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A workbook for the study of astronomy and eleven correlated myths for grades five through seven.

Tolander, Marie von Bergen
Boston University

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A WORKBOOK FOR THE STUDY OF ASTRONOMY
AND ELEVEN CORRELATED MYTHS
FOR GRADES FIVE THROUGH SEVEN

Submitted by

Marie von Bergen Tolander
(B. S. in Ed., Bridgewater, 1937)

In partial fulfillment of Requirements for
the Degree of Master of Education

1954

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School of Education
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Second Reader: Fred Weaver
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CHAPTER I

STATEMENT OF THE PROBLEM

Every series of science books for grades four through six, published within the last ten years, has at least one unit devoted to the study of stars. Science fiction has popularized "space" for untold thousands of children of this age and upward. Most of the science textbooks acknowledge the rich mythological material to be found in the study of constellations, but are able to give only brief mention of it for lack of space. The curricula of many school systems call for Greek and Roman history as the social studies program for this age-level and the textbooks can provide only limited space for the religion (mythology) of these peoples.

Fifteen reading and literature series in current use in public schools for these grades were examined to see what myths were available to children, on their reading level, for research during the study of stars, or in connection with a classical social studies program; the results were discouraging. It would seem impossible to find all, or even most of the myths herein rewritten on the vocabulary and interest level desired, because of the repeated use of certain popular myths and the omission of most of the myths which are directly concerned with the constellations. This study also revealed that
children of these grades were not meeting myths in their school reading and literature programs to any extent or with any systematic presentation of this rich heritage of folklore.
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Arbuthnot¹ states:

"Since high schools generally take for granted that something has been done with myths in the elementary schools, secondary schools may also omit them from the curriculum. The result is that many college freshmen today have no knowledge of mythology. The glory that was Greece has no reality for them. Certainly if the high school curriculum does not include the myth, then for many reasons the elementary school should — if not as the study of a people, then only as literature — but we could introduce the major gods to them through stories which would illustrate the characteristics and powers of the gods."

Therefore the writer felt there was a place for a workbook in which the elementary study of astronomy was correlated with the Greek and Roman myths of certain constellations. Such a workbook makes full use of a natural motivation for the study of mythology provided for in the study of "space" — a subject so dear to children of this age — level it is self-motivated. The writer feels there is a real need for such a well-motivated, systematic presentation of Greek and Roman mythology in the elementary school; that such a program will enrich the curriculum by providing stimulation for further research by the children, thus broadening their knowledge and skill.

It is with the hope of meeting this need and stimulating the further development of material on this subject by others, that this book was written.

CHAPTER II

REVIEW OF LITERATURE

Definitions of Myth

Before an attempt is made to discuss why and how myths might be taught, myth should be clarified and defined; and stories to be classified as such should be delineated.

Hallowell\(^1\) tells us,

"Derived from the Greek *mythos*, meaning a story, the term "Myth" is defined as a story invented by primitive man to explain natural phenomena. As he observed such physical occurrences as the rising of the sun, the change of the seasons, and the succession of day and night, or as he felt the heat of the sun and the violence of the storm, he was filled with wonder, curiosity and awe, and began to seek the causes beneath the outward appearance of things. Instead of explaining these scientifically, as man now does, he interpreted them religiously. Recognizing in these manifestations some being more powerful than himself but being unable to think of forms so diversified in action as one power or God, he conceived of these forces as gods with various attributes in terms of human experience. With a child-like imagination, he endowed natural objects with life, conferring upon them human and superhuman passions and powers, and invented fanciful stories as satisfactory explanation.

While the myth belongs to folk literature, it differs from the household tale in that it personified the forces or manifestations of nature and was accepted by a people as a religion. It differs from the fable in that the latter, made by an individual for the purpose of moral or didactic instruction, did not pretend to reality, while the myth,

made by a primitive race concerning supernatural beings, did interpret facts and was accepted as true. . . .

Legends are so interwoven with myths that little or no distinction can be drawn. . . .

In general it may be said that a myth is wholly the product of the imagination, while a legend has some faint basis in history. . . . However, many legends have been so colored by the fancy and imagination of the teller and so changed by additions and alterations that it is difficult to recognize any historic authenticity.*

And Johnson 1 also gives an excellent summary of the connotations and limitations of myth,

"A myth is a story that explains primitive man's idea of deity and the origin of the universe, that personifies the various forces of nature and attempts to explain the mysteries of natural phenomena. The life history of gods, their contacts with each other and their relations to man, man's attempt to interpret the gods and to understand the life about him, his observations of the natural world and his explanations of its mysteries, give rise to a countless number of myths. Many of these tell of gods who love and hate, feel and act as human beings, and of superhuman heroes whose achievements are wonderful beyond belief. Other myths people the realm of nature with invisible beings whose deeds and powers explain how the earth, the sky above it, and the waters around it came to be as they are. All primitive peoples have their own myths . . . ."

**Justification for the Teaching of Myth**

That education is constrained by the world situation today to build tolerance and understanding of differing people and viewpoints is obvious, and one might well place emphasis on the evolution of religious thought to develop tolerance in this highly charged area.

of human emotions. What more objective and interesting approach, on this grade level, could there be than the study of mythology, a dead religion, to develop in children an awareness that all religion represents man's groping toward ideas beyond his complete comprehension—that there is, apparently, no completely right answer to mankind's obvious need to worship.

Duff\(^1\) brings this out,

"I think it is important for children to know that however differently people in various times and places have explained the order of creation, and the nature of the Creator, and the relationship of human beings to that Creator and to each other, they were simply doing the best they could to understand these things and to govern their ways of life and of worship by what they could learn from their experience of the world they lived in. The accounts and illustrations of their beliefs and customs that came down to us in folk tales are a child's first introduction to comparative religion. He will have a better understanding of our beliefs and principals if he knows something of how they evolved, and he is not likely to have less respect for what he is taught at home and at church because of knowing."

The direct, pleasing explanations of the natural world found in the more simple, unsophisticated myths have a ready appeal to children who are all extremely interested in the world around them and forever asking why this and why that.

Hallowell\(^2\) defends the teaching of myths by saying,

Those who oppose their use claim that they are too allegorical and complicated and that the meaning is buried beneath symbols too difficult and complex for a child's comprehension.

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Naturally, everyone argues that mythology dealing with the religion and philosophy of a race is not suitable for children. On the other hand there are beautiful stories complete in themselves which appeal to them. Therefore, give younger children the simple myths of the explanatory type created at the lower stage of social development, and reverse for older boys and girls the more complex symbolic ones, representing the highest and most perfect expression of the race.

Those who favor the teaching of myths to children advance the opinion that 'myths are the natural literature of childhood,' and that the child's mind is inclined to endow natural objects with life, and to bestow human attributes on animals and plants. Since children live close to nature and love birds, animals, flowers and trees, myths give simple explanations of natural phenomena appeal strongly to them as good stories."

The writer feels that myth should be used with children at this age level not only because it is comparative religion in a guise they can comprehend and enjoy; not only because it shows the emergence here and there of great religious ideals that are universal; but because, as Kegan points out in his discussion of the preface of Charles Kingsley's Heroes, "There are no fairy tales like these old Greek ones for beauty, wisdom and truth." Meigs agrees, "The intrinsic merit of the Greek epics, their balance and polished beauty, is a matter of longstanding knowledge."

Myth opens up to children a world of fancy, of heroes, of adventure, not quite like anything else in modern writing. And in regard to modernity, realism, and proximity in time and experience,


of children's reading material; Pilant\textsuperscript{1} has this to say,

"The only sense in which "modern" is worthy of regard in the choice of stories for use in children's anthologies is to the effect that the story is by content, plot management and outcomes intelligible and interesting to the child who is to read it. Modernity is not a quality to be judged simply by whether the latest household gadgets are mentioned or the latest modes or rapid transportation and telecommunication are utilized. Names of things, persons, and places can date a piece chronologically, but they cannot suffice to make it modern or ancient in any substantial sense. Modernity to the children's anthologist, should be a question solely of whether a story is by content or language intelligible and relatable to the experiences and expectations of the reader-target."

Clifton Fadiman delivered quite an indictment against current children's literature in an article reviewed in detail by Lantz\textsuperscript{2} in which he asks, "Is the trend toward fact books depriving children of their inalienable right to wonder?" And he goes on to say

"The fifty-one juveniles I have just read bristle with pretty pictures. Not one of them is 'trashy'. Many will interest, amuse, or improve the young readers. But few... will transport him."

1. "The over-all impression is one of high level, conscientious, blameless golden mediocrity."

2. "Many books tend to view the child as a little specialist, when the whole point of being a child is that he's plastic, or should be! We have a right to assume that every adult interest has its corresponding juvenile form since, though children may have their hobbies, their major interest is in the miracle of childhood itself... In spite of a thousand things a child can learn from these neat and instructive values, he cannot find himself or


lose himself in their pages. They lack that wonderful sense of enlargement that comes from some of the old favorites, perhaps because 'There is a growing tendency among authors to choose subject matter which compels them to fold the wings of their fancy. Our juvenile writers sail too close to the coast; they refuse to let themselves go. . . are too full of age levels and vocabulary norms.' There are so many illustrations that 'we may be helping to make the children picture-minded to the point where he will in time begin to neglect, then overlook, at last despise words. Soft food makes soft teeth.'

Kingsley said he wrote his Heroes "to translate the children back into a new old world, and make them, as long as they are reading, forget the present."

Hazard asks,

"How would heroism be kept alive in our aging earth if not by each fresh, young generation that begins anew the epic of the human race? The finest and noblest of the books intended for children tell of heroism. They are the inspiration of those who, later in life, sacrifice themselves that they may secure safety for others.

Charles Kingsley wrote a book for his own children -- and called it "Heroes". He drew his characters from the Greek epic and they stand out in his book, bathed in the clear light of the Mediterranean, as though they were living statues of humanity's benefactors."

Eaton says,

"Myths to the eight-and nine-year-olds are entrancing fairy tales. This is the time when boys and girls should know both Hawthorne's "The Wonder Book" and "Tanglewood Tales" and Kingsley's "The Heroes". Some older readers may prefer Kingsley's version as more Greek, in spirit, but Hawthorne's stories are little masterpieces of prose and serve as an introduction to style as well as mythology. -- -- they please boys and girls under twelve who are still susceptible"


to the charm of the fairy-tale. —— but not to know the names and attributes of the gods and goddesses, not to be at least faintly familiar with the main stories in Greek and Norse mythology results in many blind spots in later reading."

In conclusion, Hallowell¹ states,

"Living in a world of make-believe, children enjoy the marvelous adventures and exciting contests of the gods and their super-human achievements. . . . Indirectly, through hearing and reading myths as stories, the child is being prepared for a later understanding and enjoyment of literature with its wealth of allusions. Without some familiarity with classic myths, many of the world’s masterpieces will be almost meaningless.

Since myths have a distinct literary value and as a type of literature are particularly enjoyed by children, should they not be accorded a place in children’s literature?"

The value of a knowledge of myth in understanding literary allusions, and musical and artistic creations using mythological back-grounds, has long been established. Whereas that need may not be felt too much at these grade levels, it certainly will be met in secondary schools. As for correlation with the elementary school curriculum, the possibilities are unlimited in the fields of nature study, astronomy, character training, dramatic presentations, social studies and the language arts.

Johnson² also brings this out,

"What is the value of the myth as literature for children? Certainly not all traditional or folk tales are good literature for children, nor old myths. An intelligent choice must be


made. If the choice is made along the lines of the child's interests and understanding, the value of the mythological stories cannot be overestimated. Myths are keys which open up the world of allusion and thus help children to a better understanding of the masterpieces of literature. If boys and girls become familiar with the myths in childhood, the stories and their significance are long remembered.

No type of story correlates better with the school curriculum than the myth. — — — The study of mythology is an essential part of the study of literature. Beautiful stories link up with music — the Pipes of Pan, Orpheus and his harp, Apollo and his golden lyre, and Arion and his song. — — — A knowledge of classical art cannot be separated from mythology. Also since so many of the stars and constellations are named for gods and heroes, mythical stories link up with astronomy. Many myths give beautiful answers to questions often asked by children concerning the how, when, and why of the ways of animals, birds, insects, trees, flowers and the greater forces of nature. For this reason the myth becomes an interesting corollary to nature study."

The value of teaching mythology could be summed up as follows:

1. Myths present evidence of how the mind of man looked upon his surroundings and what he did in the way of interpreting them; this aspect of the study may help to build in children a more tolerant and inquiring attitude concerning the religious views of others.

2. Myths preserve much material of social and antiquarian interest; this may help the children to understand the customs of both primitive human development, and today's social institutions and changes.

3. Myths are delightful and exciting stories in themselves; with them teachers can open up a whole new exciting world of fantasy and heroism.

4. Myths, and the heroes and deities in them, are frequently alluded to in literature, music, art and general conversation;
they have helped to shape our language, a knowledge of them is a cultural requirement.

**Extent of Use**

In trying to determine this, some of the arguments which have been advanced against the use of myths could be examined for, in suggesting usage, the arguments may also be answered.

Curry¹ has summed up these objections very well,

"Objections to Myths

1. They come from a plane of ethics, much lower than our own. This argument has validity. . . . omit myths that are not suitable rather than attempt to make them over to suit modern conceptions.

2. Myths deal with the worn-out and obsolete ideas of the past and will give children false religion and scientific notions. Neither children nor adults are ever led astray by these purely incidental background against which and by means of which the human interest is powerfully projected.

3. Myths are too deeply symbolical. Readers of different ages and abilities find results up to their stature. What is worth while in literature has an increasing message as the powers of the reader increase.

Select myths for dramatic force and ethical worth.

Present as you would any other folk story."

In conclusion, one might say:

1. Let any study of mythology follow some allusion in other subject matter, that children may feel a need for further information.

2. Let any study of mythology be not an end in itself, but a door to further enriching experiences motivated by an enjoyable period of association with these fascinating characters and situations.

---

3. And above all, let a wise choice be made of myths to be presented, that only those ideas and ideals good education aims to perpetuate will be emphasized; in that way such a study can become a meaningful and socially significant experience.
CHAPTER III
CONSTRUCTION OF THE MATERIAL

When teaching the material on stars as suggested in the science textbooks for this age-level, the writer was unable to find enough suitable material to provide the obvious and valuable correlation with mythology and the language and graphic arts. There appeared to be a need for assembling much of this material under one cover re-written and edited for this age level, and tailored to fit the science situation. This study is the result.

Choice of constellations and myths

Not every constellation has a myth, and some myths connected with constellations are not suitable for this age group; also, it is regrettable that some of the finest myths are not related to any constellations. The author has tried to stimulate the reading of these other desirable myths by the suggested activities for further study. Therefore, it was necessary to choose from a limited number of constellations, those which were of sufficient importance and which had connected with them, myths of desired interest and suitability.

Because finding the constellations in the sky and knowing it in its various positions is an important part of any such study, it was, of necessity, limited to the school year when field trips could be taken and individual observations made and noted. By stretching out
the unit over the year, teaching it only two or three days a month, it gave a greater choice of constellations and left only the summer sky for independent exploration in a pattern well established by June. It also gave more time for independent study of suggested activities and the more involved group projects.

Bounded by these limitations, a choice of seventeen major constellations was made, constellations which could be combined by reason of proximity in the heavens and interrelation in mythology, into nine units. Because the story of Phaeton is one of the most desirable myths, and the sun such an important star, it was added to make a tenth unit; and although the scientific aspect did not involve the study and location of a constellation, it gave an opportunity for a more thorough understanding of the relation of the sun to our earth.

Additional teaching aids

None of this material should be taught, of course, without an introduction of general astronomical knowledge and some background of Greek and Roman mythology. In many school systems this is the social studies curriculum for sixth grade, thus there is a natural correlation of this material. This scientific background is suggested in the Introduction which may serve as a guide to the elements to be covered more freely in several lessons over some period of time.

To aid in finding the constellations, diagrams with verbal directions for their use as sky-maps are given in the beginning of each unit and practice in their use is suggested.
Because the classical pictorial representations of the constellations are so widely accepted, the writer sought some means of presenting them which would entail a certain amount of response on the part of the pupils, hoping to enhance learning by doing as well as seeing. Most children are intrigued with the "follow-the-dot" situation, so this seemed a happy solution. Therefore, the classical illustrations of eighteen constellations have been included with the stars superimposed in contrasting ink.

In rewriting the myths for this book, the writer has tried not only to reduce the vocabulary load, but to increase the interest by using direct quotation and taking advantage of the action and suspense that is usually only alluded to indirectly in the traditional accounts of the deeds of the gods and goddesses, making them dry and heavy reading for children.

The writer made a word count against the Durrell-Sullivan Word List and the lists in the Scott-Foresman Reading Series: Times and Places, Grade 4; Days and Deeds, Grade 5; and People and Progress, Grade 6. The vocabulary of specialized words found in the appendix of this study is the result, and these words should be presented at the outset of unit and are so arranged.

Tests

In planning the tests, two kinds of learning had to be kept in mind; first, the ability to recognize the star pattern and second, the retention of the characters and plots of the related myths. Therefore, there are two such parts to each check test and also to the final test - one part a map test and the other some type of objective test. The writer
used objective tests because there was a large amount of factual knowledge to be checked. Objective tests provide for extensive sampling with a minimum of time both for administration and scoring and yet "are highly reliable." Most children at this age are not able to do justice to the essay examination nor is this material well suited for it.

The true-false test seemed appropriate for the material taught in the introduction as there were not enough plausible alternative responses for a multiple-choice test. In regard to the true-false test, Green says,

"True-false items can be used satisfactorily in many situations if they are constructed carefully enough to make them largely free from ambiguity. They can be used in testing popular misconceptions and unfounded beliefs in the sciences and social studies areas."

Matching and completion tests were used in testing the retention of the mythological aspects of the unit and of these tests Green states,

"The completion sentence is applicable, for example, in situations involving the correct use of language form — and in a variety of situations in the social studies and sciences."

and concerning the matching test,

"The matching exercise appears to be most useful with factual knowledge in a great variety of situations where it is desirable to test over a number of comparable relationships."

2. Ibid., p. 175.
3. Ibid., p. 172-3.
4. Ibid., p. 184.
For this reason the matching test was particularly good for the majority of responses in the final examination where all the mythological beasts could be grouped, many gods and goddesses, and many places for identification. Unbalanced matching sets with more items on one side than the other were used to reduce guessword factor.

Map tests and questions were straightforward identifications of star groups and the naming and identifying of important single stars.

**Supplementary Activities**

An essential phase of any unit is the opportunity provided for supplementary work sufficiently challenging for the gifted children, yet affording some activities of interest to all ability levels in stimulating individual and group research. The writer has tried to provide such a variety of suggested activities which can be used in many ways and which may give impetus to other activities created by teacher or pupils.

There is also a suggested bibliography of supplementary books most of which are within the reading range of the average sixth grade child. It would seem necessary to provide such a library to successfully carry on this unit if the children are to develop skills in research as well as acquire knowledge of the subject matter.
CHAPTER IV
SUGGESTED PROCEDURES

Overall Plan of Book

The general plan of the workbook suggests its use for a brief period each month, rather than for a long concentrated period. This will keep it from becoming tiresome, and keep the children's interest in constellations throughout the school year, and it is hoped, the summer and years to come. Just as familiarity with a symphony marks it as an old friend, so there is a real satisfaction in greeting Orion, Hercules, and Perseus as old friend appearing over the horizon each year. Because every chapter of the book follows the same plan, the teacher should vary the presentation of the chapters to avoid monotony.

The Introduction to the Unit

It is suggested that the unit be introduced in early September and preliminary work based on the introduction be done at that time rather thoroughly. The introduction to the workbook is packed solidly with facts and was planned by the writer to be a guide and means of review, rather than a text for the children. It is obvious that the material therein should be simplified, amplified, experimented with and reviewed over a period of many days. Plenty of time should be allowed for reading and research on each topic from a variety of science texts on the reading level of the children. The following
may serve as a guide to individual lesson topics covering the material in the introduction.

1. Observatories and telescopes in history and in use today.
2. Concepts of astronomical distance.
3. The solar system.
4. Galaxies, meteors, comets, and shooting stars.
5. Stars - size, colors, distances between.
6. Constellations - what are they? What has been their influence on man? Astrology vs. Astronomy.

Learning to find the constellations

After the material in the introduction has been taught and tested, the first lesson unit on the dippers could follow immediately. Practice in plotting the stars until the children are thoroughly familiar with the relative positions of them should be provided and all possible help should be given in the classroom to enable the children to meet success in finding them in the sky - a real thrill for them. This type of lesson should introduce each chapter and records kept as an incentive for each child to find the constellations in the sky as they are studied. Field trips in the early evening are a help in accomplishing this.

Presenting the myths

The myth, itself, may be studied as any story in the reading books and the presentation should be as varied as possible. It
would be a good idea to have a lesson on mythology in general covering such topics as:

1. Historical background
2. Religious aspects
3. Spheres of influence of the deities
4. Mt. Olympus - mode of "life"
5. Greek and Roman name equivalents
6. General vocabulary

before starting the chapter on the dippers.

**Correlating the curriculum**

The myths and themselves readily to dramatization in its many forms as puppet and marionette shows, radio skits, straight playlets, etc., but this activity should not be overworked.

The children will enjoy the following of the dots to find the pictorial concepts of the constellations and will probably want to color them. They will also enjoy illustrating the myths with crayon, water-color, cut-paper, and even in dioramas, lantern-slides, and roll-up movies. Correlation in the field of graphic art is unlimited.

It is hoped that the suggested extra activities will prove helpful and stimulating in providing challenge for the more gifted children and broadening the horizons of the class by enrichment in a variety of ways.
The use of the check-test is obvious and should follow closely at the end of each unit of work. Other evaluation criteria may and should be devised and used.

In the appendix there is a list of specialized vocabulary that should be presented at the outset of each unit, and there is also a bibliography suitable for use by the children at the end of the workbook.
CHAPTER V

THE WORKBOOK

Stars and Their Stories
Stars in the Dark

Up in the heavens afar
I saw a shining glittering star.

Dancing and prancing the time away
It nodded at me as if to say,
"Free as a bird that flies on high
Those are the stars that live in the sky -
Bright as a diamond,
Happy as a lark,
Here we are when the world is dark."

Michlyne O'Connell

Written by a sixth grade pupil as part of this unit.
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Final Test 97
CHECK TEST ON INTRODUCTION

This is a true-false test. If the entire sentence is true, put yes in the space in front of the sentence, if it is not true, put no.

1. A star is a whirling mass of burning gases.
2. The sun is the largest planet in the solar system.
3. Galileo is a famous present-day scientist.
4. The light from the sun takes about 8 minutes to reach us.
5. A light-year is the distance light can travel in a year and is the unit of measure for distance in the universe.
6. Light travels 186,000 miles in a second.
7. The world's largest telescope is at the Mt. Wilson Observatory.
8. Stars can be photographed through a telescope.
9. When looking through the Mt. Palomar telescope you look directly at the stars.
10. No one can count the number of planets in the solar system — it is infinite.
11. Stars give off light and heat.
13. A planet is a star that just gives off heat.
14. A galaxy is like a small solar system.
15. Our solar system is part of the Milky Way galaxy.
16. We use the term magnitude to measure the distance between stars.
17. A first magnitude star is the largest star we know.
18. A red star may be either a new or a very old, dying star.
19. A red star is the coolest star we can see.
20. A white or blue-white star is the hottest star.

21. A white star is about 5000°F.

22. A white star is a middle-aged star.

23. Astrology is a false science about the constellations and their effect on human beings.

24. The most common names for the constellations, and the stories about them came from Greek and Roman mythology.

25. We can see the same "star pictures" in the sky all year round.

Rewrite each false statement to make it true.
CHECK TEST

Complete the following statements by putting one word in each blank space.

1. The home of the gods is _____________.
2. _______ and _______ are the foods of the gods.
3. The king and queen of the gods were _______ and _______.
4. Gods and goddesses often visited the earth in _______ form.
5. At one time, Jupiter was in love with _______, a mortal woman.
6. This angered his wife, ______, who changed the woman to a _______.
7. In order to save her life Jupiter had to change her son, ______, to a _________, also.
8. These _______ may be seen in the sky and are also called the _______ and _________.

Draw lines connecting the stars in our two constellations. Label the constellations and the most important star.
CHECK TEST

Fill in the blanks in the following sentences with one word for each blank.

1. Hercules was the son of an earthly woman and ________, ______ of the gods.

2. Because of this, ______ was very jealous of him and finally bound him to his ________, King ________.

3. One of the twelve tasks he had to perform was to get three ________ apples from the ___________ of the ____________.

4. ________, who held the heavens on his shoulders, was the ___________ of these ____________.

5. He offered to get the apples for Hercules if he would ___________ ____________ for him.

6. The gates of the garden were guarded by ________, a ________.

7. ________ got the apples and wanted to take them to ________ and leave Hercules holding the sky.

8. Hercules tricked him by saying he wanted to make a pad out of his ________ ________ to protect his shoulders.

Draw lines connecting the stars of these two constellations, and label them.

north

east

west

south
Fill in the blanks in the following sentences with one word for each blank.

1. In the first legend of Cygnus, _______ disguised himself as a swan, won the favor of ________ and they became the parents of ________ who were ________.

2. In the second legend, a faithful friend of ________ was turned into a swan by Jupiter because he was trying to rescue ________ from a ________, where he was ________.

3. Orpheus was the son of ________, the ________ god, and ________, the Muse of ________.

4. He married Eurydice who shortly died from a ________ ________.

5. Orpheus planned to get her back from ________ which was ruled over by ________, king of the underworld.

6. He won the king's favor by his sweet ________ and playing his ________.

7. He was allowed to take Eurydice home on the condition that he would not ________ at her until he reached the earth.

8. He failed, and spent the rest of his life in sorrow and loneliness. When he died, ________ placed his ________ in the sky in memory of his faithfulness.

Draw lines connecting the stars of these two constellations and label each. Also label the three important stars.

north

east

west

south
## CHECK TEST

<table>
<thead>
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<th>A. Pegasus</th>
<th>D. Lycia</th>
<th>G. Bellerophon</th>
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<td>B. Chimera</td>
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</tr>
<tr>
<td>C. Mt. Olympus</td>
<td>F. Iobates</td>
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</tr>
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</table>

Place the letter for the correct name to the description of the person or place in the blank space provided. Some names may be used more than once.

1. ____ He wore a golden bridle.
2. ____ He killed a monster.
3. ____ It had a goat's head and a lion's head.
4. ____ The home of the gods.
5. ____ Goddess of wisdom.
6. ____ A king.
7. ____ He had beautiful wings.
8. ____ He gave advice and foretold the future.
9. ____ He became proud and boastful.
10. ____ A land that was being destroyed.

Draw lines connecting the stars in the constellation of Pegasus. Draw a line around the stars of Andromeda that are sometimes thought of as part of Pegasus. Next to the famous star in this constellation put its name.

```
north

east

south

west
```
Perseus
CHECK TEST

A. One of the Gray Sisters    E. Andromeda    I. Perseus
B. Polydectes                   F. Mercury        J. Medusa
C. Cassiopeia                   G. Jupiter        K. Minerva
D. Danae                        H. Acrisius

Place the letter for the correct name next to the description of the person in the blank space provided. Some names will be used more than once.

1. _______ The person who was the cause of Andromeda’s plight.
2. _______ He helped Perseus get ready for the journey.
3. _______ He put Perseus in the chest with his mother.
4. _______ Perseus’ mother.
5. _______ She angered Minerva.
6. _______ King of the gods.
7. _______ She was very vain.
8. _______ She had snakey hair.
9. _______ He wanted to marry Danae.
10. _______ He rescued Andromeda.
11. _______ He sent help to Perseus.
12. _______ She had only one eye.
13. _______ Goddess of wisdom.
14. _______ Messenger of the gods.
15. _______ He sent Perseus on the dangerous mission.

Draw lines connecting the stars in the constellations of Perseus, Andromeda, and Cassiopeia. Label each constellation neatly.
Orion and Taurus
The Hunting Dogs
## CHECK TEST

<table>
<thead>
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<th>A. Taurus</th>
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<tr>
<td>D. Diana</td>
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<td></td>
</tr>
</tbody>
</table>

Place the letter for the correct name next to the description of the person or thing in the blank space provided. Some names may be used more than once.

1. ___ Goddess of the hunt.
2. ___ Mighty giant and hunter.
3. ___ One of his dogs.
4. ___ Another of his dogs.
5. ___ Seven sisters.
6. ___ God of the sun.
7. ___ She shot her lover.
8. ___ Goddess of the moon.
9. ___ God of the sea.
10. ___ King of the gods.
11. ___ A bull.
12. ___ God of the forge—a blacksmith.
13. ___ He was once blind.
14. ___ He fooled his sister.
15. ___ He was able to heal with his rays.

Draw lines connecting the constellations of Orion, Taurus, Canis Major, and Canis Minor. Next to the correct stars place the letter corresponding to the following names below: Also label each constellation neatly and clearly.

![Constellation Diagram]

- north
- east
- south
- west

A. Procyon
B. Aldebaran
C. Pleiades
D. Rigel
E. Sirius
F. Betelgeuse
Castor and Pollux, the Twins
CHECK TEST

A. Castor  D. Argonauts  G. Jupiter  J. Vulcan  M. demi-god
B. Medea  E. Talus  H. Pollux  K. Minos  N. Golden Fleece
C. Gemini  F. Orpheus  I. Crete  L. Jason  O. Helen of Troy

Next to the definitions place the letter of the correct word from the
above list which fits the definition. There will be more words than
you need.

1. _____ A man of brass.
2. _____ Latin word for twins
3. _____ Leader of the Argonauts
4. _____ One of the twins.
5. _____ Another of the twins.
6. _____ God of the forge.
7. _____ Beautiful girl magician.
8. _____ Most beautiful woman in the world.
9. _____ King of the gods.
10. _____ King of Crete.

Below, connect the stars of the constellation, Gemini, and label the two
most important stars. Also label the star in Orion which helps you find
Gemini.

north

east

west

south
CHECK TEST

A. Hydra  D. Hercules  G. Immortal
B. Ioelaus  E. Laboura  H. Anymonie
C. Juno  F. Eurytheus  I. Argos

Next to the definitions place the letter of the correct word which fits the definition. Choose the words from the above list; some may be used more than once.

1. _____ Something which cannot be killed.
2. _____ A cousin of Hercules.
3. _____ A nephew and faithful servant of Hercules.
4. _____ A kingdom where a serpent did much harm.
5. _____ A spring near which the serpent lived.
6. _____ A very strong man
7. _____ One of his many difficult tasks.
8. _____ A nine-headed water-snake.
9. _____ Goddess, wife of Jupiter.
10. _____ It had an immortal head.

Below make the dots indicating the stars in Hydra, yourself; and then connect them in the constellation.
CHECK TEST

Complete the following statements in as few words as possible — one word in each blank.

1. __________, in a fit of madness, committed many crimes of violence.

2. As punishment, he promised to do the yielding of his __________, King Eurystheus.

3. The king forced him to do twelve difficult tasks, most of them planned by __________, queen of the gods.

4. His first labor was to kill the __________ of __________.

5. First he tried his __________ and __________.

6. Then he tried his __________.

7. He finally ended by killing it with his __________ __________.

8. When he showed it to the king, he told him to leave his trophies __________ in the future.

Draw lines connecting the stars of this constellation and label it. Also label the two important stars in it. Underline the brightest star.
CHAPTER 11

THE SUN

The sun is not a constellation, but it is, as you know, a star, and the most important one to the people of earth. Without the sun all life on earth would die; and if the earth did not stay the same distance away from the sun we would be so hot all things would burn up, or so cold we could not live. Turn back to the introduction and on the rest of this page list all the other facts we know about our sun.
CHECK TEST

Fill in the blanks in the following statements.

1. The sun is the most important _________ to the people on ____________, earth.

2. It is important for life on earth that we remain the same_________ from the sun we now are.

3. We study this story in connection with the sun because it is about the sun god, ____________.

4. He was persuaded to let his son, ____________, drive the chariot of the sun for one day.

5. This was done to prove the sun-god was his___________.

6. The boy tried to hold the chariot on its path known as the_________ on both sides of which there are many fierce__________.

7. It was a wild ride sometimes the chariot was so_________ the earth it ____________ ____________.

8. He was afraid of the__________ along the sun's path.

9. The people of earth were so terrified they cried to__________ for help.

10. He answered their prayers and seizing a __________________, hurled it at the boy and saved the earth.
16. Choose 15 of the following words and explain how their present meanings are related to mythology.

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<td>panic</td>
</tr>
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<td>janitor</td>
<td>protean</td>
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<tr>
<td>morphine</td>
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<td>opulent</td>
<td>pomology</td>
<td>sibylline</td>
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<td></td>
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<td>auroral</td>
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"The Lion of Nemea", p. 16-17; February, 1954.

FINAL TEST

Fill in the blanks in the following statements.

1. A whirling mass of burning gasses in a more or less fixed position in the universe, and giving of heat and light is a ____________.

2. The solar system consists of the ____________ and nine ____________ with their ____________.

3. The unit of measure for astronomical distance is a ____________.

4. The unit of measure for the brightness of stars is ____________.

5. A heavenly body reflecting light from a star is a ____________, or a ____________.

6. The large telescopes at Mt. Wilson and Palmar are ____________ telescopes.

7. Because people today no longer believe in the Greek and Roman gods, the stories about them are known as ____________.

8. The true science of the universe is called ____________.

9. The false science about the influence of constellations on the lives of humans is called ____________.

10. Because the universe is still unmeasurable by man we call it ____________.

11. The coolest stars are ____________ in color, the hottest are ____________.

12. Our solar system is part of the ____________ galaxy.

Match these places with the descriptions:

a. Garden of the Hesperides
b. Mt. Olympus
c. Erythea
d. Lycea
e. Polaris
f. Crete
g. Garden of Eden
h. Anyome
i. Eridanus
j. Hades
k. Nemesis
l. Hesperus
m. Zodiac

13. Island kingdom of King Minos
14. The spring Hydra lived near
15. The land of the dead
16. Where the fierce lion lived
17. Where the Chimera lived
18. Right above the north pole
19. Path of the sun
20. The home of the gods
21. River in which Phaeton drowned
22. Where the golden apples were
Match these creatures with the descriptions:

| a. Hydra          | 26. Orion's large hunting dog |
| b. Scorpion      | 27. The winged horse          |
| c. Sirius        | 28. The bull                  |
| d. Taurus        | 29. The many headed serpent   |
| e. Procyon       | 30. A man of brass            |
| f. Chimer        | 31. Had a lion's head and a goat's head |
| g. Pegasus       | 32. Orion's small hunting dog |
| h. Talus         | 33. The swan                  |
| j. Hydra         | 34. Three headed dog guarding Hades |
| k. Cerberus      | 35. He held up the heavens    |
| l. Cygnus        | 36. He drove the sun-chariot for one terrible day |

Match these people with the descriptions:

| a. Bellerophon   | 32. One of the Gemini         |
| b. Orion         | 33. King of the gods          |
| c. Diana         | 34. He held up the heavens    |
| d. Jupiter       | 35. He drove the sun-chariot for one terrible day |
| e. Hercules      | 36. Queen of the gods         |
| f. Atlas         | 37. The vain queen            |
| g. Juno          | 38. He foretold the future    |
| h. Callisto      | 39. She had snakesy hair      |
| i. Castor        | 40. She was chained to a rock |
| j. Phaeton       | 41. Messenger of the gods     |
| k. Perseus       | 42. The other of the Gemini   |
| l. Polix         | 43. Goddess of the hunt       |
| m. Apollo        | 44. He rode the winged horse  |
| n. Andromeda     | 45. The mighty hunter         |
| o. Polydectes    | 46. Blacksmith of the gods    |
| p. Minerva       | 47. She died from a snake-bite|
| q. Cassiopsea    | 48. God of the sea            |
| r. Mercury       | 49. God of sun                |
| s. An oracle     | 50. He killed Medusa          |
| t. Medusa        | 51. The singer of sweet music |
| u. Vulcan        | 52. Goddess of wisdom         |
| v. Neptune       | 53. Leader of the Argonauts   |
| w. Orpheus       | 54. He performed twelve tasks |
| x. Jason         | 55. God of the underworld     |
| y. Eurydice      |                                |
| z. Plato         |                                |
Place the letter of the constellation next to the number of the star which is part of it.

a. Cygnus  56. Alpheratz
b. Orion  57. Polaris
c. Canis Major  58. Vega
d. Little Dipper  59. Algol
e. Canis Minor  60. Beteigeuse
f. Taurus  61. Castor
g. Leo  62. Alpha
h. Gemini  63. Sirius
i. Pegasus  64. Beta
j. Lyra  65. Aldebaran
k. Perseus  66. Rigel

67. Rigel
68. Pleiades
69. Denebola
70. Procyan
71. Pollux
Encircle and label as many constellations as you recognize in the spring-summer sky.

Encircle and label as many constellations as you recognize in the fall-winter sky.
CHAPTER VI
ANALYSIS OF CLASS RESULTS

It was the purpose of the writer to try out the workbook on her class of sixth grade children.

On the basis of the thirty-three heterogeneously grouped children an attempt was made to evaluate the measurable learning that took place as a result of the presentation of this unit.

Tables II through XII show the results of the eleven check tests which were given following the study of each sub-unit and Table XIII the results of the final test covering all the material in the unit.

TABLE II

Test 1. - Mean score for 33 cases.
A true-false test on the material covered in the Introduction.
It was scored right minus wrong with a possible 25 correct answers.

<table>
<thead>
<tr>
<th>Range</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-25</td>
<td>15.40</td>
<td>5.96</td>
</tr>
</tbody>
</table>

The scores ranged from 1-25 with a mean score of 15.40 and a S. D. of 5.96.
TABLE III

Test 2. Mean score for 33 cases.
The number of correct items was counted in a completion and map test on The Dippers.

<table>
<thead>
<tr>
<th>Range</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-18</td>
<td>15.67</td>
<td>1.84</td>
</tr>
</tbody>
</table>

The scores ranged from 11-18 with a mean score of 15.67 and a S. D. of 1.84.

TABLE IV

Test 3. Mean score for 33 cases.
The number of correct items was counted in a completion and map test on Hercules and Draco.

<table>
<thead>
<tr>
<th>Range</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-22</td>
<td>18.48</td>
<td>4.20</td>
</tr>
</tbody>
</table>

The scores ranged from 7 to 22 with a mean score of 18.48 and a S. D. of 4.20.
### TABLE V

Test 4. The mean score for 33 cases.

Number of correct items was counted in a completion and map test on Cygnus and Lyra.

<table>
<thead>
<tr>
<th>Range</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-28</td>
<td>21.00</td>
<td>4.20</td>
</tr>
</tbody>
</table>

The scores ranged from 11-28 with a mean score of 21.00 and a S. D. of 4.20.

### TABLE VI

Test 5. The mean score for 33 cases.

Number of correct items was counted in a matching and map test on Pegasus.

<table>
<thead>
<tr>
<th>Range</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-13</td>
<td>11.42</td>
<td>1.33</td>
</tr>
</tbody>
</table>

The scores ranged from 8-13 with a mean score of 11.42 and a S. D. of 1.33.
TABLE VII

Test 6. The mean score for 33 cases.
The number of correct items was counted in a matching and map test on Perseus.

<table>
<thead>
<tr>
<th>Range</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-23</td>
<td>17.39</td>
<td>4.47</td>
</tr>
</tbody>
</table>

The scores ranged from 3 to 23 with a mean score of 17.39 and a S. D. of 4.47.

TABLE VIII

Test 7. — The mean score for 33 cases.
The number of correct items was counted in a matching and map test on Orion.

<table>
<thead>
<tr>
<th>Range</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-29</td>
<td>24.62</td>
<td>5.44</td>
</tr>
</tbody>
</table>

The scores ranged from 7 to 29 with a mean score of 24.62 and a S. D. of 5.44.
TABLE IX

Test 8. - The mean score for 33 cases.
The number of correct items was counted in a matching and map test on the Gemini.

<table>
<thead>
<tr>
<th>Range</th>
<th>Mean</th>
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</tr>
</thead>
<tbody>
<tr>
<td>5-14</td>
<td>11.82</td>
<td>2.33</td>
</tr>
</tbody>
</table>

The scores ranged from 5-14 with a mean of 11.82 and a S. D. of 2.33.

TABLE X

Test 9. - The mean score for 33 cases.
The number of correct items was counted in a matching and map test on Hydra.

<table>
<thead>
<tr>
<th>Range</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-12</td>
<td>9.61</td>
<td>2.58</td>
</tr>
</tbody>
</table>

The scores ranged from 3-12 with a mean of 9.61 and a S. D. of 2.58.
### TABLE XI

Test 10. - The mean score for 33 cases.

The number of correct items was counted in a completion and map test on *Leo*.

<table>
<thead>
<tr>
<th>Range</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-20</td>
<td>17.30</td>
<td>2.15</td>
</tr>
</tbody>
</table>

The scores ranged from 12 to 20 with a mean score of 17.30 and a S. D. of 2.15.

### TABLE XII

Test 11. - The mean score for 33 cases.

The number of correct items was counted in a completion test on *The Sun*.

<table>
<thead>
<tr>
<th>Range</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-13</td>
<td>11.18</td>
<td>1.26</td>
</tr>
</tbody>
</table>

The scores ranged from 8 to 13 with a mean score of 11.18 and a S. D. of 1.26.
TABLE XIII

Test 12. The mean score for 33 cases.
The number of correct items was counted in a completion, matching and map test covering all the material in the unit. There was a possible score of 113.

<table>
<thead>
<tr>
<th>Range</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>23-111</td>
<td>73.30</td>
<td>20.70</td>
</tr>
</tbody>
</table>

The mean score of 73.30 on the final test indicates that most of the children profited markedly from the instruction. The large S. D. of 20.70 indicates that the children spread from the low score of 23 to 111 and that there was a marked deviation in the ability of the children.
CHAPTER VII
SUMMARY AND CONCLUSION

It was the purpose of this study to evaluate a workbook on the teaching of astronomy and mythology in correlation. The following findings were the results of the tests given:

1. On a true-false test given, immediately after teaching the astronomical material in the introduction, on this phase of the workbook, the scores ranged from 1-25 with a mean of 15.40 and a Standard Deviation of 5.96. The highest possible score was 25.

2. On the test given after the first unit on The Dippers there was a range of 11-18 with a mean score of 15.67 and a Standard Deviation of 1.94. The highest possible score was 18.

3. On the test given after the second unit on Hercules and Draco there was a range of 7-22 with a mean score of 16.48 and a Standard Deviation of 3.80. The highest possible score was 22.

4. On the test given after the unit on Cygnus and Lyre there was a range of 11-28 with a mean score of 21.0 and a Standard Deviation of 4.20. The highest possible score was 28.

5. On a test given after the unit on Pegasus there was a range of 8-13 with a mean score of 11.42 and a Standard Deviation of 1.33. The highest possible score was 13.

-108-
6. On a test given after the unit on Perseus there was a range of 3-23 with a mean score of 17.39 and a Standard Deviation of 4.47. The highest possible score was 23.

7. On a test given after the unit on Orion there was a range of 7-29 with a mean score of 24.62 and a Standard Deviation of 5.44. The highest possible score was 29.

8. On a test given after the unit on The Gemini there was a range of 5-14 with a mean score of 11.83 and a Standard Deviation of 2.33. The highest possible score was 14.

9. On a test given after the unit on Hydra there was a range of 3-12 with a mean score of 9.61 and a Standard Deviation of 2.58. The highest possible score was 12.

10. On a test given after the unit on Leo there was a range of 12-20 with a mean score of 17.30 and a Standard Deviation of 2.15. The highest possible score was 20.

11. On a test given after the unit on The Sun there was a range of 8-13 with a mean score of 11.18 and a Standard Deviation of 1.26. The highest possible score was 13.

12. On the final test which covered all the astronomical and mythological material taught in the whole workbook over almost a school year's time, the scores ranged from 23-111 with a mean score of 73.30 and a Standard Deviation of 20.70. The highest possible score was 113.

It would seem from the above test results and a general evaluation of the reaction of the children, that they gained and retained considerable information.
As the writing of the workbook was not started until November, an optimum presentation of the material therein could not be used. However, the children seemed to enjoy each portion as it was finished, looking forward to the appearance of each chapter, and attacking the activities eagerly and with good results.

Weeks 1 states, "If any single criterion were to be satisfied relative to the selection of literature for children, the criterion would be the child's own reading preference."

This suggested that a study might be made to determine to what extent myths really appeal to children in comparison to contemporary writing. In the many studies on reading preference the writer examined, none listed or apparently considered the myth. The closest forms used in the preference studies were the fairy or folk tales and most of the critical literature shows a definite distinction between these and myth.

Because it would seem there is a little or no natural motivation for random reading of mythology on the elementary school level, due to ignorance of its existence, let alone its content; mythology, it would seem to follow, should be read and studied, possibly motivated in some way such as this workbook, before an accurate comparison of preference could be made by the children in such a survey.

Two of the children in the writer's class continued to read other Greek, Roman and Norse myths until the last weeks of school - several months after the completion of the workbook - with no coercion on the teacher's part. Also many children reported seeing various new constellations at different times during the weeks following the close of the unit.

Thus, it would seem that the workbook material was well received, and that learning, measurable and intangible, took place.
BIBLIOGRAPHY


27. Ware, Fay; and Lucille Sutherland, Greek and Roman Myths, Webster Publishing Co., St. Louis, 1952.


### SPECIALIZED VOCABULARY

<table>
<thead>
<tr>
<th>Term</th>
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### The Dippers - Chapter 2

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<td>Jupiter</td>
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<td>assuming</td>
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</tr>
<tr>
<td>Ursa Minor</td>
<td>nectar</td>
<td>Mt. Olympus</td>
</tr>
<tr>
<td>Callisto</td>
<td>ambrosia</td>
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### Hercules and Draco - Chapter 3

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<td>Draco</td>
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### Cygnus and Lyra - Chapter 4

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<td>Castor</td>
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### Pegasus - Chapter 5

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### Perseus, Andromeda and Cassiopeia - Chapter 6

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### Orion, Taurus, and the Dogs - Chapter 7

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### The Gemini - Chapter 8

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### Hydra - Chapter 9

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### Leo, the Lion - Chapter 10

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