



A LOOK INTO SCIENCE

MARCH 2023 · VOLUME 5

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EDITORIAL NOTE

"How can the sky be your limit when there are footprints on the moon."

Our vision, via Ubiquiscope, is to provide our dear readers with raw materials comprising innovative ideas that have been utilised around the globe. We wish to ignite the spark of curiosity in them so that they are well equipped to pursue their areas of interest in their future professional lives.

With this long preamble, we welcome you to the 5th edition of Ubiquiscope, brimming with some amazing contents, ready to enrapture our readers.

The familiar tall sky-scrapers of Manhattan that you often see in movies have a rather important effect in the field of statistics, which you will learn in our review about understanding Manhattan Plots!

Talking about statistics and not mentioning research is definitely not acceptable, so we bring a rather interesting write up about the value of research in the current day clinician's era.

In our customary section on History of Medicine, we share a detailed description about Augusta Klumpke, a surname first year students will never dare to forget!

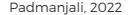
We have captured a few vibrant moments of Lambodaraya '22, in a special segment, courtesy to our wonderful photography team.

These are but handful of highlights we have prepared to keep you in sync with the happenings around . We hope you enjoy this edition to the fullest and keep us posted with any helpful feedback.

Yours faithfully,

Team Ubiquiscope







Madhur Sharma concert night

LEVITATION AND GRAVITATION

"That's one small step for man, one giant leap for mankind." ~Neil Armstrong

Space is a microgravity environment, which means some mechanical forces on the body that we are used to on Earth are absent or reduced in space. This causes our body systems to work differently.

It gets difficult for the cardiovascular system to function normally after a trip to space due to differences in gravity and blood flow ease in the opposite direction.

Spaceflight studies have shown up to 24% loss in calf muscles after more than 100 days in space.

Due to the delicate structure of the lungs, it deforms under its own weight, resulting in significant differences in alveolar volume and ventilation between the top and bottom of the upright lung.

Mars v/s moon

The increasing population on earth is compelling our scientists, astrophysicists and researchers to look for sustainable places for survival elsewhere in space. The major fight in this agenda is among the already discovered places. Is the moon better or mars for the survival of both humans and humanity? This makes an important question for discussion.

Mankind was born on Earth. It was never meant to die here. ~Interstellar.

	Earth	Mars	Moon	Titan
Gravity	9.8m/s2	3.712m/s2	1.67m/s2	14% that of Earth
Climate/ Temperature	Varies according to region, time of the year, day and night. Average temperature is 57 F	Average -80 F	It fluctuates from extremely warm to extremely cold in day and night respectively	-290 F Extremely cold
Environment (Atmosphere)	Dense	Less Dense	Absent	5 times as dense as Earth
Distance from Earth		113.88 million kms	384,400 kms	746 million miles (7 years travel time from earth) Beyond LEO (Low Earth Orbit)
Preferred Settlement Place	Overground	Underground	Underground	Overground
Agriculture	Agriculture is a common practice	Martian Soil contains perchlorates. Agriculture is possible by hydroponics.	Agriculture possible	Research ongoing
Effects on CVS	-	Reduced Blood Volume	Reduced effort against gravity	Reduced blood volume
Effects on RS	-	Respiratory support required	Respiratory support required	-
Effects on Muscles	-	Muscle wasting occurs	Muscles Atrophy	Muscular Atrophy

"A stitch in time saves nine" but what if you metaphorically lose track of time because it's functioning differently. Numerous theories mention the variation of timeline on earth and in space, this stands as a challenge in the way. This along with many identified and non-identified challenges will be met on the way. The search however continues.

So the question that stands is... Will we get to Mars and beyond?

PROFILE IN MEDICINE A CLINICIAN'S ZEST FOR RESEARCH

It was the year 1885, when Augusta Dejerine-Klumpke took hold of her ophthalmoscope to examine a patient who had come in with an injury to his brachial plexus. The excessively constricted pupils set her off

onto becoming a name to behold among neurologists across the world. Born on 15 October, 1859 Klumpke was fortunate to belong to a family supportive of educating their three daughters in a time when women were being raised for advantageous marriages. She was born in America, but soon relocated to Paris with her family as they felt it was best for their academic pursuits. She faced the blatant sexism evident in medical institutions with dignity and maintained a focused determination towards her studies. She has famously been described as someone who "wouldn't take no for an answer". Klumpke had always seen her years as a medical student in hindsight, as the time when she became initiated to her passion for research. She along with her husband Joseph Jules Dejerine experimented on serial sectioning methods of brain and drew up extraordinary sketches. They co-authored the two-volume book, 'Anatomy of Nerve Centre'. She has 56 articles to her name, was the president of Paris Society of Neurology and the first female member of Society of Biology. She received many titles in her lifetime such as Officier de la Legion d'honneur and Chevalier de la Legion d'honneur. Her drive for research far exceeded that for clinical practise. Augusta Klumpke will always be a striking and inspirational feminist icon in the field of science.



AIR POLLUTION AND CARDIOVASCULAR DISEASES: CONNECTING THE DOTS

Air pollution is a heterogeneous, complex mixture of gases, liquids, and particulate matter. Over the last decade, a growing body of epidemiological and clinical evidence has led to a heightened concern about the potential deleterious effects of ambient air pollution on health and its relation to heart disease and stroke. Environmental air pollutants like carbon monoxide, oxides of nitrogen, sulfur dioxide, ozone, lead, and particulate matter are associated with increased hospitalization and mortality due to cardiovascular disease, especially in persons with congestive heart failure, frequent arrhythmias, or both. Data from the American Cancer Society (ACS) cohort estimated that for each 10-µg/m3 increase in annual average exposure to PM2.5, long-term all-cause, cardiopulmonary, and lung cancer mortality were increased by approximately 4%, 6%, and 8%, respectively. To evaluate whether high concentrations of ambient particles can trigger the onset of acute myocardial infarction (AMI), Peters and associates, interviewed 772 patients with AMI as part of the Determinants of Myocardial Infarction Onset Study to evaluate relation between high concentration of ambient particles and AMI. They used a case-crossover approach and found Elevated concentrations of PM2.5 were associated with a transient risk of AMI onset during 2 separate time periods (within 2 hours and 1 day after exposure). These and many more contemporary studies suggest that possible links between acute and/or chronic exposure to PM and cardiovascular events may be related to increases in heart rate and blood pressure, fibrinogen, and blood coagulation factors; arterial vasoconstriction; inflammatory mediators. Evidence shows that even low doses of air pollution (eg second hand smoking of just 1 cigarette per day) could have negative effects on coronary morphology and circulation. Collectively, these and other studies suggest that air pollution may accelerate the development of coronary atherosclerosis and worsen its sequelae. Some of these effects may occur over time, as with acceleration of the progression of atherosclerosis, or rather abruptly, as with the triggering of an arrhythmia or myocardial infarction by acute inflammatory responses, altered platelet adhesiveness, or perhaps vascular endothelial dysfunction.

OVER THE SKYLINE, INTO THE GENOME: AN INTRODUCTION TO MANHATTAN PLOTS

"One thing my pea plants have taught me: always do science with things you can make into soup." And indeed, Gregor Mendel, the Father of Genetics is right, for what are human beings, if not a soup of genes?

For ages geneticists have been baffled by the inheritance of non-Mendelian genes, the association of their variants and the numerous diseases they cause.

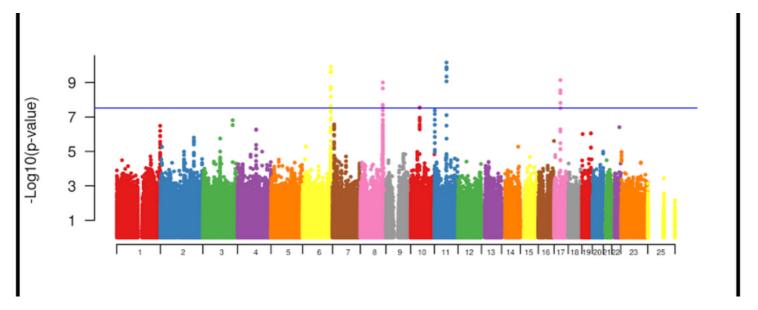
Manhattan plots were a simplified solution to understanding this complex inheritance.

Named after the Manhattan skyline they resemble, rather than the action flick they remind one of, these scatter plots are most commonly used to represent Genome Wide Association Studies, abbreviated to GWAS, which were an audacious attempt to locate the "common risk variant" for "common diseases", i.e., map the genetic basis of pathologies, like heart disease, diabetes, autoimmune, psychiatric diseases, etc., whose symptoms vary greatly in population.

The plots display data with a large number of data-points, the x-axis showing the genes along a single chromosome which tend to be inherited together, organised by chromosome number from left to right, and the y-axis highlighting the negative log base 10 of the p-values of the gene's linkage with the chromosome in affected individuals compared against individuals not affected by these pathologies. The x chromosome is not considered in the plot.

The cluster of data points, consisting numerous dots, make the city buildings, with the highest skyscrapers indicating loci with strong linkage, interspersed with low rise buildings depicting the opposite.

It is said that Manhattan is a city with unending possibilities, where one goes to find oneself. Does it not fit, that the graphs decoding the very essence of our being, are named after it as well?



EFFECTS OF MALE MARIJUANA USE ON SPERM HEALTH AND POTENTIAL RISKS TO FUTURE CHILDREN

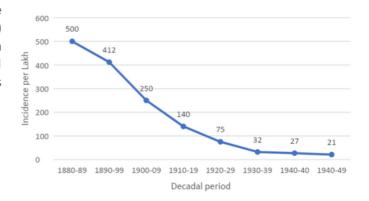
With more legalization of medical and recreational marijuana, it is increasingly perceived to be safe. Use during pregnancy has proven risks. But father's use before pregnancy also matters. Research and findings from the Cannabis-Induced Potential Heritability of Epigenetic Revisions in Sperm (CIPHERS) study at Duke University show that use of marijuana changes the sperm epigenetics and can affect the healthy development of his future children. Growth, development and behavioral changes were observed in both rat and human studies. Abstinence before starting a family showed positive effects. Avoiding marijuana use for at least 11 weeks or one sperm regeneration cycle reduces the number of sperm showing marijuana-associated epigenetic changes at genes that are important for early childhood development.

Further study will determine if human children inherit epigenetic changes and, if so, how it affects health and development. But people need to be aware of the potential health effects caused by male consumption of marijuana and how to reduce risks.

FROM THE DEAN'S DESK PRACTICE QUESTIONS FOR STUDENTS

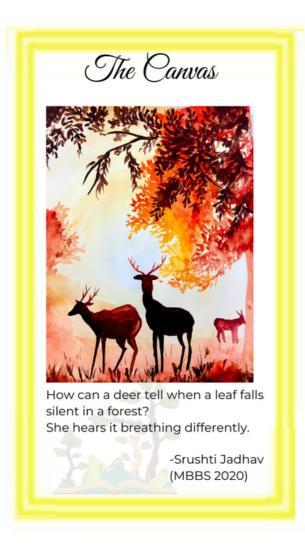
1.A 30 year old male laborer working in a tribal Dam construction area reported to a peripheral health institution (PHI) with all the classical "4S" symptoms of a presumptive TB patient. However, neither X-Ray facilities nor Sputum smear facilities are available at this PHI. Under the NTEP, the appropriate step in such a situation will be:

- (a) His blood should be sent for CBNAAT examination and further management to be done based on result of CBNAAT
- (b) ATT should immediately started as a "clinically diagnosed TB case"
- (c) He should be given a one-week course of broad spectrum antibiotic and reviewed thereafter
- (d) Alternative diagnosis should be considered and he should be referred to appropriate specialist. Give your reasons for selecting the answer.
- 2. A researcher took a random sample of 10,000 persons aged 15 years and above from a particular district, in 2011 and undertook sputum smear examination for M tuberculosis on all those persons in this sample who were having symptoms of presumptive TB. He found that the smear positivity was 2.5 per 1000. He repeated the study after 10 years, in 2021, taking another random sample of 10000 subjects aged 15 years and above from the same district and found, this time, that smear positivity was 3 per 1000. Thus, there was an increase in the smear positivity by 0.5 per 1000 population. The type of epidemiological research design used in this study was:
- (a) Longitudinal descriptive study
- (b) Cohort study
- (c) Repeated cross sectional study
- (d) Case control study
- 3. You are the Medical Officer In charge of DOTS center in a medical college. With a view to find out whether there is higher risk of Diabetes Mellitus among patients of Pulmonary TB, you undertook the standard fasting and 2 hours PP blood glucose estimation among 100 patients attending your DOTS center and also among 100 patients suffering from osteoarthritis, who were attending Orthopedics OPD and were of same age and sex as the patients of pulmonary TB, and who did not have any of the "4S" symptoms of tuberculosis. The statistical procedure to be used in this study for assessing the magnitude of risk of having diabetes mellitus among patients of pulmonary tuberculosis as compared to when pulmonary tuberculosis is not present, will be:
- (a) Risk ratio
- (b) Relative Risk
- (c) Odds Ratio
- (d) Chi Square test
- 4. The graph shown here is a line diagram of the incidence of tubercular disease for decadal (10 year) periods from 1880 to 1950 which occurred in a western European country. Which of the following factors could have resulted in the decline in incidence of tuberculosis as seen in this chart:
- (a) Availability of BCG vaccine
- (b) Availability of Streptomycin, Thioacetazone and PAS
- (c) Availability of microscopic diagnosis
- (d) Overall improvements in socio-economic conditions



- 5. The Key activities in NTEP, as well as the erstwhile RNTCP include active TB case finding, use of newer and shorter treatment regimen, private sector engagement, financial/nutritional support to TB patients, and IT enabled surveillance. With this background, the major focus of national tuberculosis elimination / control is on which level of prevention:
- (a) Primary
- (b) Secondary
- (c) Tertiary
- (d) Primordial

Correct Answers will be placed on WhatsApp Group of Class Representatives 1 week after publication of UBIQUISCOPE



Med Poets Society

डोळे...

- एक कोडे

डोळे कधी काही अशा गोष्टी बोलून जातात ओघाओघाने काही कोडी सांगून जातात अपेक्षा असते एवढीच मनाची सोडवावे ती कोडी त्या एकाच व्यक्तिनी

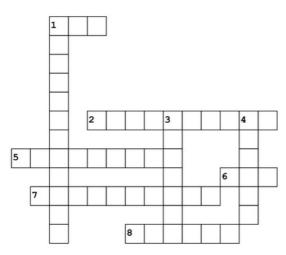
जरी बाकीचे जग नाही समजू शकले ते कोडे तू ते वाचण्याचे प्रयत्न तरी घ्यावे

डोळ्यात साऱ्यांचे सारे गुपीत लपलेले असतात नकळत हेच नयन सारं काही बोलून जातात पण हे शांततेतले संवाद सगळ्यांनाच समजते असे काही नाही कोणा एकाकडेच असते त्या तिजोरीची चावी

आठवणींचे गहरे समुद्र म्हणजे डोळे एका व्यक्तिच्या मनाचे मार्ग म्हणजे डोळे त्याच डोळ्यांमधे हरवून जावेसे बाटते कारण तुझ्यातच हे भान माझे हरपते इतकीच भोळी भाबडी आशा या डोळ्यांची आहे तू एकदा तरी प्रेमाने वळून बघावे माझ्याकडे...!

> -सलोनी शिवाजी फराकटे (MBBS 2020)





Across

- 1. Universal health coverage day is promoted by
- 2. UHC Day is celeberated on
- 5. World handicapped day is celebrated on
- What means that all individuals and communities receive the health services they need without suffering financial hardship
- Condition or function judged to be significantly impaired relative to the usual standard of an individual of their group is termed
- 8. Where did AIDS began

Down

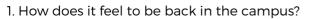
- What do you call the period where you cannot detect for HIV
- 3. A person can be a _____ of HIV but not AIDS
- Of the one billion population of persons with disabilities, what percent live in developing countries

Words That Matter 👤

According to WHO, mental health is a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, work productively and fruitfully, and is able to make a contribution to his or her community. Today, there are many NGOs which promote and help people to achieve and maintain good mental health. They are active in a wide array of areas include activities like treatment, rehabilitation, community care, research, training and capacity building, awareness and lobbying. In this edition's Interview section, we have attempted to encapsulate the idea for this cause from the point of view of Dr. Rucha Shette.



"Understand the purpose of what you are doing.
Always be curious and honest"



It is lovely to be back. I can remember all the moments I had experienced in every corner of the campus. It is very heartwarming. I can recollect how we were all wide eyed and bushy tailed.

2. Why did you decide to start an NGO?

It is the only place where I can be innovative and creative without conforming to the agenda of other people.

3. What were some of the difficulties that you encountered, and how did you overcome them?

The difficulty that we faced was that volunteers didn't stay long enough. Volunteers don't work full time and since we are not paying them you can't force them to work as per your needs. So we always had to work with a fresh batch of volunteers carring out various activities for the NGO. But that was also a great experience, since we got in touch with so many amazing students.

4. What are your future plans for the NGO?

The main goal is 'Mental Health for All.'

So, our future plans include:

A) to provide mental health services at affordable cost to those who actually need it.

B)Lay emphasis on the research aspect. Because without research we won't know if we're doing the right thing.

5. How can our students help you in your NGO?

Students can always volunteer.

Interested students can make a team in their college and conduct various activities regarding mental health, in collaboration with the NGO.

6. What message will you like to give the current undergraduates at PIMS?

Understand the purpose of what you are doing. Always be curious and honest.

7.As a mental health advocate, what is the most common thing you hear from people living with mental health conditions?

People often fear that conditions related to mental health are permanent, but in reality that's not the case. At least not in many cases. You have the power to change your life for the better. Our brain is ductile and we can train it to do a lot of amazing things.

8. What are some of the biggest barriers to people accessing good mental health care?

The Biggest barrier is the lack of awareness. If you know there's a problem you will take help to treat it. But if you don't know that mental health is a problem or that it is treatable you will never ask for help.

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9. Why have you dedicated your life to helping people with mental health conditions?

8 years back I was diagnosed with schizophrenia, I received the best treatment and now I am completely out of it. After that I realised the true importance of mental health.

Also if me being a doctor was so illiterate about the matter, I really felt the need to talk to the general population who have no idea what mental health really is and in addition to that I felt that everyone deserves the kind of care I got.

10. What do you wish people knew about mental health?

Mental health is nothing mystic. It is really a 'chemical locha'. Since it manifests as emotional behaviour we have trouble calling it a disorder. So we might call it bad behaviour. It is a disorder like diabetes which can be treated. It does need more time and patience but it is completely treatable. But one thing for sure is that we have to work hard for our happiness. Don't wait to be happy to do something. Do something that will make you happy.

11. Do you have any piece of advice for the individuals who are hesitant to seek help?

Advice for them is to take their own time. Asking for help doesn't make you any inferior.

12. What are your general tips for staying mentally healthy?

Stay mindful of what you are doing and focus on the task in front of you rather than thinking of what could have happened.

CAMPUS INSIGHTS





Chess: Aryan Kawade (2018): 1st Position Abhijeet Phadke (2020): 2nd Position On 27th and 28th August, there was an Interdeemed Sports event where the representatives of our university won a plethora of achievements under the university's name



Badminton Men's: 1st Position Badminton Women's: 2nd Position

TT Men: 1st Position
TT Women: 2nd Position



Team 'Unheard and Unseen' winning at PSG Institute





Team 'A Thousand Miles' winning at AFMC and Grant Medical College

On 5th September, Batch 2020 organized a Teacher's Day programme on behalf of RMC. The programme started with some melodious notes with our respected faculties being a part of it and had a bag full of entertainment having dance performances, games and debates.



Team 'Hustle' winning at Osmania Medical College





Synergia- The Academic Club of RMC under the guidance of Dr. Mandar Baviskar organized Cruciverbal- The crossword Quiz on September 1st, 2022



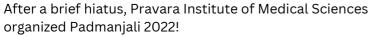
As we go through the Month of September, we cannot overlook the Inauguration of the Positive Mental Health Cell, headed by Brigd. Dr. P. S. Bhatt along with the Psychiatry department of RMC and student representatives Dr. Sowmya Peri and Dr. Jyotsana Jeevantika



16th Convocation, for Batch 2016, held on October 1st, 2022

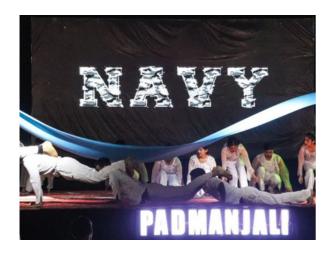






From the Batch Photography Day on Oct 10th, 2022, to the Traditional Day, Headrush 10.0, Tie and Saree Day, Concert and Prom night and Stage Events, it was a week filled with excitement and creativity













GANPATI BAPPA MORYA!!! PUDHACHYA VARSHI LAVKAR YA!!! Celebrations were in the air, as after a gap of 2 years the enthusiastic students and employees of Pravara Institute of Medical Sciences organized Lambodaraya 2022. With joyful chants of his name, they zealously welcomed their beloved Ganpati Bappa to the campus.









It was a 10 day celebration in Bappa's name, with Grand Artis being conducted twice daily. In the shot- we see the Surgery and Pharmacology departments standing to recieve the divine blessings after hosting the morning arti. During the Sthapana and Visarjan, the Grand Dhol Pathak was performed by the students of all faculties. Jatra was also held along with the dandiya night.

The beats of the Dhol and Tasha vadaks were followed by Ganpati Vandana, Dance Performance and Lezim Pathak.



The event consisted of workshops on Point Of Care Quality Improvement (POCQI), Oral Presentation, Poster Presentation and Case Presentation, Oration and Plenary session by the dignitaries, Cultural Evening and Valedictory ceremony.

Attended by many medical professionals from across the globe, our chief guests were Dr. Vikram Datta, Dr. Peter Lachman and Mr. Luigi D'Aquino.





The Nationwide Quality Of Care Network (NQOCN) organized a 2 day conference in association with the Departments of ObGy and Paediatrics.

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The PIMS cricket team represented the University at West Zone Cricket Tournament in Jhunjhunu, Rajasthan on 2nd Feb 2023.



The boys basketball team of PIMS, DU represented the University at the West zone Basketball Tournament on 10th December 2022.





On the occasion of Valentine's Day'23, a special event- COLOR CRUSH- was organised by MAITREYI-The Humanities Society, where students expressed themselves to their dear ones through brush strokes preserved on a canvas.



Patriotism shown by the students standing at attention as the melody of the National Anthem rang through the flag hoisting ground on Republic Day 2023, with the dignitaries of the university in attendance





NSS volunteers organized a health camp in Adgaon. It included free of cost health checkups and interaction sessions with students of primary to high school on good hygiene and eating habits



GAME! SET! MATCH! The anticipation was nearly palpable on the New Basketball Court when the Veteran Basketball players of the University faced off against one another in the first ever PIMS PRO BASKETBALL LEAGUE- where the audience got to Witness Greatness!

Patriotism shown by the students standing at attention as the melody of the National Anthem rang through the flag hoisting ground on Republic Day 2023, with the dignitaries of the university in attendance





A throng of supporters cheered for their favorites as-The never experienced before Street Football Tournament-LA PRAVARA- kicked off on a high note, and concluded higher, with the trophy going to Team Goal Diggers truly electrifying nerves.



Obesity made the headlines on 4th March, the world Obesity day, as under the aegis of the PSM department, students measured their body proportions to determine their physical health with regards to a much controversial subject.



'Natak Dil ke Phatak khole, apna natak haule haule'
On occasion of International Women's Day, NSS
volunteers and the Women Empowerment cell of PIMS
held a rally and students performed street plays to
bridge the gap between genders

BOOK REVIEW: THE MAN WHO MISTOOK HIS WIFE FOR A HAT



When this book was recommended to me, I had mistakenly assumed to it to be a humour novel. But, as I read through the pages I learnt that it is a non-fiction book where the author, a neurologist as well as a gifted writer, has presented some fascinating case studies about his patients with unique afflictions.

The book has been divided into 4 parts wherein each section contains the case studies pertaining to a particular category of neurological afflictions.

Medical case studies are written in a dry, clinical language where the patient is dehumanized, and reduced to a cursory phrase. In the preface the author says, "Such [medical case] histories are a form of natural history - but they tell us nothing about the individual and his history; they convey nothing of the person, and the experience of the person, as he faces, and struggles to survive, his disease." Thus, the author has attempted to "deepen the case history to a narrative or tale" and I liked the way he has talked about his patients with warmth, sympathy and respect.

The narratives are often enriched with quotes, theories and experiences of other doctors, some of whom were stalwarts in their fields.

I believe most of us understand what a magnificent and complex entity the human brain is, and the book reinforced the fact that how fragile it can be, a little bit of damage and it can turn a person's life upside down, make it difficult or even impossible for the individual to do even some basic functions which are so

mundane that we do not even think about them.

In the pages of the book, I came across afflictions I wouldn't have imagined possible even in my weirdest dreams. A gifted music teacher suffering from "visual agnosia" had indeed mistaken his wife's hand for a hat, and provided the title of the book; a woman would learn to use her hands at the age of 60 and prove herself to be a gifted sculptor, a man had the problem of leaning like the Tower of Pisa without his knowledge and would come up with his own novel solution and the list goes on. In some cases the patients would learn to cope, but in others they would not be so lucky.

One particular comment by the author - "The power of music, narrative and drama is of the greatest practical and theoretical importance", pleasantly surprised me as the author showed his preference for a humane treatment of the patients.

One situation you might encounter while reading the book is that the narrative is full of medical jargon and therefore makes it more suitable for Medical Students. Even if you do not check out every single jargon, you can still

understand the fact of the matter.

~Dr. Oliver Sacks (British Neurologist)

OLIVER SACKS MAN

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