, with respect to the brain; I here have to confess sincerely and in public that I do not know anything about it].

He ended the lecture by presenting suggestions how to continue research. The brain should be described accurately paying attention to all its aspects, including anatomy, embryology, comparative anatomy, function, etc.

“Dans les animaux vivans, il y a a considerer toutes les choses que peuvent causer quelque alteration aux actions du cerveau, soit qu’elles viennent du dehors, comme les liqueurs, les blessures, les medicamens ; soit que les causes soient internes, commes les maladies, dont la medecine compte un grand nombre » [In living animals, one may consider all things that may cause any change to the actions of the brain, whether they may come from outside, as fluids, injuries, medicines; or be it internal causes, as diseases of which medicine counts a large number].

The publication was commented upon in the *Transactions of the Royal Society* (September 20, 1669) in which we find a three-page summary, containing the sentence “Next, he entertains the reader with an enumeration of the chief errors of anatomists touching the brain. And here he examins particularly the Systemes of dr. Willis and Monsieur Des Cartes.”

Stensen as well as Swammerdam were both sponsored by Thévenot, and the three worked together in 1665. Stensen moved to Florence in 1666, where he stayed with the Grand Duke of Tuscany, Ferdinando II) and his brother (Leopoldo

**He concludes his Discourse by recommending the method which seems best and most convincing to him, for making true Discoveries in Anatomy; where he adviseth, that for obtaining the true history of the parts, we should examine and accordingly draw them in that State, in which they are found naturally, without at all forcing them; thereby to find, whether the parts are indeed joyned together or separated, and what situation is assigned them by Nature it self. Where he desires, that the Anatomist would not only be intent upon the part, on which he is for the present employed, but also reflect upon all the Operations, he hath made before he came to that part, which may have caused some change or other in the same, as to it's situation, connexion &c. Of which he also allecges divers Examples, especially as to the Brain.**

Section from the review of Steno's *Discours* in *Transactions of the Royal Society* (September 20, 1669).

de Medici), both interested in science, founding the *Accademia del Cimento* [Academy of Experiments] in 1657. Here, he published his *Elementorum myologiae specimen*, including detailed descriptions of the structure and contraction of muscles (1667). The work, however, was severely criticized by Mayow, Borelli, Bernoulli, and Boerhaave.

Interestingly, both Stensen and Swammerdam never practiced medicine. They made a religious turn in their lives. Although born in an orthodox Lutheran family, Stensen converted to Catholicism in 1667. Later, he became a priest and bishop in northern Germany. He died in Schwerin in 1686 (age 48). Swammerdam became depressive, possibly related to a long-lasting conflict with his father on providing means of sustaining life, but also by doubts about his future and a possible marriage. He became a member of the religious community of mystic Antoinette Bourignon (1616-1680). The last years of

his life, he studied insects often using small microscopes that he made himself. He died in 1680 (age 43). His first biographer (Leiden professor Herman Boerhaave) published his *Bybel der natuure of historie der insecten* [Bible of nature or history of insects] in 1737, in which we find the experiments described above. •

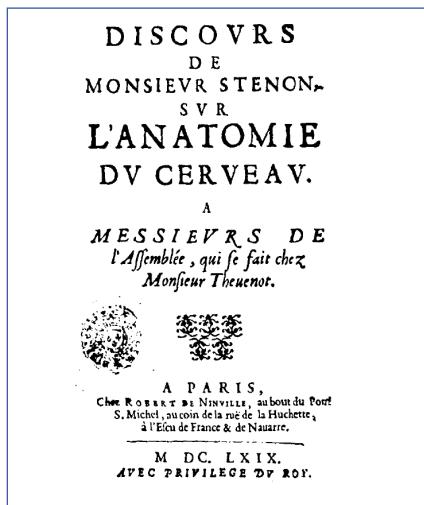
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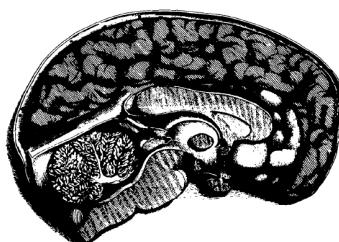
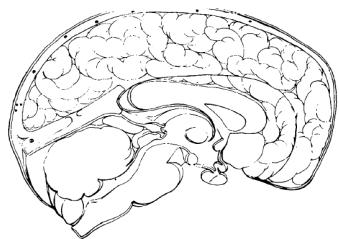
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From Steno's *Discours* (1669).

# WCN 2019

## XXIV WORLD CONGRESS OF NEUROLOGY

DUBAI, UNITED ARAB EMIRATES, OCTOBER 27-31 2019

**GET YOUR TEAM TOGETHER AND PARTICIPATE IN A GLOBAL FUN EXCHANGE OF IDEAS**

Join the Tournament of Minds for a chance to win free\* registration for the 2019 World Congress of Neurology in Dubai.

The Tournament of the Minds is a unique opportunity for WCN 2019 participants to:

- Interact with colleagues
- Test intellectual tenacity
- Demonstrate national pride, while competing in country teams

Teams of 4 will take part in a knockout competition, to answer questions on a range of neurological topics based on clinical cases from around the world.

Review the guidelines and enter the competition.

\* Free registration to the WFN 2019 Congress will be offered to the 4 people per team. Delegates will need to first register and pay - after their nomination is confirmed they will be reimbursed.



WORLD FEDERATION  
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# WCN 2019

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# DUBAI

**ACCELERATING THE PACE OF CHANGE**



## TAKE PART IN THE TOURNAMENT OF THE MINDS

The Tournament of the Minds is a unique opportunity for WCN 2019 participants to interact with colleagues, test intellectual tenacity, and demonstrate national pride, all while competing in country teams. As such, the aim of the Tournament of the Minds is to provide an experience that is both educational and entertaining for participants, integrating various aspects of neurology.

This year, when your WFN member society signs up your team, you will receive free registration to WCN 2019 in Dubai. The winning team of the tournament will also receive free registration for our next congress in 2021.

The full details are available on the Congress website:

[www.wcn-neurology.com](http://www.wcn-neurology.com)

Start building your team.