

**SYNOPSIS OF A COURSE OF  
LECTURES ON THE ANATOMY,  
PHYSIOLOGY AND  
HISTO-CHEMISTRY OF THE  
NERVOUS SYSTEM**

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Synopsis of a course of lectures on the anatomy, physiology and histo-chemistry of the nervous system by John A. Benson

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**JOHN A. BENSON**

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*L. A. Engr.*

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OF A  
COURSE OF LECTURES  
ON THE  
ANATOMY,  
PHYSIOLOGY AND HISTO-CHEMISTRY  
OF THE NERVOUS SYSTEM.

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## PART I.

### Biological Introduction.

The determining characteristics of living things. Barriers separating animate and inanimate worlds. The Cell—peri-nuclear portion, the nucleus, nucleolus, etc. Properties of Protoplasm. Observations of Authorities, to-wit: Schwann, Dujardin, etc., to the present time. Karyokinesis.

*Unicellular plants*—"Torula," "Protococcus pluvialis."

*Unicellular animals*—"Proteus animalcule."

*Parasitic organisms*—"Pencilium glaucum," "Mucor mucedo," "Bacteria."

*Unicellular animals with differentiation of structure*—"Vorticella."

*Multicellular organisms*—"Hydra viridis," "Hydra fusca."

*Formation of a nervous system*—Beginning of differentiation of nervous from other elements, as illustrated in simpler forms of life. Formation of reflex loop. Higher arrangement of ganglia and fibres. Ratio of fusion of nerve cells and strands to integration of function. Functions of the nervous system in associating different parts of the same body; in bringing the living being into relation with the external world.

*Reproduction*—Embryonic growth and development with special reference to the nervous system.

*The law of periodicity, or rhythm in nature*—Examples, etc.

*The law of habit*—Application, examples.

*The origin of the forms of life*—The doctrine of Evolution; progressive integration of structure and function, with passage from the single or uniform to the multiple



1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in financial reporting and compliance with regulatory requirements. The text notes that incomplete or inconsistent records can lead to misunderstandings, disputes, and potential legal consequences.

2. The second part of the document outlines the various methods and tools used to collect, store, and analyze data. It highlights the significance of choosing appropriate data management systems that can handle large volumes of information efficiently and securely. The document also discusses the importance of data integrity and the need for regular backups and security measures to protect sensitive information from loss or unauthorized access.

3. The third part of the document focuses on the application of data analysis techniques to derive meaningful insights from the collected information. It describes how statistical methods and data visualization tools can be used to identify trends, patterns, and anomalies in the data. The text stresses that effective data analysis is crucial for making informed decisions and identifying areas for improvement or optimization.

4. The fourth part of the document addresses the challenges and risks associated with data management and analysis. It discusses issues such as data quality, privacy concerns, and the potential for data breaches. The document provides recommendations for mitigating these risks, including implementing robust security protocols, ensuring data accuracy, and maintaining strict access controls.

5. The final part of the document concludes by summarizing the key points and emphasizing the overall importance of a comprehensive data management strategy. It encourages organizations to adopt a proactive approach to data management, regularly reviewing and updating their processes to stay current with evolving technologies and regulatory standards.

or multiform; from the simple to the complex; and from the general to the special. Physiological division of labor, or specialization of function and differentiation of structure.

*Origin of life*—Two principal views: "The theory of creation," and the "theory of descent with modification." Teachings of Charles Darwin. The survival of the fittest. Sexual selection.

*Arrangement of evidence*—1, Morphology; 2, Embryology; 3, Mimicry; 4, Rudimentary organs; 5, Geographical distribution; 6, Paleontology; 7, Fossil and existing species; 8, Progression; 9, Domesticated animals. (Mills).

*The American school*—Teachings of Cope and of Hyatt. Investigations and observations of Rev. Dr. J. A. Zahm. Neo-Lamarckianism. Weismann's teachings. Theories of Brooks. Darwin's hypothesis of "pangenesis." Vines' equivalent of "parthenogenesis." St. George Mivart's doctrine of "extraordinary births." Romane's idea of "physiological selection." Application to the consideration of diathesis, idiosyncrasy. Observations of Herbert Spencer.

*Man's place in the animal kingdom*—No longer in zoology placed in a separate group by himself, man now classed with the "primates" along with the anthropoid apes (gorilla, etc.), the simians of the old and new worlds and the lemurs. Structural resemblances between man and the other primates very great. More difference between the structure of the most widely separated members of the group than between certain of the anthropoid apes and man. Points of greatest resemblance between man and the anthropoid apes are: The same number of vertebræ; the same general shape of the pelvis; a brain distinguishing them from other mammals; and posture, being bipeds. Distinctive characters are: Size, rather than form of the brain,

