

# DOWNLOAD PDF H/W WB SOLAR SYSTEM (HOW AND WHY WONDER BOOKS)

## Chapter 1 : Lunar Maps - The Moon

*How and Why Wonder Books were a series of illustrated American books published in the 1940s and 1950s that was designed to teach science and history to children and young teenagers.*

G Schurig, Richard and P. Gaeblers Geographisches Institut, Contains a map of the Moon by Julius Franz. G Map of the Moon: International Astronomical Union, c. Contains photographs of the 14 sheets of the maps reduced to 5x8 inches. G Map of the Moon. Rand McNally and Company. The spurious names were removed when the map was revised in 1963. Both maps are drawn to an approximate scale of 1:10,000,000. Map of the Moon. George Solonevich made very odd looking drawings of the lunar surface and of manned lunar exploration. The colors on his lunar landscapes were not accurate, but they created a wonderful and mysterious atmosphere! Faber and Faber Limited. Double spiral bound fold-out set of 26 quadrant maps from Wilkins and Moore, but slightly larger, for use at telescope. Includes 28 page Gazetteer listing each name with quadrant, diameter, length or height and very brief description of formation. George J. This illustration is not really a map, but it shows the unequal distribution of the dark "maria" blue colored and cratered "terrae" yellow colored. Early 1950s Tjomme E. This booklet contains very interesting drawings of the telescopically observed lunar features! The moonmap itself looks quite "artistic" and shows the names of the major surface formations. New York; Interscience Publishers,

**Chapter 2 : Tim Furniss - Books, Biography, Contact Information**

*Tim Furniss is a published author of children's books and young adult books. Some of the published credits of Tim Furniss include Spacecraft (Mean Machines), Sun. To edit or update the above biography on Tim Furniss, please Log In or Register.*

Agarkar Jayashree Ramdas V. Wadadekar First published Seventh impression Printed by C. It is an attempt to answer some common queries by simple scientific means, and thereby sustain the interest and curiosity of the students in the subject. The book would also help in understanding the reasons behind many more phenomena by cultivating a discipline of scientific enquiry in the mind of the student. Science is a way of thinking that helps us to understand and appreciate nature around us. It is much more fascinating to know why the sky is blue than just to see it as such. Behind each natural phenomenon there is a cause, and science assists us in understanding these causes and their effects. This means we ourselves become the masters of our own environment rather than being at the mercy of nature. The different motives that can questions discussed in this book have been raised by children from parts of the state. The answers and the discussions are designed to them to think and to probe deeper. In some places simple experiments be performed anywhere have been suggested. This book, which is the second in a planned series, will be of immense use to all our young students who have yet to learn about the fascinating tools science has provided in our everyday life. Bombay, December H. Can it be prevented? Will the water overflow after the ice melts? How does it explode? How are these deposits discovered? A lizard is not a very uncommon animal. You might have spotted one in woodlands or in lonely parks. There are many varieties of lizards. Some of them can change the colour of their skin. Generally, lizards living in deserts lack this ability, while those living in forests can easily change their skin-colour. The chameleon is a kind of a lizard which is famous for its ability to change the colour of its skin. The skin of every animal is made up of cells which contain coloured substances or pigments. These materials lend colour to the skin. In a chameleon, the colour cells lie in three layers under the transparent skin. The outermost layer consists of yellow and red pigment cells. Under this layer lies another layer which consists of certain crystals that can reflect blue and white light. Melanophores have tentacles small narrow tubes up through the two layers above, through which melanin granules can rise due to nervous stimulation. It is these cells that control the shades of the colours. When the chameleon is totally relaxed, melanin granules stay concentrated in the base layer. White light is reflected from the middle layer, and the chameleon looks yellowish or reddish. When the melanophores are stimulated, the granules rise up upto the middle layer. White light is therefore not reflected, and the chameleon looks the mixture of blue and yellow. When the chameleon is still more excited, the black granules rise up all the way through the tentacles, and the chameleon looks dark brown. In this state, the other two layers are completely obscured. The chameleon changes colour according to its feelings like fear, anger, etc. The colour also depends upon the temperature of the surroundings. Sometimes the chameleon uses its ability to change colour, in order to escape detection by an enemy. The chameleon makes its skin-colour match the colour of the surroundings, making it difficult for its predator to see it. Can you guess why the army uniform is olive green? Which is the biggest invertebrate? There are many ways of classifying animals in the world. One way is to divide them according to whether or not they have a backbone. Animals which have a backbone are called vertebrates and those without a backbone are called invertebrates. An invertebrate not only has no backbone, but it has in fact no bones at all. Man, cow, monkey, snake, fish, birds, etc. The squid is the biggest invertebrate. A particularly large variety is over 50 feet long, with arms extended. Surprisingly, such a huge creature has no bones at all. It is just like a big sack. The giant squid lives in the sea. It has a novel way of moving about in water. It fills itself with water it can hold plenty of it and ejects a jet of water. The reaction of the jet makes it move about. The squid feeds on other animals in the sea. The squid uses an equally novel method of protecting itself. It has a sac containing a dark ink-like liquid. When the squid senses danger, it ejects a large portion of the dark liquid. The surrounding water becomes dark

and, therefore, more or less opaque. The squid makes use of this dark screen to escape from its enemies. Do you know that in the Second World War, Fig. Why do old people have white hair? Hair is really a part of the skin. The colour of our skin depends upon five pigments coloured substances in our body. Melanin is the most important of these pigments. Melanin is stored under the skin, and in the hair and eyes. Since the outer layer of our skin is thin, one can see the colour of melanin stored under it, just as a leaf looks green because of chlorophyll in it. The amount of melanin under the skin decides the complexion of a person. Less of it leads to a fair complexion, while its excess leads to a dark complexion. Since hair is a part of the skin, the colour of hair also depends upon the amount of melanin in the skin. Similarly, the colour of eyes also depends upon melanin. Generally, people living in hot climates have a dark complexion, black hair and black eyes. You will notice, however, that all people living in hot climates say, India are not uniformly coloured. There is some variation in the shades of the colour of the skin, the hair and the eyes. Some people are quite fair, while some others are much darker. Similarly, the colour of hair varies from black to pale brown, and the colour of eyes also varies from black to cat-like grey. On the other hand, people living in cold climates have usually a fairer complexion, and their hair is light-coloured. Here also, there is a variation from blonde to brunette. Their eyes are usually light-coloured. Generally, you will notice that the complexion, colour of hair and colour of eyes go together. If the pigment is not uniformly distributed under the skin, patches are observed on the skin. We call such a small patch a mole. In old age, all the processes in the body slow down. The cells produce less melanin. That is why the hair slowly turns grey to white. Each hair is like a small transparent tube. As long as it is full of melanin, it appears dark. When this tube does not get enough melanin, the colour begins to change. The empty tube appears white. You must have seen a refill tube in a ballpen. With blue ink filled in, it looks blue. An empty refill tube, however, looks greyish. Sometimes, however, cells melanocytes lose their ability to produce melanin even in young age. Such a person, though young, will have white hair. Melanocytes need special materials, called enzymes, to make melanin. If these enzymes are lacking, enough melanin is not produced and some parts of the skin in addition to hair appear white. Such a person suffers from leucoderma. Leucoderma is not a contagious disease.

# DOWNLOAD PDF H/W WB SOLAR SYSTEM (HOW AND WHY WONDER BOOKS)

## Chapter 3 : Daedalus: The Long Odyssey from Myth to Reality

*Books by Kathryn Whyman, Visa pour la sciences, Structures and materials, Solar system, Everyday Chemicals (Simply Science), Heat and Energy (Simply Science), Forces in Action (Simply Science), Living things, Sparks to Power Stations (Hands on Science).*

This was The Wonder Book of Railways. They were also sturdily constructed size: I hope to provide details of when titles first appeared, how many editions were published of each, which were the most popular and when publication ceased. In order to do this, I need help from you. If you have pre-war the ones with boxed cover illustrations or war-time editions or the titles marked below, please send me the edition numbers if shown or descriptions of the covers. Please also include your country and if outside Britain or Australia, whether any of your editions have been published outside of Britain. The layout is still messy. I hope to improve it further one day. If you find similar ads for different years, please send me the details. The list within this book includes: These are given where known. Thanks to Paul, Dallas and others for your updates! I hope to sort the page fully later in End papers by Thomas Maybank. End papers by Thomas Maybank Hooray! It has a publication date - Additional information as supplied by John. Sopwith Triplane in RAF markings diving to the lower left hand corner. Publish date is , no edition is shown but I assume it to 1. Sopwith Triplane diving to the bottom left hand corner is a second edition printed in my copy is printed by William Clowes and Sons Ltd one of the front pages states that there are seven other wonder books uniform with this volume. The book is The Wonder Book of Aircraft with the airship named "Atlantic" on the cover, as accurately described on yoursite. Publish date is , no edition is shown but I assume it to be 4. Airport staff loading cargo in hold of 4 engined piston airliner showing on the nose wheel door. No publish date shown but given as a present in A picture inside of the Graf Zeppelin on its flight around the world indicate this is not the printing. Given as a present in The paper is of heavier stock and is rather coarse. The cover page has an illustration as does the front and rear of the dustjacket but the back board is plain. No Before and After cartoon is included inside the front and back boards. No edition information provided. I noticed on the website that someone had commented about Thomas Maybank and he has illustrated the inside front and back cover of this book. The picture on the front is of a St Bernard dog. It has 12 colour plates and "nearly " other illustrations. It has 8 colour plates and "nearly " other illustrations. It has 8 colour plates and "over " photographs. Cover painting by L Hocknell? It has 12 colour plates and "nearly" illustrations. An article on Russia shows a pre-revolution approach. The children of the Central Powers get 2 pages. True Stories of Heroism and Adventure Printer: The stories are from the 19th century up to , e. The cover picture is of TE Lawrence attacking Turks. There are 8 colour plates and "numerous" illustrations. Edited by Harry Golding, FRGS No edition specified, cover picture of a boy leaning on a book and facing the reader with a comet, a radio tower and an elephant around him. It has 8 colour plates and "nearly" illustrations. So I gave him the book and kept the jacket as my one and only sample. Mine has inscription for Xmas Day so dated as such. Australian pop stated as 4., Tenth Edition End papers by Thomas Maybank. A separate list at the end of the book - probably the last section before printing - of the populations of all dominions, colonies, etc. Sample published , corrected and enlarged; publishing history as follows. First published , reprinted same year then Compiled and edited by Gerald E Speck. Navy blue cloth, gilt markings, endpapers show map of world. Two-column layout with full list of contributing writers and companies. My copy lacks a jacket. The title page is lost with cover picture in gold frame of a floating crane carrying a cantilever bridge section. On page 17 a small picture of the Sydney Harbour Bridge "in course of construction" the pylons look wrong. On page 17 a small picture of the now supposedly completed Sydney Harbour Bridge as in earlier edition and on p43 the Oakland Bay Bridge under construction. Inscription to end papers dated This copy was a Scripture Union Sunday School prize in Probably only the one edition. Printed by Ward Lock and Co. It was given to C. Gardner by his Dad and Mum Xmas Most of the cars are Austin7 to Essex 6. It is in good condition. The car on the front I do not think is an Alvis, it may be a Singer or a Hillman.

## DOWNLOAD PDF H/W WB SOLAR SYSTEM (HOW AND WHY WONDER BOOKS)

The painting is dated Ltd, London and Melbourne. Post , pre from chapter on Vesuvius. Some new articles but not new contributors. There are 12 colour plates and illustrations. Edited by Harry Golding Content and illustrations, one captioned , suggest publication in the s. The cover picture looks forward through the left cab window along a green LNER locomotive towards twin tunnels. There are 12 colour plates and "nearly illustrations". There are 8 colour plates and "nearly illustrations". There is a dust-jacket which has also suffered rather a lot of damage: The front picture wraps round over the spine and about half an inch of the back. A page article near the beginning looks at The Composition of British Railways, and how the then six-region structure was related to the territories covered by the former "Big Four". There is a section on foreign diesel locomotives and on an experimental British gas turbine locomotive. There are 8 colour plates and "over illustrations". There has been no disturbance to the paper, and there does not seem to be any reason for these details to have been removed, so it may just be a printing flaw in the later edition. There is also a photograph of a monorail displayed at the Japan-British Exhibition held in London in Gregg for regular attendance and good conduct at Christ Church, Willesborough unattached during the year , which suggests the book would have been purchased late in or early in The certificate was signed by F. Ltd, London, Melbourne and Toronto. As all the Railways depicted are all pre the Big Four grouping in and the picture of the boy on page 11 is pulling a toy of a Great War type Lorry, I would put it somewhere about publication Date. The boiler of the green engine seen thru the drivers Spectacle plate cannot be an LNER engine as that company did not exist then! The book is complete but pages are falling out. I picked it up at a swap meet for only a few dollars. Weather forecast for June and colour plate of completion of arch of Sydney Harbour bridge so looks c List of Wonder Books with 8 or 12 colour plates: Harry Golding described as General Editor. There are 8 colour plates and nearly illustrations, including a s Humber saloon on p End papers by A E Beard. S" who wrote the introduction and three short general chapters. My science knowledge is insufficient to find clues to the publication date in the text. Unidentified edition title page lost with solar flare on cover.

## DOWNLOAD PDF H/W WB SOLAR SYSTEM (HOW AND WHY WONDER BOOKS)

### Chapter 4 : How and Why Wonder Books | Awards | LibraryThing

*NASA Images Solar System Collection Ames Research Center. How & Why Wonder Book Of Beginning Science by How And Why Wonder Books.*

How and Why Wonder Books Displayed below are the first six titles in the timeless "How and Why Wonder Book" series, a series of books on science, nature, history and the environment, aimed at capturing the imagination of youth. These books have long since become "collectibles" in their own right, and given the extensive scope of the series and its various formats, it is no mean feat to obtain a "complete" collection of these works. For collectors, this series is complex and oftentimes confusing; especially given the fact that the entire scope of the series spans several decades and a number of different publishers and distributors, too. As such, these years will be the primary focal point within these web pages, with only minor emphasis placed on the series from onwards. This website will deal, almost exclusively, with only the "North American" version of the series and will not attempt to detail the U. To make matters worse, there are several existing websites with either inaccurate or incomplete information posted to them. We will also attempt to correct these shortcomings via the content of the following pages. The answer to this is two-fold. Both the Golden Press book and the Encyclopedia Britannica series were considered to have been direct competition to the How and Why Wonder Book series given that they were based on science, nature and history themes , but the Encyclopedia Britannica series was directed at a much younger youth audience as evidenced by the elementary school level text contained within them. These story books were ideal for parents to use as "bedtime stories," or as reading primers, because they covered many diverse juvenile themes, such as fairy tales, cartoon characters, fantasy stories and the like. Grosset and Dunlap devised a "book numbering" system to differentiate between the different titles and authors and began numbering these volumes with a simple "three digit" number coding that ran in a relatively sequential manner. These four-digit numbers were used on many of the popular fiction series and, commencing in , also on the How and Why Wonder Book series. The photo below illustrates some of the hardcover fiction books that were printed with a "four-digit" identifier. Note the following book numbers illustrated in the above photo. In a similar fashion, the Tom Swift Jr. Adventures series, one can guess that the first book in the series was likely But, book series did not always commence in a similar fashion. Take a look at the Peggy Lane Theater Stories book on the far right. This book, entitled "Peggy Finds the Theater," is the first book in this particular series, yet it bears We will discover later that the same type of inconsistent numbering logic was applied to How and Why Wonder books, too. And, finally, the book on the far left, "Fury and the White Mare," bears , but is not part of an extensive "Fury" series which this number relates to. It is just a general sequential number applied to this book, one of several "non-series" books that required an identifier number. It is not wholly correct to call this a "non-series" book since there were three separate "Fury" books published by Grosset and Dunlap in a similar hardcover format, but publishing date would have dictated their four-digit numbers since three books would have been too small a "series" to warrant their own reserved block of numbers. The following photos illustrate two of these "first edition" hardcovers. Shown below are the second book in the series Weather and the sixth book in the series Stars. Note that neither book reads "The How and Why Wonder Book of" in the upper left hand corner inside the rainbow logo. They simply read, "The How and Why Book of. Not only did the rainbow crest read in such a manner, but the spines of the books also indicated that they were simply "How and Why" books see photo below. The following photos show images of the first-edition back covers of these books. The "red" colored back cover is of the Weather book and the "blue" back cover is of the Stars book. Note that they, likewise, simply read "How and Why Books" in the central text area and that absolutely no mention is made that the series is tied to the "Wonder Books" name as of yet. Shown below is an enlargement of the text area of the first edition back covers. Note that only the first six books in the series are listed and that they all read "The How and Why Book of. Pictured below is a much later printing of the third book in the series,

## DOWNLOAD PDF H/W WB SOLAR SYSTEM (HOW AND WHY WONDER BOOKS)

"Electricity. They all had what we will call "glossy" covers, since they uniformly had a thin layer of mylar type plastic coating on them to give them their distinctive sheen. With age and use, many of these books tend to exhibit this plastic layer peeling off in flakes and pieces. The gloss cover format was continued for many years, as it was thought that the glossy covers had more store appeal to consumers in a retail environment. Both the Library editions and the School editions possessed rugged "linen" covers, intended to sustain much abuse. We will next focus on the "softcover" editions, in order of their year of release. These books were published and distributed simultaneously in both U. Note that the numbers assigned to the softcover editions were completely different from those assigned to any of the hardcover versions of an identical title. The first six books were released, it is assumed, in the early part of

## DOWNLOAD PDF H/W WB SOLAR SYSTEM (HOW AND WHY WONDER BOOKS)

### Chapter 5 : How and Why Wonder Books - Wikipedia

*The skull of a woolly rhinoceros thought to be at least years old has been found in Cambridgeshire. An expert from the Natural History Museum said it was "an apparently well-preserved."*

Unless otherwise noted, information contained in each edition of the Kansas School Naturalist reflects the knowledge of the subject as of the original date of publication. Borman and Helen M. Back numbers are sent free as long as the supply lasts, except Vol. Copies of this issue may be obtained for 25 cents each postpaid. Second-class mail privileges authorized at Emporia, Kansas. Both previous issues have long since been out of print, but they may be found in many school and public libraries. The organization of the present issue is like that of the second. Some of the well known series of books are listed together, even though individual books of the series may have been included in one of the former lists. The addresses of the publishers have been listed together, on page As in the previous lists, no books have been included which the authors thought were unscientific in their approach or conclusions. The authors personally examined all books listed. The books are grouped into categories which have proved most interesting and useful to elementary teachers. Within each group the books are listed alphabetically by authors. To conserve space, the following symbols are used: P-primary grades, I-intermediate grades, U-upper grades. Also, short names are used for the publishing companies, their full names appearing on page Worthwhile information that is interesting to boys and girls; many illustrations. Many constellation charts, showing the mythical figures. Good charts and excellent information about shape and size of earth, ocean floor, and continents. Function of a weatherman to warn people about the coming of a storm, but not to control a storm. Interesting material and illustrations. Well illustrated; easy to read. An analysis of the rainbow, the way things move, and the mystery of light. A pronouncing index; four colored plates, each showing twelve different shells. Fossils and the story they tell; rocks, minerals, and gems. Easy to read and well illustrated. Well written and illustrated. Includes soil, rocks, grasses, flowers, worms, stars, and weather. Gives suggestions for a back yard laboratory and how to conduct experiments. Many interesting colored illustrations. Excellent illustrations make the reading material more meaningful. Descriptions of various climates-arctic, desert, prairie, and swamp. Plant and animal life found in various regions of the world. Outstanding illustrations depicting animals in natural habitats. Other evidence that animals such as birds and mammals have been in the vicinity. Use of aqua-lung to examine life beneath the water. Will arouse interest of children in the world about them, as well ,IS giving helpful information about plants, animals, sea life, and the world around boys and girls. Beautifully illustrated in color. Preschool and P Illustrations to clarify terminology. Describes the different plant families. The various kinds of seeds, their parts, and how they germinate. Experiments that children can do with seeds. Plants that are sources of material for modern medicine. How seeds are scattered from place to place. Simple experiments that children can do. Basic facts about plants; wild flowers of the wood, roadside, fields, deserts, swamps, and mountains. Most plants described are the more common varieties. Illustrations in full color. P, I, U The illustrations are in color. Brief information about potter and mason wasps, mud dauber, yellow jackets, hornet, and cicada killer wasp. Many colored as well as some black-and-white illustration of bees and wasps. Large type, interesting material. How to keep reptiles in a classroom. Many colored and black-and-white illustrations. Simply written and well illustrated. Easy to read; colorful illustrations. Well illustrated and written in an interesting way. Many of the illustrations in full color. Information about the world during the time of the great dinosaurs. Many colored and black-and-white illustrations; excellent book to help identify fossils. I, U, and Teachers Some indication of why these great monsters disappeared. How man comes to know about these prehistoric animals. Includes ways people make use of water. Introduction to waves and tides; well illustrated. Many illustrations; highly informational. Instructions for making and keeping up a terrarium and an aquarium. Good illustrations to help in the understanding of the experiments. A challenging book for boys and girls. Many illustrations to aid in the understanding of the experiments. Many of these experiments can be done by

## DOWNLOAD PDF H/W WB SOLAR SYSTEM (HOW AND WHY WONDER BOOKS)

children at home as well as at school. What heat is, how it travels through materials, how it makes engines go, and how it cooks food. Illustrations clear and to the point. Well illustrated, for better understanding of what should be done. Excellent illustrations of the submarine. Ways to explore our natural surroundings; collections that can be made; things that children can make; simple tools and inexpensive pieces of equipment. An introduction to the solar system and some of the common constellations. Many black-and-white illustrations to help in the understanding of the materials, whether for experiments or activities. Such terms as work, power, energy, and efficiency developed in an elementary way. This book belongs to the series entitled "Easy To Read Book. A section devoted to language of rockets and missiles. One of the series, "Easy To Read Books. Space travel and dangers that may be encountered. Excellent illustrations and readable material. A non technical book with excellent explanations of the working of a rocket. Designed for the use by pupils who are inquisitive about science and want additional information. Volume 10 has index for all other volumes; bibliography for additional readings. Field and Meadow, Etta S. Fresh and Salt Water, B. Bartram Cadbury Volume 3. Forest and Woodland, Robert S. The Desert, Alexander B. Klots and Elsie B. Klots Well written information for general reading in the specific areas. Accurate and authoritative, by contributors and consultants who are outstanding in their fields. Volume 16 has index for all other volumes. Many illustrations, diagrams and maps.

**Chapter 6 : Wonder Books and Modern World Books**

*H Is for Haunted House: A Halloween Alphabet Book by Stone, Tanya Lee and a great selection of similar Used, New and Collectible Books available now at [calendrierdelascience.com](http://calendrierdelascience.com)*

Personal human power factors IX. Suggested readings and resources figure available in print form Figure 1. According to Greek mythology, a man named Daedalus, imprisoned on the island of Crete, crafted for himself out of feathers and wax a pair of wings. Fastening the wings to his arms, he jumped from a cliff and soared to freedom on the Greek mainland. The event remains mythological, though cultural historians trace origins of the story to about B. The long flight from myth to reality was at least completed! This unit is intended for use in general science, physical science, and modern technology courses in grade The most ideal setting for the unit would be an interdisciplinary study of the relationship between science and technology, on the one hand and the interaction between technology and culture, on the other. However, individual teachers closely attuned to the interests and skill levels of their students can adapt the material presented to enrich a wide variety of courses and curricular emphases. Students complain that the study of science is dull, dry and boring. The scientific method, so easily mistaken as a rigid sequence of steps, deserves to be treated in a much livelier manner as a systematic pursuit of knowledge involving recognition of a problem, collection of data through observation and experimentation, and the formulation and testing of hypotheses. I propose to engage student interest in the study of human-powered flight by leading off with poetic imagery and Greek mythology; in particular, the myth of Daedalus. Initial discussions should examine the myth for its human meanings--the turbulent passions, crimes and punishments, political alliances, deceits, trickery, hope and hubris. Equally attractive is the use of the myth as springboard for discussion of the necessary technology of human flight. Daedalus fashioned simple wings from whatever materials he had on hand--wax, feathers, thread. He and his son would use their arms to generate needed power by flapping the wings. How possible is such flight by humans? What resistances must be overcome? What natural forces might be married to the task? How much energy would be needed? Can a body generate such power? Learning Goals Upon completion of this unit, students will: Know the Daedalus myth and its significance for human aviation. Be able to locate Greece, the island of Crete, and the Aegean Sea on a world map. Compare and contrast mythology, legends and history. Be able to discuss the relationship of imagination to science. Know the major steps in the evolution of human-powered flying kites, balloons, dirigibles, aircraft 6. Appreciate the aircraft design contributions of da Vinci, Cayley, the Wrights. Know the four forces affecting flight lift, gravity, thrust, drag and how they are related. Understand how to represent forces with vectors 9. Understand and be able to illustrate the difference between lighter-than-air and heavier-than-air flight. Be able to compare the characteristics of hydrogen and helium and explain the importance of the discovery of helium to lighter-than-air-craft. Know the relationships among work, energy and power. Calculate personal power output ratings. Research, prepare and present a class report on one aspect of the history or physics of flight. Suggested Teaching Strategies 1. Reading aloud from the rich literature of mythology and poetry. Student research, writing and retelling of ancient stories, favorite legends, and key events in the history of flight. Lecture, slide and video presentation of historical material. Laboratory and field experiments demonstrating density of gases, fluid flow, hot air balloons, laws of motion 6. Calculations of potential energy, kinetic energy, work, and power. Determination of individual power output via bicycle riding and generation of electricity with a bicycle generator. Imagination of flight "I am eagle, i am eagle! Ancient legends, songs and poetry from many cultures reveal the connection of human spirit and transcendent hope with the soaring flight of birds, doves, eagles. Spirits, angels, characters of mythology are depicted in story and graphic arts with diaphanous wings and powers of transport far exceeding that of mere mortals. Who was the first man to fly? According to Greek mythology, it was the skilled Athenian craftsman and inventor Daedalus. Daedalus took as an apprentice his nephew Perdix; however, Perdix proved to be such a talented artisan that Daedalus killed him in a jealous rage. As punishment for his

crime, Minos imprisoned Daedalus and his son Icarus in the labyrinth. To escape, Daedalus made two pairs of wings from feathers, was wax thread. Father and son used the wings to fly from Crete. However, Icarus, in his enthusiasm, flew too high in the sky causing the wax in his wings to melt and he plunged to his death in the sea. Daedalus flew on in grief and reached the mainland. Minos supposedly pursued Daedalus to Sicily where, according to one story, Daedalus killed the king by scalding him in a specially constructed bathtub. Theseus and Ariadne made their way safely to Athens where they became the ruling royalty. The Daedalus myth has been interpreted for thousand of years in literature and the arts e. Daedalus is a mythic hero of human dimensions whose own crimes and shortcomings never go unpunished. From the pre-scientific world of ancient Greece we are given a piercing glimpse of the inner core of our humanity: Suffering is never far from, and perhaps closely entwined with the greatest accomplishment and achievement. A classroom activity to further explore the myth is suggested with this unit. Daedalus, mythological progenitor of flight, is significant as heroic symbol of human imagination and innovation, but not as the reality we seek. Here it will be helpful to point out to students the differences between myth, legend and history. Legend, Webster inform us, is "a story coming down from the past, especially one regarded as historical although not verifiable. History of Human Flight "At first we will only skim the surface of the earth like young star lings, but soon, emboldened by practice and experience, we will spring into the air with the impetuosity of the eagle, diverting ourselves by watching the childish behavior of the little men or awling miserably around on the earth below us. Humans first left the earth not on feathered wings, nor even in balloons, but on giant kites. As mentioned above, the invention of kites is attributed to 4th century B. Long before they were known in the west, kites were used to lift observers high above the sea for navigation and signaling purposes in shipping and military maneuvers--practices witnessed and reported by the explorer Marco Polo from his travels to the Orient in the 14th century A. Kites were used in China not only for observation, but even for the dropping of bombs in battle and for the first known parachute jumps. Kite making and kite flying are particularly enjoyable ways to study aerodynamics and might easily be joined to any class picnic, field trip, etc. The roots of balloon science really lie in the discoveries made by Greek mathematician and inventor Archimedes who, in about B. For students unfamiliar with Archimedes Principle, mass, volume, and density, some simple laboratory lessons at this point will help them grasp the fundamentals which can then be applied to ballooning. Studying the work of Archimedes, Bacon envisioned the air about us as a sea of some solid basis. Each sphere was to be made of very thin copper, 20 feet in diameter. All air was to be removed from the spheres so they would float up in the sky. Constructing a simple cloth bag, he filled it with hot air and watched it rise to the ceiling. The European age of lighter-than-air flight had begun! Unknown to the Montgolfiers and to most of the European world, the first demonstration of hot air ballooning is now known to have taken place in years before the Avignon discovery! A brilliant young Jesuit priest, Father Laurence de Gusmao of Brazil built and displayed before the King of Portugal working models of paper balloons rising above a small basket of flame. The Montgolfiers still have the distinction of being the first to send a person aloft in a balloon; but Gusmao was first to show the principle--even if he did cause a minor fire in the palace chamber during the demonstration! Though hot-air ballooning gained and still retains great popularity, hydrogen-filled balloons became the favorite for scientific research in the atmosphere and for large dirigible use. Helium, nearly as buoyant as hydrogen and non-flammable was more expensive to produce so remained tragically underutilized until after several spectacular dirigible disasters, including the Hindenburg in By that time the fascination with large dirigibles was on the wane and larger, heavier-than-air craft were in ascendancy. But this is many leaps ahead of our story. We need to return to the English Franciscan monastery of Roger Bacon and pick up the trail of heavier-than-air flight design. He studied birds in flight and made drawings to show his ideas on flight, including several sketches of flapping wing planes and ornithopters which he felt a human could operate. Following da Vinci, many inventors tried to make ornithopters, the most successful being Robert Hooke in England about Hooke claimed to succeed in flying, but he also wrote of the great difficulty in remaining in the air. None of the early experimenters realized that the human body is not built for bird-like flying. The

## DOWNLOAD PDF H/W WB SOLAR SYSTEM (HOW AND WHY WONDER BOOKS)

human heart is only 0. The limitations of human physiology were spelled out in by the Italian Giovanni Borelli. His *De Motu Animalium* describes at length why man could never hope to sustain his weight in the air without mechanical assistance. Taylor and Munson, p. Chanute was a railway engineer whose work on steam and other engines proved a valuable guide to the Wright brothers. Prior to there were few attempts at flight with heavier-than-air craft. The designs of Bacon, da Vinci, Hooke and others did not prove feasible. The most promising work--that of da Vinci--was not even published until late in the 19th century. Cayley, however, made a major breakthrough in aircraft design. He decided that it would be possible to make a plane fly through air if: By using diagonal bracing to reinforce the wings and body of the craft, Cayley was able to greatly reduce the weight.

**Chapter 7 : List of books read in**

*The first books published in this series in the early part of were, indeed, "Hardcover" versions (and they did predate all of the soon-to-follow Softcover versions), but, they technically weren't "How and Why Wonder" books at all; rather they were simply "How and Why" books.*

**Crater Chains** Crater chains are unusual features composed of linear rows of small craters. One of the best examples is Catena Davy , "Davy Chain" left C G9, which extends some 50 km and contains over 20 craterlets, most with diameters under 2 km. It was probably created by near simultaneous multiple impacts, similar to the Shoemaker-Levy-9 comet impact on Jupiter in . Another nice example is Catena Abulfeda C J10 which extends for km. Double craters created by near simultaneous double impact are a related feature. Other crater chains appear to have been caused by secondary impacts of ejecta thrown out by large impacts. Vallis Capella E L9 cuts through crater Capella. There are a number of crater chain features associated with the Copernicus impact. Rays Prominent ray systems are associated with a number of the younger craters. Over great expanses of time, ray systems are obliterated by more recent impacts, continual micro-impacts and space weathering by solar radiation. Tycho S G13 has the most prominent ray system, with rays extending at least 1, km from the impact. The ray system associated with Copernicus W E7 is also substantial, extending some km from the crater. Proclus E M6 has a very asymmetric km ray system, indicative of a low angle of impact. An unusual linear km ray system is associated with Messier A E M8 on Mare Fecunditatis, resulting from an almost glancing impact. **Mountains** Unlike the picture scanned from my "How and Why Wonder Book of the Moon", lunar mountains have relatively gentle slopes. They are extremely old, most being formed billions of years ago by mechanisms very different to those on Earth. Lesser ranges are associated with other impact basins. The central mountains within larger craters were formed by the rebound from the crater-forming impact. Both single and multiple peaks occur and they are not always at the centre of the crater. They can rise to significant heights above the surrounding crater floor. There are no mountains resulting from plate tectonics. The long extinct lunar volcanoes are shallow domes rather than towering mountains. **Volcanic Domes** Volcanic domes are amongst my favourite lunar features. Most are located on Oceanus Procellarum. Due to their gentle slopes, they are only visible at local sunrise and sunset, and quickly vanish. They represent a nice imaging challenge. A number of small domes are associated with Vallis Schroteri NW D5, itself a dramatic volcanic feature. Several domes are located on other maria. **Faults** Lunar faults give rise to several types of lunar features: Wrinkle Ridges that occur on basaltic plains, a type of lunar valley or rille called Graben, and isolated faults. Rupes Recta left on Mare Nubium is an example of a "normal" isolated fault. It is km in length and has a width of 2. Other examples include Rupes Cauchy and Rupes Altai. Isolated faults are relatively rare. Lunar faults did not arise due to plate tectonics as in the case of many terrestrial faults. Rather they resulted from stresses in the lunar crust often associated with the cooling, shrinkage and subsidence of basaltic impact basins. **Wrinkle Ridges** Wrinkle ridges are a common feature on basaltic mare deposits, such is Mare Imbrium and Mare Tranquilitatis, and on a few basalt flooded craters such as Wargentini. They formed as the freshly filled basalt basins subsided under their own weight. Compression buckled the surface, resulting in long raised folds and ridges that often extend for long distances. Wrinkle ridges are thrust faults. Due to their low profile - they are usually only m in height, they can only be seen at local lunar sunrise and sunset. However the basaltic plain can be at quite different elevations on either side of the ridge as a consequence of the buckling process. Sometimes Wrinkle ridges follow the outline of ancient craters buried under basaltic plains, for example Lamont. **Valleys and Rilles** Superficial resemblance is the only thing the ancient lunar valleys have in common with terrestrial valleys. A handful of larger depressions are called valleys "vallis" , whilst the more plentiful smaller examples are called rilles or rimae. There are several different types. The largest sinuous rille is Vallis Schroteri NW C5 right , which is km in length, up to 1 km in depth and 10 km across at its widest point. By any measure it is a large valley. For comparison, the Grand Canyon is km length,

## DOWNLOAD PDF H/W WB SOLAR SYSTEM (HOW AND WHY WONDER BOOKS)

up to 29 km across and up to 1. Other sinuous rilles include Rima Birt and Rima Hadley Straight rilles are graben, flat valleys formed when the crust between two adjacent faults subsided right. Graben often occur at the edges of maria, where they have resulted from subsidence of the basalt causing faults to open up in long tracks. They can also occur in older cratered terrain. The prominent km Vallis Alpes N H2 is probably a flooded graben. Vallis Alpes Alpine Valley right mentioned above is an example shaped by several processes. The large structure was formed between two parallel faults when the crust was pulled apart. The flat floor and narrow sinuous rille running down its length was formed by subsequent lava flooding from Mare Imbrium and Mare Frigoris. The sinuous rille is good observing challenge. A very different formation process is exemplified by Vallis Rheita SE L13, which probably resulted from a destructive rain of secondary impacts associated with the formation of the Mare Nubium impact. It is essentially a highly eroded crater chain. Vallis Capella mentioned in Crater Chains above is a less highly eroded example.

### Chapter 8 : How and Why Wonder Books

*HOW - -- AND WHY (J/tmdIA, &Mflj THE HOW AND WHY. WONDER BOOK OF ENERGY AN,D POWER Written by C. BRUCE SIBLEY Illustrated by RAYMOND TURVEY.*

### Chapter 9 : interactive moon atlas

*How do series work? To create a series or add a work to it, go to a "work" page. The "Common Knowledge" section now includes a "Series" field. Enter the name of the series to add the book to it.*