

CLASSICS OF BIOLOGY AND MEDICINE

The Visions of Hildegard of Bingen

Charles Singer

London, England

EDITOR'S NOTE: Hildegard of Bingen (1089 to 1179) was a notable figure in medieval Scholastic thought both because she was a creative and independent thinker and an influential woman in a time and culture we think of as dominated by the male-oriented Latin church. She devoted considerable thought to understanding the natural world and was reputed to be a gifted healer. Of special note is the impact of her visions on her own cosmology as well as on later thinkers. Even today, there are popular cults of mysticism associated with Hildegard, and one can buy current recordings of music she supposedly composed. Her visions are accessible to us through several manuscripts that include drawings and illustrations thought to be in her own hand.

Nearly a century ago, one of the founders of modern scholarship in the history of medicine and science, Dr. Charles Singer, carefully examined the Hildegard manuscripts and offered the conclusion that Hildegard's visions were most likely to be her interpretations of the auras and visual scotomata associated with migraine headaches. His paper, first published in 1917 (in Volume I of his *Studies in the History and Method of Science*) caused a minor storm of controversy, as it attacked the supposedly divine origin of Hildegard's visions. This essay was expanded, revised, and appeared in Singer's *From Magic to Science: Essays on the Scientific Twilight* (London, 1928) and is the version reprinted here. Singer's erudition, knowledge of classical and medieval sources, and wide medical learning is apparent throughout this essay. Through Hildegard's writings, he provides us with a penetrating glimpse into the rather unfamiliar scholastic thinking about the natural world that would soon give way to the modernity of our own times.

§1. HILDEGARD AND HER WORKS

Hildegard of Bingen was born in 1098, of noble parentage, at Böckelheim, on the River Nahe, near Sponheim. Destined from an early age to a religious life, she passed nearly all her days within the walls of Benedictine houses. She was educated and commenced her career in the isolated convent of Disibodenberg, at the junction of the Nahe and the Glan, where she rose to be abbess. In 1147 she and some of her nuns migrated to a new convent on the Rupertsberg, a finely placed

site, where the smoky railway junction of Bingerbrück now mars the landscape. Between the little settlement and the important mediaeval town of Bingen flowed the River Nahe. The stream was, and is, here spanned by a bridge of Roman origin, to which still clings the name of the pagan Drusus (15 B.C. to A.D. 19). At this spot (Figure 93), a place of ancient memories, secluded and yet linked to the world, our abbess passed the main portion of her life, and here she closed her eyes in the eighty-second year of her age on September 17, 1179.

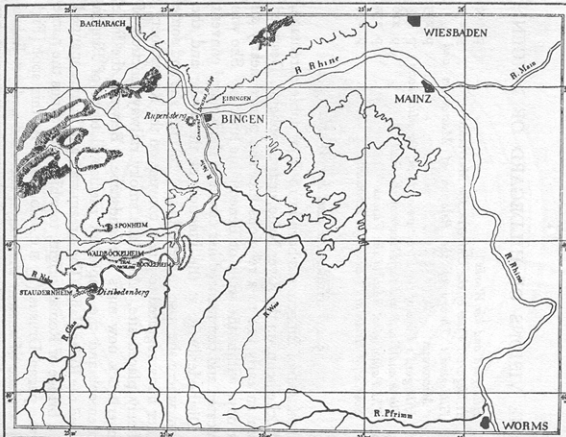


Figure 93.
The Hildegard country.

Hildegard was a woman of extraordinarily active and independent mind. She was not only gifted with a thoroughly efficient intellect, but was possessed of great energy and considerable literary power, and her writings cover a wide range, betraying the most varied activities and remarkable imaginative faculty. The most interesting of her works are her books of visions. She was before all things an ecstatic, and both of her great mystical works, the *Scivias* (written between 1141 and 1150), and the *Liber divinorum operum simplicis hominis* (written between 1163 and 1170) contain passages of real power and beauty. Less valuable is her third long mystical work (the second in point of time), the *Liber vitae meritorum* (written between 1158 and 1162). She wrote an interesting mystery-play and is perhaps responsible for a collection of musical compositions, while her life of St. Disibode, the Irish missionary (594 to 674) to whom her part of the Rhineland owes its Christianity, and her account of St. Rupert, a local saint commemorated in the name "Rupertsberg," bear witness to her narrative powers, to her capacity for systematic arrangement, and to her historical interests. Her extensive correspondence demonstrates the influence that she wielded, while certain other works by her give us glimpses of her activities as head of a religious house.

Her biographer, the monk Theodoric, records that she also busied herself with the treatment of the sick and credits her with miraculous powers of healing. Some of the cited instances of this faculty, as the curing of a love-sick maid, are but manifestations of personal ascendancy over weaker minds. Notwithstanding her undoubted acquaintance with such feeble remains of ancient science as existed in her day, and notwithstanding the claims that have been made for her as a pioneer of the hospital system, there is no serious evidence that her treatment extended beyond exorcism and prayer. There is a medical compilation ascribed to her, which is an interesting relic of Dark Age medicine. We are, however, unconvinced by the evidence that Hildegard was its authoress.

For her time and circumstance Hildegard saw a fair amount of the world. Living on the Rhine, the highway of Western Germany, she was well placed for observing the traffics and activities of men. She had journeyed as far north as Cologne, and had traversed the eastern tributary of the great river to Frankfort on the Main and to Rothenburg on the Taube. Her own country, the basin of the Nahe and the Glan, she knew intimately. She was in constant communication with Mayence, the seat of the archbishopric in which Bingen was situated, and there has

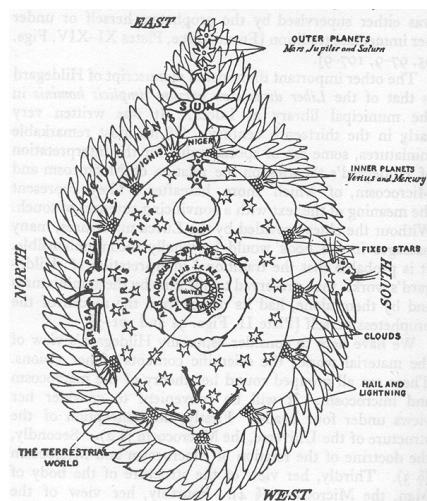
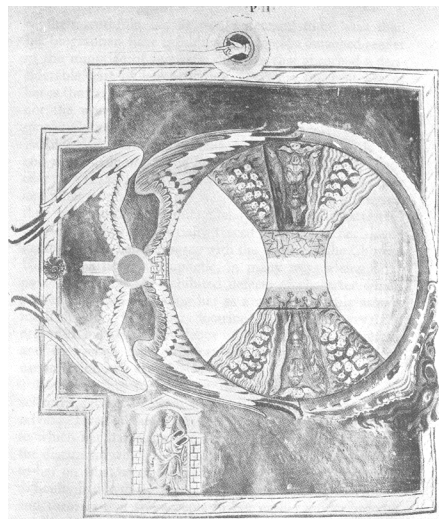


Figure 94. The structure of the sphere of the earth. From a manuscript at Lucca of Hildegard's *Liber Divinorum Operum Simplicis Homini*, written about 1200.
Figure 95. Hildegard's first scheme of the universe, slightly simplified from a figure in the Weisbaden Codex.

survived an extensive correspondence with the ecclesiastics of Cologne, Speyer, Hildesheim, Treves, Bamberg, Prague, Nürenberg, Utrecht, and numerous other towns of Germany, the Low Countries, and Central Europe.

Hildegard's journeys, undertaken with the object of stimulating spiritual revival, were of the nature of religious progresses. Like those of her contemporary, St. Bernard of Clairvaux, they were in fact largely directed against the heretical and most cruelly persecuted Cathari, an Albigensian sect widely spread in the Rhine country of the twelfth century. In justice to her memory it is to be recalled that she herself was ever against the shedding of blood. It was not an age of tolerance, but had her less ferocious views prevailed, some more substantial relic than the groans and tears of this people might have reached our time, while the annals of the Church would have been spared the defilement of an indelible stain.

Hildegard's correspondence with St. Bernard, then preaching his crusade, with four popes, Eugenius III, Anastasius IV, Adrian IV, and Alexander III, and with the

emperors Conrad and Frederic Barbarossa, brings her into the current of general European history. She comes into some slight contact with the story of England by her hortatory letters to Henry II and his consort Eleanor, the divorced wife of Louis VII.

To complete a sketch of her literary activities, mention should be made of a secret script and language attributed to her. It is a foolishly empty device that hardly merits the dignity of the term "mystical." It has, however, exercised the ingenuity of several learned philologists.

There is ample material for a full biography of Hildegard, and many accounts have appeared of her. Most of them are the work of men devoid of critical judgement and are marked by a desire for edification that neither adds to their attractiveness as literature nor conduces to our assurance of their truthfulness. It would demand more skill than her biographers have exhibited to interest a detached reader in the minutiae of monastic disputes that absorbed a considerable part of her activities. Perhaps the best life of her is the earliest. It is certainly neither the most

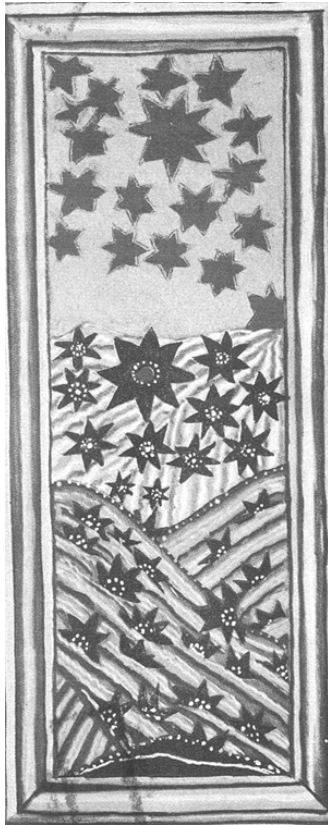


Plate I (left). Vision of the Fall of the Angels. From a manuscript of Hildegard's *Scivias* at Wiesbaden, written at Bingen about 1180.

Plate XI (right). Vision of the Trinity. From a manuscript of Hildegard's *Scivias* at Wiesbaden, written at Bingen about 1180.

credulous nor the worst written and is by her contemporaries, the monks Godefrid and Theodoric.

Hildegard was never canonized. Attempts towards that end were made under the Popes Gregory IX (1237), Innocent IV (1243), and John XXII (1317). Miraculous cures and other works of wonder were claimed for her, but either they were insufficiently miraculous or insufficiently attested. Those who have impartially traced her life in her documents will, we believe, agree with the verdict of the Church. Hers was a fiery, a prophetic, in many ways a singularly noble spirit, but she exhibited defects of character which prevent us from regarding her as a woman of truly saintly mind or life. From her doctrine of *Nous* [see below] the orthodox may derive evidence of her heresy as an author and the pious draw comfort for her failure to achieve canonization as a saint.

In attempting to interpret the views of Hildegard on scientific subjects, certain special difficulties present themselves. First is the confusion arising from the writings to which her name has been erroneously attached. From the discussion which follows we omit certain works ascribed to her on what seem to us inadequate grounds. A second difficulty is due to the receptivity of her mind, so that views and theories that she accepts in her earlier works become modified, altered, and developed in her later writings. A third difficulty, perhaps less real than the others, is the visionary and involved form in which her thoughts are cast. But a fourth and more vital difficulty is the attitude that she adopts towards phenomena in general. To this difficulty we must devote a little special attention.

To Hildegard's mind there is no distinction between physical events, moral

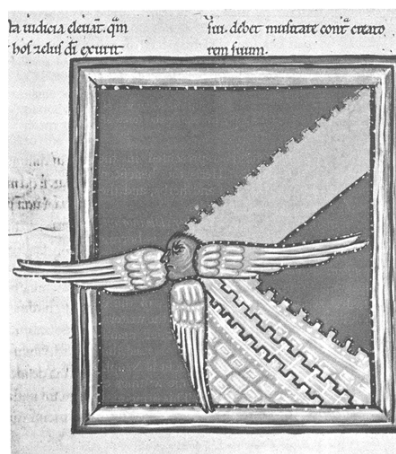


Plate XII (left). Vision of the “Sedens Lucidus.” From a manuscript of Hildegard’s *Scivias* at Wiesbaden, written at Bingen about 1180. The figure is typical of migraine. It consists of glittering background, here represented in gold, on which appears a very bright shimmering point of red light. From this point fortification figures radiate. The vision is identical in pathological basis with that depicted in Plate XIII and both are combined in the “reconstructed” vision of Plate XIV. Plate I, Plate XI, and Figure 108 are migrainous appearances of rather different types.

Plate XIII (right). Vision of the “Zelus Dei.” From a manuscript of Hildegard’s *Scivias* at Wiesbaden, written at Bingen about 1180. This figure is a representation of a vision of migrainous origin. In its essential parts it is identical with Plate XII, and it recurs in the “reconstructed” vision shown in Plate XIV. It should be compared to the other types of migrainous vision shown in the Plate I, in Plate XI, and in Figure 108.

truths, and spiritual experiences. This view, which our children share with their mediaeval ancestors, was developed but not transformed by her visionary powers. Her fusion of internal and external universe links Hildegard to a whole series of mediaeval visionaries, culminating with Dante. In Hildegard, as in her fellow-mystics, we find that ideas on Nature and Man, the Moral World and the Material Universe, the Spheres, the Winds and the Humours, Birth and Death, on the Soul, the Resurrection of the Dead, and the Nature of God, are not only interdependent but closely interwoven. Nowadays we separate our ideas into categories, scientific, ethical, theological, philosophical, and so forth, and we even esteem it a virtue to retain and restrain our thoughts within limits that we deliberately set for them. To Hildegard the segregation of ideas in this manner would have been incomprehensible. Such terms as *parallelism* or *allegory*

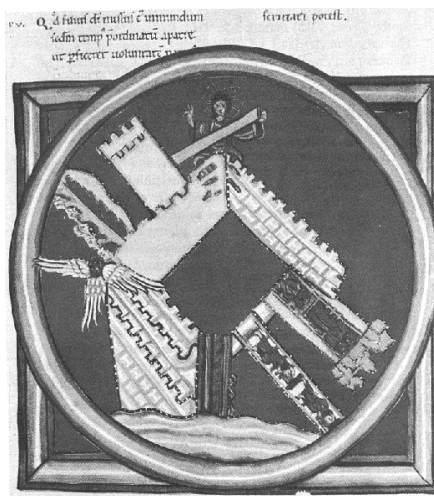


Plate XIV. “Reconstructed” Vision of “The Heavenly City” (Compare Plates XII and XIII). From a manuscript of Hildegard’s *Scivias* at Wiesbaden, written at Bingen about 1180. Note that the visions represented in Plates XII and XIII reappear here. The other parts of the picture are represented separately in other miniatures in the same manuscript.



Figure 96 (left). Scheme of the “zones” of the world, the Frigid, the Temperate, and the Tropic (*perusta*) from Herrade de Landsberg’s *Hortus deliciarum*.

Figure 97 (right). The Last Judgement and the Fate of the Elements. From a manuscript of Hildegard’s *Scivias*, written at Bingen about 1180.



Figure 98 (left). Man’s Fall and the Disturbance of the Primordial Elemental Harmony. From a manuscript of Hildegard’s *Scivias*, written at Bingen about 1180.

Figure 99 (right). The New Heavens and the New Earth and the New Ordering of the Elements. From a manuscript of Hildegard’s *Scivias*, written at Bingen about 1180.

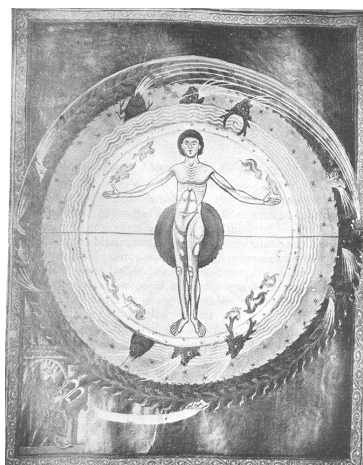
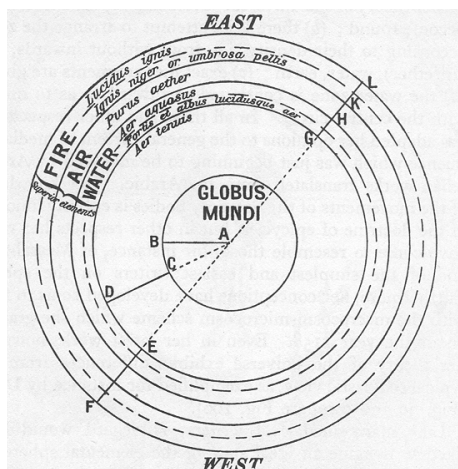


Figure 100. Hildegard's later scheme of the universe constructed from her measurements. AB, CD, and EF are all equal and GH, HK, and KL are all equal. The clouds are situated in the outer part of the *Aer tenuis* and are formed by an extension of the *Aer aquosus* toward the earth.

Figure 101. The Macrocosm, the Microcosm, and the Winds. From a manuscript at Lucca of Hildegard's *Liber Divinorum Operum Simplicis Hominis*, written about 1200.

do not cover her views of the relation of the material and spiritual. In her mind the material and spiritual are really interfused, or rather they have not yet been separated.

Therefore, although in the following pages an attempt is made to estimate her scientific views, yet this method must, of its nature, interpret her thought only in a very partial fashion. Hildegard presents to us scientific thought as an undifferentiated factor, and an attempt is here made to separate it, by the artificial but not unscientific process of dissection, from the organic matrix in which it is embedded.

The interest of the works of Hildegard is greatly heightened by the existence of certain early and most remarkably illuminated manuscripts of her visions. Some knowledge of the miniatures in two of these, one at Wiesbaden and one at Lucca, is essential for the understanding of her meaning.

The illuminated manuscript of Hildegard's *Scivias* in the provincial library at Wiesbaden is a truly noble volume, in excellent preservation and of the highest value for the history of mediaeval art. It was prepared in or near Bingen at about the time of Hildegard's death. Its miniatures



Figure 102. *Nous* pervaded by the Godhead and the controlling Hyle. From a manuscript at Lucca of Hildegard's *Liber Divinorum Operum Simplicis Hominis*, written about 1200.



Figure 103. *Nous* pervaded by the Godhead and embracing both the Macrocosm and the Microcosm. From a manuscript at Lucca of Hildegard's *Liber Divinorum Operum Simplicis Hominis*, written about 1200.

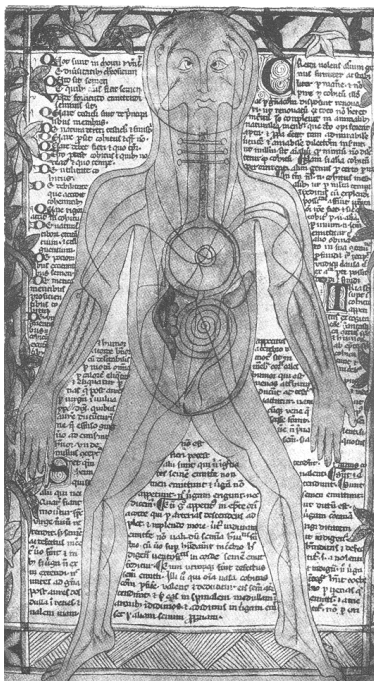


Figure 104. An anatomical drawing of the Thirteenth Century, representing the veins. From manuscript *Ashmole 399*.

help greatly in the interpretation of the visions, illustrating them often in the minutest details. In view of the great difficulty in visualizing much of her narrative, there can be little doubt that the preparation of these miniatures was either supervised by the prophetess herself or under her immediate tradition (Plate I, Plates XI to XIV, Figures 95, 97 to 99, 107 to 109).

The other important illuminated manuscript of Hildegard is that of the *Liber divinorum operum simplicis hominis* in the municipal library at Lucca. It was written very early in the thirteenth century. Of its most remarkable miniatures, some are of special value for the interpretation of Hildegard's theories on the relation of Macrocosm and Microcosm, of which more hereafter. They represent the meaning of the text with a convincing sureness of touch. Without the clues provided by the Lucca miniatures, many passages in the book would be wholly incomprehensible. It is probable that the traditional interpretation of Hildegard's works, thus preserved to our time by these miniatures and by them alone, had its origin from the mouth of the prophetess herself (Plate II, Figures 94 and 101 to 103).

We have here to consider especially Hildegard's view of the material world, the scientific contents of her visions. These are all grouped round her theory of the Macrocosm and Microcosm. It will be convenient to consider her views under four heads. Firstly, her conception of the structure of the Universe, the Macrocosm (§2). Secondly, the doctrine of the relation of Macrocosm and Microcosm (§3). Thirdly, her view of the structure of the body of Man, the Microcosm (§4). Fourthly, her view of the nature of the soul (§5).

§ 2. HILDEGARD'S VIEW OF THE UNIVERSE, THE MACROCOSM

To the student of mediaeval science Hildegard's beliefs as to the nature and structure of the universe are among the

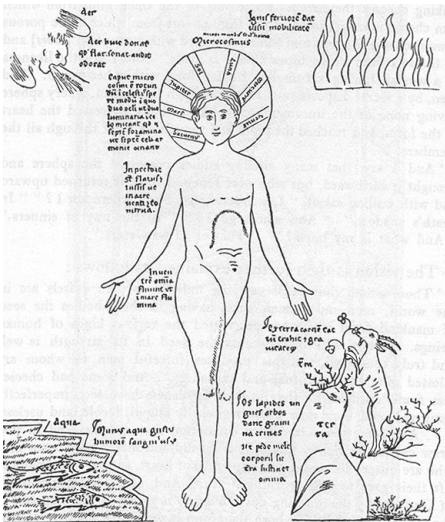


Figure 105. The Microcosm from Herrade de Landsberg's *Hortus Delicorum*. Over the head of the figure are written the names of the seven planets. Air and fire stand one on each side. The inscription against the head may be rendered: "The head of the Microcosm is round like the heavenly sphere. In it are two eyes as the two luminaries shine the heavens and there are seven orifices adorn it like the seven heavens of harmony." Against the thorax is written: "In the chest is breath and cough like the winds and thunder." Against the abdomen is written: "Into the belly all thing flow like rivers to the sea." By the legs stand the emblems of Earth and Water and the analogy is similarly carried on.

most interesting that she has to impart, and here the miniatures aid us greatly.

In the middle of Hildegard's universe is a spherical earth. Around this are arranged a number of concentric shells or zones. The inner zones, like the earth itself, tend to be spherical. The outer zones are, however, oval, and the outermost of all is egg-shaped, with one end prolonged and more pointed than the other (Figure 95).

The concentric structure of the universe with the earth in the middle is a commonplace of mediaeval science. In most mediaeval works, as for instance in Dante, the universe is, however, described as spherical. The egg-shape, as exhibited by Hildegard, is unusual, but is encountered

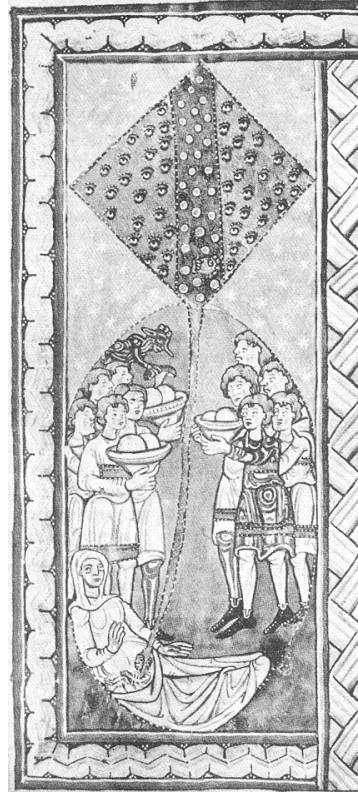


Figure 106. The arrival of the soul in the body of the infant. From a manuscript of Hildegard's *Scivias*, written at Bingen about 1180.

among other mediaeval writers. Many of the so-called *Mappaemundi* exhibit the *surface* of the habitable earth itself as oval, and it was probably from the misunderstanding of such charts that Hildegard and other writers gained their conception of an oval universe. In her method of orientation also she follows the *Mappaemundi*, placing the east at the top of the page, where we are accustomed to place the north.

It is unfortunate that Hildegard does not deal with geography in the restricted sense, and so we are not in full possession of her views on the antipodes, a subject of derision to patristic and of misconception to scholastic writers. She does, however, vaguely refer to the inversion of seasons and climates in the opposite hemisphere, though she confuses the issue by the adop-

tion of a theory, widespread in the Middle Ages and reproduced in the *Divina Commedia*, that the antipodean surface of the earth is uninhabitable, since it is either beneath the ocean or in the mouth of the Dragon (Figure 94). The nature of the antipodean inversion of climates was clearly grasped by her contemporary, Herrade de Landsberg (Figure 96).

Hildegard's views as to the internal structure of the terrestrial sphere are more difficult to follow. Her doctrine of Purgatory and Hell is confused, but she held that the interior of the earth contained two vast spaces, shaped like truncated cones, where punishment was meted out and whence many evil things had issue. Her whole scheme presents analogies as well as contrasts to that of her kindred spirit Dante (Figure 95). Hildegard, however, who died before the thirteenth century had dawned, presents us with a scheme far less definite and elaborated than that of her great successor, who had all the stores of the golden age of scholasticism on which to draw.

In Hildegard's first diagram of the universe, which is of the nature of a "section," the world, the *sphaera elementorum* of mediaeval writers, is diagrammatically represented as compounded of earth, air, fire, and water confusedly mixed in what her younger contemporary, Alexander of Neckam (1157 to 1217), calls "a certain concordant discord of the elements." In the illustrations, the four elements have each a conventional method of representation, which appears again and again in the different miniatures (Figures 98 to 99).

Around this world with its four elements is spread the atmosphere, the *aer lucidus* or *alba pellis*, diagrammatically represented, like the earth which it enwraps, as circular. Through this *alba pellis* no creature of earth can penetrate. Beyond are ranged in order four further shells or zones. Each zone contains one of the cardinal winds, and each cardinal wind is accompanied by two accessory winds,

represented, in the traditional fashion, by the breath of supernatural beings.

Of the four outer zones the first is the *aer aquosus*, also round, from which blows the east wind. In the outer part of the *aer aquosus* float the clouds, and according as they contract or expand or are blown aside the heavenly bodies above are revealed or concealed.

Enwrapping the *aer aquosus* is the *purus aether*, the widest of all the zones. The long axis of this, as of the remaining outer shells, is in the direction from east to west, thus determining the path of movement of the heavenly bodies. Scattered through the *purus aether* are the constellations of the fixed stars and arranged along the long axis are the moon and the two inner planets. From this zone blows the west wind. The position and constitution of this *purus aether* is evidently the result of some misinterpretation of Aristotelian writings.

The next zone, the *umbrosa pellis* or *ignis niger*, is a narrow dark shell, whence proceed the more dramatic meteorological events. Here, following on the hints of the *Wisdom of Solomon* (Chap. v) and the *Book of Job* (Chap. xxxviii), are situated the diagrammatically portrayed treasuries of lightning and of hail. From here the tempestuous north wind bursts forth. The presence of this *ignis niger* suggests some contact on the part of the authoress with the teaching of the *Meteorologica* of Aristotle. The nature of this contact we shall consider later.

The outermost layer of all is a mass of flames, the *lucidus ignis*. Here are the sun and the three outer planets, and from here the south wind pours its scorching breath (Figure 95).

The movements of the four outer zones around each other, carrying the heavenly bodies with them, are attributed to the winds in each zone. The seasonal variations in the movements of the heavenly bodies, along with the recurring seasons themselves, are also determined by the

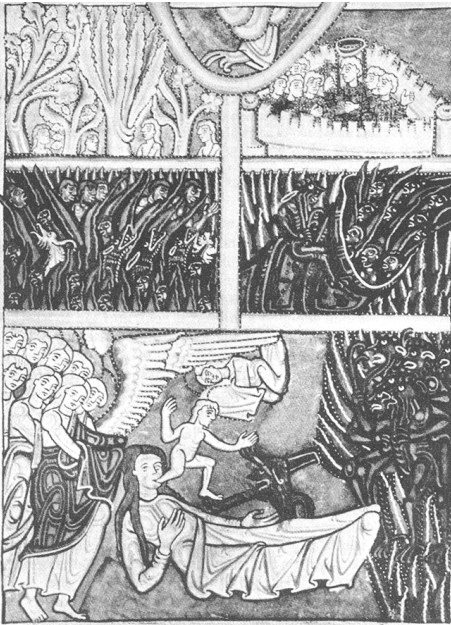


Figure 107. Departure and fate of the soul. From a manuscript of Hildegard's *Scivias*, written at Bingen about 1180.

prevalent winds, which, acting as the motive-power upon the various zones, form a celestial parallelogram of forces. In this way is explained also why in spring the days lengthen and in autumn they shorten, until in either case an equinox is reached.

I looked and behold the east and the south wind with their collaterals, moving the firmament by the power of their breath, caused it to revolve over the earth from east to west; and in the same way the west and north wind and their collaterals, receiving the impulse and projecting their blast, thrust it back again from west to east.

I saw also that as the days began to lengthen, the south wind and his collaterals gradually raised the firmament in the southern zone upwards towards the north, until the days ceased to grow longer. Then, when the days began to shorten, the north wind with his collaterals, shrinking from the brightness of the sun, drove the firmament back gradually southward until by reason of the lengthening days the south wind began yet again to raise it up. (Migne, cols. 789 to 791) (Figure 95).

Intimately bound up not only with her theory of the nature and structure of the



Figure 108. The days of creation and the fall of man. From a manuscript of Hildegard's *Scivias*, written at Bingen about 1180.

universe but also with her beliefs as to the end of things is Hildegard's doctrine of the elements. Before the Fall of Man these were arranged in a harmony, which was disturbed by that catastrophe (Figure 98), so that they have since remained in the state of mingled confusion in which we always encounter them on the terrestrial globe. This *mistio*, to use the mediaeval Aristotelian term, is symbolized by the irregular manner in which the elements are represented in the central sphere of the diagram of the universe (Figure 95). Thus mingled they will remain until subjected to the melting-pot of the Last Judgement (Figure 97), when they will emerge in a new and eternal harmony, no longer mixed as matter, but separate and pure, parts of the new heaven and the new earth (Figure 99).

But the heavens and the earth which are now ... are kept in store and reserved unto fire against the day of judgement and perdition of ungodly men.... But the day of the Lord will come ... in the which the heavens shall pass away with a great noise, and the elements shall melt with fervent heat, the earth also and the works that are therein shall be burned up.... Nevertheless we, according to his

promise, look for new heavens and a new earth, wherein dwelleth righteousness (2 Peter iii, 7, 10, and 12)

So Hildegard, acting on a scriptural hint, is enabled to dematerialize her doctrine of the after-things.

But, although since man's fall the elements have lost their order, and their harmony on this terrestrial orb, yet is that harmony still in part preserved in the celestial spheres that encircle and surround our globe; and water, air, earth, and fire have each their respective representatives in the four concentric zones, the *aer aquosus*, the *purus aether*, the *umbrosa pellis*, and the *lucidus ignis* (Figure 95). These are the "superior elements" which still retain some at least of their individuality and primal purity. From each of their spheres blows, as we have seen, one of the cardinal winds, and each wind partakes of the elemental character of the zone whence it issues, and has a corresponding influence on man's body, since each of the four humours is specifically affected by the element to which it corresponds.

Then I saw that by the diverse quality of the winds, and of the atmosphere as they in turn sweep through it, the humours in man are agitated and altered. For in each of the superior elements there is a breath of corresponding quality by which, through the power of the winds, the corresponding element (below) is forced to revolve in the atmosphere, and in no other way is it moved. And by one of those winds, with the agency of sun, moon and stars, the atmosphere which tempers the world is breathed forth. (Migne, col. 791). (Cf. Figure 101.)

This doctrine of the relation of the various winds to the four elements and through them to the four humours is found in the *De Rerum Natura* of Isidore of Seville, and is illustrated in European manuscripts from the ninth century onward, but we meet it set forth with special definiteness in the twelfth century in the translations from Messahalal [see below]. It is encountered also in the work of Herrade de Landsberg [see below]. In and after the thirteenth century it had become a common-place.

The description we have given of the universe was set forth by Hildegard in her first mystical work, the *Scivias* (1141 to 1150). Subsequently she became dissatisfied with the account she had given and, while not withdrawing it, she sought in her later *Liber Divinorum Operum* (1163 to 1170) so to modify the original presentment as to bring it more into line with accepted views which treated the universe as a series of concentric spheres. Thus she writes:

There appeared to me in vision a disk very like that object which I saw twenty-eight years ago of the form of an egg, in the third vision of my book *Scivias*. In the outer part of the disk there was as it were the *lucidus ignis*, and beneath it the circle of the *ignis niger* was portrayed ... and these two circles were so joined as to be one circle.

There was thus one outer zone representing the fire:

Under the circle of the *ignis niger* there was another circle in the likeness of the *purus aether* which was of the same width as the two conjoined (outer) fiery circles. And below this circle again was the circle of the *aer aquosus* as wide as the *lucidus ignis*. And below this circle was yet another circle, the *fortis et albus lucidusque aer* ... the width whereof was as the width of the *ignis niger*, and these circles were joined to make one circle which was thus again of width equal to the outer two. Again, under this last circle yet another circle, the *aer tenuis*, was distinguishable, which could be seen to raise itself as a cloud, sometimes high and light, sometimes depressed and dark, and to diffuse itself as it were throughout the whole disk.... The outermost fiery circle perfuses the other circles with its fire, while the watery circle saturates them with its moisture (cf. *Wisdom of Solomon* xix. 18 to 20). And from the extreme eastern part of the disk to the extreme west a line is stretched out (i.e., the equator) which separates the northern zones from the others (Migne, cols 403 to 414) (Figure 100, Plate II, and Figures 101, 103).

The earth lies concentrically with the *aer tenuis* and its measurements are given thus:

In the midst of the *aer tenuis* a globe was indicated, the circumference of which was everywhere equidistant from the *fortis et albus*

lucidusque aer, and it was as far across as the depth of the space from the top of the highest circle to the extremity of the clouds, or from the extremity of the clouds to the circumference of the inner globe (Migne, col. 751) (Figure 100).

In her earlier work, the *Scivias*, Hildegard apparently had not realized the need of accounting for the independent movements of the planets other than the sun and moon. She had thus placed the moon and two of the moving stars in the *purus aether*, and the sun and the three remaining moving stars in the *lucidus ignis*. Since these spheres were moved by the winds, their contained planets would be subject to the same influences. In the *Liber Divinorum Operum*, however, she has come to realize how independent the movements of the planets really are, and she invokes a special cause for their vagaries.

I looked and behold in the outer fire (*lucidus ignis*) there appeared a circle which girt about the whole firmament from the east westward. From it a blast produced a movement from west to east in the opposite direction to the movement of the firmament. But this blast did not give forth his breath earthward as did the other winds, but instead thereof it governed the course of the planets (Migne, col. 791) (Cf. Figure 101).

The source of the blast is represented in the Lucca manuscript as the head of a supernatural being with a human face (Figure 101).

These curious passages were written at some date after 1163, when Hildegard was at least 65 years old. They reveal our prophetess attempting to revise much of her earlier theory of the universe. Note that (a) the universe has become round; (b) there is an attempt to arrange the zones according to their density, i.e., from without inwards, fire, air (ether), water, earth; (c) exact measurements are given; (d) the water zone is continued earthward so as to mingle with the central circle. In all these and other respects she has adapted her opinions to the general current of mediaeval science which was just beginning to be moulded by Aristotelian works translated from the Arabic. Her knowledge of the

movements of the heavenly bodies is entirely innocent of the doctrine of epicycles, but in other respects her views have come to resemble those, for instance, of Messahalal, one of the simplest and easiest writers on the sphere. Furthermore, her conceptions have developed so as to fit in with the Macrocosm-Microcosm scheme which she grasped. about the year 1158. Even in her latest work, however, her theory of the universe exhibits differences from the typical scholastic view, as exemplified for instance by Dante (Figure 100).

Like many mediaeval writers, Hildegard would have liked to imagine an ideal state of the elemental spheres in which the rarest, fire, was uppermost, and the densest, earth, undermost. Her conceptions were however disturbed by the awkward facts that water penetrated below the earth, and indeed sought the lowest level, while air and not water lay immediately above the earth's surface. Mediaeval writers adopted various devices and expended a vast amount of ingenuity in dealing with this obvious discrepancy. Hildegard devotes much space and some highly involved allegory, both in the *Scivias* and in the *Liber Divinorum Operum*, to the explanation of the difficulty, while Dante himself wrote a treatise in high scholastic style on this very subject. These works of two mystics illustrate the essential difference between mediaeval and modern science. Both writers attach a far greater demonstrative value to analogy than we now allow, and the reasoning of both is almost exclusively *a priori*. The vast stress on analogy and the constant use of *a priori* methods are the two chief elements which separate the scientific thought of the Middle Ages from that of our own time.

§3. HILDEGARD'S THEORY OF THE RELATION OF MACROCOSM AND MICROCOSM

The winds and elements of the outer universe, the Macrocosm, become in

Hildegard's later schemes intimately related to structures and events within the body of man himself, the Microcosm, the being around whom the universe centres. The terms Macrocosm and Microcosm are not employed by her, but, in her last great work, the *Liber Divinorum Operum*, she succeeds, in most eloquent and able fashion, in synthesizing into one great whole, centred around this doctrine, her theological beliefs and her physiological knowledge, together with her conceptions of the working of the human mind and of the structure of the universe. The work is thus an epitome of the science of the time viewed, however, through the distorting medium of this theory. In studying it the modern reader is necessarily hampered by the bizarre and visionary form into which the whole subject is cast. Nevertheless, the scheme, though complex and difficult, is neither incoherent nor insane, as at first sight it may seem. It is, in fact, a highly systematic and skilful presentment of a cosmic theory which for centuries dominated scientific thought.

As an explanation of the complexity of existence which thinkers of all ages have sought to bring within the range of some simple formula, this theory of the essential similarity of Macrocosm and Microcosm held in the Middle Ages, during the Renaissance and even into quite modern times, a position comparable to that of the theory of evolution in our own age. If at times it passed into folly, fantasy, and even madness, it should be remembered that it also fulfilled a high purpose. It gave a significance to the facts of nature and a formula to the naturalist, it unified philosophic systems, it exercised the ingenuity of theologians, and furnished a convenient framework to prophecy, while it seemed to illumine history and to provide a key and meaning to life itself. Even now it is not perhaps wholly devoid of message, but as a phenomenon in the history of human thought, a theory which appealed to such diverse scientific writers as Seneca, Albertus Magnus, Paracelsus, William Gilbert,

William Harvey, Robert Boyle, and Leibnitz is surely worthy of attention. We may turn now to Hildegard's presentation of this doctrine.

Hildegard's *Liber Divinorum Operum* opens with a remarkable and beautiful vision illustrated by a no less remarkable picture (Figure 102):

I saw a fair human form and the countenance thereof was of such beauty and brightness that it had been easier to gaze upon the sun. The head thereof was girt with a golden circlet through which appeared another face as of an aged man. From the neck of the figure on either side sprang a pinion which swept upward above the circlet and joined its fellow on high. And where on the right the wing turned upward, was portrayed an eagle's head with eyes of flame, wherein appeared, as in a mirror, the lightning of the angels, while from a man's head in the other wing the lightning of the stars did radiate. From either shoulder another wing reached to the knees. The figure was robed in brightness of the sun, while the hands held a lamb shining with light. Beneath, the feet trampled a horrible black monster of revolting shape, upon the right ear of which a writhing serpent fixed itself (Migne, col. 741).

The image declares its identity in words reminiscent of the Wisdom literature or of passages in the Hermetic writings, but which are, in fact, partly borrowed from Bernard Sylvester (see below).

I am that supreme and fiery force that sends forth all the sparks of life. Death hath no part in me, yet do I allot it, wherefore I am girt about with wisdom as with wings. I am that living and fiery essence of the divine substance that glows in the beauty of the fields. I shine in the water, I burn in the sun and the moon and the stars. Mine is that mysterious force of the invisible wind. I sustain the breath of all living. I breathe in the verdure and in the flowers, and when the waters flow like living things, it is I. I formed those columns that support the whole earth ... I am the force that lies hid in the winds, from me they take their source, and as a man may move because he breathes, so doth a fire burn but by my blast. All these live because I am in them and am of their life. I am wisdom. Mine is the blast of the thundered word by which all things were made. I permeate all things that they may not die. I am life. (Migne, col. 743.)

Hildegard thus supposes that the whole universe is permeated by a single living spirit, the figure of the vision. This spirit of the Macrocosm (Figure 102), the *Nous* or “world spirit” of Hermetic and Neoplatonic literature, the impersonated Nature, as we may perhaps render it, is in its turn controlled by the Godhead that pervades the form and is represented rising from its vertex as a second human face. Nature, the spirit of the cosmic order, controls and holds in subjection the hideous monster, the principle of death and dissolution, the *Hyle* or *primordial matter* of the Neoplatonists whose chaotic and anarchic force would shatter and destroy this fair world unless fettered by a higher power.

With the details of the visionary figure we need not delay (it is outside our purpose to attempt a full elucidation of Hildegard’s allegory. The eagle in the right wing signifies the power of Divine Grace, while the human head in the left wing indicates the powers of the natural man. To the bosom of the figure is clasped the Lamb of God), but we pass to the description of the structure of the Macrocosm itself, to which the second vision is devoted (Figure 103). Here appears the same figure of the Macrocosmic spirit. But now the head and feet only are visible, and the arms are outstretched to enclose the disk of the universe which conceals the body. Although the Macrocosm now described is considerably altered from Hildegard’s original scheme of the universe, she yet declares that “I saw in the bosom of the form the appearance of a disk of like sort to that which twenty-eight years before I had seen in the vision, set forth in my book *Scivias*”(Migne, col. 751). The zones of this disk are then described (Figure 100). They are from without inwards:

- (a) The *lucidus ignis*, containing the three outer planets, the sixteen principal fixed stars, and the south wind.
- (b) The *ignis niger*, containing the sun, the north wind, and the materials of thunder, lightning, and hail.

- (c) The *purus aether*, containing the west wind, the moon, the two inner planets, and certain fixed stars.
- (d) The *aer aquosus*, containing the east wind.
- (e) The *fortis et albus lucidusque aer*, where certain other fixed stars are placed.
- (f) The *aer tenuis*, or atmosphere, in the outer part of which is the zone of the clouds. All these zones are represented in the accompanying plates and diagram.

From all these objects, from the spheres of the elements, from the sun, moon, and other planets, from the four winds each with their two collaterals, from the fixed stars, and from the clouds, descend influences, indicated by lines, towards the figure of the Microcosm (Figures 101 and 103 and Plate II).

The Microcosm is then introduced:

And again I heard the voice from heaven saying, “God who created all things, wrought also man in His own image and similitude, and in him He traced [signavit] all created things, and He held him in such love that He destined him for the place from which the fallen angel had been cast (Migne, col. 744).

The various characters of the winds are expounded in a set of curious passages in which the doctrine of the Macrocosm and Microcosm is further mystically elaborated. An endeavour is made to attribute to the winds derived from the different quarters of heaven qualities associated with a number of animals (*Liber Divinorum Operum*, part i, visions 2 and 3). The conception is illustrated and made comprehensible by the miniatures in the Lucca manuscript (Plate II and Figs. 101 and 103).

An associated vision is devoted to a comparison of the organs of the human body, the Microcosm (Figure 103), to the parts of the Macrocosmic scheme. Some of these views are set forth below.

Another vision explains the influence of the heavenly bodies and of the “superi-

or elements” on the power of nature as exhibited on the surface of the earth. It is illustrated by a charming miniature in the Lucca manuscript (Plate II).

I saw that the upper fiery firmament was stirred, so that as it were ashes were cast therefrom to earth, and they produced rashes and ulcers in men and animals and fruits.

These effects are shown in the left upper quadrant of Plate II, where the ashes are seen proceeding from the *lucidus ignis*, the “upper fiery firmament.” Two figures are seen, a female semi-recumbent, who lifts a fruit to her mouth, and a male figure fully recumbent, on whose legs a rash is displayed. The trees also in this quadrant show the effects of the ashes, two of them being denuded of fruit and foliage.

Then I saw that from the *ignis niger* certain vapours (*Nebulae*) descended, which withered the verdure and dried up the moisture of the fields. The *purus aether*, however, resisted these ashes and vapours, seeking to hold back these plagues.

These vapours may be seen in the right upper quadrant of Plate II. They descend from the *ignis niger*, attenuate for a space in the *purus aether*, and then descend through the other zones on to an arid and parched land. Here are two husbandman; one sits forlornly clasping his axe, while the other leans disconsolately upon his hoe. On the legs of the latter a rash may be distinguished.

And looking again I saw that from the *fortis et album lucidusque aer* certain other clouds reached the earth and infected men and beasts with sore pestilence, so that they were subjected to many ills even to the death, but the *aer aquosus* opposed that influence so that they were no hurt beyond measure.

This scene is portrayed in the right lower quadrant of Plate II. Here is a husbandman in mortal anguish. He has gathered his basket of fruit and now lies stricken with the pestilence. His left hand is laid on his heart, while his right hangs listless on his thigh, pointing to tokens of plague

upon his legs. Beyond lies the dead body of a beast on which a carrion bird has settled.

Again I saw that the moisture in the *aer tenuis* was as it were boiling above the surface of the earth, awakening the force of the earth and making fruits to grow (Migne, col. 807).

This happier scene is represented in the left lower quadrant of Plate II. Here the beneficent fertilizing influence is falling on trees and herbs, and the happy husbandmen are reaping its results.

The main outline of the *Liber Divinorum Operum*, in which these visions are to be found, is borrowed from the work of her contemporary Bernard Sylvester of Tours, *De mundi universitate sive megacosmos et microcosmos*. In this composition, written about 1150 by a teacher in a cathedral school, gods and goddesses of the classical pantheon flit across the stage as though the writer were a pagan. The mythology of Bernard is founded mainly on Plato's *Timaeus*. The eternal *seminaria* of created things are mentioned and the general line of thought is Neoplatonic. Thus the *anima universalis* of Neoplatonic writings can be identified with the *Nous* of Bernard. This principle is contrasted with primordial matter or *Hyle*. The general setting of Hildegard's work is quite different, but Hildegard's figure of the spirit of the Macrocosm is identical with Bernard's *Nous*. *Hyle*, on the other hand, becomes in Hildegard's plan the monstrous form, the emblem of brute matter, on which the spirit of the universe tramples.

Hildegard's conception of Macrocosm and Microcosm, which was thus borrowed from Bernard Sylvester, has analogies also to those well-known figures illustrating the supposed influence of the signs of the zodiac on the different parts of the body. Such figures, with the zodiacal symbols arranged around a figure of Christ, may be seen in manuscripts anterior to Hildegard and may be traced back to pagan sources in which Hercules takes the place of Christ.

The influence of the “Melothesia” — to give it the name assigned by Porphyry — has been traced through its period of efflorescence at the Renaissance right down to our own age and country, where it still appeals to the ignorant and foolish, and is still to be found in popular calendars and prophecies.

Hildegard often interprets natural events by means of a peculiarly crude form of the doctrine of the parallelism of Macrocosm and Microcosm. Thus she tells us that “if the excess of waters below are drawn up to the clouds (by the judgement of God in the requital of sinners), then the moisture from the *aer aquosus* transudes through the *fortis et albus lucidusque aer* as a draught drunk transudes into the urinary bladder; and the same waters descend in an inundation (Migne, col. 757).

Again, events in the body of man are most naively explained on the basis of the nature of the external world as she has pictured it.

The humours at times rage fiercely as a leopard and again they are softened, going backwards as a crab; or they may show their diversity by leaping and going as a stag, or they may be as a wolf in their ravening, and yet again they may invade the body of man after the manner of both wolf and crab. Or else they may show forth their strength unceasingly as a lion, or as a serpent they may go now softly, now violently, and at times they may be gentle as a lamb and at times again they may growl as an angered bear, and at times they may partake of the nature of the lamb and of the serpent (Migne, cols. 3, 791 to 792). (These animals will be seen represented in Plate II and in Figures 101 and 103)

The word cancer is here used, but the crab goes sideways, not backwards. By cancer Hildegard, who had never seen the sea, means the freshwater crayfish *Astacus fluviatilis*, an animal common in the Rhine basin. It is the head of a crayfish that is figured in the miniatures of the vision of the Macrocosm in the Lucca manuscript.

Having completed her general survey of the Macrocosm and having investigated

in detail the structure of man’s body, the Microcosm, in terms of the greater universe, and discussed the influence of the heavenly bodies on terrestrial events, Hildegard turns to the internal structure of the terrestrial sphere (Figure 94).

Upon the surface of the earth towards the east stands the building which symbolizes the *aedificium* of the church, a favourite conception of our authoress. This church is surmounted by a halo, whence proceed a pair of pinions which extend the shelter over a full half of the earth’s circumference. As for the rest of the earth’s surface, part is within the wide-opened jaws of a monster, the Destroyer, and the remainder is beneath the surface of the ocean. Within the earth are five parts analogous, as she holds, to the five senses of man. An eastern clear arc and a western clouded one signify respectively the excellence of the Orient where Zion is situated, and the Cimmerian darkness of the Occidental regions over which the shadow of the dragon is cast. Centrally is a quadrate area divided into three zones where the qualities of heat and cold and of a third intermediate “temperateness” (*temperies*) are stored. North and south of this are two areas where purgatory is situated. Each is shaped like a truncated cone, and composed also of three sectors. Souls suffer the torment of flame in one section, the torment of water in another, while in the third or intermediate section lurk monsters and creeping things which add to the miseries of purgatory or at times come forth to earth’s surface to plague mankind (Figure 94). These northern and southern sections exhibit by their reversed arrangement the belief in the antipodean inversion of climate, an idea hinted at several times in Hildegard’s writings, but more definitely illustrated by a figure of Herrade de Landsberg (Figure 96).

Macrocosmic schemes of the type illustrated by the text of Hildegard and by the figures of the Lucca manuscript, had a great vogue in mediaeval times, and were

passed on to later ages. Some passages in Hildegard's work read curiously like extracts from Paracelsus (1491 to 1541), and it is not hard to find a link between these two difficult and mystical writers. Trithemius, the teacher of Paracelsus, was abbot of Sponheim, an important settlement almost within sight of Hildegard's convents on the Rupertsberg and Disibodenberg. Trithemius studied Hildegard's writings with great care and attached much importance to them, so that they may well have influenced his pupil.

The influence of mediaeval theories of the relation of Macrocosm and Microcosm is encountered among numerous Renaissance writers beside Paracelsus. But as knowledge accumulated, the difficulty in applying the details of the theory became ever greater. Facts were strained and mutilated more and more to make them fit the Procrustean bed of an outworn theory, which became untenable when the heliocentric system of Copernicus, Kepler, and Galileo replaced the geocentric and anthropocentric systems of an earlier age. The idea of a close parallelism between the structure of man and of the wider universe was gradually abandoned by the scientific, while among the unscientific it degenerated and became little better than an insane obsession. As such it appears in the ingenious ravings of the English follower of Paracelsus, the Rosicrucian, Robert Fludd, who reproduced, often with fidelity, the systems which had some novelty five centuries before his time. As a similar fantastic obsession this once fruitful hypothesis still occasionally appears in modern works of perverted learning.

§ 4. HILDEGARD'S VIEW OF THE STRUCTURE OF MAN, THE MICROCOSM

One of the visions of the *Liber Divinorum Operum* is devoted to a description of man's body according to the theory of the Macrocosm and Microcosm.

An investigation of her account reveals the fact that she is making an independent attempt to fit the anatomical knowledge of her day into her favourite theory. To understand her results we must know something of the material on which she is drawing, as well as of the theory into which she is trying to fit it.

The list of works containing anatomical descriptions that was available to a German writer of the twelfth century is not long. A perusal of them reduces her sources of information to three. One of these was the book *On the Nature of Man* by Constantine the African (died 1087). This book was translated by him about 1085, at the Benedictine Abbey of Monte Cassino, from some unknown Arabic original. The other anatomical work to which Hildegard was able to refer was a series of five diagrams representing respectively the arteries, veins, bones, nerves, and muscles (Figure 104). These diagrams were very widespread during the Middle Ages and were copied in the most servile fashion for centuries. Her account of the structure of the body was also in part derived from the work of Hugh of St. Victor *On the Members and Parts of Man*. On this, however, her dependence is less direct than upon the other two. The resultant is a curious visionary system of anatomy, physiology, and pathology, which we set forth in an abbreviated translation:

The humours may pass to the liver, where wisdom is tested, having been already tempered in the brain by the strength of the spirit, and having absorbed its moisture so that now it is plump, strong, and healthy.

In the right of man is the liver and its great heat, so that the right is swift to act and to work (An idea that occurs in Aristotle, *Parts of Animals*, ii, c. 2, but is rejected by Galen) ... the vessels of the liver, affected by the agitation of the humours, trouble the venules of the ear of man and sometimes confound the organ of hearing....

I saw also that sometimes the humours seek the navel, which covers the viscera as a cap, and holds them in, lest they be dissipated, and maintains their course and preserves the heat both of them and of the veins....

And the same humours go to the vessels of the reins and of other members, and pass in their turn to the vessels of the spleen, and then to the lungs and to the heart; and they meet the viscera on the left where they are warmed by the lungs, but the liver warms the right-hand side of the body. And the vessels of the brain, heart, lung, liver, and other parts carry strength to the reins, whose vessels descend to the legs, strengthening them; and returning along with the leg vessels, they unite with the virile organ or with the womb as the case may be.

Again, the muscles of the arms, legs, and thighs contain vessels full of humours; and just as the belly has within it viscera containing nourishment, so the muscles of arms, legs, and thighs have both vessels and the (contained) humours which preserve man's strength.... But when a man runs or walks quickly, the nerves about the knees and the venules in the knees become distended. And since they are united with the vessels of the legs, which are numerous and intercommunicated in a net-like manner, they conduct the fatigue to the vessels of the liver, and thus they reach the vessels of the brain, and so send the fatigue throughout the body.

The humours in man are distributed in just measure. But when they affect the veins of the liver, his humidity is decreased and also the humidity of the chest is attenuated; so that thus dried, he falls into disease of such a nature that the phlegm is dry and toxic and ascends to the brain. There it produces headache and pain in the eyes and wasting of the marrow, and thus if the moon is in default he may develop the falling evil (epilepsy).

The humidity also which is in the umbilicus is dispersed by the same humours, and turned into dryness and hardness, so that the flesh becomes ulcerated and scabby as though he were leprous, if indeed he do not actually become so. And the vessels of his testicles, being adversely affected by these humours, are dried up within them; and thus, the humours being withdrawn, impetigos may arise ... and the marrow of the bones and the vessels of the flesh are dried up, and so the man becomes chronically ill, dragging out his days in languor.

But sometimes the humours so affect breast and liver ... that various foolish thoughts arise ... and they ascend to the brain and infect it and again descend to the stomach and generate fevers there, so that the man is long sick. Yet again they vex the minor vessels of the ear with superfluity of phlegm; or with the same phlegm they infect the vessels of the lung, so that he coughs and can scarce

breathe and the phlegm may pass thence into the vessels of the heart and give pain there, or the pain may pass into the side, exciting pleurisy; under such circumstances also, the moon being in defect, the man may lapse into the falling sickness (Migne, cols. 792-3).

Sometimes Hildegard's visionary anatomical ideas can be paralleled among her contemporaries. Thus the following passage on the relationship of the planets to the brain is well illustrated by a diagram of Herrade de Landsberg.

From the summit of the vessel of the brain to the extremity of the forehead seven equal spaces can be distinguished. Here the seven planets are designated, the uppermost planet in the highest part, the moon in front, the sun in the middle, and the other planets distributed among the other spaces (Figure 105).

§ 5. BIRTH AND DEATH AND THE NATURE OF THE SOUL

The method by which the soul enters the body is set forth in a very striking vision in the Scivias and is illustrated in the Wiesbaden Codex by a no less remarkable miniature (Figure 106). The soul, which contains the element of wisdom, passes into the infant's body, while yet within the mother's womb. *The Wisdom of God* is represented as a four-square object, with its angles set to the four quarters of the earth, this form being the symbol of stability. From it a long tube-like process descends into the mother's womb. Down this there passes into the child a bright object, described variously as "spherical" and as "shapeless," which "illuminates the whole body," and becomes or develops into the soul.

The birth scene is strikingly portrayed. In the foreground lies the mother with the head and shoulders supported and the right arm raised. In her womb is the infant in the position known to obstetricians as a "transverse presentation." Around the child may be distinguished clear traces of the uterine membranes. Near the couch are ranged a

group of ten figures who carry vessels containing the various qualities of the child. Above and to the left the Evil One may be seen pouring some noxious substance into one of these vessels, or perhaps abstracting some element of good. The whole scene suggests the familiar fairy story in which, while all bring pleasant gifts to the child's birth, there comes at last the old witch or the ill-used relative who adds a quota of spitefulness.

The scene is described and expounded as follows:

Behold, I saw upon earth men carrying milk in earthen vessels and making cheeses therefrom. Some was of the thick kind from which firm cheese is made, some of the thinner sort from which more porous [*tenuis*] cheese is made, and some was mixed with corruption (tabes) and of the sort from which bitter cheese is made. And I saw the likeness of a woman having a complete human form within her womb. And then, by a secret disposition of the Most High Craftsman, a fiery sphere having none of the lineaments of a human body possessed the heart of the form, and reached the brain and transfused itself through all the members....

And I saw that many circling eddies possessed the sphere and brought it earthward, but with ever renewed force it returned upward and with wailing asked, "I, wanderer that I am, where am I?" "In death's shadow." "And where go I?" "In the way of sinners." "And what is my hope?" "That of all wanderers" (Migne, col. 415).

The vision is then further explained as follows:

Those whom thou seest carrying milk in earthen vessels are in the world, men and women alike, having in their bodies the seed of mankind from which are procreated the various kinds of human beings. Part is thickened because the seed in its strength is well and truly concocted, and this produces forceful men to whom are allotted gifts both spiritual and carnal And some had cheeses less firmly curdled, for they in their feebleness have seen imperfectly tempered, and they raise offspring mostly stupid, feeble, and useless And some was mixed with corruption for the seed in that brew cannot be rightly raised, it is invalid and makes misshapen men

who are bitter, distressed, and oppressed of heart, so that they may not lift their gaze to higher things (Migne, col. 421)... And often in forgetfulness of God and by the mocking devil, a *mistio* is made of the man and of the woman, and the thing born therefrom is deformed, for parents who have sinned against me return to me crucified in their children (Migne, col. 424). [Compare Constantine, *De humana natura*, sections "*De perfectione*" and "*De impeditone*".]

Hildegard thus supposes that the qualities and form of a child are inherited from its parents, but that two factors, the formless soul from the Almighty and the corrupt fluid instilled by the devil, also contribute to the character of offspring. This is the usual mediaeval view and is broadly portrayed in the figure.

The strange conception of the body being formed from the seed as cheese is precipitated and curdled from milk, is doubtless derived from a passage in the *Book of Job*:

Hast thou not poured me out as milk, And curdled me like cheese?

Thou hast clothed me with skin and flesh,

And knit me together with bones and sinews., (*Job* x. 10, 11) [The Aristotelian writings also compare the transformation of the material humours into the child's body with the solidification of milk in the formation of cheese.]

When the body has thus taken shape there enters into it the soul, which, though at first shapeless, gradually assumes the form of its host, the earthly tabernacle; and at death the soul departs through the mouth with the last breath, as a fully developed naked human shape, to be received by devils or angels as the case may be (Figure 107).

During its residence in the body the soul plays the part usually assigned to it in the earlier mediaeval psychology. Hildegard regards the brain as having three chambers or divisions, corresponding to the three parts of man's nature, an idea encountered in the writings of St. Augustine. Parallel to these there are, she tells us:

Three elements in man by which he shows life; to wit, soul (*anima*), body (*corpus*), and sense (*sensus*). The soul vivifies the body and inspires the senses; the body attracts the soul and reveals the senses; the senses affect the soul and allure the body. For the soul rules the body as a flame throws light into darkness, and it has two principal powers or limbs, the intellect (*intellectus*) and the will (*voluntas*) ... For the intellect is attached to the soul as the arms to the body; for as the body is prolonged into arms with fingers and hands attached, so the intellect is produced from the soul by the operations of its various powers (Migne, col. 425).

We need follow Hildegard no further into her maze of micro-cosmology, in which an essential similarity and relationship is discovered between the qualities of the soul, the constitution of the external cosmos, and the structure of the body, a thought which appears as the culmination of her entire system and provides the clue to the otherwise incomprehensible whole [Especially in the *Liber Divinorum Operum*, pars I, vis. iv.]

§6. THE PATHOLOGICAL BASIS OF THE VISIONS

For the physical accompaniments and phenomena of Hildegard's visions we have three separate lines of evidence: her own account; the statements of her contemporary biographers, Theodoric and Godefrid; and the miniatures of the Wiesbaden Codex, probably prepared under her supervision.

It is clear that despite the length and activity of her life Hildegard did not enjoy normal health. From a very early age she was the subject of trances and visions, and from time to time she was prostrated with protracted illness.

God punished me for a time by laying me on a bed of sickness so that the blood was dried in my veins, the moisture in my flesh, and the marrow in my bones, as though the spirit were about to depart from my body. In this affliction I lay thirty days while my body burned as with fever, and it was thought that this sickness was laid upon me for a punishment. And my spirit also was ailing, and yet

was pinned to my flesh, so that while I did not die, yet did I not altogether live. And throughout those days I watched a procession of angels innumerable who fought with Michael and against the Dragon and won the victory ... And one of them called out to me, "Eagle, Eagle, [The eagle is frequently in mediaeval writings a symbol of the power of Divine Grace] why steepest thou? ... All the eagles are watching thee.... Arise I for it is dawn, and eat and drink" ... And then the whole troop cried out with a mighty voice ... "Is not the time for passing come? Arise, maiden, arise!" Instantly my body and my senses came back into the world; and seeing this, my daughters who were weeping around me lifted me from the ground and placed me on my bed, and thus I began to get back my strength.

But the affliction laid upon me did not fully cease; yet was my spirit daily strengthened.... I was yet weak of flesh, timid of mind, and fearful of pain ... but in my soul I said, "Lord, Lord, all that Thou putteth upon me I know to be good ... for have I not earned these things from my youth up?" Yet was I assured He would not permit my soul to be thus tortured in the future life (Migne, col. 110).... Thus was my body seethed as in a pot ... yet gave I thanks to God, for if this affliction had not been from Him I had surely not lived so long. But although I was thus tortured, yet did I, in supernal vision, often repeat, cry aloud, and write those things which the Holy Spirit willed to put before me.

Three years were thus passed during which the Cherubim thus pursued me with a flaming sword ... and at length my spirit revived within me and my body was restored again as to its veins and marrows, and thus I was healed (Migne, col. 111).

This illness of Hildegard was the longest and most typical but by no means the only one through which she passed. She describes her affliction as continuing for long periods, but there can be little doubt, from her history, that during much of the time she was able to carry on some at least of her functions as head of a religious house.

The condition from which she was suffering was clearly a functional nervous disorder; this is sufficiently demonstrated by her repeated complete recoveries, her activity between the attacks, and the great age to which she lived. At first sight the long pro-

cession of figures and visions suggests that she might have been the victim of a condition similar to that of which Jerome Cardan has left us so complete a personal record. But on reading the books of visions the reader will easily convince himself that we are not here dealing with a dream-state. The visions are indeed essentially vivid. "These visions which I saw," she repeatedly assures us, "I beheld neither in sleep, nor in dream, nor in madness, nor with my carnal eyes, nor with the ears of the flesh, nor in hidden places; but wakeful, alert, with the eyes of the spirit and with the inward ears, I perceived them in open view and according to the will of God. And how this was compassed is hard indeed for human flesh to search out" (Migne, col. 384).

Nevertheless, though the visions exhibit great originality and creative power — the reader will often be reminded of William Blake — all or nearly all present certain characters in common. In all a prominent feature is a point or a group of points of light, which shimmer and move, usually in a wavelike manner, and are most often interpreted as stars or flaming eyes (Frontispiece). In quite a number of cases one light, larger than the rest, exhibits a series of concentric circular figures of wavering form (Plate XI); and often definite fortification figures are described, radiating in some cases from a coloured area (Plates XII, XIII). Often the lights gave that impression of working, boiling, or fermenting, described by so many visionaries, from Ezekiel onwards.

This outline of the visions Hildegard herself variously interpreted. We give examples from the more typical of these visions, in which the medical reader or the sufferer from migraine will, we think, easily recognize the symptoms of "scintillating scotoma." Some of the illuminations, here reproduced in their original colours, will confirm this interpretation.

I saw a great star most splendid and beautiful, and with it an exceeding multitude of falling sparks which with the star followed south-

ward. And they examined Him upon His throne almost as something hostile, and turning from Him they sought rather the north. And suddenly they were all annihilated, being turned into black coals ... and cast into the abyss that I could see them no more (*Scivias*, lib. iii, vis I; Migne, col. 565) (Frontispiece).

This vision, illustrated by the beautiful figure of stars falling into the waves, is interpreted by her as signifying the Fall of the Angels.

The concentric circles appear in numerous visions, and notably in that of the *Days of the Creation of the World and the Fall of Man*, illustrated by what is perhaps the most beautiful of all the miniatures of the Wiesbaden Codex (Figure 108). It is in this concentric form that Hildegard most frequently pictures the Almighty, and the idea again appears in the eleventh miniature, here reproduced in its original colours, which she describes as "a most shining light and within it the appearance of a human form of a sapphire colour which glittered with a gentle but sparkling glow" (Plate XI). Appearances of this type are recorded again and again.

The type with fortification figures is encountered in a whole series of visions, of which we reproduce the account and illumination of the *Zelus Dei* (Plate XIII, and *Sedens Lucidus*, Plate XII).

I looked and behold, a head of marvellous form ... of the colour of flame and red as fire, and it had a terrible human face gazing northward in great wrath. From the neck downward I could see no further form, for the body was altogether concealed ... but the head itself I saw, like the bare form of a human head. Nor was it hairy like a man, not indeed after the manner of a woman, but it was more like to a man than a woman, and very awful to look upon.

It had three wings of marvellous length and breadth, white as a dazzling cloud. They were not raised erect but spread apart one from the other, and the head rose slightly above them ... and at times they would beat terribly and again would be still. No word uttered the head, but remained altogether still, yet now and again beating with its extended wings.

From the head extended a series of fortification lines, and this peculiar form of

vision is reproduced on several occasions and variously interpreted (Plate XIII). It is united with similar visions in what we regard as a reconstructed conception of exceedingly complex structure. This she claims to see separately, and she interprets it as the *aedificium* of the city of God (Plate XIV). Such reconstructed visions are clearly of a different type and origin to the simple group in which a shining light or group of lights is encountered and interpreted as a speaking figure.

Hildegard's visions, perhaps without exception, contain this element of a blinding or glittering light, which she interprets in a more or less spiritual manner. We terminate our account with the passage in which she sums up her experiences of it:

"From my infancy up to the present time, I being now more than seventy years of age, I have always seen this light in my spirit and not with external eyes, nor with any thoughts of my heart nor with help from the senses. But my outward eyes remain open and the other corporeal senses retain their activity. The light which I see is not located but yet is more brilliant than the sun, nor can I examine its height, length, or breadth, and I name it the "cloud of the living light." And as sun, moon, and stars are reflected in water, so the writings, sayings, virtues, and works of men shine in it before me. And whatever I thus see in vision the memory thereof remains long with me. Likewise I see, hear, and understand almost in a moment and I set down what I thus learn....

But sometimes I behold within this light another light which I name the "Living Light itself" ... And when I look upon it every sadness and pain vanishes from my memory, so that I am again as a simple maid and not as an old woman (Migne, col. 18).

And now that I am over seventy years old my spirit, according to the will of God, soars upward in vision to the highest heaven and to the farthest stretch of the air and spreads itself among different peoples to regions exceeding far from me here, and thence I can behold the changing clouds and the mutations of all created things; for all these I see not with the outward eye or ear, nor do I create them from the cogitations of my heart ... but within my spirit, my eyes being open, so that I have never suffered any terror when they left me (Migne, col. 18).

§7. SOURCES OF HILDEGARD'S SCIENTIFIC KNOWLEDGE

In our discussion we have often referred to works consulted by Hildegard. In this section we have to consider her sources in more general terms. Her imaginative power and mystical tendency make an exhaustive search into the origin of her ideas a difficult task. Unfortunately, she does not herself refer to any of her sources other than the Biblical books; to have cited profane writers would have involved the abandonment of her claim that her knowledge was derived by immediate inspiration from on high. Nevertheless, it is possible to form some idea, on internal evidence, of the origin of many of her scientific conceptions.

The most striking point concerning the sources of Hildegard's mystical writings is negative. There is no German linguistic element distinguishable, and the writings show little or no trace of native German folk-lore. She claims to be a simple unlearned woman, unskilled in the Latin tongue; but with the testimony before us of the writings themselves, and of her use of Latin, the statement may be set down to a mere literary formula, accentuated by the desire to magnify the element of inspiration. So far from her having been illiterate, we perceive that not only the form — which might have been modified by a contemporary editor — but also the structure and details of her writings betray much painstaking study of the works of others.

Hildegard lived at rather too early a date to drink fully at that broad stream of new knowledge that was soon to flow into Europe through Paris from its reservoir in Moslem Spain. Such drops from that source as may have reached her must have trickled in either from Italy, with the works of Constantine the African (died 1087), or perhaps from the Jews who had settled in the Upper Rhineland.

Her science is primarily of the usual degenerate Greek type, of the earlier

Middle Ages. We may distinguish in it disintegrated fragments of Aristotle and Galen, coloured and altered by the customary mediaeval attempts to bring theory into line with scriptural phraseology, though a degree of independence is at times obtained by the visionary form in which her views are set. Hildegard exhibits, like all mediaeval writers on science, the Aristotelian theory of the elements, but her statement of the doctrine is illuminated by flashes of her own thoughts and is coloured by suggestions from St. Augustine, Isidore of Seville, Bernard Sylvester, and from writings attributed to Boethius.

The great translator from the Arabic, Gerard of Cremona (1114 to 1187), was her contemporary, and his labours at Toledo made available for Latin readers a vast number of scientific works which had previously circulated only among Arabic-speaking peoples. Several of these works, notably Messahalal's *De Orbe*, and the Aristotelian *De Caelo et Mundo*, and parts of the *Meteorologica*, which contain material on the form of the Universe and on the nature of the elements, evidently reached the Rhineland in time to be used by Hildegard. On the subject of the form of the earth Hildegard expressed herself definitely as a spherist, a point of view more widely accepted in the earlier Middle Ages than is perhaps generally supposed. She considers in the usual mediaeval fashion that this globe of ours is surrounded by celestial spheres that influence terrestrial events. But while she claims that human affairs are controlled, under God, by the heavenly cosmos, she yet commits herself to none of that more detailed astrological doctrine that was developing in her time, and came to efflorescence in the following centuries. In this respect she follows the earlier and more scientific spirit of such writers as Messahalal, rather than the wilder theories of her own age. The shortness and simplicity of Messahalal's tract on the sphere made it very popular. It was

one of the earliest to be translated into Latin; and its contents would account for the change which, as we shall see, came over Hildegard's scientific views in her later years.

The general conception of the universe as a series of concentric elemental spheres had penetrated to Western Europe centuries before Hildegard's time. Nevertheless, the prophetess presents it to her audience as a new and striking revelation. There is another favourite mediaeval cosmic theory, however, which she developed along individual lines. Hildegard exhibits in a peculiar and original form the doctrine of the "Macrocosm and Microcosm" (see above). Hardly distinguishable in the Scivias (1141 to 1150), it appears definitely in the *Liber Vitae Meritorum* (1158 to 1162), in which work, however, it takes no very prominent place, and is largely overlaid and concealed by other lines of thought. But in the *Liber Divinorum Operum* (1163 to 1170) this belief is the main theme. The book is indeed an elaborate attempt to demonstrate a similarity and relationship between the nature of the Godhead, the constitution of the universe, and the structure of man, and it thus forms a valuable compendium of the science of the day viewed from the standpoint of this theory.

From whence did she derive the theory of Macrocosm and Microcosm? In outline its elements were easily accessible to her in Isidore's *De Rerum Natura*. But the work of Bernard Sylvester, *De mundi universitate sive megacosmus et Microcosmus*, corresponds so closely both in form, in spirit, and sometimes even in phraseology to the *Liber Divinorum Operum*, that Hildegard must have had access to it. Bernard's work can be dated between the years 1145 to 1153. This would correspond well with the appearance of his doctrines in the *Liber Vitae Meritorum* (1158 to 1162) and their full development in the *Liber Divinorum Operum* (1163 to 1170).

Another older contemporary with whom Hildegard presents points of contact is the mystical writer Hugh of Saxony (1096 to 1141), head of the monastic school of St. Victor at Paris. In Hugh's writings the doctrine of the relation of Macrocosm and Microcosm is more veiled than with Bernard Sylvester. Nevertheless, the symbolic universe in his work *The Mystic Noah's Ark* is on the lines of Hildegard's belief, and presents many parallels to the visions of Hildegard.

At Hildegard's date very complex cabalistic systems involving the doctrine of Macrocosm and Microcosm were being elaborated by the Jews, and Rabbinic mysticism specially flourished in her district. The famous traveller Benjamin of Tudela, who visited Bingen during Hildegard's lifetime, tells us that he found there a congregation of his people. It is clear from her writings that she was familiar with Jews, and it is possible that she may have derived some of the very complex Macrocosmic conceptions, with which her last work is crowded, from local Jewish students.

The Alsatian Abbess, Herrade de Landsberg (died 1195), a contemporary of Hildegard, developed the Microcosm theory along similar lines. A combination of circumstances thus make it probable that the theory, in the form in which these writers present it, reached the Upper Rhineland somewhere about the middle or latter half of the twelfth century, and that it was conveyed by works coloured by Neoplatonism and depending on Arabic sources.

Apart from the Biblical books, the work which made the deepest impression on Hildegard was Augustine's *City of God*, which forms the background of a large part of the *Scivias*. *Ezekiel*, *Daniel*, and the *Apocalypse* among the Biblical books, the *Gospel of Nicodemus* and the *Shepherd of Hermas* among Apocryphal books, contain a lurid type of vision which her own spiritual experiences enabled her to utilize, and which fitted in well with her Microcosmic doctrines. Ideas on the harmony and

disharmony of the elements she picked up from the *Wisdom of Solomon* and from the Pauline writings, supplemented by Isidore of Seville.

Her figure of the Church in the *Scivias* reminds us irresistibly of Boethius' vision of the gracious feminine form of Philosophy, and Boethius was very widely read in Hildegard's day. The visions of the punishments of Hell which Hildegard recounts in the *Liber Vitae Meritorum* bear resemblance to the work of her contemporary Benedictine, the monk Alberic the younger of Monte Cassino (1101 to c.1160), to whom Dante also became indebted.

Hildegard repeatedly assures us that most of her knowledge was revealed to her in waking visions. Some of these, we have seen, had a pathological basis and she was a sufferer from a condition that would nowadays probably be classified as hystero-epilepsy. Too much stress, however, can easily be laid on the ecstatic presentment of her scientific views. Visions, it must be remembered, were a common literary device at the period. Her contemporary Benedictine sister, Elizabeth of Schönau, as well as numerous successors, as for example Gertrude of Robersdorf, adopted the same frame-work for their message. The use of the vision for this purpose remained popular for centuries, and we may say of these writers, as of Dante, that the visions gave, not the genius nor the poetic inspiration, but the form merely in which they were realized.

The contemporaries of Hildegard who provide the closest analogy to her are Elizabeth of Schönau (died 1165), whose visions are recounted in her life by Eckbert, and Herrade de Landsberg, Abbess of Hohenburg in Alsace, the priceless manuscript of whose *Garden of Delights* was destroyed in the siege of Strassburg in 1870. With Elizabeth of Schönau, who lived in her neighbourhood, Hildegard was in frequent correspondence. With Herrade she is not known to have had

direct communication; but the two were contemporaries, lived not very far apart, and under similar political and cultural conditions. Elizabeth's visions present some striking analogies to those of Hildegard, while the figures of Herrade, of which copies have fortunately survived, often suggest the illustrations of the Wiesbaden or of the Lucca manuscripts of the works of Hildegard.

In fine, Hildegard presents us with the science of the Dark Ages just emerging

into the Arabian twilight. In spite of the extreme mystical form in which her material is cast, we can discern the Aristotelian and Neoplatonic tendencies which the new Arabian science was conveying to Western Europe.

We can perceive in Hildegard something of the nature of a complete and coherent philosophy, which separates her from the ages that went before her. Hildegard's works are heralds of the dawn of a new movement.