PROBLEMS OF ADOLESCENCE

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PREFACE

In December 1983, Dr. Rudolf Lissau spoke to a meeting of professors, students and teachers at an Inquiries in Curriculum and Instruction Seminar at the Department of Secondary Education. Dr. Lissau became the first of several speakers we have had over the past year or so associated with the world-wide movement of Waldorf schools. Steiner's comprehensive vision of the task of education as being the fullest development of young people in a world which is at once both mysterious and understandable, offers a continuous challenge to the teachers of Waldorf schools. This struggle is of great interest to the educational community at large, both because it produces important insights into some of the most fundamental educational questions, and also because it poses these questions within the concrete setting of everyday school and classroom practice.

Dr. Lissau's topic, "the problems of adolescence," exemplifies the kind of profound and yet practical topics which preoccupy Waldorf education. Adolescence is the age of transition between childhood and adulthood. Lissau asks: How is a contemporary school to help adolescents to grow and mature in an age and in a society which are no longer able to imbue the coming of age with meaning? The response he provides in this paper grows out of a wealth of experiences garnered during forty years of teaching experience as a secondary school teacher in a Waldorf school at Wynstones, England.

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PROBLEMS OF ADOLESCENCE

Introduction

This paper is based on a lecture which the author was privileged to give to the Department of Secondary Education in the University of Alberta in December 1983. The form of a paper allows a wider treatment of the subject which, in this case, means entering on a few philosophical and methodological questions before starting with the subject itself. The reason for this procedure is partly biographical. The author, a graduate of the universities of Vienna and London, has not followed an academic career, but has spent his life as a practicing teacher. His early experience was gained as a teacher of the blind and then, for forty years, he taught adolescents at Wynstones School, Gloucestershire, England. Wynstones was, and still is, an unorthodox place. It is one of about 400 Steiner or Waldorf Schools which are spread over large parts of the globe and which can be found in all English-speaking countries as well as in Western and Central Europe. These schools are "free" schools, which means that they tend to be self-governing and flourish best where the boundaries which the legislators have set are wide, and where—as in the United Kingdom, for example—officialdom is still tempered by a tradition of tolerance and pluralism. These schools attempt, as far as the social reality of a particular country allows it, not to be private schools for a privileged elite, but a genuine alternative education service.

The first of these schools was founded in 1919. It was meant for the children of the workforce of the Waldorf Astoria cigarette factory in Southern Germany. When in 1933 the Nazis came to power in Germany these schools either closed voluntarily on the ground of incompatibility with the regime or were closed by the government for the same reason. Whenever the German armies occupied a country, one of the first acts was the closure of Steiner schools. Only a handful of English-speaking schools were able to continue throughout the War. After the War, Steiner education was reestablished, and since the sixties we have been able to witness a rapid expansion of these schools. One is inclined to think that this is the fastest growing educational movement of the present day and that in number and international distribution these schools are only surpassed by the schools of the teaching orders of the Roman Catholic Church. The main obstacle to further growth is neither legislation nor lack of demand, but a shortage of properly qualified teachers.

Steiner schools are self-governing and therefore vastly different from each other. These differences arise from the educational legislation of the particular country, its social structure and cultural tradition, the composition of the body of teachers, their aims and intentions, and the particular local setting of the school. They share, however, some overriding aims and a coherent system of psychology—though teachers referring to it would probably speak about the latter as a shared picture of man. This includes a developmental psychology not too different from that of Piaget who began his work after Steiner's death and researched completely independently of him. The two overriding aims of Steiner education are education for freedom—or the education of autonomous persons—and the building up of working groups where pupils are not competing with each other, but learn cooperation and respect for the totally different individualities which make up a class.

Steiner

Rudolf Steiner (1861-1925), the founder of the *Waldorfschule*, is very difficult to describe in a few words because of a lack of valid comparisons. He was a seer who rejected mysticism, vagueness and emotionalism. A man who worked in a multiplicity of media, the written and the spoken word, poetry and drama, painting, sculpture and architecture. A man who gave profound advice on the spiritual and moral development of man, a master of meditation who at the same time was able to inspire through his practical suggestions to experts in as widely different fields as education and agriculture, medicine and banking, natural and social science. "Obviously a charlatan," the response to such a catalogue is likely to be. Against a statement like this there stands, however, the undoubted success of many activities working with his suggestions. We shall, then, turn now to some of his basic ideas insofar as they are relevant to education.

The body of facts and ideas Steiner enunciated was called by him Anthroposophy, a word which to him seemed far from ideal. He once described this Anthroposophy as the full awareness of the humanity of man. He experienced man as a threefold being who lives in the wonderwork of the human body, in the realm of the soul, that is in the field of psychology, the way a man experiences his and others' personality, and in his existentialist or spiritual dimension, a dimension of which some psychologists such as Viktor Frankl or Assogioli are also aware, and without which the totality of human existence cannot be grasped.

Steiner laid great stress on the development of human consciousness. As ancient religions, poetry and mythology witness, men used to experience the world in an entirely different way from ours; to all intents and purposes they lived in a different world. Steiner describes these changes of consciousness in minute detail. The form taken as norm in our Western society arose, according to him, in Europe at the early Renaissance. This form of consciousness supplied the basis for scientific thinking, broke the power of age-old groupings and traditions, and, in many ways, encouraged the free development of the human individuality. This form of consciousness, like all the others before it, is transient, not—as most contemporaries assume—the only possible one or the ultimate.

While Steiner accepted the validity of this development—he never attempted to put the clock back or advocated prescientific attitudes—he made a strong case for its further development. Far from setting boundaries to scientific investigation he constantly attempted to show in a multiplicity of ways how man's inner life, his awareness of himself could also be made the subject of scientific investigation. So he called his Anthroposophy also Science of the Spirit. At the same time he endeavored to demonstrate that the present scientific approach was not the only way to increase the realm of knowledge. Goethe had taught him that a study of the qualities of phenomena was worthwhile and important, and that the artist can point to essential insights into the human condition which are closed to the mere scientist.

He therefore argued against reductionism which, already three generations ago, he recognized as one of the greatest dangers to the full development of man. He foresaw that it would lead to an impoverishment of human experience and open wide the doors of mass manipulation. It, would destroy what is typically human in man. People who like the present author are persuaded of the validity of Steiner's diagnosis were not surprised when one of the foremost behavioral scientists of our age looked back at his life's work and called the book which summarized the achievement of his work ***Beyond Freedom and Dignity***.

These short remarks may help to explain the method of presentation as well as the content of the following consideration of Problems of Adolescence.

The Experience of Adolescence

It seems that only since the beginning of this century have people become aware of adolescence as a time of crisis and, often, of acute suffering. Not only the psychologists, but even more so creative artists, dramatists, novelists and poets made their contemporaries realize that adolescence, a time when the sensitivities of young women and men are particularly acute, must be met by the understanding and compassion of the adult world. Indeed, the experience is often overwhelming and can, in some extreme cases, lead to nervous breakdown, schizophrenia or suicide. More often it means a breaking free from the family. Parents who had been conscious of a happy relationship with their child now see him or her estranged and isolated from them and acquiring habits totally alien to their own. They notice a sudden unexpected irritability. Young women show a tendency to become prickly, young men to become reticent and sullen, and often display a strong need for solitude.

Both sexes suddenly become aware of their bodies. There are, of course, the obvious signs of the beginning of sexual maturity which cause tensions and problems so far unknown. But the male, apparently, experiences additional difficulties. His body feels heavy, he has never known such tiredness, he becomes aware of his skeletal structure. For the first time, he acutely experiences his mortality. The more sensitive are frightened by the area of darkness which opens up in the very center of their self awareness. They are frightened by the intensity of some of their sexual fantasies and by their latent aggressiveness. They feel capable of many a crime, including murder. Thereby the question of their identity is opened up. "Surely, this cannot be me. I never knew such a feeling." Or: "I did not know that I carried such depths within me." Feelings of guilt arise, feelings which in former times were mercilessly abused by parents, teachers and clergy to control and intimidate the young. Today, as much as in bygone ages, a whole host of new moral problems arise, in fact, the world of morality, of conscious decision making—no small burden—suddenly opens up before the adolescent. Indeed, their moral sensitivity is likely to be more acute than at any other period in their lives. Young women particularly cannot bear the slightest injustice, real or imagined, whether to themselves, to their friends or to people unknown to them. For many young people this is an age of awe-inspiring questions, of existential, religious, metaphysical and philosophical problems. The question

of identity looms large. With it a host of other questions of an existentialist nature arise: human responsibility—has it limits?—individual freedom painfully juxtaposed to a deepened social awareness, and many others. For the first time there is an intimation of infinity and so the mystery of the world we inhabit is added to the search for identity. These problems are deeply worrying, even if they remain inarticulate. The thirst for justice and brotherhood will drive many to social protest and to a search for ideal solutions. Alternatives are eagerly discussed. The aims are absolute, the means unknown.

At the same time aesthetic perception is sharpened. Poetry, drama, music, dance, painting are intensely experienced and, among the more sophisticated, earnestly discussed. The fullness of life has opened up before the adolescent who neither has control over his emotions—which subsequently as an adult he may or may not acquire—nor the ability to relativize his absolute moral demands. If we try to imagine all these new problems and the demands which they make on a personality not yet fully integrated, balanced and controlled, the immense strain of these years will be apparent. Experience shows that, broadly speaking, the greater the turmoil of these years the greater the potential for mature manhood or womanhood is indicated.

The Evidence of Former Ages

In non-Western societies the problems of adolescence were not experienced to their full extent, and also in the traditional life of Europe and North American they were more easily contained than is the case today. There are two totally different reasons for this change. On the one hand, until recently, the compulsion of tradition and convention, of society and the church molded young men and women more often than today into socially acceptable types. The price of this process was, of course, a high degree of uniformity. On the other hand, older forms of society had developed ways by which adolescence could be creatively met. However different from each other those more ancient forms of society were, they all led their young, though sometimes only the males, consciously through adolescence and into a new stage of life. We usually apply the term initiation to the ceremony in which this new form of life was made manifest. The young were, as we said, consciously prepared for a new stage in life, they were trained in their new roles, and the whole community was made aware of the fact that the desired goal had been successfully

achieved. No young person was afterwards ever able to forget the increase in stature which this step entailed.

Initiation meant two things: an increase of knowledge and a new role in society. The young were given the accumulated collective wisdom of the tribe in the form of mythology, dance and drama. Thereby they were given answers to questions which were only forming and had probably not yet been articulated. They felt they were living in a meaningful world in which they, the other tribesmen, the family, plants and animals, heaven and earth had their duly appointed place in an ordered universe. This knowledge gave them security and confidence.

But at the same time they were given new and socially valuable tasks to fulfill in harmony with their newly-found sensitivities and increased strength. In Alex Haley's *Roots*, there is an imaginative description of a negro boy returning from the initiation ceremony to his home. He meets his mother whom he loves and—instead of showing her the accustomed respect—treats her like dirt true to his newly-found role as an adult male of the tribe. She, however, experiences a mixture of sadness and pride. Sadness because she has lost her beloved firstborn, pride because her beloved son has learned to behave like a real man. Today, we shall probably sympathize with the mother and feel her loss much more acutely than her gain. But what mattered to the tribe—and not only to this imaginary tribe, but to most tribes we have heard of and to most traditional cultures—is that the young generation was being integrated into human society, that they were given a new insight and a new role at just that time in life when they needed to feel increased responsibility and self confidence.

The Contemporary Situation

Compared with earlier cultures, our Western society leaves the adolescent completely unprotected; indeed, it constantly leads him into temptation. From an early age many children are not guided or directed to socially and individually useful activities, but are left to find their own occupations. We who have suffered from the tyranny of a normative and strictly judgmental society believe in the free expression of the child and help him to find an easy fulfillment of his wishes. We often cannot increase his field of discretion when he approaches puberty because there is little authority left of which we can now divest

ourselves. There will be few young men today who have had to wait for their eighteenth or twenty-first birthday to be given the keys of the house, in former times the traditional symbol of their adult status.

Worst of all: where the cultures of old presented the young with the picture of an ordered society within a meaningful universe, our children and adolescents are face to face with a meaningless world and so become alienated from it as they become alienated from each other. Where the younger generations of old were trained in the art of cooperation, the young of today—certainly in Europe and in Japan—look at their contemporaries as their competitors. School has become a place of meaningless activities which will, for the successful, lead to lucrative careers. You learn to manipulate a calculator, to answer objective tests, but nothing you are doing or learning is meaningful to your own development, nor does it connect you to the world you experience with your senses. Everything that is presented has to be "scientific," that means abstract, value-free and quantifiable. Whatever enthusiasm is left in the pupil will be channelled into the world of sport. Neither the family nor the school is helpful in adolescence, and society, as said before, offers its inducements and kicks from alcohol to heroin.

It is as if our commercialized society can only succeed by depriving man, certainly at least adolescent man, of much of the human substance which used to sustain former civilizations. These deprivations were foreseen already two generations ago by writers such as Aldous Huxley in *Brave New World* and Rainer Maria Rilke in the tenth of the *Duino Elegies*.

Security and Growth

It is obvious, that other things being equal, puberty and adolescence will be easier to face if the child entering upon it is already in good health, bodily and psychologically. A Steiner school is organized so that at the age of six to fourteen two sides in the development of the child are given particular attention: security and steady growth. Both these aspects of psychological health will, of course, have been fostered in the preschool age by parents, play leaders and kindergarten teachers interested in the work of Steiner. We shall confine ourselves to a consideration of practices in the school proper.

Security is achieved by the practice of asking one teacher to take charge of a group of children for the whole period of eight years and teach them in most, though not in all, subjects. Life, of course, sometimes has other ideas. There are things like pregnancies, illnesses and so on, but it is remarkable, nevertheless, how often classes in Steiner schools manage to have one principal teacher only from the age of six to fourteen plus. The children and their teacher come to know each other intimately. The teacher can plan the work over years, refer to events of some years ago which still live in their imagination, and can raise expectations for the future. The teacher will be able to set out his or her work so that children, according to their differing capacities, are fully engaged in the subject studied, and he or she will distribute praise or blame not according to their ranking in class, but to the approximation to their own individual potential. The children, in their turn, learn to trust the woman or man whom they have known over such an extended period of time. Of course, this system could in the end lead to feelings of dependency were it not for the fact that the last years of the class teacher coincide with the age of puberty of his or her charges. At this age when critical faculties of the children reach their climax they can see through their teacher completely, however much they might have loved and respected him in former years. When at last they have critically watched and his or her former glory has been shed, then it will be time to bid farewell to the class. Then they can in future years meet the teacher freely and consciously, and reestablish a totally new form of relationship—or simply pass by. What the teacher has achieved over these years is much. We are concerned here only with those aspects which increase the mental health of the children. The teacher has given them stability, confidence, an ability to cooperate with and understand each other, and joy in the community within which they are working.

We have already mentioned steady growth. By this we mean that according to their particular age children should feel a constant widening of their horizon. We know from Piaget and others that in our development we all go through qualitatively different stages. These can to a certain extent be disregarded, but at a price. Children under the pressure of a curriculum imposed for extraneous reasons and not in harmony with their natural development are deprived of real growth towards maturity. If we choose to disregard their natural development, we can only elicit mechanical responses from them. We train them in manipulation, but they do not become properly involved with the subject studied. The

steady growth which we have in mind means to awaken children to ever new areas of experience, areas in which the growing child can become creative. So we teach not only academic subjects, but also artistic, practical and craft activities. In each area of study we involve the whole of the growing personality, not only a narrow range of intellectual abilities. Social and aesthetic issues are as much part of the teaching activities as are intellectual and moral questions. In all this we observe individuals growing to maturity and mastering something like the full range of activities appropriate to their particular age.

The Adolescent in School

To most adolescents school work is not congenial. It is only in our technological age that we expect them to spend a major part of their time in a schoolroom when the natural inclination of young persons would be to be out and about to test their newly-won strength, to meet friends, if possible of both sexes, to widen their sphere of experience, and to discuss these new experiences with peers, or—to withdraw from all human contact and be alone with their thoughts, moods, intimations and desires.

In a Steiner school the coming of adolescence is marked in a number of ways, each designed to suggest to the pupil that he has entered on a new stage in life. Up to now he or she has had to relate particularly to one teacher, a class teacher whose natural authority influenced not a little the social life of the class. Now he or she is met by a number of teachers of equal standing and will develop a different relationship to each of them. Compared with the guidance which the class teacher has been able to provide unobtrusively the adolescent is now faced in school with a multitude of situations when judgment and his own sentiments will be of decisive importance.

An experienced teacher will increase this feeling of newly-won independence by giving his class an ever greater say in the social decisions which will have to be made. In the way in which he addresses his pupils and in his expectation of how he wants to be addressed by them he makes it obvious that, in his eyes, his pupils have each a different standing from that of only one year ago. This teacher will use the period of fourteen to eighteen plus so that, year by year, the pupils feel that their area of discretion is being widened and that they take ever greater responsibility for all the social arrangements in their class. Thereby they become involved in an ongoing discussion of the intentions underlying the social life of

their school and learn to deal with real life issues. They experience the necessity of making choices. The teacher is likely to point out to them that all through their lives choices will have to be made which then in turn will shape their lives, and that avoiding making a choice is also a choice. But the teacher will go on to say that while making choices is an essential part of the human condition, nobody but they themselves can decide what choices are to be made. He will, in other words, encourage them in adolescence to face life in its fullness and starkness, and to accept the responsibilities of human freedom.

Relevance

We have shown how the social teaching of the school is not given as part of a course of instructions, but arises out of real life situations in which adolescent pupils are invited to take an ever widening part. The same is attempted also in more formal teaching. As much as possible this is related to real life and as much as possible learning is achieved through action.

With their new status within the school goes also a change of emphasis in the syllabus. There is both a widening of the areas of study and an increased emphasis on the world in which we are living. The freedom prevailing in Steiner schools is such that the teacher can adapt the lessons to what is of prime importance to a particular class. In a Canadian setting questions like bilingualism, immigration, tensions between unions and employers could therefore be discussed in class on the day when a particular problem occupies the attention of the country. Equally, this possibility to react spontaneously to a situation can be helpful in many other areas. Take sex education. What is drearier and more dehumanizing than going at a foreordained hour to the biology laboratory, switch off the light and then study with the help of slides the fertilization of a human egg? Young people feel betrayed. Is this all they can tell us? Is there no mystery, no joy, no profundity in sex? And what about—love?

In a Steiner school where student participation in a lesson is strong, one stray remark by a young man or woman can give the geography lesson a quite new and unexpected turn. The teacher has felt that this is the right moment. The remark by the pupil had kindled the imagination and expectation of the class and to stand back now would be a letdown for the pupils. He will respond either by a pithy aside which he knows will remain in their

minds when the main business of the lesson will long be forgotten. Or he will break off in midstream and enter on a discussion of the issue involved—say, abortion—which is bound to rivet the pupils' attention so that very likely for the remainder of the lesson there is no going back to the subject we had started with. A socially aware teacher is unlikely to preach. He will see to it that the various sides to the argument are given expression, and if necesary will even play the role of the devil's advocate. Through questions and occasional contributions he will attempt to deepen the level of the discussion. He will provide facts which the class may not be aware of. All the time he has two aims in mind. One is to assure the young people—not by words, of course—that their school is not a sham, but connects them to the world in all its aspects, the second is to increase their feeling of individual responsibility. It is worth repeating here that he will not preach, but will point out that each human action has far-reaching consequences, that human decisions are bound to vary according to what your own picture of yourself is, what aims you have set yourself in dealing with others, and in what kind of a world you think you are living. We shall return to this last question later.

Steiner schools have made many different arrangements whereby their pupils become involved in "real" life, that is in the actual conditions in which adults today find themselves. Pupils might work in the carpentry shop and in the smithy, spin and weave, do leather and basket work, to mention only a few of the more usual activities. Some schools, however, go much further and expect their pupils to become involved for three or four weeks each year in a different form of adult activity. One year they might work on a farm, the next in a factory, and do social work in the third year. Such activities are particularly valuable if some teachers join in the actual work and then discuss with their pupils some of their experiences.

The Widening Curriculum

We indicated above that the question of relevance is paramount in the teacher's mind. His or her choice of subject will be guided by what can best engage the interest and the imagination of the class. Nevertheless, ordinary academic work is, of course, taken seriously. English, mathematics, foreign languages are studied, but for the purpose of this short essay about problems of adolescence, it would mean going too far if now we were to

show how these basic subjects are tackled in a Steiner school so that they too arouse interest and spontaneous life. However, it is a feature of these schools that other new aspects open up before the adolescent. Some have been mentioned. Very characteristically for these schools, the subject of great art is introduced to these adolescents whose sensitivities have been acutely sharpened through the biological and psychological changes which they have undergone. The visual arts, drama, music, poetry have all been experienced from the beginning of their school days through various activities appropriate to their age. These do not stop now, but are enhanced by the appreciation and discussion of great works in these forms of art. They are seen in their historical and social context, are studied as the works of particular people, and are analyzed and appreciated as statements about the essence of human life as well as studied for their composition, style and other, purely aesthetic aspects. Far from specializing and thereby narrowing down young people, adolescents in a Steiner school are made aware of an increasingly wider area of human experience, an experience which unites them to the mainstream of human development and achievement. By coming face to face with some of the greatest creations mankind has produced, another way is found for the adolescent to become dimly aware of his own potential. We could here remind ourselves of Soren Kierkegaard's saying that many a person as an adult was unable to live up to the dreams and ideals of his adolescence, but that nobody achieved as an adult what he had not dreamed of and desired in adolescence. If we narrow down our curriculum for a more or less utilitarian education, we educate generations of ambitious, and possibly even venal men and women. We increase the fairly general tendency towards alienation. If, on the other hand, our curriculum is sufficiently wide and imaginative, we help young people to explore the full range of their possibilities. We can, of course, only give a stimulus. Nor should we desire to attempt more. A teacher at a Steiner school is neither a manipulator nor a social engineer. He thrives best, and his pupils thrive best, in an atmosphere of freedom. The teacher sets the stage. The real play is performed by others: by the adults who long ago have been his pupils.

Meaning

We said already earlier on that one reason for the alientation and dissatisfaction of contemporary adolescents is their instinctive awareness—occasionally made very explicit—

that they are living in a meaningless world. This attitude is in marked contrast with that of their forebears of, say, only one or two hundred years ago. The churches then spoke with a conviction which is unthinkable today. In place of this conviction, we now have a scientific nihilism. Scientific statements are value-free: "It is not our job to make moral judgments. We are not qualified to do so." But when others, churchmen and intellectuals for example, raise their voices they often are severely told to mind their own business. For us the question is not: Can we reestablish religious convictions? This would lie completely outside the sphere of intentions of a Steiner school which, if anything, is non-authoritorian and stresses the moral autonomy of individuals. The question is: Can we find a way of presenting facts which is objective and yet leads to meaning? The answer is surprisingly simple. We can adopt the method Goethe devised in his scientific studies. We look at phenomena pure and simple, try to appreciate them in their fullness and do not envelop them in this or that theory. Then we relate, still without theorizing, one phenomenon to another. Such a relation can give us new insights and intimations, and lead us to the contemplation and objective study of larger units than is scientifically fashionable today. Instead of a merely analytical approach, we choose a holistic one. One example of such an approach will be given now.

One Example

For this example, we take our planet, the earth. Usually, we are given to understand that the earth is a minor cosmic body within a rather unimportant solar system that happens to belong to a galaxy far from the center, whatever this might be, of the observable universe. A speck of dust in a chance creation. With our present knowledge such a statement could be true, but it is certainly far from a proven fact. If we imagine our globe not as a piece of rock—which of course it is not—but a number of vastly different concentric spheres, another picture will emerge. Space forbids us to go here into too much detail, but even in outline the validity of this possible alternative to the currently prevalent picture will become clear.

About 25 miles above our heads we find the ozonosphere. Although matter is so diffuse there that we cannot even speak of a gaseous state, the processes which are effected there by this homeopathic dose of ozone are for us of great importance. Two-thirds of the

ultraviolet rays of the sun are stopped there and so this sphere is warmed. Therefore a realistic appraisal of the factual situation would be: there is a mantle of warmth above our heads which at the same time is also conducive to life on earch. Without its protection it is likely that the ultraviolet rays of the sun would burn up all living tissues. The same phenomenon, but on a much grander scale is found in the ionosphere, considerably higher up. Cosmic radiation is inimical to life. In the ionosphere it is changed into electric energy. The Northern Lights are one manifestation of this process. Again, this sphere has the same effect on us as the ozonosphere. Life enjoys powerful protection and a second belt of warmth—this time of hundreds of degrees centigrade—is formed. Not enough, both the protective "skin" and the belt of warmth are found a third time, but at widely different places. Close to the lithosphere, the crust of the earth, the air is permeated by water vapor. Its effect is to form clouds and to "trap" the warmth of the sun's rays reflected by the lithosphere or the oceans, the hydrosphere. This happens because the rays of the sun arrive in short waves which penetrate the atmosphere, but when reflected turn into long waves which are absorbed by the water-saturated air, an effect similar to that of a greenhouse.

The result is that we are surrounded by three belts of warmth and therefore do not experience the extremes of temperature which the moon witnesses: close to absolute zero at night, burning hot during daytime, a climate in which what we know as life could never unfold.

The third element of protection against life-inhibiting radiation is found in the magnetic field of the planet which seems to extend about 2000 miles above the lithosphere. This field—explored by some of the satellites which circle the earth—is in constant movement. Facing the sun, wherever the sun might happen to be at a given moment, it concentrates into a powerful shield which wards off the utterly destructive cosmic radiation. But away from the sun this field expands in a manner reminiscent of a comet's tail.

Let us hold for a few moments' contemplation what we have found: three belts of warmth and three protective layers which ward off, assimilate or filter cosmic radiation. All these processes are utterly different from each other, but their effect on the planet is the same: it enables life to arise and develop. In the discussion of these matters no metaphysical question is asked: God, design, creative intelligence are words unimportant in

the context of our lesson. But a sense of wonder has been allowed to rise in the class and quite a few pupils might feel: We are living in a mysterious universe which, nevertheless, seems to some extent to possess unity, harmony, meaning. In such a world, I too might have meaning. Such a world ought to be appreciated, studied further, contemplated and maintained. The fact that we today need an ecological movement to assure the continuing life of the planet, and thereby of mankind, is an indictment of present-day scientific methods which have presented us with a picture of the earth which was manifestly wrong and life-destructive. Only the future will show whether we still have time to alter our approach to the earth, our home. But what Steiner school teachers *can* do is to inspire their adolescent pupils so that they need not fall prey to scientific nihilism.

We need only make two additional points: The study of our planet yields many other interesting facts and relationships, particularly in the field of hydrology, which all point in the same direction: the earth *is* a planet of life. The second point is that this search for meaning can be pursued in *all* academic disciplines and is bound to have a strengthening, encouraging, harmonizing influence on the students of a Steiner school.

Summary

We have looked at so many and varied facts that a brief summary seems indicated. Puberty and adolescence are recognized in developmental psychology as an age of crisis. Preindustrial civilizations understood how to lead their young through this crisis. They increased their self respect, they gave them new responsibilities and unfolded before them a meaningful world within which their paths were clearly marked out. We are living in an age when the constraints of old no longer work. Our scientific and technological civilization deprives the world of meaning and so helps to bring about alientation. Our commercial world leads the young into temptation. The teachers at Steiner schools attempt to do in a thoroughly contemporary manner and without the old constraints what in former ages used to be a matter of course: to lead the adolescent to an awareness of his or her full potential. They open up new fields of experience and widen their area of responsibility. They show that the world within which we have our existence is mysterious, and that the most mysterious being in it is man. They also show that the search for meaning may well be attempted and that it can be greatly rewarding. They believe that in this way they can

educate healthy and courageous women and men, imaginative, full of initiative and capable of taking responsibility.

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