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HOW CHILDREN AND YOUTH THINK AND FEEL ABOUT CLOUDS.¹

By G. STANLEY HALL, and J. E. W. WALLIN.

SEC. I. CONTEMPORARY CHILDHOOD.

Of the 461 returns on which this study is based, 85 were negative, 62 of these containing no allusion to the matter, and 23, the explicit statement that nothing could be recalled. That the 18% of negative cases may slightly underrate the number of subjects deficient in cloud fancies appears from the following considerations:

The number of positive answers was 327 for females, and 49 for males. The number, of especially the latter, may be too small to be regarded fairly representative.

The results were gathered under various conditions.

Two collectors gathered replies to several questions on the moon, sun, storms, wind, heat and cold, stars, frost, ice, clouds, etc.; the queries on the latter being the following:

What are the bright clouds on a sunny day made of, also the dark, heavy clouds, and what are they for?

What have you fancied you saw in the clouds?

How did the prettiest and brightest one you ever saw make you feel?

What did it suggest?

The answers to these questions were mostly reminiscent; a considerable number were replies by young children, some were observations made by the contributor while watching and discussing the clouds with a child, and some returns consisted of all three. Another collector asked his pupils to jot down recollections concerning their spontaneous feelings toward the above phenomena, without formulating definite questions, especially cautioning them against exaggeration or over-completeness. These returns also contain a few reports of child-

¹ We especially acknowledge our indebtedness to Principal E. H. Russell, of Worcester, Miss Lillie A. Williams, of Trenton, N. J., Professor W. S. Monroe, of Westfield, and to the Oswego State Normal School. These four normal schools have collected the most and best of our data.

Dr. Theodate L. Smith has done work, especially upon the latter part of the article, that almost makes her a joint author.

ren's sayings. A third collector obtained returns upon "What I, as a child, saw in the clouds."

The material thus collected specially appertains to the stage of life represented by normal school girls of an average of about nineteen.

Taking the results of the second collector, where all of the given groups of 214 students gave their own recollections on, at least, six of the questions propounded, as most representative, we have 26% of negatives, 35% of which stand for positive declarations that nothing could be recalled, some of these, however, recalling that factual existence of early, but, now forgotten, recollections, and 65% for blanks, we shall, perhaps, not err greatly in accepting 25% as a mean value. If so, then one must be struck by the wide prevalence of the cloud tropism in the modern soul, a fact of no mean significance in itself for naturo-pathic psychology.

From what has been stated it may be inferred that no comparison will be attempted in the gross results between the sexes, the ontogenetic stages, nor the different varieties of fancies. This could only be done with any semblance of precision where the data represent resultants from identical or uniform methods or conditions.

In all such work as this there are peculiar temptations to theorize on insufficient data, to ignore negative cases, and to make too much of each individual that proves a theory. The material itself is heterogeneous, and from different places; gathered on different methods, from different ages. Perhaps some of the questions may have been too suggestive. There is no better ideal than that of Darwin, "I worked on true Baconian principles, and without any theory, collected facts on a wholesale scale." Let him who seeks truth resolve to state and interpret, not make, his facts; to bridle his own tongue, while the facts recite their own story; to place the gag where it belongs, over his own wobbling tongue and bow in humility to the authority of "facts collected on a wholesale scale."

It may be frankly acknowledged that, in this field, as indeed in any, where the representative function is at work, much that is of choicest value is individualistic.

Probably no one would champion the crass assertion that this is purely a chapter in individualistic psychology or æsthetics; yet were he so disposed the application would fit most smoothly in the more elaborate constructions or symbolisms. Yet even here the influence of a common environment is of undoubted potency.

To harmonize the two standpoints, or minimize the difficulty at stake, we shall quote freely from the returns, although this

must be done topically, and give replete details even of points seemingly trivial.¹

What Clouds are for. Fifty children between the ages of 4 and 13, with the average above nine, were asked what the high, bright and dark, heavy clouds were for. Twenty-seven mentions were made of their connection with rain, 2 of these referring to the high, bright, 17 to the dark, heavy clouds, and 8 were generalized.

Seven thought their function was to make the sky look nice or pretty, five of these referring to the bright ones; and one each gave their functions as follows: bags to hold rain (M. 12), to hold up water (M. 10), to make the rain come down (F. 11), the black to make the wind blow, and the bright, to help the sun make heat for people and animals, and to help make light (M. 5), the bright, to form cumulus clouds, while the dark are a sign of rain (F. 9), the dark to announce rain and a coming storm (M. 9), to protect the sky (F. 13), to cover or shade the sun (F. 10. M. 9), to make shade on the earth (F. 6), to keep us from seeing the angels (F. 12), so we can't see God, the Lord and the angels (M. 4), the bright ones, to prevent the sun from shining too bright and to make it cooler on a warm day (M. 12), the black to allow the sun, moon and stars to go behind and sleep (M. 11), to give us rain and air (F. 10), to water the plants (F. 11), "to make men's wives keep from getting drunk" (M. 6), (he had played this in a game); two did n't know their purpose.

Of most obvious interest are, (1) the considerable variety of different purposes mentioned, over a score for less than twice as many children.

(2) The fewness of the staple or most prevalent purposes, such as the black clouds for rain and the bright ones for beautifying the sky; (3) the common sense of most, the fancifulness or the absurdity of some replies.

Their distance. According to Lang and Erk, in the *Deutsche Meteorogisches Jahrbuch* (Munich), for 1901,² the heights are as follows:

Stratus, under 5,000 ft; nimbus, or rain cloud, 5,000; cumulus, 5,000 to 6,500; strato-cumulus, 6,500 to 8,000; cumulo-nimbus, 4,000 to 13,000; alto-cumulus, 13,000; alto-stratus, 16,500; cirro-cumulus, or dappled sky, 20,000; cirro-stratus, mackerel sky, 27,000; cirrus, or mares tails, up to 35,000.

¹The figures, where not otherwise stated, refer to the number of mentions, and not to the number of persons. The two need not coincide; *e. g.*, *a* may see horses, lions, chariots and mountains, *b* regard the material as smoke, snow and water, which accredits one mention to each item.

²*Cf.*, Inwards: *Weather Lore*, frontispiece. London, 1893.

From the indications at hand, children regard them so near that, with mechanical hindrances obviated, they might be speedily reached, a feat often contemplated with intense longing.

(F. 20) thought surely they could be reached if two large houses near by could be superposed; (F. 19), if all the houses on her street and another, (F. 19) if all the houses of her playmates could be stacked thus; (F. 21), on seeing large white clouds near the horizon, thought that by jumping from roof to roof she could finally touch them with her hands; (F. 21) believed this possible with a stick if she could get on a hill high enough; she once ran a long distance toward one on which they appeared to rest, thinking she could grasp them in her arms; (F. 21), between four and five, wanted to touch them from a high point with a long stick; she firmly believed this possible, but that they withdrew on her approach, trying to draw her up, which caused constant fear, particularly with unusually dark clouds. (F. 22), until seven or eight, thought distant clouds actually touched the earth, or rested on tall trees when these were in the way. Another (M. 31), from about 3 to 6 conceived them resting upon the tree-tops. (M. 8) could n't see how M—"could get behind a cloud" so as to see it beneath her from Mt. Washington; (F. 19) believed she could get some snow of which the clouds were composed from the top of some high building.

What are the bright high clouds on a sunny day made of, also the dark heavy clouds, and what are they for?

COMPOSITION OF CLOUDS.

Seventy-two of the 122 replies bearing on this phase were from children mostly under nine years in reply to the question as formulated as above.¹

In 58 mentions they are made of some form of moisture: vapor being mentioned 24 times, rain 20, water 7, steam 3, fog 2, and mist and dew once each; in 53, of smoke; in 24, of snow; in 11, of some form of cotton, in 8, of feathers, in 5 of dust, in 4, of wind, in 4, of mud or dirt, 3 did n't know; and in the others, of miscellaneous materials. The high white clouds were vapor in 14 mentions, and rain in only one; the dark, rain in 18 and vapor in 8; the white, snow in 21, the dark in only 1; the dark were called smoke (22) more frequently than the white (8 times). In 12 instances the smoke was said to be suggested by, be like or be the same as that from the smoke stacks of foun-

¹In what follows, much that is included under representations is not reproduced here, although it could be considered as ideas respecting the material of clouds.

dries, steam engines, mills, factories and houses, which they saw rising and mingling with clouds. (F. 21), between seven and ten, believed that they were made after people had started their fires; (F. 20) thought they were made from the smoke of all the chimneys in the city; and that they passed to another city when it cleared. (M. 3), that they were made from the smoke of his father's "choo choo cars." (F. 19), that they were formed of hot smoke. (F. 10) regarded this as an indisputable fact for she plainly saw the smoke ascending from locomotives. One child thought that they were made of snow in summer; two, in winter, while snow was on the ground; one, from the snow of the previous winter; another, of that which had fallen from a mountain in the sky; (F. 19), of the water which God reached down and brought up from the ocean and rivers. (F. 4), of goose feathers pulled out and dropped, another of feather beds and one of feathers on white soapsuds. (M. 20) thought that he had parts of the clouds when catching feathers floating about.

The following materials were mentioned once each: Something like the world (M. 8);—fat making the hands greasy if handled (F. 19 from age of 5 to 8);—something tangible or solid; bodies capable of being grasped when sufficiently approached; (F. 22, never quite understood their texture while studying them);—a substance which could be cut (F. 20);—semi-substantial (F. 20);—white soapsuds (F. 22);—the wool of sheep (the white cumulü, though she knew they were not, F. 22);—ice cream (F. 16);—heavy sandstorms like those on the desert read about in geography (the dark clouds);—large volumes of white smoke spreading over the sky and forming a ceiling with beautiful curves;—white fleecy lambs (suggested by a story, F. 21);—masses of colored cotton (F.);—surf (the white, F. 22, at about 10);—dark and white patches, but doubting this because the wind moved them (M. 4);—sieves allowing water to come through as rain (F. 19);—sieves or sprinklers the size of whose perforations determined the size of the rain drops (rain clouds, F. 18);—lead, (the dark, F. 17); dollars floating around, (the mackerel sky, F. 22);—the light clouds, of pieces of silk, the dark, of ink and black cloth (F. 7);—the light, of cotton, the dark, of gunpowder (F. 18, at about 8);—the light, of light smoke, the dark, of wind, rain and black smoke (F. 11);—(M. 6) the light, of the sky, the dark, of rain (M. 6);—(M. 8) the light, of air, the dark, of black smoke (M. 8);—the light, of smoke, breath and vapor, the dark, of smoke (F. 6);—the light, of soft feathers, the dark, of smoke, although they hold wind and rain (M. 6);—the light, of fog, though sometimes we make them, as, *e. g.*, "I did from my bonfire;"—the dark, of the heavy fog rising

in the morning (M. 9);—the light, of thick white smoke, the dark are of parts of a coming storm (F. 18, from 7–10);—the light, of cherry blossoms, the dark, of Penn. R. R. smoke (M. 6);—the light, of sunbeams, the dark, of vapor (F. 12);—the light, of sunshine, the dark, of something very dark (M. 5);—the light, of clearness, the dark, of rain and wind (F. 11);—the white, of dirt, the dark, of mud (F.);—the white of feathers, the black, of a “black waterproof drawn over,” though the latter was not believed (F. 18);—the light, of some fleecy material, suggested by the remark, “what fleecy clouds!” the dark, of some black stuff;—both as angel’s robes, the dark, having silvery linings (F.);—the white, as silver streaks across the sky, the dark, as curtains pulled over the sky (F. 17);—the white, as water, the dark, as full of thunder (M. 11);—the white, such because high, the dark, such because low (F. 7).

Here may be noted again, (1) the considerable variety of substance mentioned, about fifty for 122 subjects; (2) the small number of staples, moisture and smoke forming the highest, snow the intermediate, and cotton and feathers the lowest group; the white clouds, especially, being snow and the dark, rain; (3) the sensuous basis or suggestiveness of most answers, and the arbitrariness of others.

CLOUD REPRESENTATIONS.

Of the 601 separate mentions of forms, shapes, pictures, objects, and beings made out, formed, thought, suggested, imagined or seen, 375 belong to what may be roughly termed, animate nature, and 226, to inanimate nature.

Of the former 158 are quadrupeds; 131, persons; 25, angels; 20, plants; 11, winged animals; 4, aquatics, and the balance, miscellaneous.

Of the latter, more than one-half, or 142, pertain to what may be loosely designated geographical fancies, of which 121 are more purely land and 21 water phenomena. This includes only those objects inherent in, or part and parcel of, land and water, and not those incidental to them, chattels. The mountains (38) were most abundant—we include among them the hills (8) and the snow banks, drifts or heaps (19) many of which are described as huge in dimensions. Five stated that the mountains were made of snow, making 65 mentions. Next, follow in order land masses (55) viz., unspecified continents (11), North America (7), landscapes (6), South America (5), islands (5), countries (4), floating islands (2), Europe (2), and one each of Spain, Turkey, Denmark, the Scandinavian peninsular, the “boot” of Italy, Asia, Africa, Gibraltar, capes, farms, a land with—a lake, states and fairy

lands;—buildings (31) viz., houses (15), castles (12) of which one was an ancient structure with many turrets and towers, and another a vast pile with floating pennants in beautiful colors, palaces (2), the shining house of Queen Mab (1), church with spire (1), temple (1); ships or boats (28); water scenes (21), viz., rivers or running streams (4), the ocean (3), the seashore (3), the surf or waves (3), bodies of water (3), lakes (3), (one observes seeing the great lakes of North America), icebergs (2); vehicles of land travel (20), viz., chariots (14), buggies or carriages (2), wagons (2), bicycle (1), trains of cars (1);—vague references (19) such as figures (3), shapes (3), forms (3), images (2), pictures (2), objects, anything, most every form seen in nature, ragged forms, forms with golden borders;—cotton appearances (8), viz., huge piles (4), cotton-batting (2), huge bales (1) and thin rolling white flakes (1); rocks or stones (5);—cities (4);—flames, conflagrations or fire (4);—towers or steeples (4);—swords (4);—soapsuds (3);—triangles (2);—chairs (2);—crosses (2);—playthings (2). The following were mentioned but once: an erupting volcano, various kinds of food, things to eat, ice cream, all kinds of candy, hammocks, boots, shoes, windmills, a "black waterproof," chains, oblongs, circles, the pyramids, a pail, a shipwreck with all the details, barrels turned upside down, golden pictures, rubies, diamonds, sapphires, a round ball, "my dolls," furrows plowed in the ground, storms, a crook, velvet, roads, pipe.

The following, unless otherwise indicated, were mentioned once: people in ships (4), ships with white masts and sails (2), Elijah's chariot, chariots drawn by two or four horses and frequently with a driver, a chariot drawn by white horses, a chariot drawn by four horses pulling some one up a wide street, horses prancing along with a chariot and buggy, tier upon tier of snow crested mountains, roads winding in and out among mountains, church spires distinctly seen in a distant city, clouds drifting behind the steeples, a large card with different colors upon it. One observer noticed especially the coast of Europe from Denmark to Gibraltar (F. 21); two considered the clouds curtains of the sky, one imagining the rays of the sun when just visible around the edges, as the light behind them.

M., 11. Most commonly saw castles and landscapes, another child saw landscapes and shore scenes. To one chariots were the objects most often depicted, to another, mountains, to one castles were very rare to another common. One child imagined stories about the clouds rather than formed pictures.

Forty-two per cent. of the animals were not specified, but merely mentioned as many, several, various kinds, all sorts, wild, huge, familiar, moving, etc. The horse (24 mentions)

and dog (20) were most frequently seen, followed by the lamb or sheep (12), the lion (8) and bear (7). Other animals seen follow in this order; the bird (7), the cat (4), cow, fish, wolf, tiger, camel and elephant, reindeer, deer, bull, buffalo, duck, goose, frog, ram's head, alligator, butterfly, chicken. Trees were mentioned 16 times, and ferns, plants and flowers, single and in bunches, once each.

One observer usually saw the animals maimed or crippled;—one, the heads merely;—one, parts frequently;—one, (F. 21) especially wolves and bears but seldom human beings;—two, always huge monsters sailing through the clouds;—three, rarely ever anything but animals;—one, usually horses;—and two, never animal forms;—four, always familiar ones;—and six, usually wild ones;—one saw a caravan of camels;—one, a procession of animals;—one, the camel's hump;—one, a sheep with two legs;—three, a flock of sheep;—two, their fleece;—one, "a dog like Nell;"—one, a big white one;—one the elephant's trunk distinctly;—one (F. 21), wild animals seeking a desirable place to live;—one, a bird of enormous size;—one, saw birds flying around;—one, both flying and at rest;—one, on looking at the dogs a second time found them entirely different.

The men and animals are often regarded as participating in races and battles or chasing one another. Eight, saw battles between two armies;—one (F. 22), between a bear and alligator and between dragons and giant men;—one (F. 21), between lions, wolves, and especially bears; as the clouds passed by, she could determine the victor, the vanquished foe being thought to be eaten up;—one noticed the soldiers fall one by one in a fierce combat on the battlefield;—one saw naval battles;—one, the snow men knocking each other over;—one, steeds charging each other, a human figure occasionally appearing to block the way; one heard the thundering of two armies. One fancied animals were always trying to catch each other;—another, that the clouds were doing the same because moving so rapidly at times;—two, that the swiftly moving clouds were the pursuit of people;—one saw fishes chasing a frog;—one, horses engaged in a hot chase;—one, animals fleeing to escape God;—one tried to name the clouds in the cloud races. One saw the clouds playing tag;—one, children racing;—one (F. 21) regarded the movements as genuine races;—she named each cloud, and noticed which disappeared or completely changed its appearance first;—one saw large and small ships sailing over the ocean, alternately gaining and losing; she could generally picture the one finally victorious.

Of the persons mentioned 48 are referred to as men, 16 as women, 6 as children, 23 as people, 24 as human faces, and the

rest are miscellaneous. One saw soldiers;—one, sailors;—(F. 10), a milkman ascending the stairs with his pail;—(F. 22), a pale ghostly body reaching out longingly for her but slowly fading away;—one, a clown;—one, living and dead acquaintances;—one, friends;—one, noted people;—one, men on horseback;—one, the heads of old men;—one, the faces of old gray haired men like Longfellow;—two, their mother's face;—one, a child's;—one, a man's covered with a beard;—one, beautiful ladies, usually the profile;—one, men with wings;—one, a man with a sword;—one, persons dressed in peculiar styles doing various things:—one, a girl;—one, babies;—two, children playing different games;—one, the heart;—another, parts of a person;—one, persons awheel, in a chariot and a buggy;—one, old men with funny faces, whose pictures she would draw;—one, people busied with all sorts of things;—one, a rain- and thunder-man;—one, her aunt;—three, witches;—three, indians;—one, Dido with bows and arrows;—one, Laplanders or northern people covered with fur;—one, Santa Claus in his sleigh loaded with toys;—one, with his reindeer;—one, human beings in all sorts of positions;—one, "Jack the Bean Stalk;"—eight, giants, one only seeing the faces and three describing them as having huge bodies;—one, fairies and elves;—one, dragons;—two, men walking about;—one, men riding around;—three, never, and two, seldom, saw human forms or faces;—to another, angels were extremely rare;—(F. 21), remembers distinctly a hand seen once;—(F. 22), actually believed the faces seen to be those of dead friends;—another, that the dead were among the clouds.

The following features are noteworthy:

(1) the prolificness of the youthful shape-fancying impulse: over 100 different phenomena or striking variants, of which nearly 60% belong to the inanimate world, being recorded for 376 individuals; (2) the limited range of the "staple" objects; the following being the order for those numbering at least 20; quadrupeds, persons, mountains, continents and countries, buildings, ships and boats, vehicles; (3) the wide range of fine individual differentiations or variants of the "idols of the tribe."

At this stage the constructions of the supernatural may be pertinently introduced. One saw an angel with a bright robe;—one an angel's wing;—one, an angel with a sword;—one saw them formless and dim;—one (F. 19), on a certain day, a perfectly shaped woman with wings, which she believed to be an angel; by watching she would see many of them;—one (F.), at times, flying angels looking directly at her, thus preventing the commission of some intended wrong, through the fear that they would tell God who would punish her,—imagining all this from having heard of angels in the clouds;—one frequently

imagined she saw angels when she had been disobedient; and God looking down at her disapprovingly. One observer relates that one of the clearest remembered pictures was seen one evening a few minutes before sunset. The sky was beautifully lighted up and a form like an angel seemed to grow out of a small cloud, with the wings especially clear, and to hold a large sword extended.

The thin dark clouds blown quickly across the sky reminded one child of a frown on a person's face. When one frown was gone, another came, and imagining this to be God's face, she thought that he must be very cross and unpleasant. (F. 19) on one occasion, just at sunset, ran to her mother, telling her to come quickly, God was sitting in a chair, the bright clouds forming the image.

F., 18, always called bright clouds God's feathers.

M., 3, asked "Mamma has God got red whiskers?" He thought that the red clouds were God's whiskers.

F., 20, when about eight years old thought that our Lord told a boy in the sky to strike clouds against each other, producing a loud noise or thunder, whenever the doings of people displeased him.

Over a score alluded to heaven, mostly in respect to its locality. It was considered to be directly in the clouds, but usually beyond especially the red or golden ones.

(F. 19), believed, between five and eight, that heaven was above the clouds;—(F. 20), still believes this;—another (F. 20), rejects the scientific theory in lieu of this, the first believing that God lived in this Heaven;—(F. 19), until fourteen thought it was above the blue of the sky, regarding the sunset as a gate whose wealth of color suggested the gate of the heavenly city.

(F. 21), as a child, regarded these clouds as the gateway to Heaven: "I used to steal away in summer to a certain spot and study them, being sure that if I only had a balloon, flying-machine or something to bring me to them, I would soon be in Heaven, as I could then walk through them."

F., 26, thought that Heaven looked like beautiful clouds at sunset, and if she could push away the clouds and reach the blue she could step right into Heaven.

F., 27, considered the bright red and golden clouds the opening of Heaven where people could see a short way in, the golden clouds being the beginning of the golden streets and the bright clouds making the earth dark by contrast, the light of the heavenly city being neither from the sun nor the moon. Later she thought out and finally believed the story that the red was the reflection of the fires where Santa Claus baked cakes for good children. She thought that there was another world above us, with the blue for the ground, and another beneath us. She often dug deep holes in the ground to break through and see the people who lived there.

F., 19, was sure that the golden light in the clouds, when too bright to look at, as at sunset, was Heaven, that the gates were then open, and closed when the light and the glory faded.

The beautiful colors of sunrise and sunset reminded one observer of Heaven, and made another think that it must be very near.

To F., 22, as a child, great billowy white clouds were entrances to Heaven, and although not appearing as gates or doors, one could pass through them to the clear open space beyond.

To F., 18, the brightest clouds suggested the brightness of Heaven; to another, Heaven, where she thought the people of that realm rested upon the clouds. F., 17, thought that when the white clouds upon which sun shone were especially beautiful, that it was the beauty of Heaven.

When F., 7, saw a cloud roll over a home lately visited by death, she imagined it the place of the departed, though locating Heaven behind the sky, she wondered why clouds passed over the houses. F., 22, believed that Heaven was in the clouds; when they moved God walked about in Heaven until He reached the point where the earth touched the sky, when He came down upon the earth.

F., 22, was told when a child that dead people went to Heaven. She thought that they were among the clouds, and that changing their dresses caused changes in the colors of the clouds. She especially thought of this when viewing a brilliant sunset, fancying that the brightness of the sun came from the bright lights in their houses and halls.

F., 18, once saw her mother's form, with pale, clear and beautiful face, slowly borne to Heaven by an angel.

F., 16, relates that one evening last summer, while standing on a railway platform, she saw the semblance of a large river of lava, the middle being the hottest, with a volcano in the distance. This gradually changed to a large lake of ice, then to a winding silver pathway leading into Heaven. The first scene made her think of God's greatness; the last, of the seemingly bright and happy path, tempting us in so many ways and leading away from the straight and narrow path which leads to eternal life.

F., 18, professes to have seen Heaven, with the great shining Christ on a throne of gold surrounded by thousands of saints, and the sheet of gold leading to the gates of the city, which angels seemed to open to admit a wayfarer and then to close. The fertile fancy of this girl also depicted beautiful faces, ball rooms full of dancers, or anything earnestly contemplated while looking at the clouds. She longed to put something on the prettiest cloud so as to detain it forever. The brightest clouds suggested rubies, sapphires and diamonds to her. She also fancied that the clouds grew tired, dipped their fingers in the water and, often shaking off the drops as rain, felt better.

The following are some of the more striking, whimsical or elaborate constructions.

One observer imagined a cloud map, having upon it the stages of her fancied trip to Spain, Turkey and the Pyramids; another (F. 18), that an old woman picked feathers from her geese and threw them down.

F., 21, as a child, that the sky was a huge picture gallery with the clouds for curtains; (M. 11), that the clouds help to make the rainbow a half ring and the wind blew beautiful flowers to complete it. Once, he saw "an awful pretty cloud just like the striped kind of ice cream, pink, white, yellow, brown, orange and every other color. The sun was as red as anything."

F., 19, when about eight, thought that the clouds were actually lined with something bright like gold, which was always resplendent as if the sun shone on it.

One imaginative child saw witches and beautiful finely dressed women prowling about. Sometimes they were moving swiftly as if to meet an advancing chariot which would take them away; sometimes while waiting they would grow old and ugly like the witches. One distinctly saw the beach with the water extending out and the waves rolling in, forming huge breakers as they neared the shore; and sometimes islands were scattered over the wide ocean. To one (F.) a certain face, appearing on a gloomy day is very clear; viz., when the clouds were dark, the head of an old man smoking a pipe.

F., 17, saw, one evening when the whole sky was flushed with sunset tints, five tongues of flame illuminating the west. They seemed to her the hand of the sun extending a parting benediction to the earth. On the Fourth of July, two years ago, she counted forty-six layers of ribbons lying parallel and horizontal on the sky.

F., 19, was wont to fabricate stories, partly believing them, about the clouds, *e. g.*, that they would give her a ride whenever she wanted to go away.

F., 18, once saw in red clouds, an exact representation of a ferry boat, at another time, a lion's head.

F. 17, on seeing the lightning flash from several places in a very dark cloud before a thunder storm, imagined it a house at night, in which lights flashed from the windows as some one moved about.

EMOTIONAL REACTIONS.

This may be used as a collective term for a number of psychic reactions, responses or impulses. The question, How did the prettiest and brightest clouds you ever saw make you feel, and what did they suggest? elicited rather trite commonplaces from the 47 children furnishing answers; twenty-two felt happy;—six, glad;—two, joyous;—one, nice;—one, cheery;—one good;—one, that he wanted to sit on them;—one, that they were bright to make God's home in the sky happy, and that she could reach them (F. 8);—one, that it was cruel for lightning to strike or cut them;—two, that they wanted to study them;—one (M. 7), "it did n't make me feel funny at all." One (F. 11) replied: "mamma says it is wicked to fancy shapes in the clouds; and two did n't know. Five said it made them think of or suggested, nothing;—two, the rainbow, the cloud in the one case being pink and blue;—one each, pretty flowers and pieces of silk, a good day and play, a bright day, that it would be warm weather, running and having a good time, summer, fire, heaven and home, God and whether I was good, mountains close together, not to be lazy, a glass window in church (the sunset), and boats sailing along.

The feelings of the older persons may be grouped mainly into agreeable and disagreeable feelings. We may suppose that any activity regularly, or frequently indulged in, or for longer periods of time, where no symptoms of morbidity exist, is a useful and pleasurable one. On this supposition, the love of or delight, pleasure or joy in watching cloud phenomena is a deep seated impulse. Fifteen reported they spent "much

time," or "many hours," or "every evening;" fifteen "used to enjoy," thirteen "often did," and over a score "used" to watch them.

The following is a tabulation of the articulate statements.

Fifteen stated that they found, and as many that they still find delight, great interest or pleasure in watching the clouds. Ten particularize the aspect of motion, moving along, floating by, passing over, changing from one to another, animals making a procession across the sky (F. 17), men and animals moving, (F. 23), (F. 21) used to watch the clouds for hours, marvelling at their motions, thinking that they had fallen near the horizon where the sky ended. They had for her the greatest charm of all the natural phenomena. (F. 21) took great delight in seeing the "lion trapped" and angels and persons (seen rarely) running across the sky in their attempt to escape God and come to the earth.

Ten express this charm in seeing, tracing and finding or comparing shapes, forms and resemblances, both those of the animate and inanimate world. One found this her favorite amusement, another made it her sunset occupation and then spent much time in describing what she saw.

Ten particularize on the sunset clouds;—five on the light, bright or fleecy, though to one the dark, were more attractive.

Four were filled with admiration by cloud beauty;—(F. 19), once was held spell-bound by the beautiful ones;—(F. 22), was very fond of the "mackerel" or "dollar" sky;—(F. 19), was made happy by the reddish-yellow suggesting fire;—(F. 21), can still recall with joy what she, at about 13, considered the most beautiful sight ever seen and how it remained with her all day, viz., the golden light and soft shadow thrown by the rising sun at dawn, once while driving to the station;—(F. 18), once beheld a cloud lady so beautiful and sweet as to nearly transport her with longings, giving her the highest ideal of loveliness in the world thus far experienced. To one, a particular cloud scene has remained; a large lake, with high mountains behind, and a large boat on the shore, in which it gave her pleasure to image what a good time she and her sister would have could they reach it;—(F. 25), sat long while studying the cloud "picture gallery;" the prettiest picture she ever saw filled her with awe.

Attitude of Wonder or Surprise. Three wondered why the clouds remained or how they were suspended in the sky;—(F. 20), being greatly perplexed over this after being told that the sky, which she regarded as their support, was miles above;—three, how they would feel;—(F. 22), if as soft as cotton;—(F. 19), still wondering about this;—two, why the snow banks did not melt on a warm day;—two, why they moved;—one

each: how the smoke could fall as rain, when told the rain came from the clouds, (F. 17), how it could get so high and so varicolored (F. 17), how clouds so beautiful could become so dark, gray and cold after the sun sank (F. 19), where they were when the sky was clear (F. 21), what the white was (F. 5), if the child seen while lying flat on her back watching them could see her, if the first clouds, sulphur-yellow, appearing at three o'clock on the morning of the Fourth were omens of some coming evil, and what would happen to the little house on the mountain side if Vesuvius should have an eruption.

The attitude of doing, wishing or yearning for. These longings were mentioned once each: to feel and sit on the "cotton" (F. 24);—to get up and stand on the "snow mountains" (F. 16);—to sink down and be covered over in the "featherbeds" (F. 18);—to hold some of the colored sunset clouds in her hand she admired them so immensely (F. 17);—to stretch her arms out, take a breath, and let herself go up in the air, she felt so light on seeing the beautiful ones (F. 19);—to poke the fingers in the pretty ones and go up or have them come down and play with him (M. 7);—to plunge into the "soapsuds" (F. 22);—to feel the light feathers (F. 20);—to go up to the pretty ones (F. 19);—to jump right into the middle of the cotton (F. 22);—to lie on the light fleecy ones, which we could lie watching by the half-hour, and be floated through the sky;—to follow some particular one (F. 18);—to follow Jesus, whom she saw radiant with white robes, ascending heaven (F. 19);—to get up and see the women or girls seen there (M. 5);—to have the child seen come down and play with her (F. 22);—to paint the most beautiful one ever seen (F. 17 at about five);—to have the prettiest stay always and get dresses of the colors of some;—to look at the bright pretty ones all the time;—to keep a beautiful sunset, it faded so quickly: would say, "O! mamma catch it, catch it, it's such a nice one," and, "O! I want a dress like that; pitty, pitty clouds," (F. 18, at about 5);—to get above the large, dark clouds, to see what was going on. She was positive God was fixing something he did not want seen; would look at the sky to find a chance (F. 19);—to have the favorite cloud pass the others in the race, becoming as excited as in watching a real race (F. 19);—to know how to ascend into the big piles of snow in the summer and bring down something to eat (F. 19);—to get to bed on seeing a very beautiful red and purple sunset cloud stretching wearily along the horizon;—to climb to the tree tops and slip off into the strong, fleecy substance floating upon the air as a boat upon the water, which he watched at the horizon for hours, and to float through the heavens. His parents caused him great grief by not allowing him to go to the horizon for this purpose (M. 21 Clark fellow).

Disagreeable feelings. Thirteen of these are of a mild character; twenty-five represent fear or terror, ten of these referring to the black clouds, and six to the possibility of the clouds falling down.

The following are the specialized individual feelings relative to different situations:

Sorry when a clear white, joined a dark cloud (F. 22);—felt very sad on being reminded of the death of a young acquaintance by a cloud, seen high in the sky just before sunset, producing a lasting impression. In color and shape it suggested an angel's wing (F., 25, at 15);—felt very badly on seeing smoke ascending in wavy, dark rolls, which made her feel sure that the sky would be all covered and that it would rain, but she often noticed that the rain did not "use up" the clouds; felt oppressed on gazing at dark, heavy clouds, but the appearance of the moon always soothes this feeling;—never liked to see the ugly, black ones, because they brought thunder when it rained (F. 19);—greatly worried at seeing a cloud in the sky, and would run to the house; she inquired every morning anxiously, "will it rain to-day?" When rain descended would cry violently till it ended (F., at four);—disappointment because the lions, camels, horses, etc., chasing each other would change into something else (F.);—even now, never likes to be alone on a cloudy day (F. 18);—even now feels she would smother if journeying in the clouds (F. 19);—another the same, but, picturing herself inside one and breathing all night;—a clear, blue, cloudless sky was always distasteful, but did not like a very cloudy day (F. 17);—felt clouds meant something undesirable, because rain was coming, hindering her outdoor play or plans;—gloomy (F. 17) and blue (F. 17) when watching the dark;—felt rather afraid, but still that "I would like to sit on them."

The following fears were indicated: that, while lying on the ground looking at them, clouds would fall down upon her, believing them very heavy (F. 5);—that the "smoke" would sometime fall down and smother her (F. 7);—that the lower of the fierce-looking thunder-clouds would certainly fall after piling sufficiently upon each other;—that a terrible thing might occur, for they might descend and envelop the earth, making everything white, so we could not see one another (F. 24);—that the large cumuli or "snow-banks" would come upon and destroy her (F. 22);—that this terror of clouds falling was so great that she would catch her breath; she even now has the same fear while lying on the ground (F. 23, at 8 or 9);—that the end of the world was surely coming, though she mentioned nothing; because, at about five years ago, one evening, she saw a peculiar orange-yellow appearance over

the sky, lasting for quite a while, throwing a strange light over all objects, which frightened her; she thought that the end of the world was coming, from a terrible fear at times on seeing a dark cloud (F. 19);—that something dreadful would happen, without definite idea of what this might be, when the horrible black ones appeared (F. 20);—that the long black ones especially were dangerous; she would run for the house (F. 21);—that there was a fire in the sky; when seeing feathery ones one day, being so alarmed that she called ‘mamma’ (M. 3);—that the angels seen looking at her would report her to God; hence she was restrained from doing many wrongs; to go to bed on nights after thunder storms with sky full of floating dark clouds; they would assume shapes of animals and giants standing just outside the window (F. 18);—(F. 21) was frightened by the face of a man which the clouds always assumed; (F. 16) by an angel seen when about six years old;—two children by the black clouds, associating them with rain and believing God was going to make rain. One of them always felt that if near home she must return there, was always unable to walk about during a shower and muscles would not act even with strong effort. Relief came with the end of the shower.

F., 18, while watching the clouds at sunset, saw a beautiful face look down upon her. She continued looking and was filled with happiness. Suddenly it changed to a face so terrible that she was filled with horror, rushed into the house and went to bed, feeling that there could be no more happiness for her that day. For a long time she lacked courage to watch the clouds again.

F. 18, had no definite feeling except that the clouds had a certain charm and made her want to look at them. She never loved them, or even enjoyed looking at them, as she does at the present time, and always shrank from them at night, because she was afraid they might carry her away, she knew not where.

One is again struck by the variousness of the appeal made by the clouds, or the responses to them. They can arouse impulses that run the entire gamut of feeling; that touch every chord of sentiment, from the smooth and gentle to the loud and terrible. The strongest feelings appear to be those of fear, longing, joy or delight, reverence and awe. The appeal is both æsthetic and ethical.

MISCELLANEOUS PROBLEMS.

The dependence of cloud fancies on special circumstances, characteristics, conditions, times, seasons, associations, etc., have already partly been alluded to by implication.

The importance of the rôle played by certain factors may here be particularized, and amplified or illustrated somewhat in detail. The splendor or color of the sunset clouds should naturally make these a prolific source of cloud fancy. Other

reasons may be; the leisure hour when they occur, the diminished intensity of light, lessening retinal pain, and the small obliquity or visual angle diminishing fatigue.

F., 17. As a child, imagined and continues to do so, the sunset sky as a beautiful sea with the clouds as islands.

F., 22, had fancies about and can vividly recall sunset clouds but can remember dark ones foreboding a thunder storm, which she noticed only because others spoke of them.

F., 6, often watches beautiful sunsets, and once asked if God painted the clouds.

F., 22, enjoyed watching the sunset clouds only.

F., 19, between the ages of five and six, believed that God painted them because they were so beautiful.

F., 20, states that during the last two or three years, the beautiful, fleecy clouds of sunset and the coloring from the setting sun has filled her with awe and reverence because of the mystery of their formation.

One child imagined a fire in the clouds lit up by the setting sun.

F., 18, that she saw in these, "the sands along the shore."

F., 19, when a child, frequently imagined that sunset clouds were all kinds of candy, edibles and ice cream.

F., 18, at sunset, often imagined a fish or animals with which she had come in contact, especially a flock of sheep following their shepherd, seeing even the crook over his shoulder.

F., 21, paid attention to the evening clouds only.

To one, sunset clouds looked like burning houses or forests, owing to the yellow and red; the white ones in the moonlight, like great castles, and again Eskimos walking on mountains of snow; and just before or during a thunder storm she was reminded of a black man walking on a hill.

(F.), often regarded the beautiful red tinted sunset clouds as a very distant, most magnificent palace, whose every occupant was always happy; but the soft white clouds were always angels hovering about and the very dark ones concealed some horrid monster. One observer saw cities and seashores oftenest at sunset, but mountains in the white clouds.

Another always watched for the rain-man and thunder-man, who fought battles in the dark clouds rapidly forming before a thunder storm, imagining the rain-man whipped and his tears making the rain.

One child saw forms only in the light clouds; the dark ones frightened her.

F., 22, liked white clouds better than gray ones; she was sorry when a clear white cloud joined a dark one.

F., 20, was fond of watching the light fleecy clouds though the dark ones were far more attractive to her. She watched them only in summer.

To F., 21, clouds with a beautiful silver lining seemed to burst open and throw out hordes of wild animals.

F., 18, saw billows and furrows in the high streaked white clouds only; snow banks and animals in the large white masses, but piles of white stones, of all sizes, in the small scattered ones.

F., 17, saw white marble palaces in the white clouds upon which the sun was shining brightly.

To F., 18, the clear blue sky with a few white clouds always seemed like the water at the seashore on a summer day. With less blue in the sky, she saw chariots and faces, but during a storm or just before one, she thought of fierce wild animals, and a thunder storm brought up a vision of contending armies, the lightning being the flash of their swords.

One watcher saw large men flying from the storm in the black clouds. (F. 19), said the blue clouds always reminded her of a blue silk dress she had when very small.

One observer (F.), only recalls noticing cloud colors, doing this especially when the snow was on the ground; she considered the blue as blue velvet, the white as white fur, the former being the background, the latter the trimming.

One's favorite watching-place was the seashore;—another's, the lake;—one's, a certain hill;—another's, a hammock.

One scarcely watched them except when riding;—two, only in the summer;—one, most frequently with her sister, lying on a laprobe placed on the clover;—three, lying on the ground.

Positional time. At what period does the cloud impulse reach its hey-day? The evidence from the reminiscent returns is of this character. The vague term "used to (see, imagine, think, feel, enjoy, etc.)," was employed 61 times; "often," 34 times; "sometimes," 26; "still do," 25; "always," 18, and "when I was a child," 32. Nearly all of these refer to the more generic, or hum-drum, experiences, and none furnish any clue. Neither do the following: "once" (15), "one evening" (6), "one day" (6), or a special day mentioned (4), "one morning" (2), 32 in all; but, unlike the former, these are all specific; they are indelibly impressed upon the soul, owing to their striking character. But in no inconsiderable number, 52 in all, the experience or experiences, not at all specific, are located in time. We may arrange these guesses in five groups according as the time is stated (1) as at "about" year *a*, 18 in all, averaging 8.4 years; (2) as "between" or "from" year *a* to *b*, 16 in all, averaging 5.5 for the lower and 9.4 for the upper year; (3) as not "until" or "before," 9 in all averaging 10.7; (4) as at year *a* "or" *b*, 6 in all, averaging 9.6 and 10.6; (5) as at year *a*, 3 in all, averaging 8. The total average is nearly 9 years (8.8), which from these records, appears to be the period when, if not at their high-water mark, these fancies are the most easily recalled or precisely located. The true value, if such can ever be found, would perhaps be pushed lower down the scale. In reminiscences, the discrimination would be against correctly locating the most distant, not the most recent.

Origin. The school of Kühn and Max Müller place the sub-structure of mythology in language. Myth in Greek signifies originally, merely something spoken, a word. It is so deter-

mined by language as to be, in a sense, a "disease of language." Words may become agencies, reacting upon the mind, shaping its concepts, creating its fancies, formulating and crystallizing its beliefs. In myth making the elements of highest, operative efficiency are synonymy, polyonymy, poetical metaphor, the gender of words, etc. The effect of these factors is observable in the mythopœic processes of present-day mythology.

Tyler, however, and the school of anthropologists which he represents, look for the foundation of mythology in real and sensuous analogy. It conceived, in analogical projection, that forms, colors, objects are assimilated, associated, compared with other similars and often invested with their nature. Hence the same mythic processes may be traced in the savage mind of to-day or, though perhaps in diminished degree, in its analogue, the child's. And let us not forget a fundamental mental propensity of the modern disciplined mind to hypostatize the concept.

These two points of view are antithetical only in semblance. Both appeal to the same psychological fundamental, the apperception center. Both may furnish an empirical basis or criterion largely applicable in the present attempt to trace the origin of cloud fancies.

It may be willingly conceded that this procedure of linguistic interpretation is not a faultless index, that, at best, it is acceptable only under proviso, that, in many cases, it may not adequately portray the actual empirical processes or psychoses involved in these visions, phantasms, or imaginings; for these states of mind are often so penumbral, quasi-conscious, or submerged, or such vague borderland, revery, or dream-like phenomena, that the process that strives to give them utterance not only misconceives their interior essence, but is itself a "blooming confusion." Thus much such phrases as these, conned from the returns, indicate: "I think that I really believed what I imagined I saw as real," "it seems to me as if I might have fancied that I thought of it as," "I knew they were not, but actually always thought of them as," "it seemed to me that I seemed to look at it as being." These phenomena, however, are not all fancies of this vague type.

In forty-six cases the expressions were simply a clear cut "I saw," or "have seen," or "could see," or "would see;" in seventy-three, "I thought," or "always thought," or "used to think," or "think that;" and in seventy-eight, "I imagined," or "fancied," or "pictured," or "represented," or "tried to do this," or enjoyed doing this." But they are not even all pure fancies, or intentional fictions, as the latter terms especially would indicate. There are a few instances, nine in all,

where the writers avow their firm conviction of the reality of the fancy concerned. We may assume that many remained reticent on this point, thus greatly reducing the figure.

Eighty expressions were used involving comparison, such, *e. g.*, as "looked, appeared, or seemed likely, associated with, was suggested by, thought of as." In these cases, it is safe to say that the principle of association or apperception furnishes an adequate explanation.

The following are specific cases, in addition to those already given in previous sections, in which this principle is of undoubted validity.

Many could, did, or always would imagine the scenes or form the images of characters or places from stories heard or read;—one, (F.), usually never seeing any but these;—one, (F.), imagining especially those in Grimm's Fairy Tales, *e. g.*, Cinderella, and certain Bible stories, *e. g.*, people with animals going into the ark at the time of the flood;—two, (F.), especially those from Mother Goose Rhymes, *e. g.*, the cow that jumped over the moon, the old woman who went to sweep the cobwebs from the sky, Taffy was a Welshman, etc.

F., 16, felt greatly surprised when told that she merely fancied the things she saw.

F., 21, felt that her forms were not strictly original but like the pictures in books.

F., 21, would sometimes see white horses hitched to a chariot, with a great king as driver like a picture seen in the Bible.

F., 19, imagined she could see Pegasus, the winged horse, and his rider, Bellerephon, flying through the clouds.

To F., 22, fairy tales suggested that Queen Mab and other fairies had beautiful, shining horses beyond the clouds, of which she could get glimpses at sunset. She knew that it was visionary but it still gave her much pleasure.

F., 17, thought that the "Great Bear," of which she had heard, was made of clouds.

F., 19, as a child, saw "Old King Cole" smoking his pipe and his slaves bringing his fiddle.

F., 17, after her first geography lesson, saw North America in the clouds on her way home from school.

F., 15, while studying clouds in geography, imagined them assuming shapes of continents, sometimes one cloud showing them all in succession.

Another student of geography saw the sand storms, about which she was studying, in the dark clouds.

One child, after being told that the "hump-back mountain," plainly seen from her own home, was Mt. Tom, looked into the sky and saw a cloud of that shape, calling it Mt. Tom.

Another could see the details of the mountain scenery, even the roads, of her Vermont home.

A school girl on her way home pictured the battles of the Civil war, with guns, soldiers, etc., she had heard recited. She

was so interested in watching the cloud-battle that she ran against a man proving to be an uncle she had not seen since one year old; the scene is just as vivid to-day. Another saw armies marching in battle array, and fighting as never one could fight, suggested by pictures of battles where the smoke from the cannon rolled about in vast volumes;—(F. 23), once, at about eight, after reading her Sunday school lesson on the resurrection, saw a very large and beautiful pearly cloud resembling a figure in flowing robes; she immediately connected it with the "Risen Saviour;" for a long time she was awe-struck; she watched evening after evening for another similar sunset cloud, but has failed to this day.

(F. 16), at about five, after the clouds had cleared from a cyclone, saw the light, foamy ones on top with a layer of darker ones beneath and thought the cyclone, the sky's egg-beater, from seeing, a few days before, an egg beaten in a glass dish, leaving the heavy or only partly beaten part in the bottom.

The following instances of personification, anthropomorphism or symbolism are too complicated for the principle of suggestion to adequately account for them.

F., 18, considered the clouds and winds as enemies, the latter driving the former around with a stick; when indifferent, they were white, when angry, black.

M., 3, thought that they were actually walking;—F., 19, that they were brothers and sisters trying to catch each other, finally becoming an immense cloudful of rain;—that they were real people and animals;—F. 22, that they actually chased each other across the sky;—that they grew tired.

Thus a very large proportion of these phenomena may be traced to suggestions derived from external nature, to tales or stories read or heard and to the nursery yarns of old grannies.

How many are due to reversions, or ancestral adumbrations, as automatically operative without any external prompting, is a question opening up a wider phase of this inquiry.

SEC. 2. IN LITERATURE (MATURE ADULTHOOD).

In a field with a literature so voluminous as that on clouds, an attempt at condensed compilation must follow a set of certain rather rigid principles of selection, determined by its avowed purposes. With purely physical cloud determinations we are not here concerned; but with facts or opinions illustrative of their psychic influences, potentialities or possibilities, interpretations and significations. The object will be to fully represent the views of the writers, though often in quite different phraseology.

The point of view is the poetico-æsthetic. As Huxley¹ has

¹ Aphorisms by Goethe, T. H. Huxley: Nature, I, 9. London, 1870.

well said in commenting on Goethe's aphorisms on nature. "Long after the theories of philosophers are obsolete, the vision of the past will remain as a truthful and efficient symbol of the wonder and the mystery of nature."

No pen could be sufficiently under the spell of the magician to adequately paint, by word or pen, the marvellous æsthetic effects possible in cloud-land. The grandest of these are not work-a-day occurrences, but separated by the span of months, years, decades, or generations. Happy he who is prepared for and counts their brief and unheralded visitation. In the following references to remarkable occurrences of cloud scenes, the names are mostly those of meteorologists, who are not expected to record thrills of æsthetic delight and ethical expansion, but explanatory hypotheses. Accordingly, however luminous, these declarations certainly do not overrate our standpoint, but quite the contrary.

¹ Piazz-Smyth mentions two large clouds with smaller ones of brilliant iridescent colors, seen Dec. 11, 1885, at Edinburgh, about sunset. They were 10° or 12° high and the largest one showed a diagonal streak of glowing green shading into blue, with exquisite violet tints on either side, and the whole surrounded by dull red. With the sky peculiarly dark and sombre, behind and around, the magnificent spectacle suggested mother of pearl inlaid in a black tea-tray. The phenomenally bright smaller specks gradually lost the green band while passing into yellow and orange. These masses were higher than a neighboring heavy cumulo-stratus cloud.

² Clark states that this new phase of cloud glow was fringed with prismatic colors, in threefold layers in some places, and he distinguishes its stages.

Backhouse,³ of Sunderland, saw the same marvellous appearances daily from the 6th to the 13th, except the 9th, though the effect was striking only at sunrise and sunset. He saw no dark clouds; they appeared thin, like a flattened sheet, arranged in bands like "Noah's Arks," somewhat striated transversely. On some afternoons they had a faint smoke-like tail on the eastern side, resembling an aurora, though horizontally placed; the shapes approached rectangles, one being a perfect right-angled triangle; the motion was slow, the height considerable, the appearances altogether unprecedented.

The Derby Express⁴ characterizes the appearance seen at

¹ *Iridescent Clouds*; Piazz-Smyth: *Nature*, 31: 148. New York and London, 1885.

² *Iridescent Clouds*; Clark: *Nature*, 31: 148. New York and London, 1885.

³ Backhouse: *Iridescent Clouds*. *Nature*, 31: 192-193.

⁴ Same, p. 193.

sunrise on the 11th, as a dense pallium of cirrus cloud, appearing like a spindle-shaped, elongated opening some 30° high, exposing an intensely emerald sky, which at about eight o'clock was replaced by a "mass of brightness comprising all the prismatic colors" arranged in transverse bands, shading gradually into each other, whose shape resembled a "huge many-colored eye" set in a uniformly dark cirro-stratus. A patch of brightness upon a silvery gray background remained for some time after sunrise.

Ianson of Darlington, who saw three distinct and two faint bands, on the 13th at 4 P. M., regarded the colors as due to interference of light, or residual and not prismatic, the lower being light purplish pink shading into green, and those adjacent the bright brick red of Newton's rings, the remainder being pink and green.

Watts, on the Yorkshire Wolds, on the 6th and 13th between three and four P. M., saw only the edges of the rifts tinged with rose color. Geelmuyden, of the University observatory, Christiana, where the phenomenon was also observable, points out five previous similar occurrences between 1871-1882, and notes that the most striking effects have appeared when mild dry weather has set in after frost. A year later, occurred another exhibition of iridescent or nacreous clouds, wonderful in its changing beauty.

Hollis² regarded these peculiar brilliant and attractive sunset glows as a new phenomenon.

In Greenhow's³ observation of the magnificent display of iridescent clouds, the prismatic colors were strongly marked, the pearly brilliance of the delicate cirri, intensely striking, all in a setting of orange afterglow. Backhouse⁴ was struck by the magnificence of the three or four colored spectra, chiefly pink and green, projected upon a purple sky. Unlike the phenomena of the previous year this exhibited no straight contour lines and there was little blue in the coloring. According to Piazzi-Smyth⁵ the yellow, orange and vermilion reds were lacking, while blue, violet and rose-pink dominated. The lower portion of the sunset sky presented a gorgeous panorama of the yellow clouds with red variants. In seven letters, reprinted from the Scotsman, one writer expatiates on the large number of minute rainbows, "no larger than the sun appears," with red, orange, yellow and green distinctly dis-

¹ Geelmuyden: Iridescent Clouds. *Nature*, 31: 264. London and New York, 1885.

² Hollis: Sunset glows. *Nature*, 33: 198-199. London, 1885-86.

³ Greenhow: Iridescent Clouds. *Nature*, 33: 198-199.

⁴ Backhouse: Iridescent Clouds. *Nature*, 33: 198-219.

⁵ Piazzi-Smyth: Iridescent Clouds. *Nature*, 33: 198-219.

cernible ; one on a band of high light cirro-stratus above a clear belt resting upon a heavy bank of storm cloud, which was fringed on the sunside by most vivid and delicate prismatic bands, blue outside, red inside, the latter spreading into a "splendid band of violet;" one, on the inexpressible beauty baffling description of these noble effects seen in the morning and evening ; one, on how the water glow deepened as it ascended to a dark crimson or purple, and how the cirro-stratus, bright and luminous above, was encircled with rainbows—the most beautiful cloud display which he, an observer of the heavens for thirty years, had ever witnessed.

¹ Davison delineates in detail the progress of this enchanted sunset, how the forms and colors changed, though the group remained apparently stationary, and Stevenson,² the sunrise, whose banded colors excelled at times the brilliancy of the rainbow.

The effect noticed a couple of days later—crimson-flushed bands of light cirri, glorious and iridescent upon a background of blue, the rapid changes of the varied colors—Davison found it impossible to describe; it surpassed all previous glories seen by him in the sky. The following traces the stages of the changes of one cloud for a few minutes only.³ 4.5 P. M., right end hazy; then follows green, yellow, orange, and red ; blue, green, yellow and red ; red tinged with purple ; bright purple; and red and green.

4.11, both ends hazy; pink in the haze, and blue; yellow, green, and orange; green; red, blue, red; ending in green in the haze.

4.18, longer and narrower ; green; green, yellow and orange; green ; red ; green ; red.

4.21, the orange band (3) invading the green band (2).

4.22, the red band (5) growing brighter.

4.25, red and orange bands (3) and (5) spreading and becoming like the predominant colors.

4.27, general hue reddish orange, the orange and red bands much brighter than the others ; light haze ; hazy; red ; green ; bright red ; greenish ; orange red.

These changes continued till 4.36, when a rising cloud obscured them.

⁴M. C. Carinsel states that these appearances are common in Switzerland during the winter season and finds the cause in "diffraction of light by fine particles of ice."

¹Davison: *Nature*, 33: 202. London, 1895.

²Stevenson: *Nature*, 33: 220.

³The order is always from left to right.

⁴On these effects consult also:

Nature, 33: 219-220, 292, and *Nature*, 35: 533, 581.

Another effect evoking great interest, resembling the iridescent only in height and brilliancy, are the luminous night-clouds¹ which are usually noticed in the northern quadrants, but are also seen in the southern as startling displays of white "aftersheens" or silver blue cirrus cloudlets. They are apparently seasonal.

Piazz-Smyth, on issuing from the observatory at 12 o'clock, one night in July, when there is usually a colored twilight above the sun's locus, was "surprised and even startled" at the sight observed. It suggested a great city on the plains of Fife in a state of fierce and extensive conflagration. The awful burning redness at the horizon was topped with lemon-yellow, and this by even brighter silver-blue cloudlets, whose innocent color and gentle beauty "exorcised the horrid idea of malignant flames devouring the works of man." He considered this some phase of auroral display.

To behold cloud pictures, says a writer, one should be "drowsy, dreamy, full of fancies," and through a sort of imaginative intoxication "ready to mould shapes corresponding to the ideal types in the mind." Thus one may behold in the sunset, "green islands in golden seas, with promontories and headlands jutting out into bays of amethyst, encircled or overhung by mountains, towering in rainbow tints to the empyrean," and every moment brings a new delight in the glorious spectacle.

He describes a likeness of the celebrated Olympus, seen once, so stupendous a picture and so "excelling in vastness, grace, beauty, and rapturous sublimity," any work of art that his whole being was thrilled with a sort of ecstasy. Magnificent cities, arches, domes, spires, columns, temples, theaters, mountains, uplands, rocky projections, defiles, eminences with trees, hanging crags, were all luminous, kindled with flaming splendor. Upon the huge vaulted roof in the Mediterranean sky, a traveller, on ship-board, beheld a fleet in full sail with hulls upward and masts and rigging downward. He knew that it was the armament of England pursuing the fleet of the French and Spaniards which, at that time, was cruising near Barcelona.⁴ The beauty of such a scene consists in the exact reproduction of shape and size, the faithful reflection of colors and the great multiplication of objects. Armies may also be thus reflected from the clouds. Hence the superstitious age of tradition mistook these for spectral hosts, flourishing their

¹*Cf.*, Nature, 34: 192, 239, 264, 311. Nature, 40: 151, 544,

²*Cf.*, Nature, 36: 245. Nature, 46: 589.

³*Cf.*, 39: 537.

⁴Pictures in the Clouds: Chambers Journal, XLV, 820. London, 1968.

weapons while charging each other in the sky, These rumors becoming famous, were transferred to remote countries where skeptics could not investigate them. The Greeks told of such battles being seen by the dwellers on the coasts of Italy and Sicily.

The most sublime cloud scenes are the momentary glimpses, at night, as the lightning pierces and illuminates the thunder clouds. One such spectacle made the peaks, crags, and raging torrents of the Alps seem tame in comparison. The grandest aspect was "a stupendous tunnel, miles in height, and of immeasurable extent, through which the eye penetrated into the very womb of chaos." The sides were "ribbed with columns," the vault "glowed and coruscated with living light," and in the midst of all, thunder pealed and roared in perfect frenzy. The same writer's eloquent description of the Fata Morgana and other glorious cloud pictures repay reading.

Hutchinson¹ records a glorious sight, witnessed twice from mountain crests in India, a vast expanse of purest flocculated wool beneath and pure cerulean above. Most interesting and amusing was another observation of three thunder storms about a mile apart; the storm-clouds increasingly appeared to advance with a business-like, determined resolve to triumph over their enemies in this warfare. The constantly increasing fire of the artillery was the most remarkable fact. He has often stood at the seashore or on deck entranced, and wondering at the mystery and glory of the heaped-up, grotesque, everchanging, snowy cumuli at the horizon, which sometimes spread into illimitable vistas;—approaches, as it were, to the "plains of Heaven." "Can any understand the spreadings of the clouds?" asked Job of old. Can any one witness uninterested and unmoved the delicate, feathery forms of the cirrus, momentarily assuming new splendors without effort, the dark, lowering nimbus approaching in solemn grandeur, fitful, lightning flashes rending its dark recesses; the terrible warfare of battling clouds in the cyclone, manifesting the might of Him "who maketh the clouds His chariot," and "walketh upon the wings of the wind," and the utter impotency of man; the glorious effulgence of tints thrown by the rising or setting sun upon the surrounding clouds?

No vision more beautiful or life-like can be imagined than the city of Madras, on July 18, 1888, as seen for an hour or two, placed upon a flat plain surrounded by a magnificent girdle of cloud mountains, some black and frowning, some snow-clad, as grand and lofty as those boasted of by Scotland or

¹ Hutchinson: *Height of Clouds*. Knowledge, X: (N. S. II) 268-269. London, 1887.

Switzerland. To approach these was like entering a pass, and again crossing the Bernese Oberland, with alpenstock in hand.

An anonymous writer,¹ finds his pleasure from clouds, which have done service to the poet as objects of grandeur and beauty and to the moralist as emblems of vanity and perishableness, to be due more to their alternations of color than the various movements. The hues are produced from ten colors; the green are rarest, the blue most numerous, followed by red and yellow.

He beheld one evening in the western sky, "a marvellous conflagration of scarlet clouds, delicate lines of cloud of wondrous effulgence, at once bright, soft, ethereal, remote, melancholy, pure, so suggestive, so elevating, so accusing by their extreme beauty and purity, as to lead the mind away to regions of ineffable tranquility and light unsullied; so that on its return to the gloomy earth it can but mourn the ills and sorrows of men."

Characteristic of the sky is its diversity and grandeur of scenery and the daily changes in the color, shape, height, and aggregations of clouds.

The stages of the sunset are, first, an amber warmth, slowly deepening to orange, then imperceptibly changing to scarlet, then, that hue of crimson, above all others, pure, soft and pensive as the luster floods the west and completes the magical chord of beauty of inexpressible, clear, shadowless color.

The writer bemoans the apathy with which people generally regard the flushed heavens, the burning filaments of clouds, their wild contortions: to call attention to their wondrous beauty elicits either surprise or disdain. He expresses the desire of following the sun around the world to obtain one continuous sunset.

Once or twice in a lifetime, the sky may be flecked with "minute cloudlets thick as falling flakes of snow," from horizon to zenith. If the light catches this at right angles, a scenic display results outdoing any earthly pageantry. At these blazing wings of seraphim one gazes entranced with awe and reverence, mute with wonder and delight.

He describes in eloquent phrase the various cloud formations under varying conditions, and feels, on beholding the glorious clouds of dawn, his heart partaking of the "lightness of the air." Ideas of cold, discomfort, loneliness and solitude are instinctively associated with the wide uniformity of water and cloud on a rainy day at sea. Earth presents few images of such desolation and cheerlessness.

¹ The Highway of Cloud. Littell's Living Age (from the Dublin U. Mag.,) CVIII: 305, 314.

"Oh, for the wings of an albatross, to sweep the trackless wastes of air and gaze unlimited over the wide floor of ocean below, and cleave the clouds on a flight of a hundred leagues!"

The desire to soar to the "spirit-land of ineffable tranquillity," on beholding the distant cloud islands in the azure, "fair of form and full of repose," "comes like an instinct."

Another writer comments that of the two landscapes always visible to man, earth and sky, the upper and finer seems reserved for birds and poets or for an occasional forlorn face that turns from earth to sky for fairer hope or justice. Occasionally a person is found watching the night skies, but who gazes at the clouds by day?¹ This indifference should be overcome. By using an appropriate camera obscura, a lens in a box with dark curtains, or the Claude Lorraine glass the vast landscape is brought to a convenient focus, "mellowed and softened."² A glass clouded with a colorless smoke-tint will answer. This protects the eye from the intense light of the noonday, and will open an avenue to a new world of glorious celestial landscape.

One should become a deliberate cloud spectator, as at a theater. "There are wonderful mountains among them, with sheer precipices, and shadowy caves, and Alpine crags; dark towers, such as Childe Roland blew his blast before; minarets and domes, with mysterious arabesque of oriental tracery; serene ocean shores, where the gray sand glimmers through a shoaling blue, and the round-breasted galleons sail smoothly over."

Gazing continuously and dazzled into the upper sky for some time, "the color, or the very depth and boundlessness of it by and by seem to inundate one's brain." "Delicate brain-fancies float and feed tranquilly in this inflooding tide of the blue heavens." "Nor is all this without its possibility of solid scientific usefulness. It suggests profound problems of a scientific character."

Sometimes the clouds make faces at each other, merry or solemn according to the mood. Both on wall paper and in cloud-tapestry the profiles generally look from right to left. I perpetually see faces in this wise. Is it because one sketches profile with the right hand, with the projection accordingly to the left?

The clouds are nearly always calm, peaceful and quiet in comparison with their restless analogues the ocean waves,

¹A Rhapsody of the Clouds. The Atlantic Monthly, LVII, 254. Boston, 1886.

²The Poet Gray is said to have always carried a common lens on his daily walks that he might always obtain an image of the landscape.

though they are never still. A fine description of the scenery of the thunder storm is most realistic. "Suddenly a flash of lightning may reverse the light and shade, the gloomy cloud walls gleam out intensely luminous, while the towering shaft of intervening sky is dark by contrast and so starts forward tangibly from the distance, like a momentary incarnation of some black genie of the Arabian Nights."

We may gaze upward at the cloudless sky-dome elevated to its serenest height so long "that we drowse a little" or seem to lose ourselves in space, a second sleep, "the floating out of consciousness into the depths of outer existence." It is, thus, not wonderful that one's "reason gives way to fleeting fancies; our reveries run into them."

Tennant¹ believes that beautiful color fringes, which he hardly suspected were a novelty, because common in his observations, are always present in high cumulo-strati or strati, or along the edges of dark clouds when the sun is shining behind them all, but that they are obscured by the brightness of the cloud, or the glare of the lower air.

To destroy the coruscating glare, he advises suitable dark glass or the dilution of the tints with white light, which at the same time strengthens the tints.

To the immortal Ruskin is due the awakened cloud consciousness of the last third of the century. He strove to arouse men from their artistic lethargy by pointing out the plethora of æsthetic wonders pervading nature's every work. He made cloud gazing a respectable avocation, not for the few but the many.

To him, nature has nowhere else done so much for the manifest purpose of pleasing man, of directly talking to him and instructing him, as in the sky. Yet to this, of all nature's wonders, we attend least. Most people's ideas of it are devoid of pictures rather than the reality. Man detracts from the noblest scenes of earth by his constant presence; but the sky is for all, fitted to perpetually comfort and exalt the heart, and strengthen and purify it from dross. "Sometimes gentle, sometimes capricious, sometimes awful, never the same for two moments together; almost human in its passions, almost spiritual in its tenderness, almost divine in its infinity, its appeal to what is immortal in us is as distinct, as its ministry of chastisement or of blessing to what is mortal is essential."²

Turn to the chattering crowd. One says the sky has been wet; another, windy; another, warm. But who can describe

¹Tennant: *Colors in Clouds*. *Nature*, 33: 343, 514. London, 1885-86.

²Backhouse: *Colors in Clouds*. *Nature*, 33: 486. London, 1885-86.

³Ruskin: *Modern Painters*, 201-203, Vol. I. London, 1867.

the vast sunlit chains of mountain precipices seen above the horizon to-day, or any other day. All is gone unseen, unregretted. Yet "it is in quiet and subdued passages of unobtrusive majesty, the deep, and the calm, and the perpetual; that which must be sought ere it is seen, and loved ere it is understood; . . . things which are never wanting, and never repeated; which are to be found always, yet each found but once; it is through these that the lesson of devotion is chiefly taught, and the blessing of beauty given."

The most majestic cloud, the only one usually noticed by ordinary observers, the cumulus, is mostly windless, proceeding with a "solemn, continuous, inexplicable" movement as if controlled by some will, it is in its grotesque and endless divisions and brilliancy, surpassing all color, as "transitory as a dream."

The rain clouds, the "Angel of the Sea," the "spreadings of the clouds," come in the trial or hurricane-storm, "leaning forward, one thrusting the other aside or on top; impatient, ponderous, impendent, like globes of rock tossed by Titans—"Ossa on Pelion—but hurled forward, all in one wave of cloud-lava. Fierce behind them rage . . . the Rain-Furies, shrieking as they fly;—scourging, as with whips of scorpions"¹ . . . gorgeous, who are not dead but ever undying.

The chief masters of imagination confessedly derived their noblest thoughts from the flying clouds and not from the beautiful flowers or majestic mountains. Yet the Pegasus of England is swifter, though not often so terrible as the Hellenic. Here he races, darts and dips from crag to dell, not like the gray and withered Graiae, but like a greyhound "following the Corinthian stag with golden antlers."

As observed by Aristophanes these lower rain clouds are distinctive in always moving horizontally in an oblique position with the base sometimes advanced.² The following specific characters are ascribed to the upper clouds, symmetry, sharpness of edge, multitude, purity of color, and variety. Owing to the quiescence and multitude of the high clouds they may be regarded as "cloud flocks," "flocks of Admetus under Apollo's keeping."³ Ruskin calculates, on the basis of the number per row, that he saw 50,000 separate clouds in the field of sight, during one morning. They resembled pine branches with snow on them rather than sheep.

No sensation of number,⁴ which is most felt when symmetri-

¹Ruskin: *Modern Painters*, 142-145, Vol. V. London, 1860.

²Ruskin: Vol. I, 145. (Ed. 1867.)

³Ruskin: Vol. I, 113. (Ed. 1867.)

⁴Ruskin: *Modern Painters*, Vol. I, 216, 221.

cal, can be so impressive as the infinitely numerous bars, lines or undulatory masses of clouds. Not one of their many millions is without its separate beauty, or uniqueness, although types of one symmetrical system.

The variety of color is marvellous; the sky, especially at the zenith, does not retain a uniform color for two inches; one cloud presents a cold blue fringed with milky white; another above it, a purple fringed with red; another, nearer the sun, an orange bottom with an edge of gold, all merging with the sky.

The color depends upon the opacity by which they reflect light strongly, and their sponge like capacity to absorb light. Aristotle and Leonardo noted that vapors looked russet or red "when a warm light was seen through them and blue when viewed in the shade. But flakes of finest scarlet are often seen on deep purple grounds."

Near clouds present only subdued or uncertain colors; distant ones, catching and reflecting the solar rays from beneath, golden, purple, scarlet, and gradations from intense fiery white.

What value ought this attribute of clouds to possess in the human mind? what should be the psychic reactions to clouds? are questions propounded but not solved, by Ruskin.¹

A writer in the *Spectator* pays a high tribute to Ruskin for teaching men to look at not merely glance at these pictures which "symbolize in their silent beauty all that is most dramatic in the changes of human life." No battlefield ever abounded in more unexpected turns than this of cloud-land. Now the storm is in preparation; the squadrons are flying in hot chase; the contingents have become a compact army; the battle is on; anon the hordes are suddenly sundered. Presently, the flying squadrons again combine, and thus the story continues.

The clouds mirror, in their varied influence, far better than words, every mood, monotonous gloom, gentle melancholy, joyous brightness; the ties of human companionship and sympathy. They follow us, if we will but raise our eyes, into dreary and squalid places, converting darksome hovels into palaces of light. Another writer laments with Ruskin that the only purpose of the sky interesting man is to bring up a large, black rain cloud, every third day or thereabouts, to water the earth. In popular estimation, clouds are only bags of water for appeasing the thirst of Mother Earth.^{2 3}

¹ Ruskin: Vol. V, 123-125. (Ed. 1867.)

² Clouds: The *Spectator*, LXIII, 331. London, 1889.

³ Clouds: Temple Bar, II, 230. London, 1861.

Yet here is a stage with scene upon scene, picture upon picture, glory upon glory. Here may be found the highest manifestation of the beautiful and the sublime. Even apart from clouds, the sky is peculiarly adapted to excite the deepest emotions. The rain clouds are admirably fitted to excite the imagination of the lover of nature. Opaque and heavy, or transparent, wet, formless, with the sun shining and blue piercing through their interstices, they are a highway of the imagination with fresh delights at every turn.

Bigelow¹ regards the clouds, the moving tableau of living pictures, the most beautiful objects of the sky. No work of art can elevate the feelings to so lofty adoration of the marvels of nature as the colored glories of sunset and sunrise. The delicacy of tint and hue in the spectrum focus are second only to the dancing auroral beams, or the "star clusters of the nebulae in the milky way near the Southern Cross." An illuminated cloudlet may contain a million intersecting rainbows.

Wise² laments modern apathy for the beauty of cloud-land. The ancients did not fail to notice it. The Scandinavians erected their creed, gods and goddesses upon it; the storm-cloud inspired the story of the Odyssey and solved the mystery of Œdipus.

The Fathers were profoundly impressed by their beauty, moral motifs and religious incitements. St. Chrysostom spoke of the second meadow, that in the sky, with starry flowers, "the rose below, the rainbow above," more beautiful than palatial roofs; and reproaches men for gazing downward like the swine of earth instead of at the beauteous roof of the Maker, which the poor may enjoy even more than the rich. Yet lack of appreciation of this source of blessing on the part of the rich and the poor,—the latter being forced by the stress of circumstances to regard the matter from an economic standpoint,—is all too potent.

The greatest pleasure in watching the clouds, the feeling of change answering to the changes of the spirit, cannot be reproduced on canvas. The heavenly canvas is supremely democratic; it belongs to him who enjoys it; it is painted afresh daily. The influence of the clouds on the multitudes is illustrated by quoting a number of weather-saws or rhymes, on which Shakespeare's finest descriptions are based.

The English peasant, however, associates the beautiful with the useful. He hypostatizes the clouds, names them after natural objects: the "lamb storms" and "pewit storms," signifying the season of weaning the lambs; the "bullfinch skies,"

¹ Bigelow: *The Formation and Motions of Clouds*, 495. *The Popular Science Monthly*, LX. New York, 1901-02.

² Wise: *The Clouds and the Poor*. *Fortnightly Rev.*, I, 570-601. London, 1865.

denoting the "warm vermilion tints of sunset clouds;" the "rock clouds," or the cumulo-strati, the "snow and wool packs" or the cumuli, etc. The symbolism is true—as true as Tennyson's "daffodil sky."

To the shepherds of the plains, of the Iliad facing the sea from high hill-tops, the clouds became a constant source of joy or fear. They joyfully hailed in the summer and spring: the "water-dogs," the "gossamers" heralding fair weather, fearing the "sun-galls," Shakespeare's "water-galls," or the glorious but wrathful broken rainbow patches; "the messengers," "water-streamers" and amber "wheel-clouds," or the "burrs."

To the fisherman's mind the rain is "dirt" from a "dirty sky," the "water-gulls" have changed to ugly "sea-devils," evil portents of tempest, the flying storm clouds to "the flying devil and his imps;" the "dyer's neif" (fist) represents the small purple cloud,—the Yorkshire fisherman seeing the same resemblance as Elijah's servant on Mt. Carmel, "the dromedary cloud," "the hunchback cloud," Shakespeare's "camel cloud," a white, compressed, humped cumulus, foretelling heat in the southern, and cold in the northern hemisphere.

The cirrus is a "cat's tail," the cumulus, a "ball of cotton," the "weasel," "hog," or "wind-hog," the "whale," "bridge" or "feather-cloud," etc.; and "crow buds," "cherry flowers," "tree-clouds," "pigeons," "flying fish," "streamers," "plumes," signifying that in fair weather the cloud-land is the fisherman's meadow, his garden, his fairy-land, peopled by a mighty host.

In Sec. 12, Act IV, of *Antony and Cleopatra*, Shakespeare takes full recourse to the language of the naïve naturalism or personification of the peasant and the sailor, "who more than any one else recognize the terror and beauty of cloud scenery."

Weather prognostications or forecasts are often based on cloud situations.

The following are typical indications :¹

A red sunset, fair weather; a red and lowering morning sky, foul (Matt. 16: 2-3); or, in Bacon's words: "red clouds at sunrise, foretell wind; at sunset, a fine day for the morrow," and, "clouds before sunset of an amber or a gold color, and with gilt fringes, after the sun has sunk lower, foretell fine weather;" narrow, horizontal, western past-sunset clouds, rain before 36 hours; brassy-colored western sunset clouds, wind; cold, dark blue, gray and reddish yellow masses, cold and snow;

¹ For a very complete collection, consult *Inwards: Weather-Lore*, 84-100, London, 1893, from which most of these signs are conned.

² *Cloud Colors*, Nature, 16:43. London, 1877.

Archibald: *Clouds and Cloudscapes*. Eng. Ill. Mag., XI, 571-575. London, 1894.

light, bright gray with bright edges, hard frost ; sharply defined black clouds, rain ; lowering and massing together of detached clouds, impending wet weather ; after black clouds, clear weather ; dark western sunrise clouds, rain on the same day ; clay-colored and muddy ones, rain and wind (Bacon).

"If clouds be bright,
'T will clear to-night;
If clouds be dark,
'T will rain,—do you hark?"

Greenish tinted composite southeast clouds remaining several hours, indicate a succession of gales and many rains (Prince); feathery clouds like palm branches or the fleur de lis, immediate or coming showers (Bacon); thick equidistant patches of feathery cirri, definite streaks of alternate sky and cloud, and regular repetitions of the same form, storm ; little detached masses of wool, or knotted feather-like cirri of unusual figure, moving rapidly, great disturbances ; cirri with bottom level and streaks pointing upward, rain, but if downward, wind and dry weather (Howard); when unusually low and dense, a storm from the opposite quarter, the bar or ribbed cirrus being as good a danger signal as the barometer (Russel); "If clouds look as if scratched by a hen, get ready to reef your topsails then." The "salmon" or "Noah's Ark," stretching east and west foretells a coming storm, but if north and south, fine weather, except in Eifel of the Lower Rhine, where "north and south are the sign of drought ; east and west, the sign of blast." The mackerel sky is a sign of fair weather for the day, rain on the next or following.

"Mackerel sky and mare's tails
Make lofty ships carry low sails."

"Mackerel sky, mackerel sky,
Never long wet and never long dry."

"Mackerel scales, furl your sails."

Cirro-cumuli in winter indicate warm and wet weather; a morning sky dappled with light cirro-cumuli, a fine and warm day (Jenyns); clouds rising out of the west, showers (Luke 12:54); clouds approaching and diverging from a point in the horizon, a wind from that or the opposite direction (Best); clouds moving across the wind, a storm in the air; dark ones driving fast under higher ones in a cloudy sky, violent gusts of wind ; an increasing white cloudlet of the size of a hand to windward a storm sure (I Kings 18: 44, 45); a fast growing cloudlet in violent motion in the tropics, the "bull's eye," terrible hurricanes; dark cloudlets (broken nimbi) floating against a bit of blue sky, rain before sunset (Prince); cirri merging into cirri-strati and increasing and lowering at even-

ing, wet weather ; visible increase of clouds and decrease of clear sky, rain; a clear sky becoming spotted everywhere, an early rain.

In the writings of the Bible Ezekiel's vision projects in bold relief. He saw the heavens open; a whirlwind came out of the north, a great bright-edged cloud, containing a fire with an amber color in its midst, presented four living creatures in the likeness of a man with four faces and four wings each, straight feet, having soles like those of a calf, human hands under the wings on the four sides. The wings were joined two and two and they went forward without turning. The faces on the right side were those of a man and lion, on the left, of an ox. They sparkled like colors of burning brass, appearing like burning coals of fire and lamps; lightning proceeded from the fire, like whose flashes they "ran and returned." They appeared and acted as a wheel within a wheel. The wheels moved with them for these contained the spirit of the living creatures. The noise of the wings sounded like that of great waters or a host, like the voice of the Almighty. A voice was heard above, when they stood and dropped their wings. Their wings were high and dreadful and full of eyes. The firmament extended over their heads like the color of a terrible crystal, and contained a throne like a sapphire stone with a man upon it, surrounded above and below the loins by a fire, bright as the bow in the rain clouds, the likeness of the glory of the Lord. He fell upon his face overcome with terror and the awful majesty of the vision.

John, in one of his visions, saw an angel clothed in cloud descending from Heaven. "And I saw another mighty angel come down from Heaven, clothed with a cloud, and a rainbow was on his head, and his face was as it were the sun, and his feet pillars of fire." (Rev. 11.)

Daniel, in a night vision, saw one like the son of man "coming with the clouds of heaven to the ancient of days." (Dan. 7: 13.)

The significant role played by the clouds in the primitive religious consciousness is attested by the many biblical references to them and the important mission assigned to them.

They are symbolic or emblematic of earthly vanity and transitoriness; man's welfare and prosperity shall vanish just as they do (Job 20: 6); whatever goes down to the grave is "consumed and vanisheth away" as a cloud (Job 7: 9);—pur-gation from sin; transgressions may be as easily blotted out as a thick cloud (Isa. 44: 22);—the marvellous or inexplicable or wonderful; who can understand their spreadings or balancings. (Job 36:29);—the faithfulness, beneficence, power, glory and pervasiveness of the truth of the Almighty; His faithful-

ness and truth extend even to the clouds (Psa. 36: 5, 57: 10; 108: 4).

His strength is manifest in them. The whirlwind and the clouds are His chariot and he veils His glory behind the clouds. "He holdeth back the face of His throne and spreadeth His cloud upon it" (Job 26:9). His way is through "the whirlwind and in the storm" and the clouds become "the dust of His feet."

By means of a cloud He guided His people through their wanderings in the desert. "And the Lord went before them by day in a pillar of a cloud, to lead them the way" (Ex. 13:21).

The clouds served as a reminder of the promises of the Infinite. "I do set my bow in the cloud, and it shall be for a token of a covenant between me and the earth," (Gen. 9:13.)

It was in the clouds that the Almighty made His appearances. "And the Lord said unto Moses, Lo, I come unto thee in a thick cloud, that the people may hear when I speak to thee and believe thee forever." (Ex. 19:9).

The cloud always covered the tent of testimony by day and the appearance of fire by night. The tabernacle or tent was so filled by His glory, through the cloud abiding upon it that Moses was unable to enter (Ex. 40:34).

While Peter was speaking to Jesus at the transfiguration a cloud overshadowed them, and in the ascension He was received out of the sight of the apostles in a cloud (Acts 1:9).

The Lord is to appear upon the mercy seat in a cloud (Lev. 16: 2); the son of man in the clouds of heaven with great power and glory is to judge the world (Matt. 24: 30; Mark 13: 26; Luke 21: 27; Rev. 1: 7); Jesus declared to the high priest that He shall be seen coming thus (Matt. 26: 64; Mark 14:62); at the resurrection those alive and remaining shall be caught up in the clouds, to meet Him in the air (I Thes. 4: 17).¹

In the poem "Clouds," by Edgar Fawcett, clouds are brief, lingering moods of heaven's deep heart, "tireless pilgrims," "towering Alpine peaks," "pale plateaus," "pearly gossamers" filming the sky, "scales on fabulous dolphins' backs," "ghostly silhouettes," and "spirits with garments fluttering white" noiselessly walking "the great, awful emptiness of the night."

Tabb, in a poem, compares the soul with the cloud, in itself

¹The following may be consulted: Shelley's poem on "The Cloud" which is one of the most successful attempts, whether in ancient or modern poetry, to portray what it sets out to describe.

Proctor: *Forms of Clouds*. (Knowledge II, 178), describes an optical cloud illusion.

Harper's Magazine, 18, New York, LIV, 1877.

devoid of beauty and heaven's light, a foul vapor, a veil of nothingness.

SECTION 3. IN MYTHOLOGY (PRIMITIVE ADULTHOOD).

The word mythology has come to embrace the legends, traditions, sayings and fairy tales of a people.² There is no rigid demarcation between these. They all constitute chapters in primitive human reactions to sensations of sight and sound, to things looked at and listened to, things solar, lunar, sidereal, the clouds, wind, rain, dew, fire, mist, storm, thunder, lightning, forests, mountains, the world above and the world below; in fact, to any natural phenomenon capable of exciting the emotions of wonder, awe, fear, reverence, or, in a word, the quest for the secret mysterious core of things, the absolute spirit. Cox³ defines mythology as "simply a collection of the sayings by which men, once upon a time, described whatever they saw and heard in the countries where they lived." He tells us that we may look upon it as "something exceedingly beautiful, on which much dust has settled disfiguring some parts and hiding others." But we can now sweep aside the thicker layers of this and again behold the true and beautiful thoughts which underlie them. The disagreeable features are but perversions, distorted renderings of the original meaning of words which expressed originally only simple thoughts of childlike men on the wonders of the natural world. In us, as in them, joy and sorrow, fear and hope, wonder and reverence are aroused by the manifold phenomena of earth, sea and sky. The road for the study of comparative mythology was first cleared by Max Müller⁴ closely followed by Kuhn⁵ who tells us that "the foundation of mythology is to be looked for in the domain of language." Myth, in its original meaning, is merely the Greek synonym for a word; later it came to be applied only to things relating to the gods, the narratives of their acts, descriptions of their abodes and attributes. These were not intentional fictions, though founded on visions, dreams and vague mental states. Ritual was derived from the myth, but only when this had lost its original meaning. Many peoples with a vast storehouse of myths have no ritual at all.

Mythology originates in the psychic, not the external world. Myths are not "figurative explanations of natural phenomena" nor "vague memories of ancestors and departed he-

Harper's Magazine, 199, New York, LV, 1877.

²Cloud. The Childhood of Religions, pp. 96-98. New York, 1892.

³Cox: Manual of Mythology, p. 14.

⁴Max Müller, 1856: Chips from a German Workshop.

⁵Kuhn: Die Herabkunft des Feuers und des Göttertrunks, 1859.

⁶Brinton: Religions of Primitive Peoples. New York, 1897.

roes." They are neither "philosophic speculations" nor "poetic fancies" but of distinctly religious origin; the insight, though it be but a dim one, into the divine. Their *form* and *expression* are derived from language. Primitive languages materialized thought, for their terms are predominantly concrete and objective. Their generical distinctions are more deeply ingrained and carry with them an idea of reality not found in our purely formal distinctions; an object spoken of as masculine or feminine became positively male or female. Thus the gods were classed as male or female.

Many myths sprang directly from words through paronymy, *i. e.*, similarity in the sound of words (Müller, Kuhn).

In the course of development, myths of one deity were often transferred to another, divine attributes to a human type.

¹ Mythology has its roots in the primitive religious feeling; religion does not develop from mythology.

The meaning of the Greek myths was found by comparing their words with their earliest records, the Vedas, the older Sanscrit having preserved the first forms of the words.

To the Aryans, these stories were not pretty conceits; they believed that all moving things, the sun, the moon, "the fleet-footed dawn" were all endowed with life. And this same belief² appears in the nature myths of the more primitive peoples of to-day who attribute personality to inanimate objects, and in the notions³ of young children regarding their toys.

The bulk of Aryan myths arose from the ideas evoked by the ever varying scenery of the heavens, the myriad changes of the clouds, the brilliant hues of sunset, the tender light of dawn and the shadowy forms of twilight, the dawn being the most prolific source. Some, however, have their origin in human feelings and experiences; and fabulous events have become history, while some simple facts of human experience have been transformed into myths.

To the Aryans, cattle were as the camel to the Arab, the buffalo to the Red Indian; the standard of value, the symbol of fruitfulness, a treasure to be guarded. Their enemy was the cattle thief, their friend the cattle saver. Thus to them, heaven was the great plain over which roamed bulls and cows, symbolized in the fleecy clouds and their strong protector, the sun. The dark clouds were the retreats of the wicked monster stealing the cows and imprisoning them in the "caverns of the piled up mountains," sucking up all the water and shut-

¹ Religions of Primitive Peoples. Brinton.

² Maj. J. W. Powell in introduction to Cushing's Zuni Folk Tales and Stevenson in Report of Bureau of Ethnology, 1889-90, p. 68.

³ *Ped Sem.*, Vol. IV, 129. A Study of Dolls: G. Stanley Hall and A. Caswell Ellis.

ting off light and heat from men. Only by the protector killing this huge black thief (Veda, Vrita, serpent, wolf, black one), could the cows be restored to their pasture. Thus with Indra (Veda), with the storm gods accompanying "comes bel-
lowing, with fire (the sun's rays or lightning) flashing forth and his horns tossing in anger." The monster is slain, the rocks rent asunder and the light and rain released.¹

The danger of the early stages of human thought lay not in its poverty but in its superabundance of language. The clouds could be "described by a thousand names," each representing one of these countless aspects. Each characteristic could be found, however, in more than one object. The clouds bestowed nourishment upon the parched earth; the cows to hungry man;² the same word functioned as a common carrier. The cow was the moving animal, the horse from its speed, was named asvan, and, from its color, harit; and all these names were applied, first, to attributes of the sun and later the sun himself. From this process arose a wealth of metaphor which has resulted in a multiplicity of myths bearing within themselves the mark of their origin.

Cloud myths include not only the cattle of the sun, Nephele, Phryxus, Helle and Pegasus; in Aryan lore the sky represented a blue sea or lake with clouds as ships, of which Charon's boat was one, sailing over it, or swans gliding across its azure depths. Across its surface also glided the "gilded shallop of the sun."

The Aryan's word for cloud and mountain was the same. The cloud and mountain myths are thus often identical. Niobe, a personification of the clouds, has children, the mists, rivalling Diana and Apollo in beauty, and they are ruthlessly slain by the sharp arrows of the jealous deities. Niobe's grief dissolves her into a rain of tears, congealed into ice on the mountain crest. She is also considered a personification of winter, her tears being the thaw due to the sunbeams (Apollo's arrows). The beautiful and wonderful forms of the winter snow-cloud also find embodiment in Niobe weeping herself into a stone on the summit of Mt. Sipylus. The Sphinx, the winged hound of Æschylus, is the black cloud which withholds the rain, the ravens of Odin or Wuotan are the cloud which blast and the cloud which restores the parched earth, "the one causing famine and sickness the other restoring the earth to life."

Many of the Hellenic mythical beings derive their characteristics from phrases relating to the colors and forms of the clouds though many of the names are neither Greek nor Aryan. The

¹ Cloud: *Childhood of Religion*, pp. 197-109.

For discussion of the different schools of myth interpretation see Saussure: *Manual of the Science of Religion*, p. 206.

² Cox: *Mythology of Aryan Nations*.

Graiae and gorgons may be only the gloaming and the night. The ugly face of Medusa is the ghastly vapors of the night.

The first exploit of Hermes, born in the early morning in a cave of Kyllenian hill, after making his lyre was to go at sunset to the Pierian hills and steal the cattle of Phœbus which, however, he was forced to return. Hermes is derived from the same root as Saramâ in the old Hindu or Vedic tales, and the meaning of the myth is revealed as the dawn creeping up in search of the bright cows (clouds) stolen by the night and concealed in its dark caverns. The same root, *sar*, reappears in Sarpedon, son of Leus, and serpent, a creeping thing. Saramâ thus becomes the soft breeze of morning, and Hermes the wind.¹

The magic ship of the Norse gods, Skidbladnir, which can carry all the gods of the Teutonic Olympus, but may be folded so small that it can be carried in the hand, typifies the swelling and shrinking of the clouds as the wind carries them across the blue depth of the sky. ²The Zuni folk tale of the serpent water-god whose mighty length trails across the town and far out on the road as he carries off the maiden who has invaded his waters, but whose serpent scales diminish to a tiny handful as he lays aside his serpent form and becomes a beautiful youth, may be traced to the same source.

The stealing of the golden fleece is but the transference of the sunlit clouds from the gloaming to the dawn. Before this can occur, the light (*Helle*), in which they basked at sunset, must be entirely extinguished.

The beauty, ferocity and seclusion of the Amazons "harmonize with the phenomena of the clouds in their varying aspects of storm and sunshine."

Clouds take the shape of swans and eagles in both oriental and occidental traditions. The eagles carry *Suryâ Bai* on their wings through the sky. ³In the Zuni legend the eagle bears the youth who has become enamored of her to the home of the eagle people in the regions of the sky and, laying aside her eagle dress, appears as a beautiful maiden. The ancient Indians personified the delicate white cirrus cloud flakes into *Apsaras*⁴ bathing in the heavenly lake. Laying aside their snowy plumage and assuming human form they sported in the limpid waters. They are the *houris* of the Vedic heaven "receiving into their arms the souls of heroes," sometimes descending to earth to become the brides of mortals, but the union is never a lasting one and sooner or later the swan maidens return to their heavenly abodes.

¹Cox: *Manual of Mythology*.

²Cushing: *Zuni Folk Tales*.

³Cushing: *Zuni Folk Tales*.

⁴*Apsaras*—those who go into the water.

¹Among the Minussinian Tartars the swan maidens assume both beautiful and loathsome forms. They are the fierce raging demons of the air dwelling in the "raven-black rocks, the seventeenth region of the earth." Sometimes they are forty in number but again they are merged into one, as the scattered clouds mass themselves together and lose their identity in one overspreading darkness.

The classic swan myths are numerous. The Hellenic swan was the bird of the muses and thus of Apollo. At the birth of the golden haired deity, the swans coming from the golden stream of Pactolus circled about Delos seven times. So the white clouds circle around the rising sun.

To the ancients, the clouds were not mere aggregations of vapor but "cows driven to the milking by Hermes, the summer wind; a great sheep with moist fleeces slain by the unerring arrows of Bellerophon, the sun; or swan maidens flitting across the firmament, Valkyries, hovering over the battlefield to receive the souls of fallen heroes; or mighty mountains, piled one above another, in whose cavernous regions the divining wand of the storm god, Thor, revealed hidden treasures." To the Hindus the rain clouds were celestial cattle milked by the wind god. The Aryans saw the clouds as Phaiakian ships with bird-like beaks or bright birds of divine shapes and colors, the light fleecy cirri were mermaids, swans or maidens with swan-like plumage. The Danish Mara, the Hindu nymph Urvasi, her kinsman, the Gandharvas or cloud demons, the cloud nymphs were all discerned in the drifting and ever changing clouds. The Valkyries, Odins attendants, battle maidens, invulnerable and immortal so long as they remained obedient, were, together with their steeds, the personification of the clouds, while their glittering arms were the lightning flashes. At the injunction of Odin, they swooped downward and conveyed heavenward on their white horses over the "quivering Bifröst" the fallen heroes worthy of Valhalla. These maidens were conceived as having dazzling white arms, flowing golden hair, silver helmets and burnished spears and shields. Hoar-frost and dew fell from the glittering manes of their steeds. Myths of the swan maidens are among the most beautiful and widely distributed of all legends. Their variants are legion but through them all runs the idea of the winning of a supernatural maiden by a mortal and the inability to retain her. In Germany and Sweden, the birds are swans or geese; in Russian tales, spoonbills, and in oriental legends, doves.

¹Baring-Gould: *Myth of Middle Ages*.

For Swan Legends see "Baring Gould, *Myths of the Middle Ages*."

²Fiske: *Myths and Mythmakers*, Boston, 1888.

Among the Esquimaux they are vaguely characterized as sea fowl, and, in the legends of American Indians, they become hawks or eagles.

Akin to the swan myths are some of the repulsive forms found in classic literature. The "bent clawed birds" of Aristophanes, the Harpies who tormented Æneas and his companions, the malignant progeny of the sea god Nereus, the gorgons, with their brazen claws and snaky locks, were personifications of the storm cloud in its more destructive forms and accompanied by hail, icy winds and blasting thunder bolts.

The Aryan myths constantly recognize the close connection of earth, light and vapor. No one myth can be classified as a specimen of one definite class. The language applied to the darkness is applied also to the gloomy storm vapors which appear as the monstrous Polyphemus or as the three daughters of Phorkos who have but a single tooth and possess a single eye in common. These "swan shaped" Phorkides, corresponding in Norse myths to the ravens of Odin, represent two distinct classes of vapors, one inducing famine and sickness, the other revivifying the dead earth; sometimes both are neutral, neither wholly malignant nor kindly. In the Arabian Nights, the roc guarding the huge diamond egg in the valley of diamonds (the starry sky), is the rushing vapor which sweeps across the face of the sun blotting it from view.

In Greek mythology the storm cloud brooding over the earth but rainless, became the Theban sphinx or the Pythian dragon; and the rain clouds, the Hyades or rainy sisters. Almost every mythographer has a different account to give of them. They are the daughters of Atlas and Aithra (the heaven and pure air) or of Oceanas, the water or Erechtheus, the earth. Thus the myths repeat the generation of the clouds,

"I am the daughter of earth and water
The nursling of the sky." (*Shelley.*)

their names denoting their fructifying, vivifying and destructive powers.

Nephele, while the mother of the children whose disappearance caused the Argonautai to search long for the golden fleece, is strictly the representative of the mist or clouds, and her two children, Phryxos and Helle, the ether and the bright clear air of day. As Helle wearied with her long journey falls into the Hellespont and is drowned so must the evening light completely die out before the dawn can arrive, and as Nephele returns to her cloud home, on discovering that her husband Athamus (the sun) has wearied of her, so the morning mist vanishes before the glowing rays of the sun.

¹ Guerber: Myths of Northern Lands.

The effect of color on the emotions is one which, though as yet little studied, is recognized in the symbolic use of color in nearly all primitive religious cults, in the poetic literature of both ancients and moderns and in the love of brilliant color which is characteristic of nearly all primitive tribes. Though little has been done experimentally, the subject is one of great interest and worthy of investigation. While the import of the color varies considerably, it does not exclude some general tendencies.¹ "The white and the blue are usually of cheerful and peaceful signification, the black and the red are ominous of strife and darkness. In many tribes the yellow bore the deepest religious meaning. The Mayas of Yucatan assigned it to the dawn and the east." The Aztecs sang about the bed of the dying "Already does the dawn appear, the light advances. Already do the birds of yellow plumage tune their songs to greet thee." The colors of the sand and altar paintings of the numerous cults of the American Indians all have a symbolic meaning. ²The Kiowa Indians and associated tribes make the use of mescal (*Anhalonium Lewinii*) a regular part of their religious ceremonies. The use of this drug is productive of wonderful color visions though its mental effects are extremely slight. So great is the fascination of this color intoxication that, though complaint has been made at Washington by missionaries and others and its use forbidden by law on the reservations, the rite still persists and has become the chief religion among all the tribes in the southern plains.

Nowhere in the outer world can the color sense be more fully satisfied than in gazing at the clouds. There is little wonder that we find the classic myths describing the many tinted garments of Iris, the saffron-hued robe of Aurora, the golden hair of Apollo and the glistening chariot of the sun.

From this analysis of myths we find among primitive peoples a love and appreciation of nature which clothed itself in the images suggested by their environment. Delight in the beauty of natural forms, wonder and awe at her mysterious workings, foreboding and terror raised by nature in her sterner moods, joy and gladness in the clear air, bright sunlight, and fleecy clouds, gloom and sadness under the overcast heavens and shrouding mists, all find their expression in myth and folk tales. The tendency to personify all forces not understood, and to explain natural phenomena by attributing them to supernatural agencies is common to primitive man of all races

¹ Mescal Buttons: D. W. Prentiss, M. D., and F. P. Morgan, M. D., *Medical Record*, Aug., '96.

² Mescal Plant and Ceremony: James Mooney. *Therapeutic Gazette*.

³ Brinton: *Religions of Primitive Peoples*.

and in all ages. ¹“All primitive men are mystics. In their simple aspect, the fear born figments are grotesque shadows or fantastic duplications of actual things moved by malignant or capricious motives, like those of human kind; in somewhat advanced thought the figments are more complex, and incarnated chiefly in self-moving things and invested with enlarged and intensified autonomy; while in the higher stages of primitive culture the figments are idealized into mystical potencies conceived to actuate the objects and powers of the universe in accordance with impulses and motives such as those observed to control human action.”

Comparing the results of the analysis of myths with the data obtained from the questionnaire, endeavoring always to keep strictly within the limits of the facts presented, what correspondences and what diversities do we find? From the data given in the returns on which this study is based we find in 25 cases that cloud manifestations, especially those of storm clouds, roused varying degrees of fear, in some instances amounting to positive terror, and in one case to actual paralysis of the motor functions. In ten more cases disagreeable feelings of a milder character were aroused. In a Study of Fears published in 1897, out of a group of 1,701 persons 44 had fears of clouds and their forms, 603 of thunder and lightning and 16 of fog. The ancient Aryan myths tell us of the fear inspired by Thor, hurler of thunderbolts, of the terror roused by the furious Maruts, attendants on Indra, “who overturn trees and destroy forests,” who “roar like lions and are as swift as thought,” who “shake the mountains and are clothed with rain,” and of the supplications addressed to Zeus who smites with thunderbolts. The Sioux Indians address prayers to the “thunder being” whom they regard as a maleficent power. Among the children, fear of the black clouds as bringing thunder or some undefined harm, fear of clouds falling and, in a lesser number of cases, fear of being carried off by clouds, are the more typical classes of fears, while many cases are purely individual and traceable to some specific association.²

The idea of the dark or thunder clouds as bringing harm is common in the individual history of the child and the history of the race. In the latter it had a substantial basis in experience. In the former, the basis of experience is far too slight to account for the intensity of the emotion aroused, and for its explanation we must turn from the history of the individual to the history of the race. Between the child's fear of being car-

¹ W. J. McGee: Primitive Mysticism. Report of Bureau of Am. Eth., 1897-98.

² A Study of Fears: G. Stanley Hall, *Am. Journal of Psychol.* VIII, 147-249.

ried off by the clouds and the myths of Ganymedes and the Valkyries, there may be a possible parallelism but the data is insufficient to warrant any assumption.

The sentiment of longing aroused by the clouds is common both to the child and the adult. In the latter it is usually of a moral or æsthetic nature; in the child it is a definite desire to touch or reach the clouds or to use them as conveyances. For the expression of this sentiment as well as those of wonder, joy, delight, sorrow, pathos, and awe we may turn, not to one myth but to many. Myths of the swan maidens who inspired love and longing in the hearts of mortals by their wondrous beauty, the joyous aspects of Phœbus Apollo, the sorrows of Niobe and Nephelê furnish us with abundant parallels. Less poetic in form than the classic myth but equally expressive of feeling, though in perhaps a cruder state of development, is the Chippeway legend which attributes the flush of the morning "to a beautiful maiden who is painting herself in her lodge in the sky."¹

A comparison of the functions of clouds as given by children with the cosmogony of some of the North American Indians furnishes some interesting coincidences. The functions most commonly attributed to the clouds by the children were "to make rain," to protect the sky, "to make the sky look pretty," to hide the sun, to keep us from seeing God and the angels, etc. In the cosmogony of the Sia Indians as gathered by Mrs. Stevenson² we find "The cloud, lightning, thunder and rainbow peoples followed the Sia into the upper world, making their homes in springs similar to those they had occupied in the lower world. The cloud people are careful to keep behind their masks which assume different forms according to the number of people and the work being done. Behind these the cloud people are laboring to water the earth. The rainbow people were created to work in Tinia (the sky) to make it more beautiful for the people of Haarts (the earth) to look upon; not only the elders making the beautiful bows, but the children assisting in this work. The Sia have no idea how or of what these bows are made. They do know, however, that the war heroes travelled on these bows." In Sia myth the "Sun-Father" also wears a mask.³ In the cosmogony of the Zunis obtained by Mr. Cushing, "the warm breath of Mother-Earth blew the white flecks of foam off the primeval waters, so that, meeting the cold breath of the Sky-Father, they fell down in gentle mist and spray, whence came all life."

¹ A. F. Chamberlain: *Journal of Am. Folk Lore*, Vol. IX.

² M. C. Stevenson: *Report of Bureau of Ethnology*, 1889-'90.

³ A. F. Chamberlain: *Primitive Nature Study*, Transactions of the Canadian Institute, VI, 313.

The forms seen in the clouds by children are so evidently products of environment, in many cases being directly referred to their sources, and so varied that the only legitimate inference to be drawn from them is that, while the picture making impulse is common to the child, the primitive copies of ancient times and the modern savage, the particular forms in which it finds expression are, in large measure if not wholly, due to environment. As it was a natural association for the ancient Aryan to see cows roaming over heavenly pastures, for the Norseman to see ships sailing over blue deeps, so the child to-day sees in the clouds the animals and natural forms to which he is accustomed, or peoples them with images drawn from fairy tales or it may be from his geography or history lesson.

From the material thus presented how far are we justified in claiming parallelism between the development of the child and the development of the race? (1) The data obtained from the questionnaire returns show that there is present in the life of most children a period when cloud psychoses form no inconsiderable portion of the mental furnishing. So far as can be judged from the limited number of returns, this cloud tropism begins at about the age of five and apparently reaches its maximum somewhere between the ages of ten and fifteen. But the limited number of returns, the fact that they are largely furnished by those of approximately the same environment, and the lack of data for ages beyond twenty-two or three years forbid anything but a provisional statement upon this point. Both myth and folk lore testify to the prevalence of this same tropism among primitive peoples and to its powerful influence upon their moral, religious and æsthetic development. (2) So far as the psychoses are of an emotional nature we find an almost complete parallelism between the history of the child and the history of the race; also that the intensity of the emotion in the child, especially in the case of disagreeable feelings, is disproportionate to its immediately traceable antecedents, a fact which points to vestigial traces of a more primitive stage of existence when man was still at the mercy of the uncontrolled forces of nature.

(3) The anthropomorphic tendency so markedly present in the cloud reactions of primitive man exists also in the child, and though the modern child is early robbed of his illusions, the *feeling* often persists after intellectual assent to its substrate has been destroyed.

The pedagogic value of this cloud tropism is worthy of consideration since it furnishes an almost universally available means for the cultivation of the powers of observation and imagination and the development of the moral and æsthetic emotions. Children in whom the phenomena of the natural world awaken no reactions have been cheated of their birthright;

their imaginations are dwarfed and crippled by disuse, their moral and æsthetic feelings are undeveloped and they are less capable of emotions of awe and wonder, not only for nature but for the power behind nature. ¹"To the solid ground of Nature trusts the mind which builds for aye." He who has never looked with seeing eye on the cathedrals of nature reared by the towering trees or the fairy palaces builded by the clouds, cannot understand the inspiration of the men whose genius raised the cathedrals of the middle ages. He to whom the colors of the sunset sky have never appealed may wander through miles of picture galleries and come away no whit richer for all the wealth of color which the old masters lavished upon their canvases. To him also the door of much that is beautiful in literature is closed, for only nature holds the key. We hear much of Nature Study for children in these days but the 18% of negative returns in the syllabi which have furnished the data for the present study constitute a plea for a wider diffusion of the teaching that shall give sight to the eyes which see not. A half-hour twice, or even once a week, systematically devoted as a regular part of the school exercises, to watching the colors, motions, changes and positions of clouds, would have a practical value in relieving the overstrain of the eyes from close application.² The subsequent writing down of all impressions would furnish an exercise in language study and the mental life of the child would be enriched and broadened.

¹ Wordsworth.

² Slightly smoked glasses should be used whenever the light is of sufficient intensity to fatigue the eyes.