Compiling of School atlases and wall maps on geography

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In Summary

- School atlases for different levels of education
- Steps in Atlas creation
- Wall maps
- Research experiences in schools
- Design and new directions

Situation in Bulgaria 5 years ago

- not satisfying - old contents and design
- school curriculum was changed some times during the last fifteen years
- cartographic firms have not been able to give what was necessary for the educational process
- still nowadays many schools have old wall maps with old contents, cartographic information and design; other ones do not have maps for every continent

Example –
why do we need new Atlas for 7 grade

- the forthcoming acceptance of Bulgaria in European Union
- the examinations in Geography
- the complicated school curriculum approved by Ministry of Education
- The blank maps are used very successfully for assimilation of knowledge

Levels of geography education

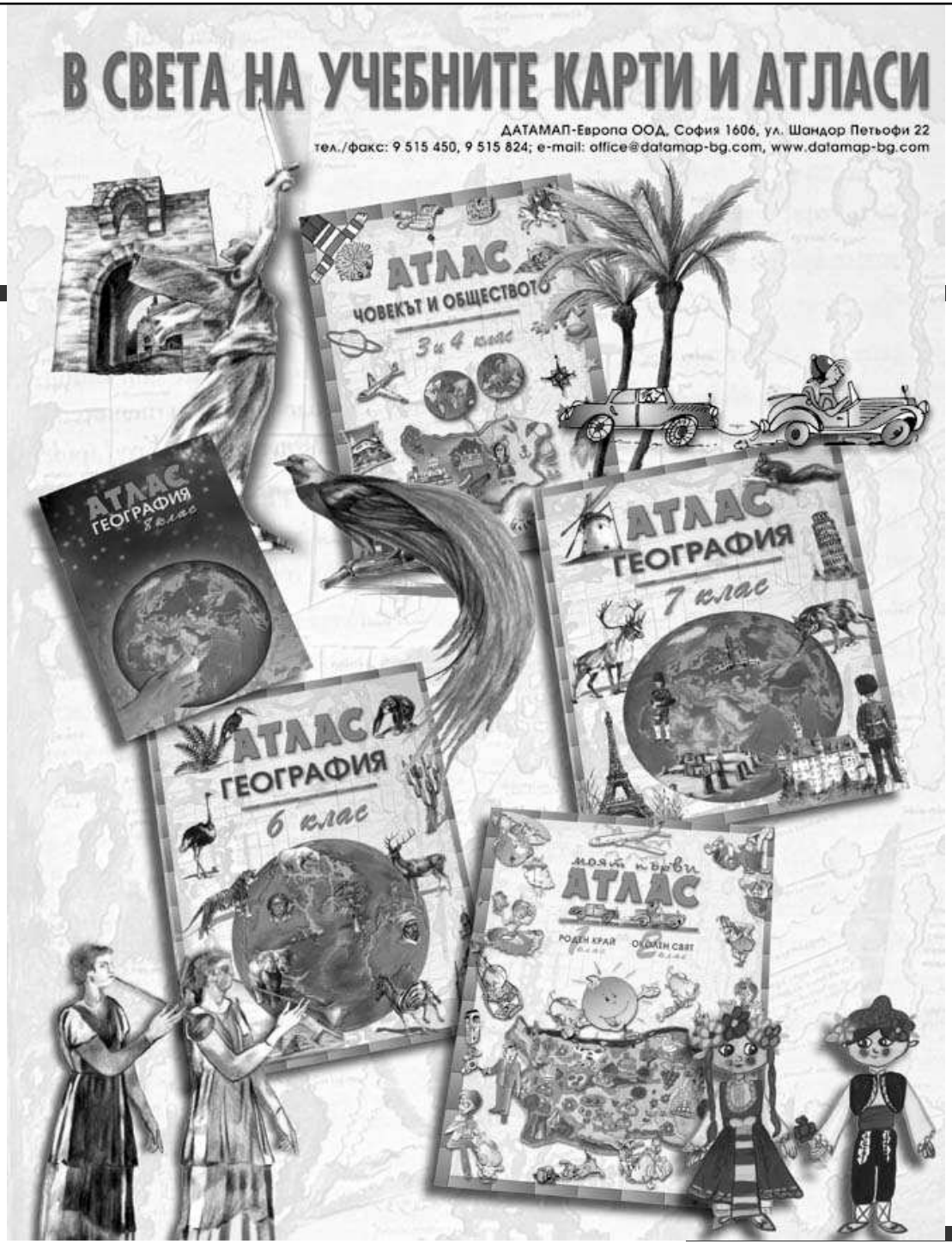
Primary	Secondary	High
1-2 grade 7-8 years old	5 grade new	9 grade 15 years old
3-4 grade 9-10 years old	6 grade 12 years old	10 grade 16 years old
	7 grade 13 years old	11 grade -
	8 grade 14 years old	12 grade -

POSTER

Atlases in geography

Author:
T. Bandrova

Publisher:
DataMap-Europe



Sources for Atlas creation

- Curriculum in Geography
- Min 3-4 text books in geography
- Existing maps and atlases for these ages
- GIS vector data for the territory
- Statistical data, raster data (photos, pictures), etc.

Who participate in the process

- Cartographers – authors and mapmakers
- Specialists in GIS
- Geographers, expert's advice
- ideas and efforts of schoolteachers
- university professors as reviewers
- professional artists
- designers
- Ministry of Education

- **Cartography is originally an instinctive science, which nowadays enters a new, revolutionary period of its development.**

M. Konecny

Students' help in maps and Atlases designing

- The purpose - find a way for the best communication with students
- Children's knowledge and information - process of designing maps and atlases
- "The cartographer must learn how the non cartographer draws a map, what they want to communicate, what symbolism they use and what is their logic" *Morita, T.1997*

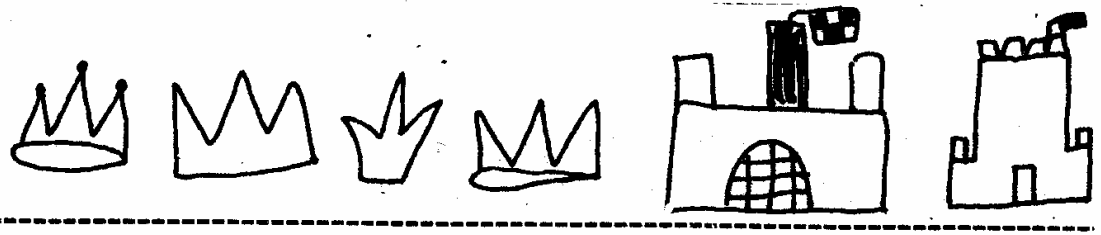
Experimental work with children in making maps for their education

- 80 first and second school year pupils in Sofia
- Children are not acquainted with the use and reading of maps
- Children show great interest for the experiments and have a desire and possibility to use maps

Symbols are drawn by a student 7 years old

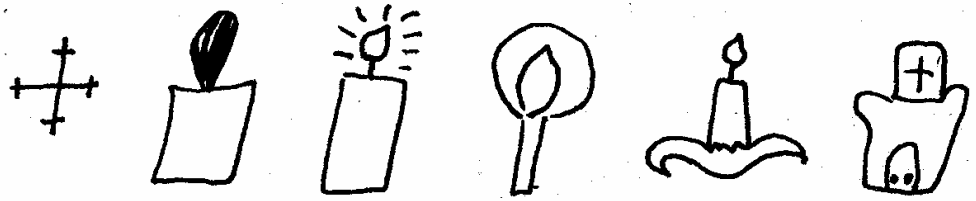
Palace

Дворец



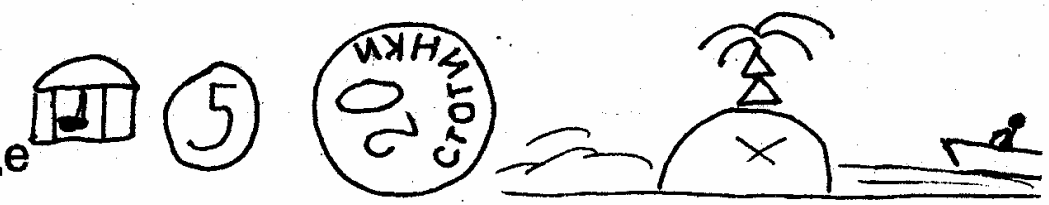
Church

Църква



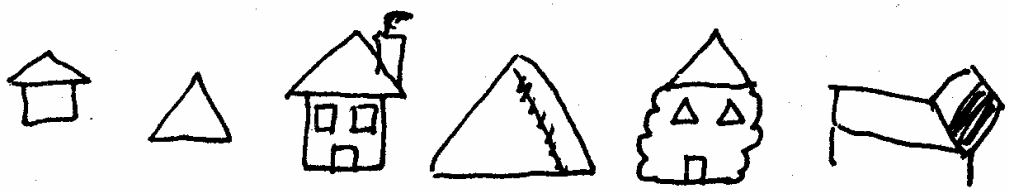
Golden treasure

Златно съкровище



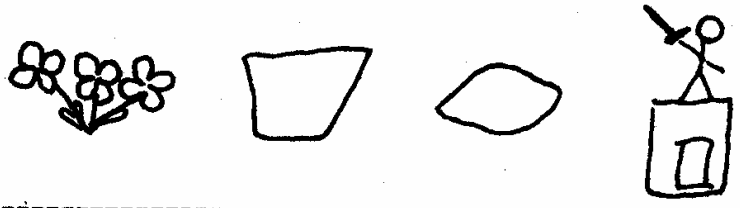
Hut

Хижа



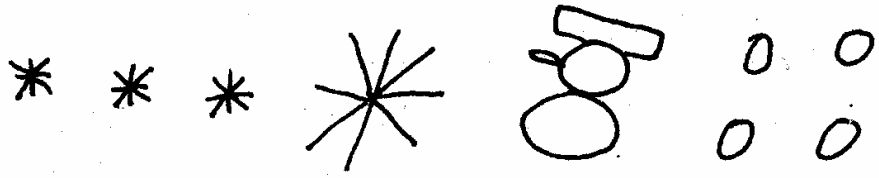
Monument

Паметник

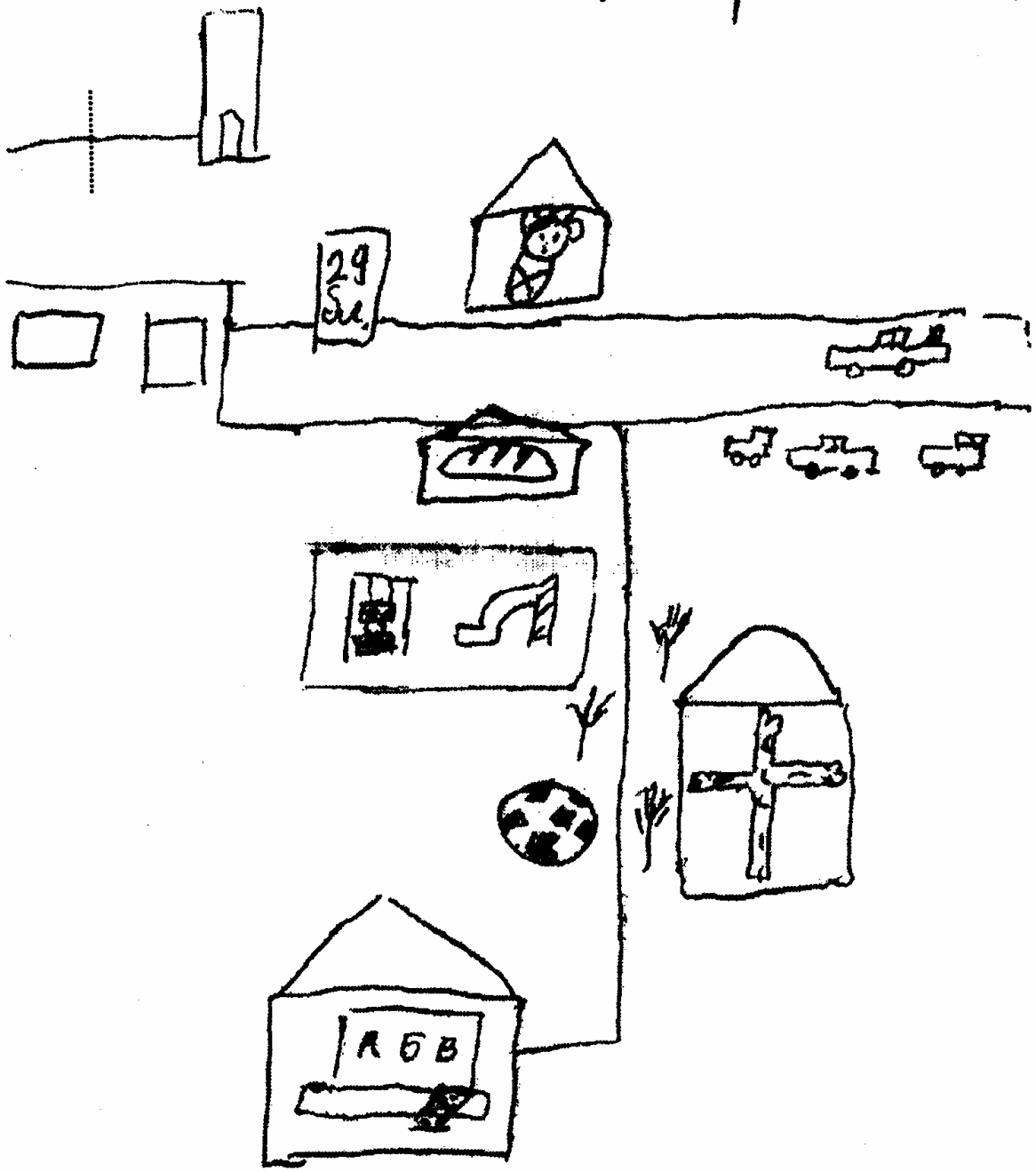


Snow

Сняг



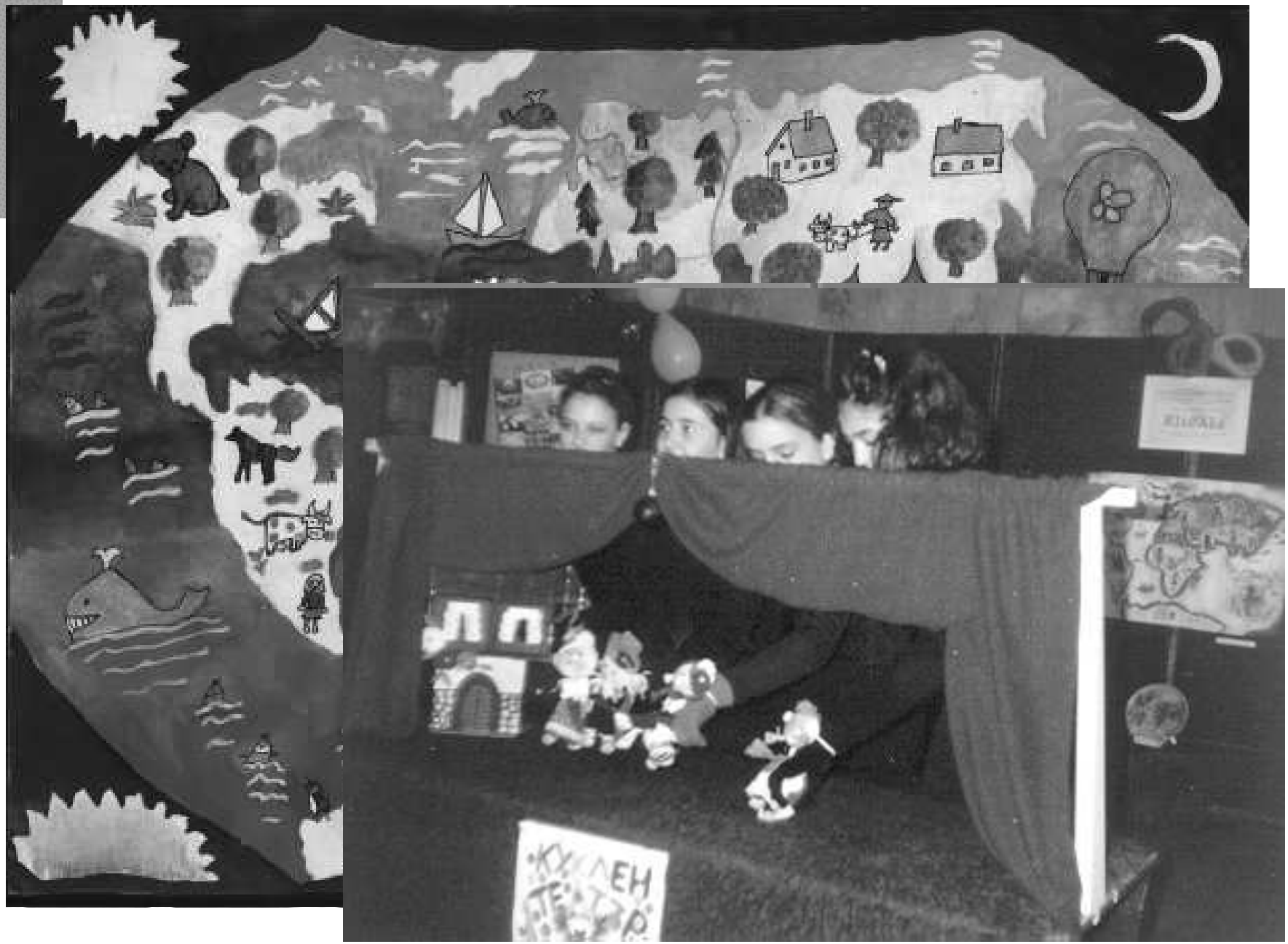
Марио - I Б



Barbara Petchenik Competition in National level

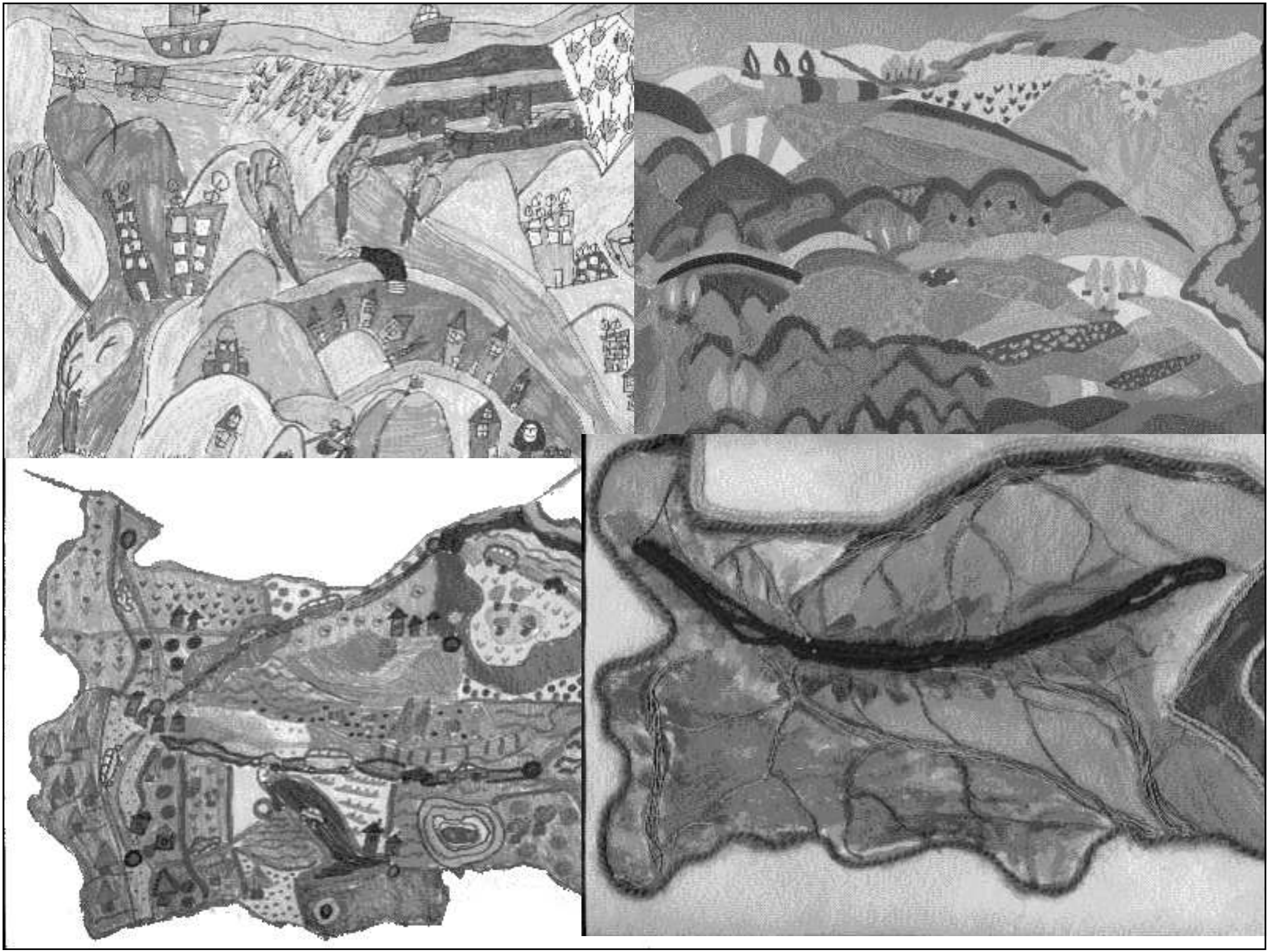
- primary schools cartographic products are often designed by children's drawing from local entries to the Barbara Petchenik map competition
- Example: Atlas for 3-4 grade – themes of geography and history

Barbara Petchenik Competition - Bulgaria



National Competition "Map of Bulgaria"

- above 700 drawings
- from 50 settlements in Bulgaria
- It shows children's love to learned national geography and history as well their ability to use cartographic visualisation methods



Experimental research in secondary and schools about information extraction and map understanding

85 students - 12-13 years old

aim: final definition of symbols and text sizes, colors, necessary information and designing view of all maps before pre-publishing process

Students felt in the process of map producing. This fact made them proud they were chosen for this research.

Experimental research in secondary and schools about information extraction and map understanding

The students were asked to give answers to some questions connected with represented cartographic information.

Results:

- some of texts are enlarged
- some colors were changed
- some additional texts were situated

Conclusion about experimental work

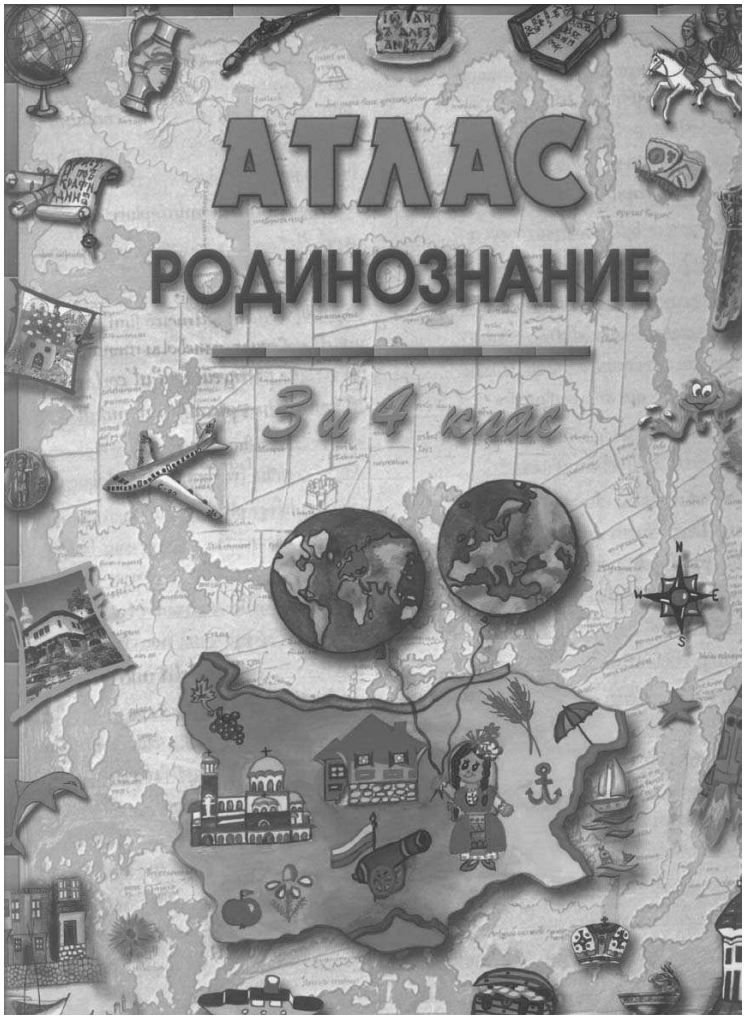
- there are no doubts this is the right way for compiling of students atlases and maps
- student's criticism and ideas are the best way to show cartographers how to present modern with enough understandable information
- work with this specific king of users group will facilitate all efforts of people engaged with school cartographic products

Curriculum instruction for skill's achievement of students

- The Ministry of Education approves the curriculums in Geography;
- shows rules, themes and student's achievements, which should be covered by the teachers, students and also mapmakers for every school year
- The contents of the atlases and wall maps are dependent on the curriculum

Atlas 'The Person and the Society'

(40 pages, sizes 31x24 cm) - school years 3-4



- first introduction to the world of maps
- scales, symbols, selection of geographical and historical maps
- It is a “handbook” which is both fun to use and easy to understand.
- blank maps help students to understand the geographical features
- the design - combines children’s drawings, photos, and artists’ illustrations


СЕЛСКО СТОПАНСТВО
19
Р У М Ъ Р С К А
Р Е П У Б Л И К А
Б Ъ Л Г А Р И Я
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Г Р Ъ Ц И Я
Т У Р Ц И Я
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Белоградчик
Монтана
Берковица
Враца
Своге
Ботевград
Трън
СОФИЯ
Перник
Дупница
Самоков
Кюстендил
Благоевград
Разлог
Гоце Делчев
Сандански
Петрич
Велинград
Пазарджик
Панагюрище
Пирдоп
Костенец
Самоков
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Исперих
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Попово
Шумен
Нови пазар
Търговище
Провадия
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Балчик
Варна
Велико Търново
Котел
Сливен
Карнобат
Несебър
Бургас
Ямбол
Средец
Царево
Казанлък
Стара Загора
Нова Загора
Чирпан
Пловдив
Асеновград
Димитровград
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Чепеларе
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Скът
Вит
Осъм
Бели Лом
Черни Лом
Сива р.
Провадийска р.
Камчия
Гол. Камчия
Луда Камчия
Мочурино
Бургаски залив
Варненски залив
Варненско ез.
Бургаско ез.
Средецка р.
Поповска р.
Велека
Овчарица
Съзлийка
Топлница
Джерман
Места
Доспат
Арда
Студен кладенец
Ивайловград
Батак
Тракиец
Пчелларска р.
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Пшеница
Царевица
Слънчоглед
Памук
Рози
Зеленчуци
Лозя
Овощни градини
Тютюн
Едър рогат добитък
Овце
Свине
Птици
Коне

Example:

Curriculum instruction – 7 grade

- **The students should receive the information for different sources –**

  "they should easily read geographical maps, climate graphs, hydro-graphs, column diagrams, circle diagrams and relief profile"

- **The students should interpret the information –**

  "introduction of new skills can be achieved by characterizing, comparing, and grouping of geographical objects"

- **The students should present the information –**

  "this could be done by scheme drawing, map painting, diagrams drawing, mapping of trip route, compiling of thematic maps"

Contents

- 17 maps of Europe
- 7 of Balkan Peninsula
- 11 of Bulgaria
- Nature and economy - actual data and electronic map base.
  "Landscapes"- visualize by shade-relief and realistic drawings of plants, animals and famous buildings

The cover

Maps in Atlas 7

1. **Map of the world**

Europe

2. **Nature of Europe**
3. **Climate of Europe**
4. **Europe – Hydrograph and Soils**
5. **Europe – Plants and Animals**

Landscapes

6. ***The Mediterranean***
7. ***The Atlantic***
8. ***Alps***
9. ***Central European Plane***
10. ***Scandinavia***
11. ***East European Plane***

Maps in Atlas 7

6. Europe – Industry
7. Europe – Agriculture
8. Europe – Population
9. Europe – Transport and Trade
10. Europe – Tourist objects
11. Europe – Political

Balkan Peninsula

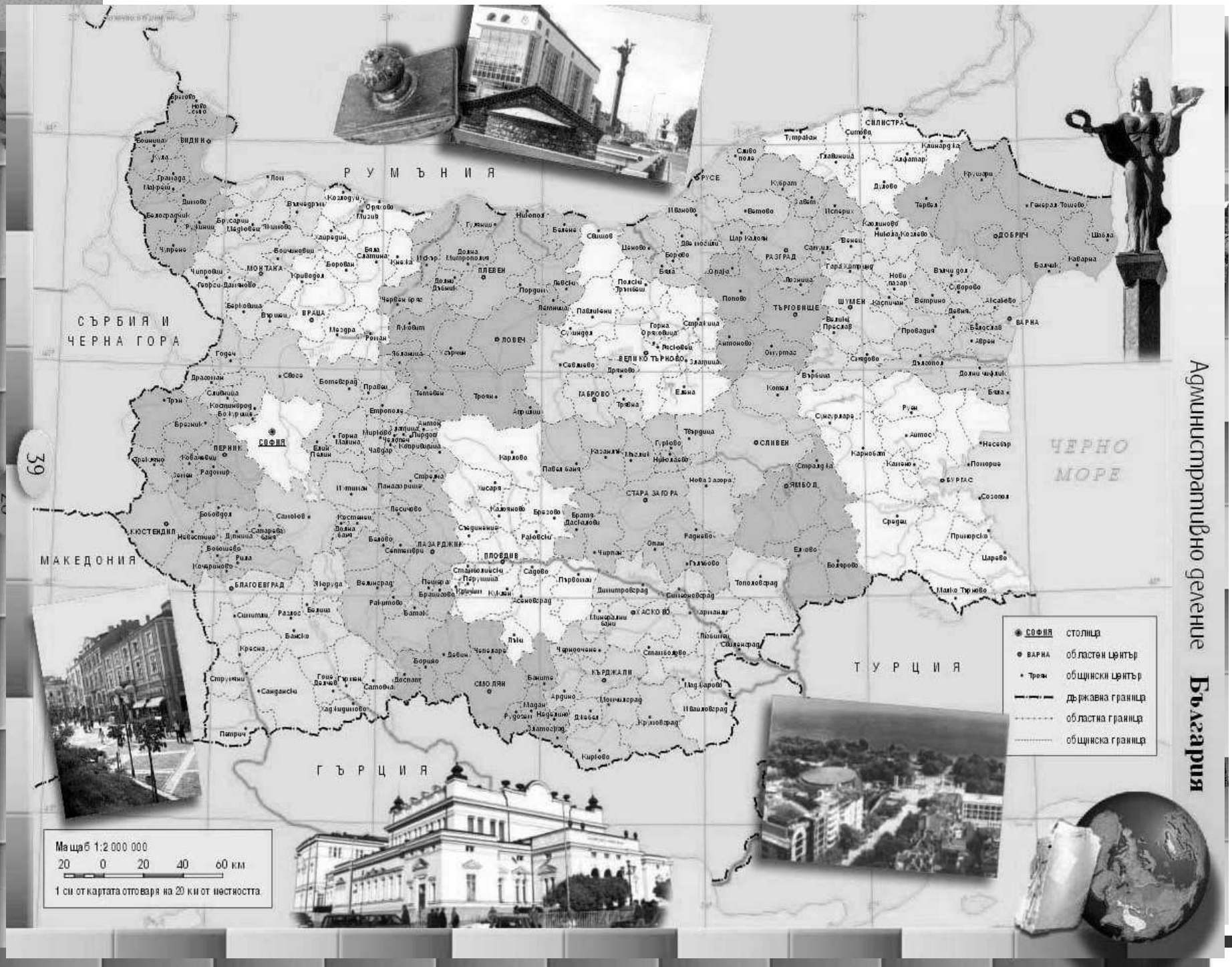
1. Nature of Balkan Peninsula
2. Climate of Balkan Peninsula
3. Balkan Peninsula – Hydrograph and Soils
4. Balkan Peninsula – Plants and Animals
5. Balkan Peninsula – Economy
6. Balkan Peninsula – Political

Maps in Atlas 7

Bulgaria

1. **Nature of Bulgaria**
2. **Climate of Bulgaria**
3. **Bulgaria – Hydrograph and Soils**
4. **Bulgaria – Plants and Animals**
5. **Bulgaria – Population**
6. **Bulgaria – Industry**
7. **Bulgaria – Agriculture**
8. **Bulgaria – Transport Network and Trade**
9. **Bulgaria – Tourist Objects**
10. **Bulgaria – Administrative**

Административно деление **България**



Blank maps – 7 grade

- The student's tasks are clear indicated
- Students should color and inscribe the contour maps
- They will compile the real maps on this way, will assimilate their knowledge and receive additional ones

Methodology of Atlas creation

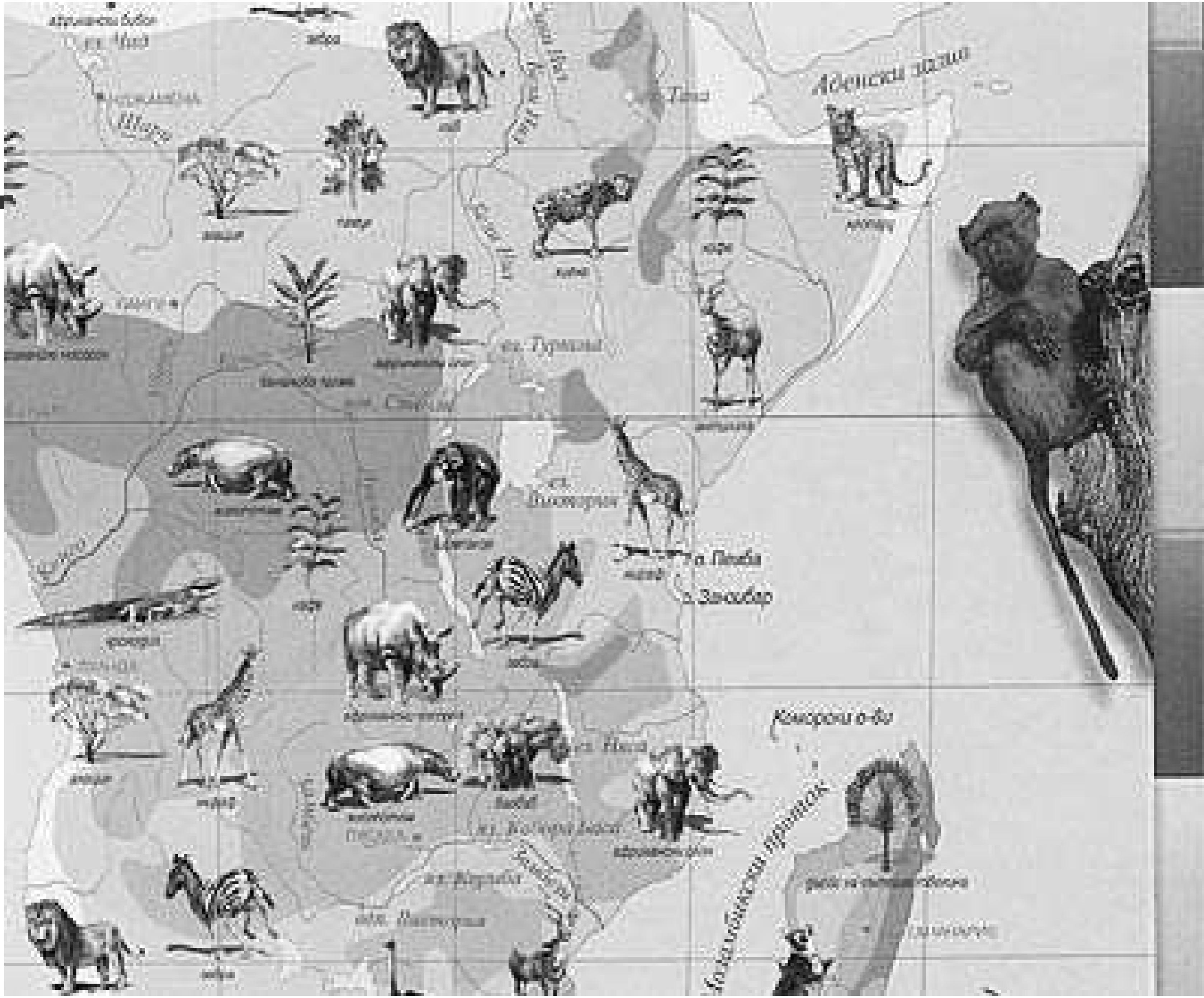
1. *Idea;*
2. *School curriculum and its analyses;*
3. *Atlas and contour maps' contents;*
4. *Currently statistical and text data and GIS cartographic vector data base;*
5. *Draft representation of the contents;*
6. *Test analyses on the base of student reaction and information extraction;*
7. *Atlas and blank maps compiling;*
8. *Modern design*
9. *Pre-publishing and Publishing processes.*

Atlas on Geography - school year 6

40 pages, sizes 31x24 cm

- **Thematic maps on nature, climate, hydrography and soils, plants and animals, population and races of all continents excluding Europe**

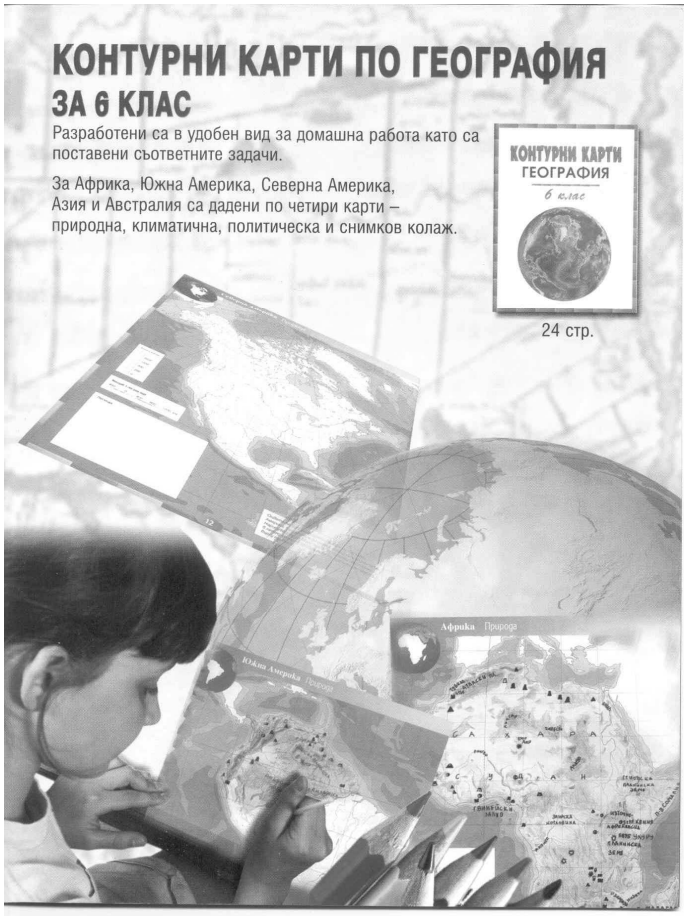
- **. Realistic pictures represent people, plants and animals**


Аденски залив
о. Пемба
о. Занзибар
Коморски о-ви

Blank Maps - school year 6

24 pages, sizes 31x24 cm

- intended for homework
- 4 types of map - Nature, Climate, Countries and Photos show Africa, South America, North America Asia and Australia.
- The tasks are clearly indicated with easy instructions.

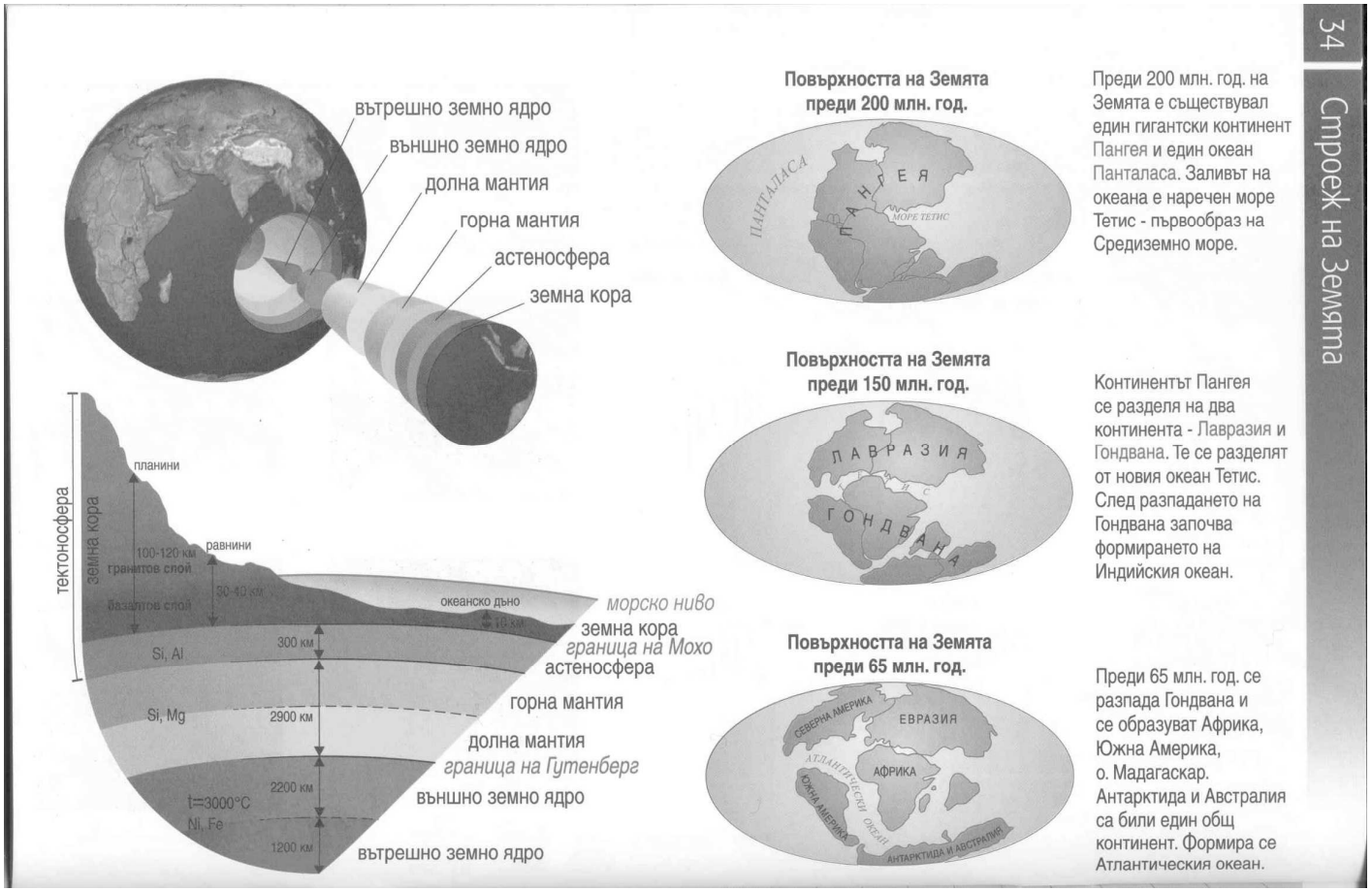


Atlas on Geography - 8
(48 pages, sizes 24x15,5 cm)

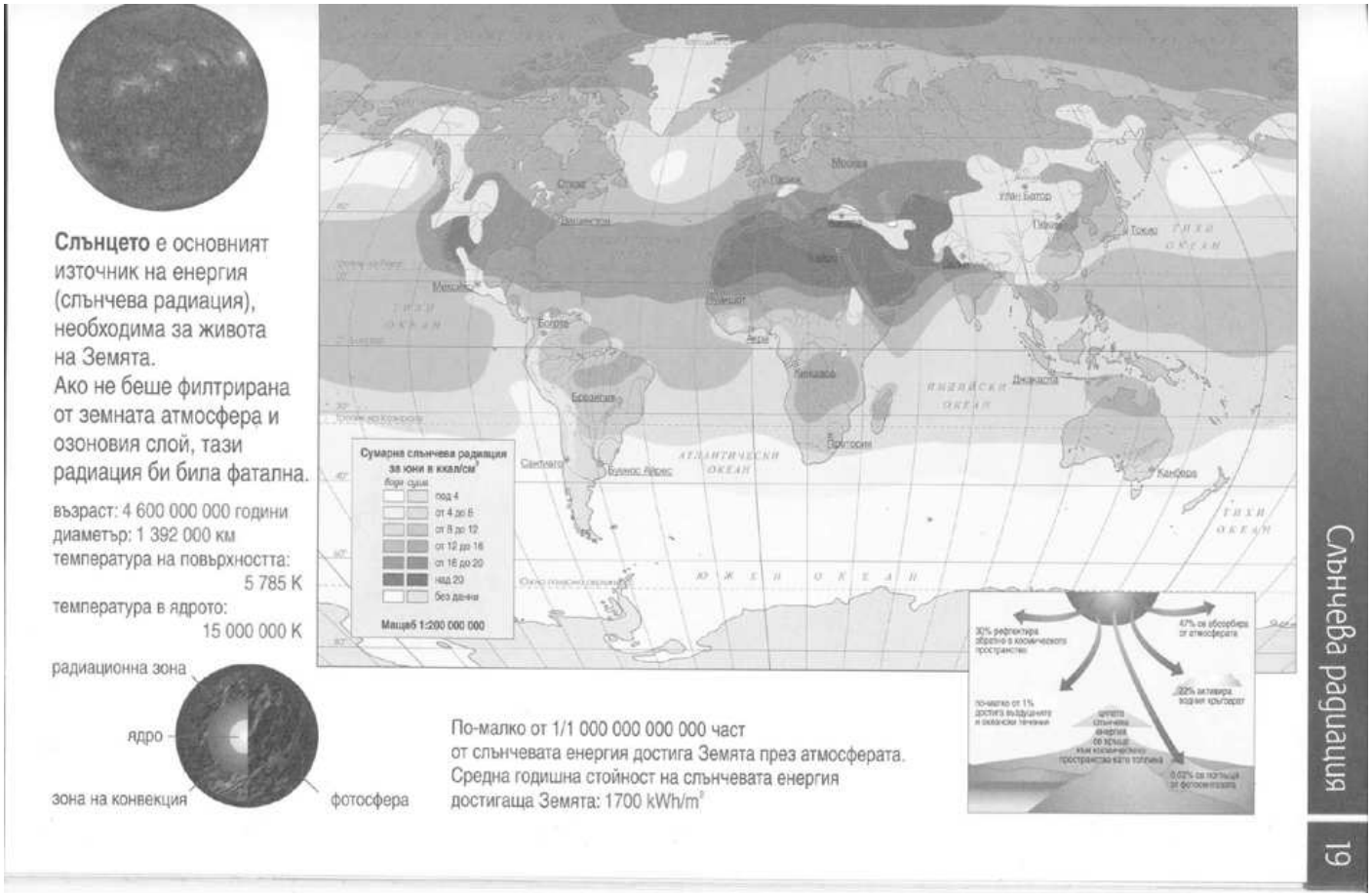
The themes in the atlas are:

- **Cartography,**
- **Earth and Solar system,**
- **Atmosphere,**
- **Hydrosphere,**
- **Lithosphere and soils,**
- **Geosystems.**

A page in the Atlas Geography 8 representing the Earth Structure



A page in the Atlas Geography 8
Representing the Solar Radiation



Слънцето е основният източник на енергия (слънчева радиация), необходима за живота на Земята.
Ако не беше филтрирана от земната атмосфера и озоновия слой, тази радиация би била фатална.

възраст: 4 600 000 000 години
диаметър: 1 392 000 км
температура на повърхността: 5 785 K
температура в ядрото: 15 000 000 K

радиационна зона
ядро
зона на конвекция
фотосфера

Сумарна слънчева радиация за юни в kkал/cm²
вода суша
под 4
от 4 до 8
от 8 до 12
от 12 до 16
от 16 до 20
над 20
без данни
Мащаб 1:200 000 000

По-малко от 1/1 000 000 000 000 част от слънчевата енергия достига Земята през атмосферата.
Средна годишна стойност на слънчевата енергия достигаща Земята: 1700 kWh/m²

Слънчева радиация
19

Wall maps of the continents

locality, coastline, nature, mountains, lowlands, rivers and lakes, minerals, soils, plans and animals, countries and capitals, etc. All of these elements are included in 3 maps for a continent.

- Nature map (includes minerals)
- Climate. Hydrograph. Plants and animals (includes climate-charts and hydro-charts)
- Countries. People

MAP OF THE WORLD – Nature
200 x 140 cm, Scale 1:17 000 000

- The major relief shapes - by colors and texts. Traditional symbols for Bulgarian maps are used for presentation of minerals and topographic objects .

- Hypsometric scale - highs – 200, 400, 600, 1000, 2000, 3000m, …and depths – 200, 2000, 4000, 6000m, …The hydrography is represented in 100% Cyan color for lines and texts and different percents for area presentations.

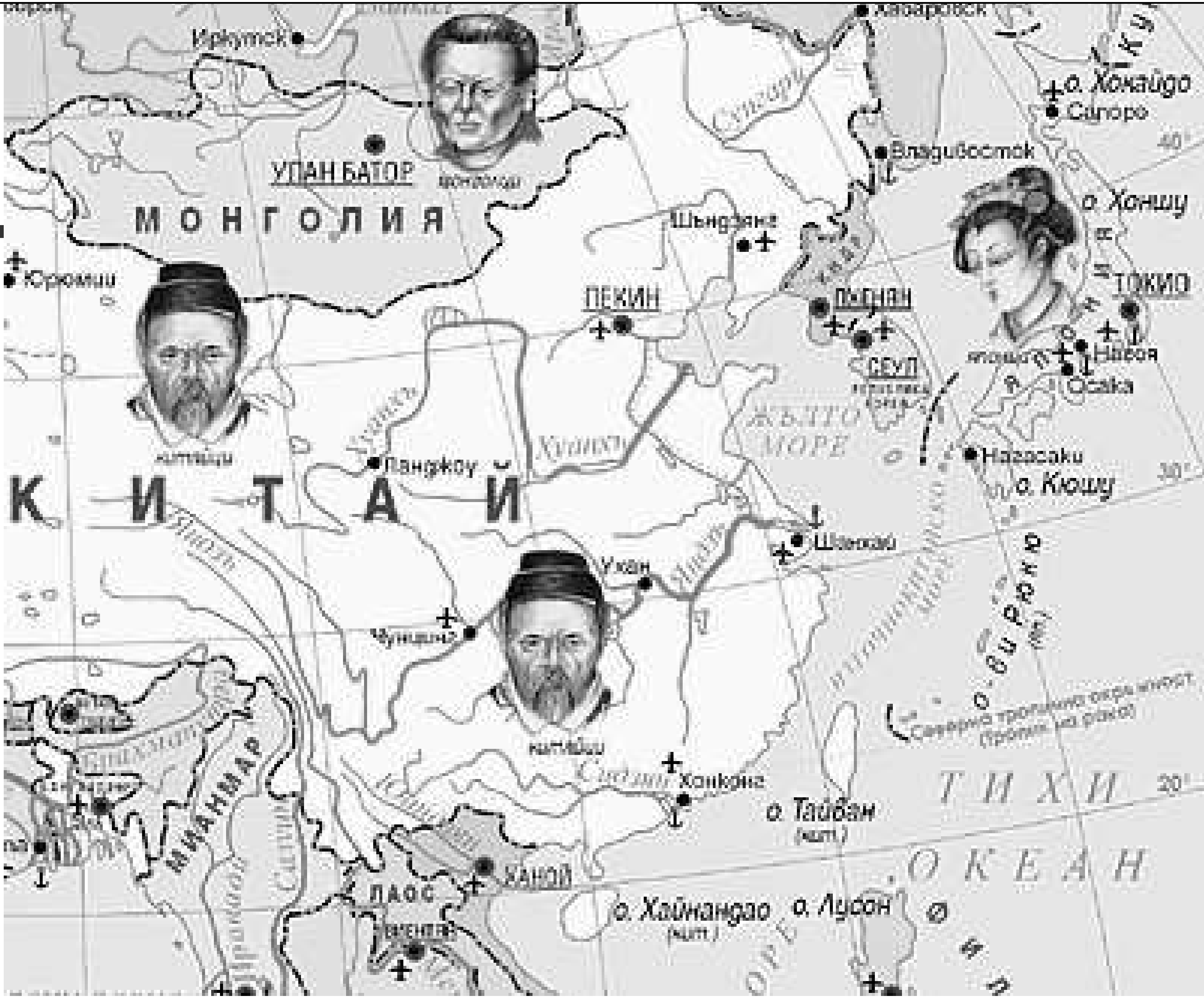
- Countries with their capitals can be seen on the background, represented by Magenta color texts .

MAP OF THE WORLD - Climate. Hydrography. Plants and Animals

- Climate zones, ocean currents, winds, meteorological stations
- climate diagrams for every zone and the hydro-diagram for the biggest river
- Climate diagrams content average temperatures in ^{o}Celsius for every month, average annual temperature, temperature amplitude, average monthly rainfall and average annual rainfall in millimeters.
- Realistic pictures present animals and plants.

MAP OF THE WORLD – Countries

- Hydrography, country boundaries, capitals, large cities and towns are represented on the map.
- All this content is learned in the school and children have to know, tell, explain, and make conclusions after thinking in front of the map.
- The colors and font text are chosen after experiments in classrooms for easily understanding and information extraction from the map.


Иркутск
Хабаровск
о. Хокайдо
Сапоро
Владивосток
УЛАН БАТОР
монголци
МОНГОЛИЯ
ПЕКИН
ПХЕНЯН
СЕУЛ
о. Хоншу
ТОКИО
Нагоя
Осака
ЖЪЛТО МОРЕ
Нагасаки
о. Кюшу
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МИАНМАР
о. Хайнандао
(кит.)
о. Лусон

Thank you very much for your attention!

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