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Modeling the Drift of Earth's Continents

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Abstract: This article presents the result of the authors' work on the development of the model of the origin and motion of the Earth's continents from the beginning of their formation to the present state. The paper describes gradual formation and movement of continents formed from the liquid substance and climatic changes that occurred after the change of continents positions.

Keywords: Drift of Continents, Ecliptic Obliquity, Vortex Tube, Primary Continents, Path of Odysseus

1. Introduction

The founder of modern paleontology and geology, Melchior Neumayr, called the motion of the Earth's continents as a drift. This name accurately reflects the existing ideas about the origin and development of continents. No one doubts that the continents are moving, but whence, where and why – there are no answers to these questions in numerous publications.

Based on the available data about the structure of the Earth and theoretical developments, the authors developed and implemented a model of the origin and drift of the Earth's continents from the beginning of their formation to the current situation.

2. Drift modeling of the Earth Continents

Planet Earth (further – Earth) in its development 3-4 billion years ago was in a heated state, so that its substance, perhaps except the core, was in a liquid state and rotated around the Earth's axis. It should also be noted that the inclination of the ecliptic to the equator was absent or was close to zero, and there were no forces causing it.

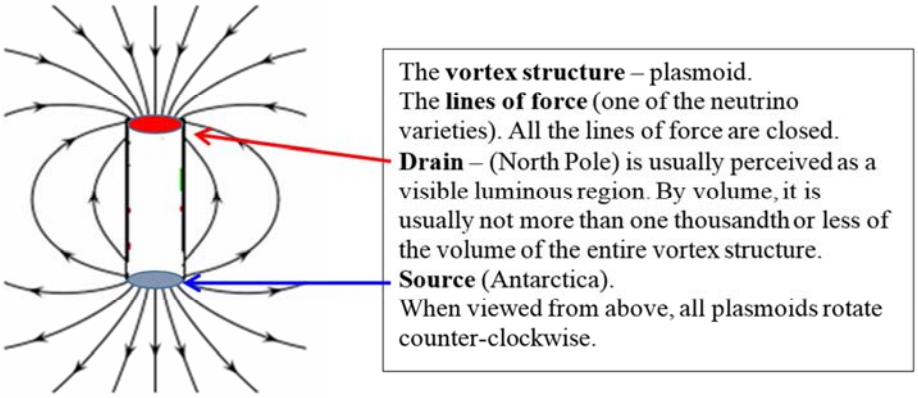


Figure 1. *Vortex structure.*

In accordance with the corollary to the kinematic Helmholtz theorem, a vortex tube for a viscous liquid cannot end in a liquid. Vortex formations can begin on the surface of the body, on the free surface and on the interface of the

liquid. Taking into account the conclusions of the corollary with reference to the viscous, rotating substance of the Earth and the structure of the poles of the Earth (the North Pole – the ocean, and the South Pole – the Antarctica mainland with an average height of over 2000 m, which is ten times higher than the average height of the other continents), one of the vortex tube models can be constructed, shown in Figure 1.

In this model, the drain is located at the North Pole, and the source at the South Pole – the mainland of Antarctica. Taking into account that the Earth cooled down over time, it can be assumed that at first on the Earth's surface near the source separate pieces of the Earth's crust were formed. When they moved to the drain – the North Pole, they dissolved and were absorbed.

With a further decrease in the temperature of the Earth's surface a fairly stable "cap" was formed at the source. Initially, because of the relatively high temperature, the "cap" had sufficient ductility and viscosity to spread without faults. Subsequently, since the diameter of the peripheral belt of the "cap" with the decrease in latitude increased by the cosine wave, there were faults that divided Pangaea into the primary continents – South America, North America, Africa, Australia and Europe, Asia and the rest of Pangaea – Antarctica. The scheme of their location is shown in Figure 2.

Figure 2. *Location of continents at the beginning of the drift – 147 million years ago.*

Although the faults have outlined the contours of the primary continents, they have been connecting with each other across Antarctica for a long time.

All primary continents have the form of a triangle, one vertex of which is directed to the South Pole. Parameters (length, width, area) of primary continents have values described in Table 1.

Table 1. *Parameters of primary continents.*

No.	Name of continent	Length (mile)	Width (mile)	Area (millions of sq. km.)
1	Asia	4090	3751	35,951
2	Africa	4180	3917	31,036
3	S. America	4218	2715	20,265
4	N. America	4200	3231	30,921
5	Lemuria	4220	3177	36,066

The relative exclusion is the not preserved in original boundaries continent Lemuria, which included Europe, Australia, the Arabian and Hindustan peninsulas. The restored mainland Lemuria is shown in Figure 3.

Since the distances between the points of the continents did not change when they moved, then describing the contour of the continent and linking it to some point of the continent (in this model it is the southern point of the continent at their initial location around Antarctica), we can calculate the motion trajectories of the southern points of the continents. And according to this, it is possible to construct for each time interval of the continents' motion a mutual arrangement of continents or parts of Lemuria, or for example to plot the precession of the Earth's axis, or to consider the evolution of civilizations, since their connection with the mutual arrangement and place under the Sun is unquestionable.

The average length of primary continents is 4182 miles, the maximum length deviation for Asia is 2.17%. The same length of continents in the absence of the inclination of the ecliptic to the equator speaks in favor of the assumption that Pangaea was formed uniformly from the South Pole and occupied the entire space from latitude 90° to 20° south latitude (4182 miles along the meridian is about 70°). The surface area of the Earth from 90° to 20° south latitude is $1.7*10^8$ km^2, the area of continents without Antarctica is $1{,}543*10^8$ km^2, the difference is $0.167*10^8$ km^2 on 5 faults is about 10% or 7.2° by one fault along the equator.

The authors deduced the longitude dependence on the latitude for the continents, which looks like this:

$$D = A\,(½\ W + ¼\ \mathrm{Sin}\ W) + B$$

where

D – longitude of one of the points of the continent, in this case – southern,

W – latitude of this point,

A and B – constants associated with the position of the continents at the beginning of the drift. Their values are given in Table 2.

Table 2. *Values of constants A and B for different continents.*

Name of continent	A	B
Australia	-241.66	1.59
Madagascar	-302.46	-80.46
North America	-125	118
Hindustan	-153.43	80.55
South America	-421.87	-197.06
Africa	-357.37	1.32
Europe	-186	130.37
Asia	-165	129.1

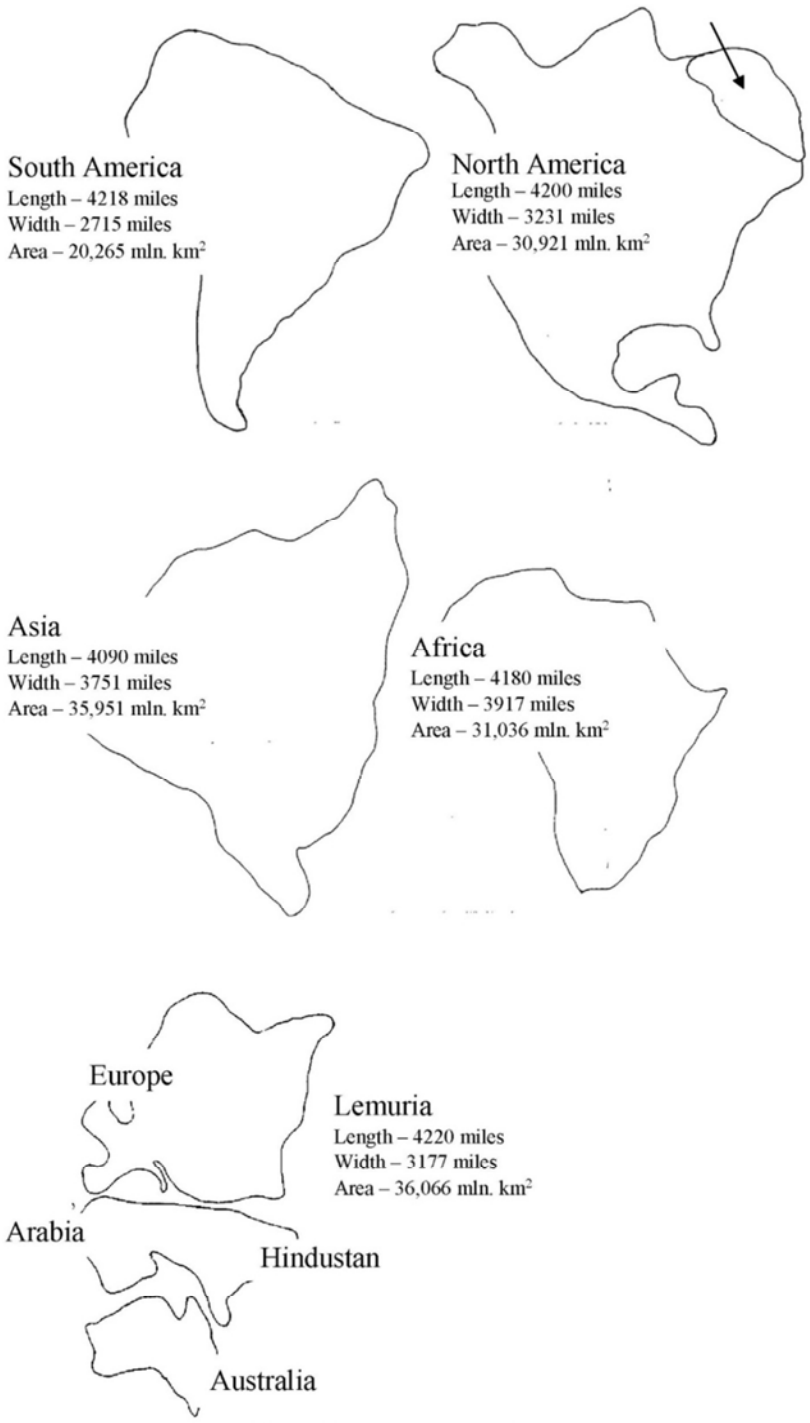


Figure 3. *Schemes of continents.*

Given the latitude of the continent in the range of values from the original to the present with a certain step, we can:

- calculate the longitude of the point;
- calculate the distance traveled by a point.

Thus, all the continents moved along the same trajectory, more precisely along parallel lines, but with different initial conditions associated with the location of the continents around Antarctica and the time of movement at a speed of 10 cm per year [7-14] to its present position.

With the separation of the continents from Antarctica about 143 million years ago and with their movement the uniform location of the continents with respect to the Earth's axis was disturbed, which led to the inclination of the ecliptic to the equator and its change. The inclination of the ecliptic to the equator reached its maximum value of 24.45° about 70 million years ago, after which it decreased to 8.69° about 28 million years ago and again increased to the present value of 24.3°. The graph of the change and the beginning of the drift of the continents are shown in Figure 4.

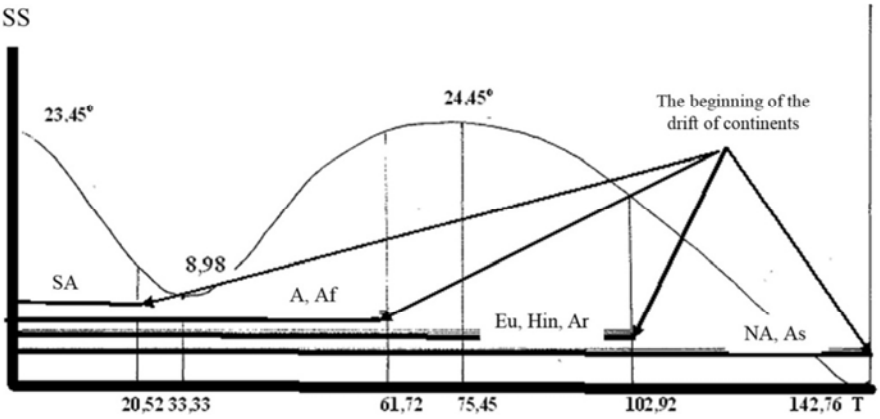


Figure 4. *Dependence of the inclination of the ecliptic to the equator against the time SS = f (T).*

Where: SS – the inclination of the ecliptic in degrees, T – the time in million years from the current, SA – South America, A – Australia, Af – Africa, Eu – Europe, Hin – Hindustan, Ar – Arabian Peninsula, NA – North America, As – Asia.

The primary continents Asia and North America were the first to start moving. At the beginning of the movement, the northern parts of them occupied the equatorial position, and now they are in the permafrost region.

The change in the inclination of the ecliptic to the equator and the movement of the continents in the north direction naturally caused a change in the climatic conditions, of the animal and plant world.

Antarctica occupies a special place among all continents. It is the youngest continent among all the others. In addition, only it remained directly connected with the source of the substance of the Earth. This determined a significant average height – 2040 m, which is two times higher than the average height of the highest continent of Asia and in the preservation of its permanent location. This allowed to connect the trajectories of the motion of continents to the initial conditions and determine their location.

During the drift of the continents, mountain formation took place due to the compression (mashing) of the ocean floor and the pile of the continental plates on each other, and the continent Lemuria disintegrated (broke up) from the pile on it of the continent of Asia to Europe and the Arabian and Hindustan peninsulas (which began to move northward) and Australia, which separated from Antarctica much later. If Atlantis existed, it could be in the blessed climatic conditions between Europe and the peninsulas of Arabia and Hindustan and perished from the pile on it of Asia, when catastrophic tsunami passed through the cracks of Lemuria with the length of up to 3000 miles and a depth of about 100 km. The remains of Atlantis can be between Australia and Asia.

The results of modeling the drift of the continents not only agree with most of the actual data, including fundamental ones, on the subjects of continental drift, but also allow us to see them in the interrelation and interaction.

Consider some of them:

1. The breakup of Gondwana began 140-160 million years ago [7-14].

According to the given model, the beginning of the breakup of Gondwana is identical to the beginning of the continents' motion, which began 143 million years ago.

2. The age of rocks in the ocean floor is 150-200 million years. Given that the bottom of the oceans was formed after the beginning of the drift of the continents, then its age should coincide with the beginning of the movement of the continents.

3. Lemuria began to break up 100 million years ago [7-14]. The pile of Asia on Lemuria according to the model occurred 102.9 million years ago and was the beginning of the breakup of Lemuria.

4. The Himalayas were formed 70-100 million years ago [7-14]. The pile of Asia on Lemuria occurred 102.9 million years and was the beginning of the formation of the Himalayas.

5. Ancient Gondwana glaciation occurred 200 million years ago [7-14].

Milankovitch's theory convincingly shows that changing the parameters of the Earth's orbit leads to a change in the amount of sunlight entering the upper atmosphere (changes in the incident radiation) [6]. Fluctuations in the climate can be due to a change in the three parameters of the orbit - eccentricity, the inclination of the ecliptic and precession. During a small seasonal temperature difference, ice blocks can be formed during the winter, and their melting will occur during the warm season, moreover the process will go slowly and possibly there will be glaciation.

In accordance with the model before the movement of the continents 143 million years ago, the inclination of the ecliptic was zero. On the South and North poles of the Earth there was a year-round winter, which caused the glaciation of Gondwana. Since the primary continents have not yet separated from Antarctica, the glaciation has covered the southern parts of all continents, including Asia and North America.

6. Africa and South America began to move away from each other about 70 million years ago [7-14].

In accordance with the model, Africa began to move away from South America 61.7 million years ago.

7. Paleomagnetic studies show that during the last 100

million years, India is shifting in the north [7-14].

The breakup of Lemuria, which includes India (in this work it called Hindustan), occurred after the pile of Asia 102.9 million years ago. And since that time, India has moved mainly in the northern direction.

8. The Ural Mountains were once near the edge of the ocean, which separated Siberia from the European part of Russia.

In accordance with the model before the drift of the primary continents of Lemuria, which included both the European part of Russia and Asia, where Siberia is located, they were separated by the world Ocean. During the drift of the continents, their closure and formation of the Ural Mountains occurred at the border of this closure.

The original position of the continent of Europe before the movement of the continents according to the developed hypothesis is confirmed in the work of the staff from the Institute of Geophysics of the Ural Branch of the Russian Academy of Sciences named "Paleomagnetism Ordovician of the Urals" [11]. The continent Europe was originally located within from the equator to 20° south latitude.

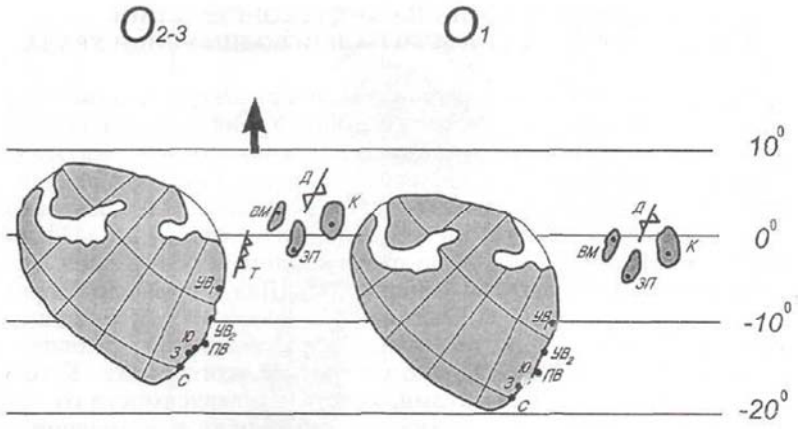


Figure 5. *Paleomagnetic (paleotectonic) reconstructions of the Urals in the Ordvik, minus – southern latitudes [11].*

The developed model was used in the study of the work of Homer – "Odyssey". The study used the time of the war and the location of the continents in this period.

With its movement, the continents occupied the position shown in the figure about 80 million years ago. The Trojan War began at a time when Troy was within the bounds of an oar transition across the sea.

The modeled path of Odysseus allows to eliminate all or at least the main contradictions in Homer's Odyssey.

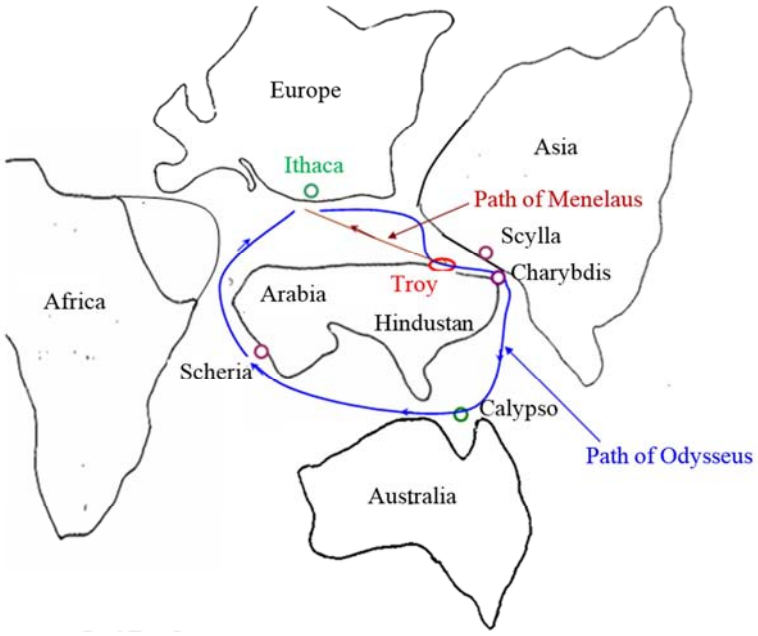


Figure 6. *Path of Odysseus.*

3. Conclusion

While analyzing the above – mentioned modelling according to hypothesis, worked out in this article, we are to come to the following conclusions:

1. The drift of the continents is submitted to dependences general to all the continents and takes place along parallel trajectories. Common period of the drift of the continents is 143 million years.

2. In consequence with change of the continent positions, ecliptic obliquity to the equator is changed within 0° to 24.45° and thence occurred changes in climatic conditions, fauna and flora of the Earth.

3. Achieved results of the above said modelling relate not only with majority of facts, including fundamental ones within the theme of the continent drift, but afford realizing them in mutual relations and actions as well.

The results of modeling the drift of Earth's continents are given in application.

Appendix

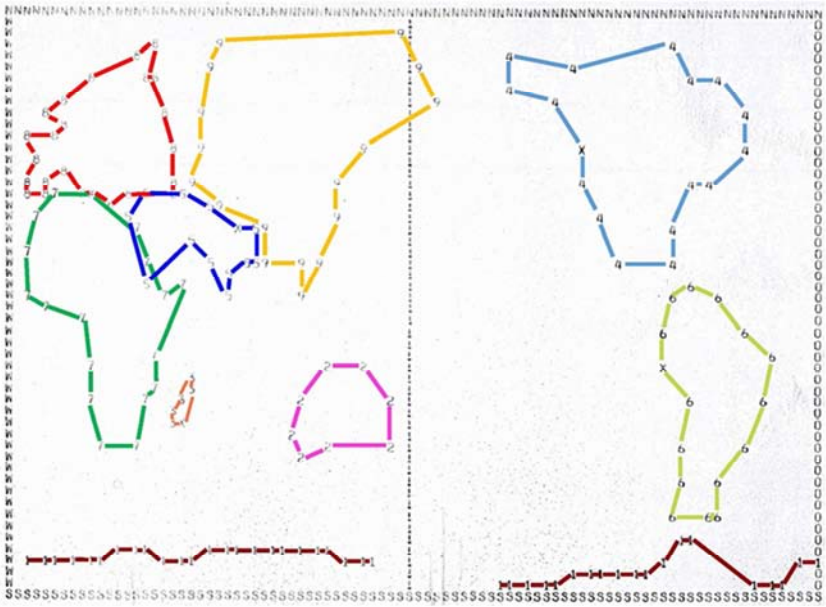
Tables and graphs of the motion of continents for the period from the current state to the beginning of the movement with a step T = 13.733 million years ago

Table 3. *Calculated data for continents at step 1.*

Coordinates of the southern point:	S =	90.0000000	1	D =	0.0000000	1	I =	1	
Coordinates of the southern point:	S =	41.0000000	1	D =	147.5800018	-1	I =	2	
Coordinates of the southern point:	S =	27.0000000	1	D =	47.1800003	-1	I =	3	
Coordinates of the southern point:	S =	10.0000000	-1	D =	83.4700012	1	I =	4	
Coordinates of the southern point:	S =	5.5999999	-1	D =	65.5999985	-1	I =	5	
Coordinates of the southern point:	S =	58.5999985	1	D =	67.5199966	1	I =	6	
Coordinates of the southern point:	S =	36.5200005	1	D =	20.6200008	-1	I =	7	
Coordinates of the southern point:	S =	36.7599983	-1	D =	26.0900002	-1	I =	8	
Coordinates of the southern point:	S =	8.8299999	-1	D =	103.9100037	-1	I =	9	T = 0.00000000E+00 mln. years
MX = 0.4298E+26	MY = -0.4106E+26			Moment =			0.594403E+26SS = 24.3825836		

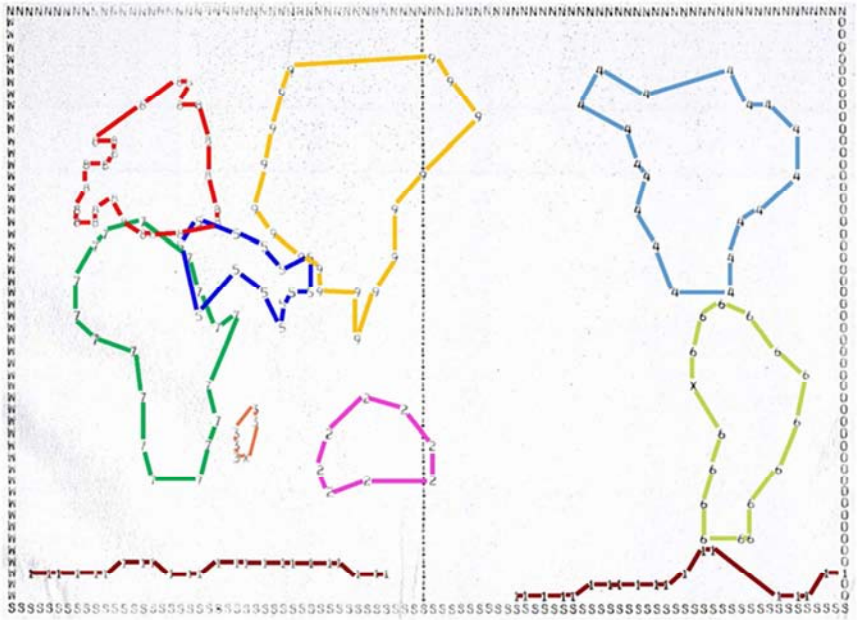
Table 4. *Explanation to the Table 1.*

Where:	S	–	latitude (-1 – southern, 1 – northern).
	D	–	longitude (-1 – eastern, 1 – western).
	I	–	number of continent (1 – Antarctica, 2 – Australia, 3 – Madagascar, 4 – North America, 5 – Arabia and Hindustan, 6 – South America, 7 – Africa, 8 – Europe, 9 – Asia).
	T	–	time (the time next to the number of continent means the time of the beginning of the movement; time next to the 9th continent – current time).
	MX, MY	–	coordinates of the point of contact of the continents' contours.
	Moment	–	obliquity of ecliptic to the equator in degrees at every step.



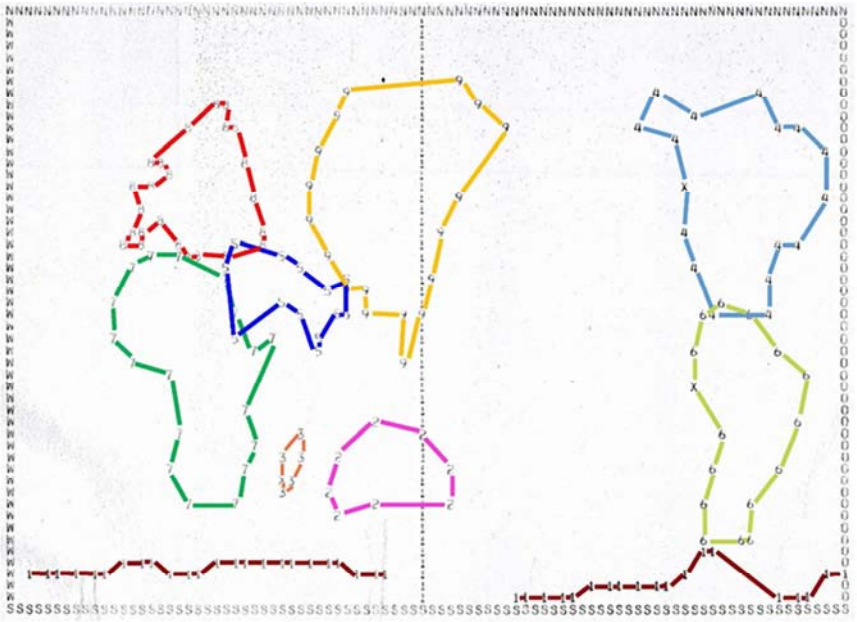
Coordinates of the southern point:	S =	90.0000000	1	D =	0.0000000	1	I =	1	
Coordinates of the southern point:	S =	48.0480003	1	D =	162.6569061	-1	I =	2	
Coordinates of the southern point:	S =	34.0480003	1	D =	79.5487747	-1	I =	3	
Coordinates of the southern point:	S =	2.9520001	-1	D =	68.4345627	1	I =	4	
Coordinates of the southern point:	S =	1.4480000	1	D =	84.4267120	-1	I =	5	
Coordinates of the southern point:	S =	65.6479950	1	D =	56.1374817	1	I =	6	
Coordinates of the southern point:	S =	43.5680008	1	D =	46.4237823	-1	I =	7	
Coordinates of the southern point:	S =	29.7119999	-1	D =	42.1084213	-1	I =	8	
Coordinates of the southern point:	S =	1.7820001	-1	D =	123.9698792	-1	I =	9	T = 0.13733043E+02 mln. years
MX = 0.7153E+25	MY = -0.3862E+26			Moment =			0.392766E+26SS = 15.8300724		

Figure *7. The position of the continents and the calculated data for them at step 2.*



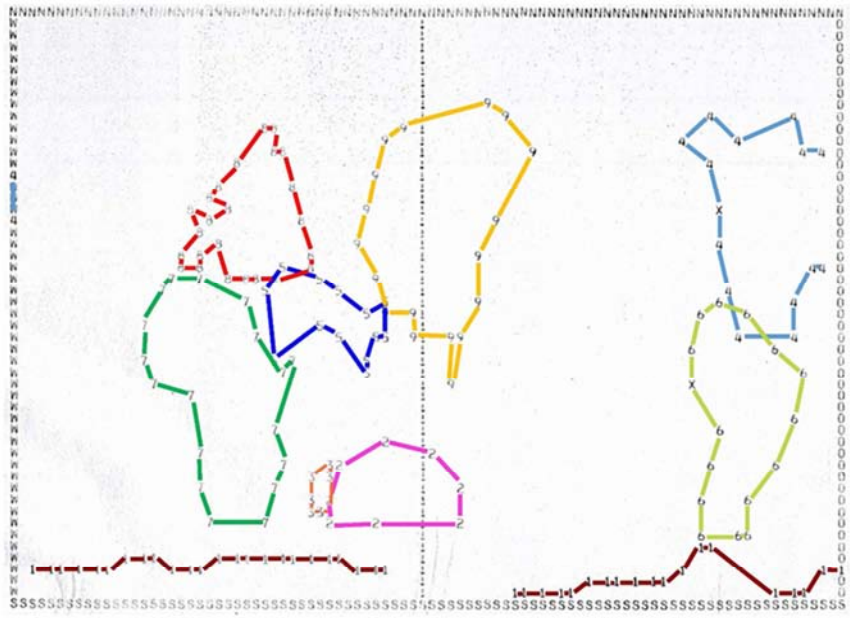
Coordinates of the southern point:	S =	90.0000000	1	D =	0.0000000	1	I =	1	
Coordinates of the southern point:	S =	55.0960007	1	D =	174.1251221	-1	I =	2	
Coordinates of the southern point:	S =	41.0960007	1	D =	102.9070053	-1	I =	3	
Coordinates of the southern point:	S =	4.0959997	1	D =	53.0791321	1	I =	4	
Coordinates of the southern point:	S =	8.4960003	1	D =	103.1350555	-1	I =	5	
Coordinates of the southern point:	S =	69.0000000	1	D =	52.4642944	1	I =	6	T = 0.20521624E+02 mln. years
Coordinates of the southern point:	S =	50.6160011	1	D =	66.8043365	-1	I =	7	
Coordinates of the southern point:	S =	22.6639996	-1	D =	60.5146713	-1	I =	8	
Coordinates of the southern point:	S =	5.2659998	1	D =	144.2223511	-1	I =	9	T = 0.20521624E+02 mln. years
MX = -0.1267E+26	MY = -0.1603E+26			Moment =			0.204330E+26SS = 8.1584988		

Figure 8. *The position of the continents and the calculated data for them at step 3.*



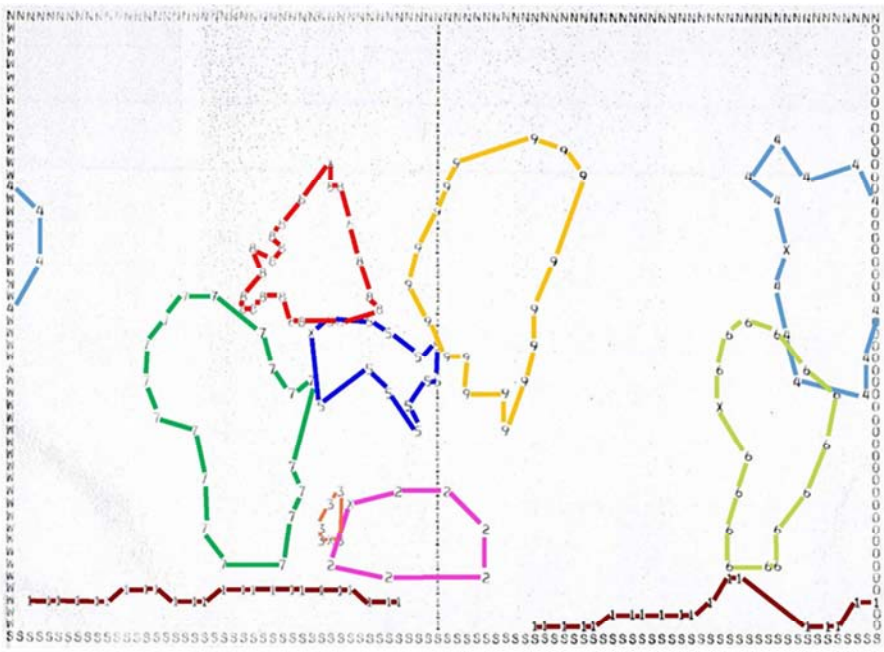
Coordinates of the southern point:	S =	90.0000000	1	D =	0.0000000	1	I =	1	
Coordinates of the southern point:	S =	62.1440010	1	D =	177.8142853	1	I =	2	
Coordinates of the southern point:	S =	48.1440010	1	D =	121.7541885	-1	I =	3	
Coordinates of the southern point:	S =	11.1440001	1	D =	37.9918518	1	I =	4	
Coordinates of the southern point:	S =	15.5440006	1	D =	121.1683350	-1	I =	5	
Coordinates of the southern point:	S =	69.0000000	1	D =	52.4642944	1	I =	6	
Coordinates of the southern point:	S =	57.6640015	1	D =	81.9075928	-1	I =	7	
Coordinates of the southern point:	S =	15.6160002	-1	D =	80.9123611	-1	I =	8	
Coordinates of the southern point:	S =	12.3140001	1	D =	164.0207825	-1	I =	9	T = 0.34254669E+02 mln. years
MX = -0.1417E+26	MY = 0.1450E+26			Moment =			0.202720E+26SS = 8.0937843		

Figure 9. *The position of the continents and the calculated data for them at step 4.*



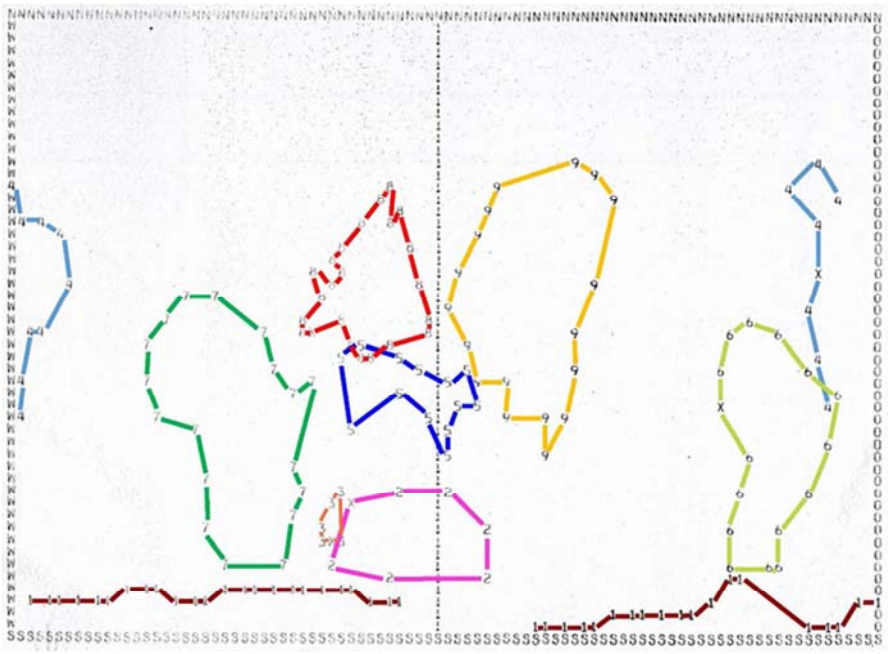
Coordinates of the southern point:	S =	90.0000000	1	D =	0.0000000	1	I =	1	
Coordinates of the southern point:	S =	69.1920013	1	D =	172.7535095	1	I =	2	
Coordinates of the southern point:	S =	55.1920013	1	D =	136.0755310	-1	I =	3	
Coordinates of the southern point:	S =	18.1919994	1	D =	23.6183167	1	I =	4	
Coordinates of the southern point:	S =	22.5920010	1	D =	138.0088654	-1	I =	5	
Coordinates of the southern point:	S =	69.0000000	1	D =	52.4642944	1	I =	6	
Coordinates of the southern point:	S =	64.7119980	1	D =	92.1476746	-1	I =	7	
Coordinates of the southern point:	S =	8.5679998	-1	D =	102.7620239	-1	I =	8	
Coordinates of the southern point:	S =	19.3619995	1	D =	177.2160034	1	I =	9	T = 0.47987713E+02 mln. years
MX = -0.4685E+25	MY = 0.4323E+26			Moment =			0.434823E+26SS = 17.5774727		

Figure 10. *The position of the continents and the calculated data for them at step 5.*



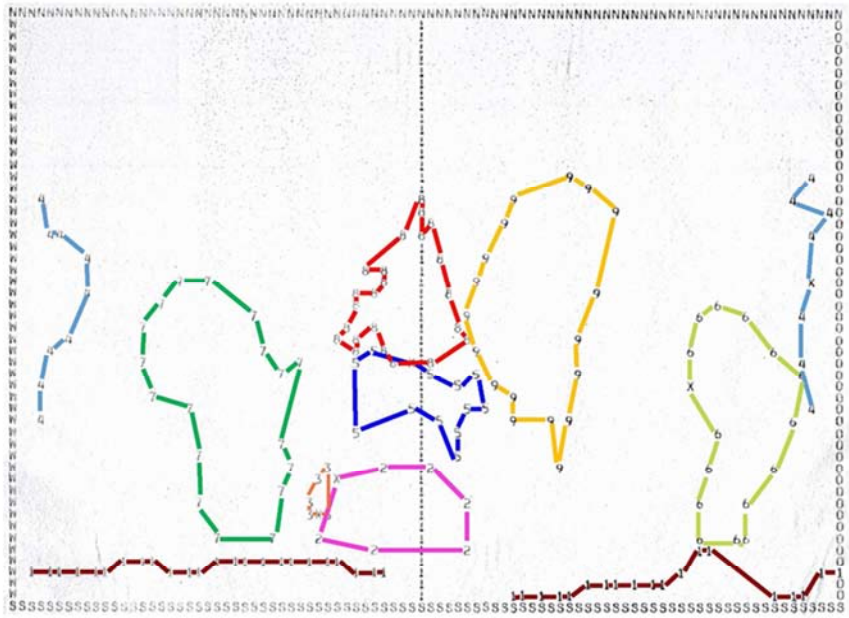
Coordinates of the southern point:	S =	90.0000000	1	D =	0.0000000	1	I =	1	
Coordinates of the southern point:	S =	73.1800003	1	D =	171.0023499	1	I =	2	T = 0.61720757E+02 mln. years
Coordinates of the southern point:	S =	55.7400017	1	D =	137.0051270	-1	I =	3	T = 0.61720757E+02 mln. years
Coordinates of the southern point:	S =	25.2399998	1	D =	10.3611450	1	I =	4	
Coordinates of the southern point:	S =	29.6400013	1	D =	153.2107697	-1	I =	5	
Coordinates of the southern point:	S =	69.0000000	1	D =	52.4642944	1	I =	6	
Coordinates of the southern point:	S =	66.5000000	1	D =	94.0505981	-1	I =	7	T = 0.61720757E+02 mln. years
Coordinates of the southern point:	S =	1.5200000	-1	D =	125.4367676	-1	I =	8	
Coordinates of the southern point:	S =	26.4099998	1	D =	160.0068054	1	I =	9	T = 0.61720757E+02 mln. years
MX = 0.6831E+25	MY = 0.5619E+26			Moment =			0.566083E+26SS = 23.1511745		

Figure 11. *The position of the continents and the calculated data for them at step 6.*



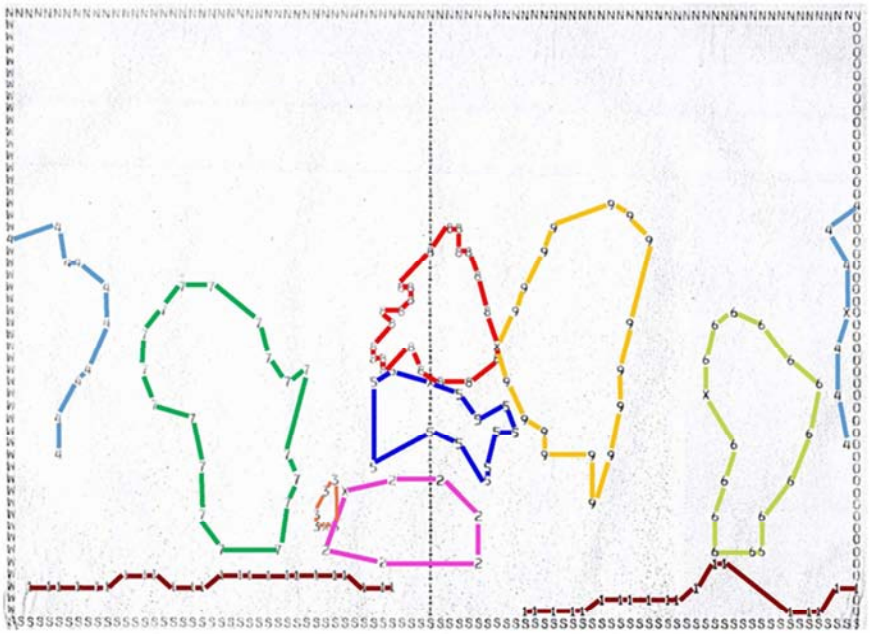
Coordinates of the southern point:	S =	90.0000000	1	D =	0.0000000	1	I =	1	
Coordinates of the southern point:	S =	73.1800003	1	D =	171.0023499	1	I =	2	
Coordinates of the southern point:	S =	55.7400017	1	D =	137.0051270	-1	I =	3	
Coordinates of the southern point:	S =	32.2879982	1	D =	1.4443054	-1	I =	4	
Coordinates of the southern point:	S =	36.6879997	1	D =	166.4268646	-1	I =	5	
Coordinates of the southern point:	S =	69.0000000	1	D =	52.4642944	1	I =	6	
Coordinates of the southern point:	S =	66.5000000	1	D =	94.0505981	-1	I =	7	
Coordinates of the southern point:	S =	5.5279999	1	D =	148.2600098	-1	I =	8	
Coordinates of the southern point:	S =	33.4580002	1	D =	144.7768402	1	I =	9	T = 0.75453804E+02 mln. years
MX = 0.2123E+26	MY = 0.5698E+26			Moment =			0.608063E+26SS = 24.9807854		

Figure 12. *The position of the continents and the calculated data for them at step 7.*



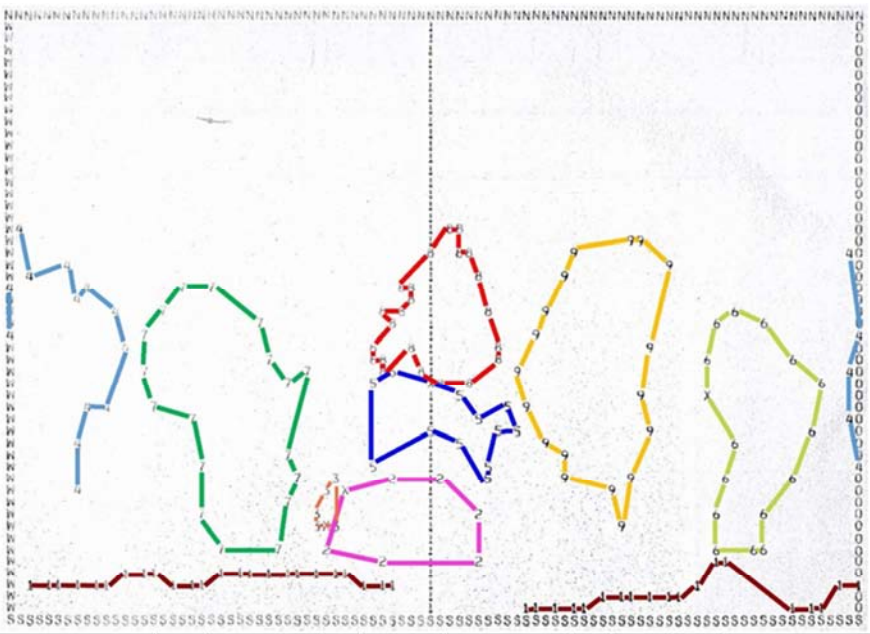
Coordinates of the southern point:	S =	90.0000000	1	D =	0.0000000	1	I =	1	
Coordinates of the southern point:	S =	73.1800003	1	D =	171.0023499	1	I =	2	
Coordinates of the southern point:	S =	55.7400017	1	D =	137.0051270	-1	I =	3	
Coordinates of the southern point:	S =	39.3359985	1	D =	11.5500946	-1	I =	4	
Coordinates of the southern point:	S =	43.7360001	1	D =	177.4295349	-1	I =	5	
Coordinates of the southern point:	S =	69.0000000	1	D =	52.4642944	1	I =	6	
Coordinates of the southern point:	S =	66.5000000	1	D =	94.0505981	-1	I =	7	
Coordinates of the southern point:	S =	12.5760002	1	D =	170.5462646	-1	I =	8	
Coordinates of the southern point:	S =	40.5060005	1	D =	131.8320923	1	I =	9	T = 0.89186852E+02 mln. years
MX = 0.3425E+26	MY = 0.4769E+26			Moment =			0.587151E+26SS = 24.0661163		

Figure 13*. The position of the continents and the calculated data for them at step 8.*



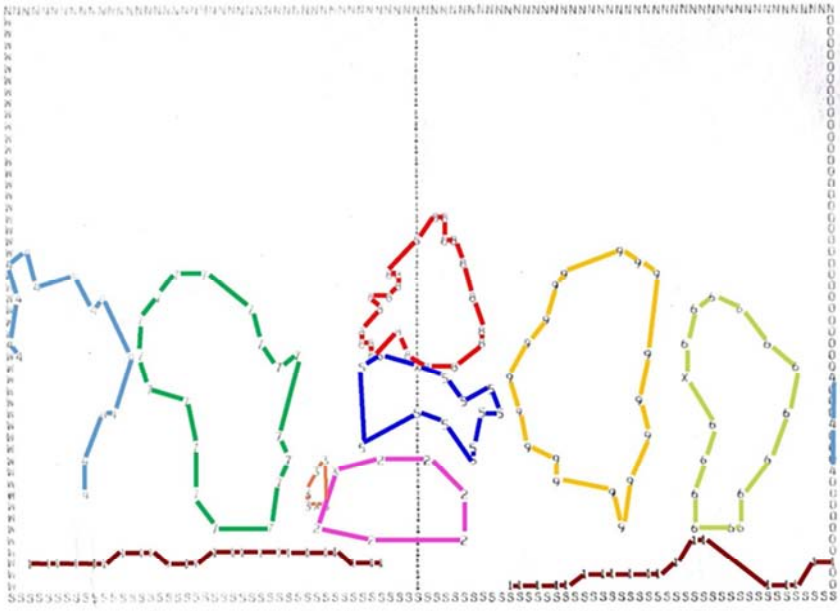
Coordinates of the southern point:	S =	90.0000000	1	D =	0.0000000	1	I =	1	
Coordinates of the southern point:	S =	73.1800003	1	D =	171.0023499	1	I =	2	
Coordinates of the southern point:	S =	55.7400017	1	D =	137.0051270	-1	I =	3	
Coordinates of the southern point:	S =	46.3839989	1	D =	19.8105927	-1	I =	4	
Coordinates of the southern point:	S =	48.0000000	1	D =	177.0340576	1	I =	5	T = 0.10291990E+03 mln. years
Coordinates of the southern point:	S =	69.0000000	1	D =	52.4642944	1	I =	6	
Coordinates of the southern point:	S =	66.5000000	1	D =	94.0505981	-1	I =	7	
Coordinates of the southern point:	S =	16.0000000	1	D =	179.0182953	1	I =	8	T = 0.10291990E+03 mln. years
Coordinates of the southern point:	S =	47.5540009	1	D =	121.3410187	1	I =	9	T = 0.10291990E+03 mln. years
MX = 0.3521E+26	MY = 0.3280E+26			Moment =			0.481228E+26SS = 19.5253963		

Figure 14. *The position of the continents and the calculated data for them at step 9.*



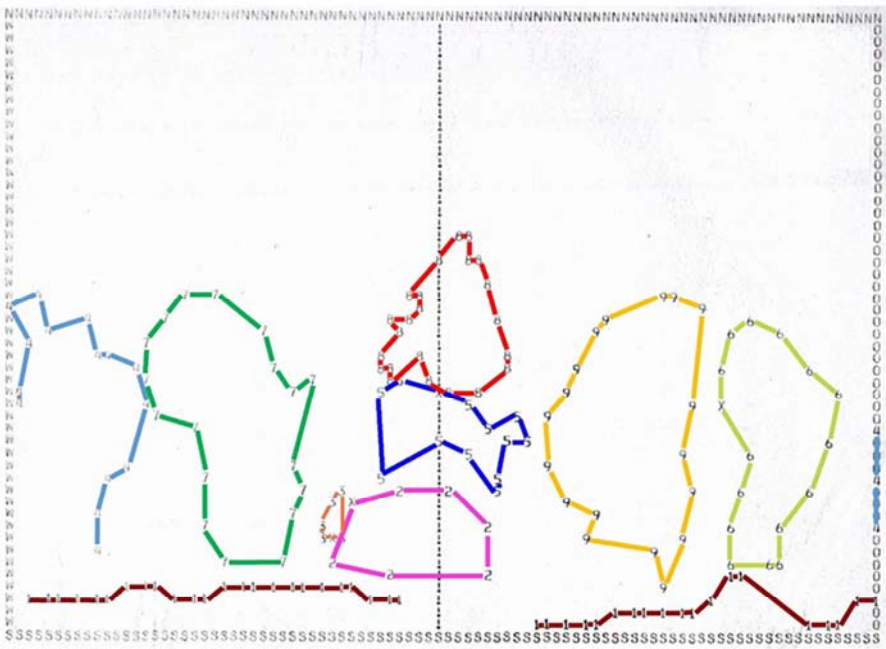
Coordinates of the southern point:	S =	90.0000000	1	D =	0.0000000	1	I =	1	
Coordinates of the southern point:	S =	73.1800003	1	D =	171.0023499	1	I =	2	
Coordinates of the southern point:	S =	55.7400017	1	D =	137.0051270	-1	I =	3	
Coordinates of the southern point:	S =	53.4319992	1	D =	26.1913605	-1	I =	4	
Coordinates of the southern point:	S =	48.0000000	1	D =	177.0340576	1	I =	5	
Coordinates of the southern point:	S =	69.0000000	1	D =	52.4642944	1	I =	6	
Coordinates of the southern point:	S =	66.5000000	1	D =	94.0505981	-1	I =	7	
Coordinates of the southern point:	S =	16.0000000	1	D =	179.0182953	1	I =	8	
Coordinates of the southern point:	S =	54.6020012	1	D =	113.3242187	1	I =	9	T = 0.11665295E+03 mln. years
MX = 0.2492E+26	MY = 0.2094E+26			Moment =			0.325475E+26SS = 13.0646372		

Figure *15. The position of the continents and the calculated data for them at step 10.*



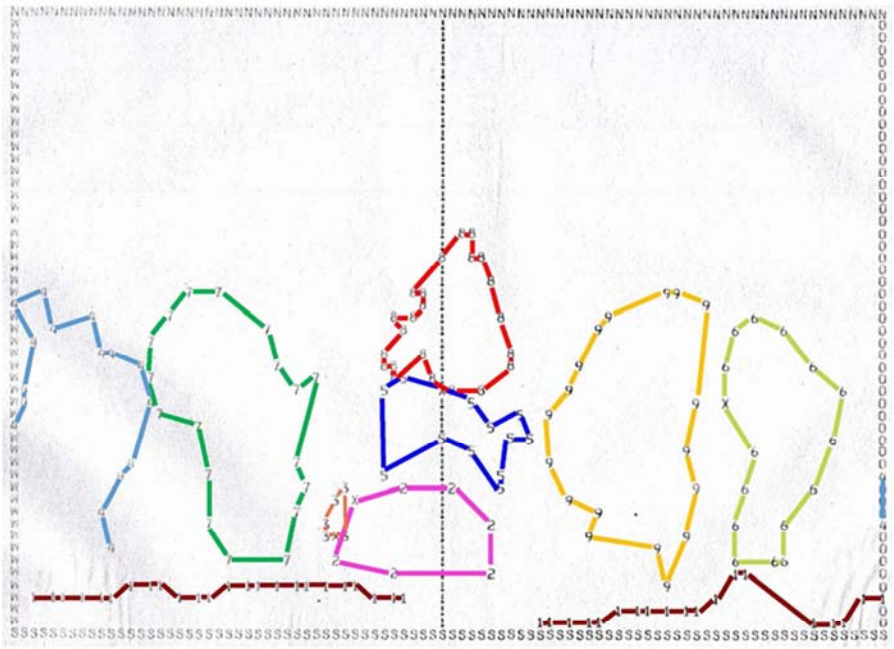
Coordinates of the southern point:	S =	90.0000000	1	D =	0.0000000	1	I =	1	
Coordinates of the southern point:	S =	73.1800003	1	D =	171.0023499	1	I =	2	
Coordinates of the southern point:	S =	55.7400017	1	D =	137.0051270	-1	I =	3	
Coordinates of the southern point:	S =	60.4799995	1	D =	30.7711334	-1	I =	4	
Coordinates of the southern point:	S =	48.0000000	1	D =	177.0340576	1	I =	5	
Coordinates of the southern point:	S =	69.0000000	1	D =	52.4642944	1	I =	6	
Coordinates of the southern point:	S =	66.5000000	1	D =	94.0505981	-1	I =	7	
Coordinates of the southern point:	S =	16.0000000	1	D =	179.0182953	1	I =	8	
Coordinates of the southern point:	S =	61.6500015	1	D =	107.6533356	1	I =	9	T = 0.13038599E+03 mln. years
MX = 0.1340E+26		MY = 0.1135E+26		Moment =			0.175572E+26SS = 7.0040135		

Figure 16. *The position of the continents and the calculated data for them at step 11.*



Coordinates of the southern point:	S =	90.0000000	1	D =	0.0000000	1	I =	1	
Coordinates of the southern point:	S =	73.1800003	1	D =	171.0023499	1	I =	2	
Coordinates of the southern point:	S =	55.7400017	1	D =	137.0051270	-1	I =	3	
Coordinates of the southern point:	S =	67.5279999	1	D =	33.7370911	-1	I =	4	
Coordinates of the southern point:	S =	48.0000000	1	D =	177.0340576	1	I =	5	
Coordinates of the southern point:	S =	69.0000000	1	D =	52.4642944	1	I =	6	
Coordinates of the southern point:	S =	66.5000000	1	D =	94.0505981	-1	I =	7	
Coordinates of the southern point:	S =	16.0000000	1	D =	179.0182953	1	I =	8	
Coordinates of the southern point:	S =	68.0000000	1	D =	104.3323822	1	I =	9	T = 0.14275897E+03 mln. years
MX = 0.2972E+25		MY = 0.5160E+25		Moment =			0.595490E+25SS = 2.3703294		

Figure 17. *The position of the continents and the calculated data for them at step 12.*



Coordinates of the southern point:	S =	90.0000000	1	D =	0.0000000	1	I =	1	
Coordinates of the southern point:	S =	73.1800003	1	D =	171.0023499	1	I =	2	
Coordinates of the southern point:	S =	55.7400017	1	D =	137.0051270	-1	I =	3	
Coordinates of the southern point:	S =	68.0000000	1	D =	33.8845520	-1	I =	4	
Coordinates of the southern point:	S =	48.0000000	1	D =	177.0340576	1	I =	5	
Coordinates of the southern point:	S =	69.0000000	1	D =	52.4642944	1	I =	6	
Coordinates of the southern point:	S =	66.5000000	1	D =	94.0505981	-1	I =	7	
Coordinates of the southern point:	S =	16.0000000	1	D =	179.0182953	1	I =	8	
Coordinates of the southern point:	S =	68.0000000	1	D =	104.3323822	1	I =	9	T = 0.14275897E+03 mln. years
MX = 0.2408E+25		MY = 0.5997E+25			Moment =			0.609307E+25SS = 2.4253609	

Figure 18. *The position of the continents and the calculated data for them at step 13.*

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