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Child and Man

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CHILD AND MAN

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Drawing Level

THE articles in this number express the deeply justified concern which we must feel at the invasion of the child's life by the cinema, radio, television and also the gramophone. The frequent use of these mechanical contraptions finds enthusiastic support in high places in the educational world. This has gone much further in America than in Europe.

There are instances of story-telling to children of three by the world's best story-tellers whilst the teacher in charge is reduced to merely turning the pages of the companion illustrated portfolio every time the gramophone narrative is interrupted by a "bow-wow". Such a practice goes much further than the mechanical effect - the teacher as a human being becomes a nonentity in the process. There are instances of large schools where, to avoid the inconvenience of the morning assembly, the Headmaster from his office pronounces the Lord's Prayer over a loud speaker to the children gathered in their classrooms and proceeds immediately to give the order of the day. It is increasingly the case that regular television hours have their allotted place in the time-table, again on the assumption that one brilliant teacher is better than a host of less efficient ones. And what a wealth of possibility for 'accurate observation' is offered to children through the cinema strip!

To an intellectualised mind already made to some degree non-susceptible to the finer nuances of human experience it can only seem supreme folly to question the benefits bestowed by these splendid instruments of modern culture.

Mere protest is of no avail: it can only be deemed old-fashioned and bigotted. There are unhappily few educators of note who do not advocate the free and extended use of these accurate and convenient means of education. How then can the vast majority of parents think otherwise? We must accept the fact that these things have come to stay and that they will inevitably encroach ever more on school as well as home. They are in their first stages only, and will be perfected, adapted and applied with ever greater zeal.

Looking realistically to the future there is only one course possible: to educate the original faculties in the child to such a degree that radio, television and the rest induce a feeling of boredom if not actual nausea. This is true already for many children in our schools. Where there is a vivid appreciation of colour, an actual living with tone, an early experience of movement through eurythmy, an education towards imaginative perception, the mechanical reproduction of these *feel* grey. In the moment where this is accomplished it becomes possible to begin to enquire whether indeed there is not a proper and justifiable function for these inventions in our modern

life. The mere protest may indeed be unreasonable. What is needed is that human beings shall, by their inner development, come level with the age they live in, and have the resources to carry their humanity further. Rudolf Steiner has given us the means of so intensifying our educational work according to need that the forces latent in the soul of the modern child may be strengthened and enlivened to the requisite degree for this modern age. In this lives the one abiding hope.

THE EDITOR.

The Dynamo and the Virgin

A. C. Harwood

Forest Row

ONCE modern education has passed the primary stage, the unity of knowledge and the indivisibility of man are forgotten, the barriers of classification appear, and segregation and *apartheid* become the rule. The children are divided – in England at any rate – into three categories of mind, which are not very distinguishable from categories of ability, and despatched to different schools. Within one type of school at least – the Grammar School – they will be further divided into the two main streams with their many ramifications of Scientists and Humanists. Most children have naturally broad interests and wide abilities, and it is often a toss-up whether a child is directed through the door of the Sciences or of the Arts. I remember in my own case – for the grammar schools were even then developing their 'modern' sides in distinction to the classical – that after an interview between the Headmaster and my father (who confirmed the story that the 'Head' kept two boxes of cigars, a cheap one for parents and an expensive one for himself) it was decided that I should go on the classical side. The news was not communicated to me, and I fancy at that time it would have meant very little if it had been, so I suspected nothing wrong when by an error of administration I was sent to the modern side. It was only half way through the school term that my father, who followed the good English tradition of leaving education to the school, discovered me studying a scientific book. There was a second interview with the Head, the two boxes of cigars were again produced, and, much to my bewilderment, I found myself the following day studying the mysteries of ξ η to Thus was a scientific genius nipped in the bud.

As we grew older we Classical boys tended to look down on our Modern contemporaries. The few scientific lessons we were given in the laboratory were considered to be, and actually were, a rag, so that our opinion of science teaching and science teachers was not high. In our school debates we had much more to say and we seemed to say it better. Our interest in affairs had the backing of historical comparisons: we could quote the poets and call 'antiquity from the Schools of Greece and Rome'. We were already experiencing something of the difference between two kinds of mind.

But how little we knew of the unplumbed depths and echoing overtones which lay behind the distinction we vaguely sensed – the difference between knowledge pursued for the sake of virtue and knowledge pursued for the sake of power, between the intuitive mind and the analytical mind, between a moral and an amoral view of the universe, between the religious and the scientific temperament,

between the world of values and the world of acts. It is a Protean difference which manifests in different shapes with himself in the lore of the thirteenth century and especially every new decade, but perhaps nowhere has it been expressed more dramatically than by the American, Henry Adams. As a young man Adams had steeped in the cult of the Virgin which came to such magnificent expression in the School of Chartres. It seemed to him that the power which moved the will of mankind in that century, which built cities and cathedrals, launched ships, united and separated kingdoms, and sent men marching over the earth, was – the Virgin. Then in the epoch-making Chicago Exhibition of 1900 he suddenly experienced the impact of technocracy, and saw the new driving force of mankind crystallised in the omnipotent and invisible revolutions of the Dynamo. Could it be the same humanity which had once been impelled by the Virgin that was now driven on by the Dynamo? What was this Man who within so short a space of time could worship two such diverse gods? Adams could not find the answer to his problem, which is not only historical but is in fact the problem with which modern education is faced. For the Virgin stands for all that lives in the feelings, ideals and aspirations of mankind, for the nine Muses, for faith, hope and charity, for what is commonly called culture: the Dynamo for the impersonal forces of nature which the intellect has discovered, released and harnessed for the technocracy which is leading man he knows not whither. It is the Dynamo which has brought all the sciences into its service, even the mathematical sciences, so that the distinction between pure and applied science has been largely obliterated, and which today demands its young men and maidens no less than the Minotaur demanded the youth of Athens.

For we must face the fact that the modern demand for scientific education is the demand for technocrats. If we are dealing with purely speculative or observational science the matter would be somewhat different. Nor is it any good pretending that it is not a real and pressing demand. If the West does not produce technicians it will fall by the way in the race of life. But in a democracy it is not enough to be a technician alone – democratic man, unlike dialectical man, has more interests to serve than production. He must be educated in values as well as in technics if he is to be responsible for his own social and cultural life. Or if his work is in the cultural sphere he must understand the broad principles of technical science without which he will be living in a world from which he is estranged. Forty years ago, when a man could still live in comparatively small contact with machines, Steiner contended that to travel on a tram without understanding its mechanical principles was unsocial. In the modern world a man has to live by machines and cannot live without values. How can we persuade him to serve at the same time both the Virgin and the Dynamo?

If we are to do so it is plain that we must overcome the separation between those who study values and those who study plain facts; that is, broadly speaking, between the two studies of the Arts

and the Sciences. Of course in all schools and departments of schools where the sciences are studied the tribute of a few hours in the curriculum is paid to the Arts, and the Humanities equally are not left without their smattering of Science. But it is futile to pretend that these minima represent anything like that co-education of the Arts and the Sciences which has always obtained in Rudolf Steiner Schools.

So pressing has the problem become in recent years that the question of a new curriculum for universities and schools, which will enable students to study a science and a human subject side by side, is now being publicly canvassed. The schools cannot act unless the universities open the way. The Headmaster of a well-known English school has proposed a degree course in which subjects like botany and history, or physics and literature should be the joint subjects of study. At the last meeting of the British Association for the Advancement of Science, a physicist and a historian, both from Cambridge, advocated a similar union, the aim of which was stated to be the production of men and women for whom there were 'not two worlds but one'. In the recently founded University of North Staffordshire it is already possible to take such a combined course of Arts and Sciences: and the first year of every student is occupied by a general course of Science, History and Literature - to correct the excessive specialisation which has already occurred in the schools.

All this has the admirable aim of achieving once more a universal quality in education; and the attempts must not be belittled. But the question must be asked: is it any use placing these subjects side by side unless they learn to speak a common language? Is it not the inner unity which must first be sought - and then the rest will follow? How can we enable the Virgin to talk to the Dynamo?

For it is useless to pretend that the old dichotomy which has troubled mankind since the advent of Natural Science is resolved. In Darwin's day it took a religious form - the controversy of the Ape and the Angel. For most people, this controversy has been resolved by the scrapping of the first and last books of the Bible - and much of the intermediate books as well. But today it had taken on the new and more fundamental form of the Atom or the Angel. That is to say the picture of the world order is either mechanical or moral - or some would prefer to make the antithesis mechanical or aesthetic. If man has created a moral or aesthetic life of his own in a mechanical universe he is predestined to dichotomy and for him the world will never be one. But if the world should after all prove to have a moral or aesthetic essence, the Virgin might still all be able to talk to the Dynamo.

One of the arguments adduced by the Cambridge historian in favour of the proposed combination of Arts and Sciences is that history is important for the scientist even in the understanding of his science. It will certainly be useful for our present purpose to glance back for a moment to a time when there was no dichotomy and education was truly universal.

In the Middle Ages there was a fundamental course through which all students passed before they were allowed to advance to a special study such as Theology or Law or Medicine. This course consisted of the Seven Liberal Arts and was divided into the two sections of the Trivium and the Quadrivium. Each section had a unifying theme, and the two sections again were united by a still greater common principle. The Trivium - Grammar, Rhetoric and Logic -, was a study of the *word*, or of those echoes of the Creative word which were still to be found in human speech and thought, and enabled man to apprehend the universe which the Word had created. There was plenty of the element of form in this approach to language - witness the rules of the syllogism - but it was qualitative as well. The deepest human feelings were aroused in matters which today have become mere abstraction. At Chartres for instance, the scholar who studied grammar was taught to experience the gradations of the parts of speech as a kind of mystical wedding of the universal with the particular, the spiritual with the earthly. A substantive like *albitudo* (whiteness), the expression of the pure essence of an idea, the *Virgo Intacta*. In the verb *albescit* (it whitens) the virgin enters the bridal chamber. In the adjective *albus*, which is meaningless without its particular noun, the marriage is consummated - the idea has become flesh. With such an approach to the elements of grammar it is small wonder that one of the pupils of Chartres, John of Salisbury, claimed that grammar was a study of such virtue that it even made the student healthy.

The Quadrivium consisted of Geometry (which included much which would now be called geography and natural history) Arithmetic, Music and Astronomy. The common element of all these sciences is number - that is to say, number as a formative principle. 'God geometrises' and the result of his geometry and his mathematics is to be seen in the heavenly bodies, in music, and in the plants and minerals of the earth. But it is man who is the focal point of all this geometrising, not man the accidental arrival on the earth after billions of years of matter without him, but man for whom the visible universe has been created. Both the Trivium and the Quadrivium met in the great central unity of *Man*. All knowledge was man-centred: or, because man was made in the image of God, it could equally be said that all knowledge was God-centred. It was an ideal unity: science and art spoke with one voice of man and nature 'the Hand that made us is divine'.

If a single date can be given for its breakdown, it is when Francis Bacon declared that the method of knowledge is experiment and the object of knowledge is power. The educators of Europe were confronted with the fact that their knowledge of nature had been swept aside as both fantastic and useless. They could not maintain their view of the universe in face of the new experimental sciences, the scientific content of their teaching (how they would have shuddered at this use of the word science) was tacitly dropped, and only the 'Arts'

side remained. For both by tradition and by inherent feeling they could not regard as *educational* a form of science which did not pretend to attach any value to its discoveries other than utility and power. So the new sciences developed for the most part outside the schools and universities. The Public Schools of England remained almost untouched by them till the beginning of the present century. Then the invasion began, the sciences came flooding into the schools and the Dynamo built his citadels in the groves of the Nine Muses and the seven Liberal Arts. There he sits entrenched and glares at the Virgin. Up to now the only way they can get on together is by agreeing that his way of thinking applies to one part of life and hers to another. But no one denies that the two ways of thinking lead to hopelessly incompatible conclusions.

If we are ever to bring them together there is no doubt about the place where it must be done. It is the place where the seven liberal arts found their ultimate union - in man himself. Can we form a picture or philosophy of man in which two such diverse elements cohere? If we can, we have formed a medium in which they can talk to each other, and we shall be able to put them side by side in our schools knowing that, however, different their tones, they are parts of an ultimate common language.

It is the supreme virtue of Rudolf Steiner's philosophy that through a renewed experience of what may be called the *humanity* of man it leads to that ultimate language. He asks us again and again - and how hard it is to do - to look at the present state both of human consciousness and of natural processes as temporary and particular. The trouble with the natural scientists is that he is not radical enough in his hypotheses about former conditions of the earth and the universe. He can only think in terms of conditions of matter. He assumes when he finds no trace of material organic life in past ages that there was no life: when there is no evidence in the rocks of a conscious creation, there was no consciousness: when there are no traces of men, there was no man. It does not enter into his hypotheses that consciousness, or let us call it spirit, may have existed before it entered the manifest physical world; that in that world itself the mineral may be the corpse of a once living entity; that what appears first in the phenomenal world need not be the first in spiritual creation. He is quite unaware of the extent to which he constantly projects his present mode of thinking and perception into the remote past, as though it were an absolute reality valid for all time, so that he is constantly imagining past terms of modern consciousness and modern sense-perception.

In this the humanist does not help him. For he too assumes that consciousness (about which he should know something) has always been pretty much what it is now. Men have always seen the world with their eyes, he thinks, as they see it today, but being a little more like children they made up fairy stories about it instead of scientific hypotheses. It does not seriously occur to the Humanist that the tradition of all mankind may be correct in saying that in primeval

times men had direct converse with spiritual beings - the gods, - who instructed them in the arts of life and the forming of their social order: that the modern acute awareness of the self on the one hand and the sense-world on the other may have been gained at the expense of a larger less personal consciousness which embraced modes of being unknown to the sense-bound intelligence.

It is, however, such conception as these which Rudolf Steiner presents to us as the key to the understanding of man and the universe. Moreover in doing so he stresses the immense importance of the modern development of consciousness. Why has it taken so many thousands of years for human intelligence to produce the Dynamo? It is because a particular form of consciousness had first to evolve, a consciousness freed of all direct participation in spiritual things, wide-awake, self-reliant, objective. What is important about this consciousness is not its technical achievements, great as they are, but itself. When a future mankind looks back on this technical age, its glory will appear to them to be not the Dynamo, but the thinking which produced it - the thinking of Natural Science. By detaching thought from all connection with feeling, with religion, with inspiration, Natural Science has made it objective as it never was before. The world it has pre-eminently conquered is the world of death, that is that kingdom of nature which was once alive but has reached the end of its existence in the form of the mechanical mineral world. It is a great and powerful world, but dangerous if it is not recognised for what it is. But once it is so recognised, the mind of man will inevitably press forward to the discovery of those living worlds from which it has descended. He will use the acuteness of his new consciousness like a sword to cut his way into a knowledge of spiritual things. The Dynamo becomes the fulcrum by which he lifts himself again into the presence of the Virgin.

To put the problem in another way, if once it is realised that consciousness has descended from the divine into the human world, from a cosmic participation into the detached sphere of the earthly senses, there will be no reason for believing that it is predestined to remain there. On the contrary it will struggle to escape from its bondage and to extend its boundaries in every possible direction, provided it does not lose its own peculiar virtue of clarity and control.

One sphere where such an extension can begin is plain. The perception of man is not limited to the five physical senses. There is artistic perception as well, which informs and refines the senses and speaks of quality and form where the physical senses speak only of measure and number. This artistic perception must also become valid in the sphere of science. On the other hand, the clarity and objectivity of Natural Science must penetrate the sphere of the arts. The artist and the humanist must become always more conscious of the reasons for those subtle differences which they study.

The sphere of feeling and the sphere of knowledge had drifted so far apart in the last few centuries, - tearing man asunder with them - that it is difficult to imagine how they can ever be united again.

Nevertheless the beginning can be made even in schools, and is, as a point of fact, being made in Rudolf Steiner Schools. It can even be seen in quite simple things - perhaps there best of all, because the simplest is often also the most profound.

In the last few decades a vast movement for children's art has arisen, especially for children's paintings. The aim of these paintings is almost entirely self-expression : either in abstract form or in his impressions of a scene the child is encouraged to express his own individuality. This is not the principal aim of the painting in a Steiner school. From the very first the children are shown the different qualities of various colours as an objective reality, and when they paint the intention is to let the colours speak to each other in their own language, and not to use colour to express their own subjectivity.

Similarly, in the sphere of poetry it is the common thing today to discuss with children the *meaning* of a poem, which generally involves turning the imagery into idea, but to let the sound evoke a mere generalised experience of feeling. But in Eurythmy - a central lesson in all Steiner Schools - every sound is studied as a gesture possessing its own unique quality. This kind of perception is carried over to the language lessons where it is not enough to know that one nation calls a tree *arbre* and another *baum*. Through the sound the different kind of relation which different people have to the tree is sought.

As a corollary to the extension of consciousness into spheres which are generally left to half-conscious feelings, is the artistic attitude towards the Sciences. The children are encouraged to think morphologically rather than atomistically. Fundamentally modern scientific thinking postulates the absolute alternative that things are *either* material objects existing independently of consciousness, *or* only ideas in the mind. The mind and the world have only an accidental connection with each other. To Rudolf Steiner, however, it was an obvious because an experienced fact that there is an objective realm of creative forms perceptible to the mind, independently of whether those forms have entered material existence. Indeed the growth of an organism is to be considered as the gradual entry of the ideal form into incarnation. And the interrelation of incarnated forms - such as man and animal - is to be understood by reference to the 'ideal' form, and not by comparing only those forms which are still extant, or of which physical remains can be found. But this ability to think 'morphologically' will never be attained from a scientific education devoid of the arts. The two must be married in order that either may advance.

It may be objected that there is here a confusion between the common use of the word arts to express creative activity in painting, sculpture etc., and the academic use of the term to denote specific studies. The intention, however, has been to use the word in a sense anterior to this division, when History had its Muse no less than Dancing or Poetry. For the creative grasp of form and meaning in such a subject as History was not then held to be substantially different from the actual creation of form in music or poetry. In the former

the Spirit was working no less than in the latter. Both were equally the field of divine inspiration. When the Romantic poets gave the new meaning of a way of knowing to the word Imagination they were endeavouring to find their way back at another level to this old unity. It is as creative Imagination that Science and Art also will ultimately meet. It is a long way to go, and before the goal is reached both Science and Art will discover a common ground in Religion. The goal will hardly be in sight before books on chemistry and books on poetry both naturally speak on terms on the creative Word.

A recent writer on the teaching of Science - J. Bronowski - has deplored the fact that Humanists are taught Science as though they were to become scientists. Rather than the elementary grind to which they are commonly subjected, he rightly thinks that, on the one hand, they should meet science in its impact upon the social life and on subjects which interest them such as History, and on the other hand that they should experience something of scientific method in pure observation or experiment. It is such an approach to science which is to be found in the Rudolf Steiner Schools. For the Imagination never isolates. In the same measure with which it will endeavour to penetrate to the common roots of things, will it also seek out their later inter-connections. And ultimately it will find both roots and inter-connections in the place where the Seven Liberal Arts found them - in the being of man himself.

This is what lies behind the marriage of the arts and the sciences in the curriculum of a Rudolf Steiner School. It would hardly be possible without certain external arrangements which are characteristic of these Schools. From the lowest to the highest classes each principal subject is taught in its turn for a continuous period of three, four or five weeks in a long lesson of two hours, which takes place the first thing every morning.

This continuity of time, even more than its generous measure, makes it possible to achieve a depth of study not attainable in short periods scattered over the week : and it is quality of study rather than specific content which is the aim of these lessons. For this part of the day scientists and humanists sit side by side and achieve something of the aim of living together in one world, because common outlook informs all the lessons. After this common experience in knowledge and in life the humanists can go to their more inward studies without danger of living in an ivory tower, and the scientists can enter their laboratories, taking their imagination and artistic powers with them.

It need hardly be added that all this applies to boys and girls together. Indeed the co-education of the arts and sciences is not altogether unconnected with the co-education of the sexes. For the woman has more of the quality of feeling and intuitive perception of the Virgin ; the man more of the robust external energy of the Dynamo. But Man and Woman ultimately belong to one world, no less than the Virgin and the Dynamo. It is a question of penetrating to their common origin.

Mathematics as a Discipline for Training

Inner Perception

(Inner Activity)

J. Van Wettum,

The Hague.

FROM the surrounding world, man takes in colours, sounds, shapes, etc. He transforms these into images which he can later recall as memory "pictures". But man also has the faculty of creating images apart from sense impressions. These may be confused and chaotic and lead to an unhealthy soul-life in the form of fixed ideas. But if this faculty is trained in an exact way, it is just this which can lead to what is generally called imagination which enables a man to live his life and do his work in a creative way. This is a faculty by which he can achieve more than by carrying out only the tasks which others give him.

This article is concerned with this faculty. The reader is first asked, for example, to imagine something. If this proves too difficult, the diagrams at the end are added to aid the imagination, but it is suggested that the example be read first in order to try to stimulate inner perception.

We ask the reader to imagine a cube on a table. He is not supposed to put a real cube in front of him, but he imagines one; not too small, say a 10" cube. It stands straight before him in such a way that two of the edges of the base run from left to right, i.e. parallel to the horizon, supposing it were visible behind the table. The two other edges of the base then run at right angles to the front edge of the table. In the four angles of the base the four vertical edges meet. The upper plane is a square again which lies in a similar position to the base (cf. diagram 1). When we have this cube in front of us in its simplest position we can imagine that it starts moving. We can for example make it turn round the right edge of the base, i.e. the edge which runs from front to back. Only this edge remains immobile, the whole body starts moving until that edge of the upper plane which was on the left (running from front to back) lies straight above that edge, round which the whole solid turns. In this position which can be considered as a position of balance we stop the motion of the cube (cf. diagram 2). The front plane has now become a square which stands on one corner. If we look at the cube from above then we see the three edges that run from front to back equidistant from each other. The whole has the form of an oblong.

Now we imagine a very sharp knife which cuts cross sections of the cube, i.e. parallel to the surface of the table. If these slices are cut near to the top edge then the cross section is an oblong of which

the longer side is as long as the edge of the cube (cf. diagram 3). As the plane in which the knife moves sinks deeper, this oblong becomes wider. At a certain moment this cross section is a square. After this it becomes an oblong of which the shorter side is as long as the edge of the cube (cf. diagram 3); until the widest point has been reached. Then the oblong becomes narrower again. Now we can move the cube further again out of the position of balance round an edge, for example in such a way that only the far angle of the edge which so far has kept its position remains in position. The whole cube now tips backwards until that point of the top horizontal edge which faced us in Position 2 stands straight above the lowest point. Now the cube is in balance again. This position is already much more difficult to imagine than the one before. When you look at the cube now from above, you see a regular hexagon. When now you cut through it in horizontal planes then you first get equilateral triangles which change into hexagons which change back again into triangles that lie just the other way round compared with the first.

Whoever has been able partly or wholly to follow the preceding train of thought will have observed, that in order to do so he has had to be inwardly active. All mathematics essentially depends on inner activity. One can use certain aids, one can have cubes and other bodies made out of cardboard, wood or any other material, one can draw diagrams of the figures, but real mathematics has to come about by inner activity. In this it differs from an empirical science. In biology one starts from the phenomena of life in plants, animals or human beings which are seen and which can be examined. In physics and chemistry one starts from the qualities of the various substances and the effects the substances have on each other. There is always a given fact which is independent of the human being; there are plants, animals, electric or magnetic phenomena. Only in mathematics, most clearly in geometry, even the content, the "matter" which he is going to explore is created by man. That is why Plato regarded geometry as the primary discipline for preparing to live in the world of ideas. For that is what he regarded as the content of the teaching in his philosophical school. When one thinks of a circle, then it is not the circle which once one saw drawn on a piece of paper, neither the full moon, nor a carriage wheel, but it is something which is a combination of all the circles ever seen. It is the same with all mathematical forms. They are related to the visible forms but they are more than that. The laws of the circle, the qualities of geometric forms are not derived from outwardly perceived forms, but from the ideal forms which are built up from within. On the one hand this gives a feeling of strong security: every detail of a process of demonstration, starting from the given facts up to the final result, is produced and controlled by the thinker. On the other hand: just this calls forth in those who do geometry a tremendous, one could even say, fiery enthusiasm. One is aware of participating in the mighty process of creation, one is being creative.

Each living being, each animal and human organism needs food for sustenance and growth. One knows from experiments that when animals are given only predigested food they cannot keep alive. The organism demands food for which it has to summon up its own activity for the digestive process. As the organism needs to use less energy because it is being fed with easily digested substance, it becomes inwardly lazy and after a while ill. Healthy, strong organism demand substances for which considerable energy is required. So it is with the inner man. A healthy, strong personality is only acquired when inner activity can develop, only when he gets spiritual food which summons up and calls into play this inner spiritual activity. When he gets too much predigested food he becomes inwardly lazy and in the course of time ill.

Here also an example may explain what is meant. Many people have during the Spring put branches of a horse chestnut in a vase in a heated living room. One can see how the shining brown buds swell, how they burst open, how the hairy whitish-greenish hand-shaped leaves unfold, until the branch is fully developed. If later once this process is long since completed, it is repeated in the imagination, then one can, in a few minutes or, with some practice, in a few seconds, manage to let this whole process of development from bud to leaf take place in the mind.

Now, on the other hand, one can go to a film, for example to a film full of beautiful nature pictures like "The Living Desert" by Walt Disney. Towards the end of this film one sees the most wonderful desert flowers develop from bud to flower in a few seconds. In this way one could make a film - and such films have been made - in which this process from chestnut bud to fully developed leaf rolls off in a few seconds. Seeing this film does not produce this inner activity spoken of in this article; on the contrary. Here is a primitive example of how the technique of film, radio and television threatens to paralyse a primary life function of the spiritual man.

At this point it is certainly necessary to state that the author of this article is not of the opinion that all films, including "The Living Desert", ought to be destroyed. What is necessary, though, is that parents and teachers should be fully conscious of the effect of modern techniques. When we see that the voices that warn against the effects of indulging in television, wireless and film grow stronger and more urgent, then it is necessary to know how and why this is so. And moreover ways and means will have to be found of how to lead and help the children in such a way that they will be able to resist the damaging influences of these techniques, which will inevitably develop.

One of the means which will have to be used much more strongly and consciously is the inner activity just described. This is already possible from the first class of the elementary school through all classes and courses of elementary, secondary and high schools. And in this mathematics can play a very important part.

Diagram 1.

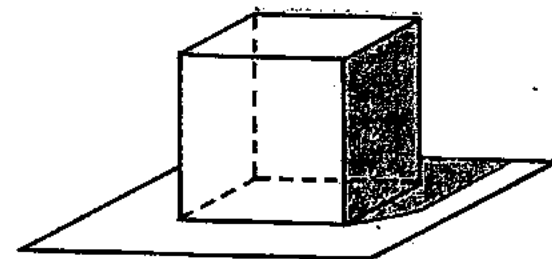


Diagram 2.

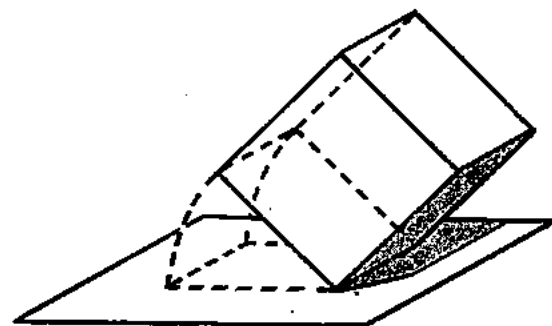
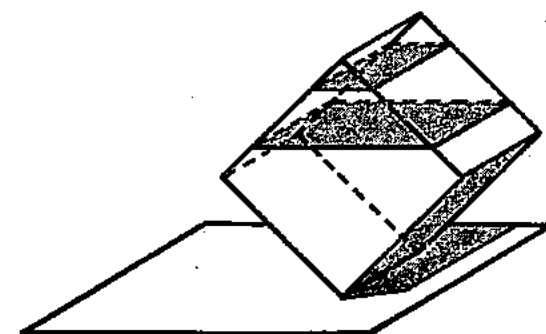


Diagram 3.



AUTOMATION, A SECOND INDUSTRIAL REVOLUTION?

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THERE are two spheres in which the general feeling of uneasiness, which pervades the world, threatens to develop into real fear: the splitting of the atom and automation in industrial life. In this article we want to discuss several social aspects of automation as it develops in industry. As it usually the case with a difficult and elaborate problem: many speak about it, but few know much about it. Under these circumstances a mass of unfounded rumours can be more dangerous socially than the facts themselves. These wild rumours arouse the feelings which lead to words such as those used during a recent congress in Cambridge:

"Automation is a word that should not have happened."

What technically speaking is "automation"? And from which sources flow the ideas which are feeding the technique? Are these ideas original, new principles, or are they an imitation and development of anatomical, mechanical, biological or psychological data? Are we creators of a new technical world, or are we clever imitators of existing principles in nature? The first stage of technical development was the using of tools which specialized the capabilities of the hands or made them more powerful. These tools were mechanical principles, copied from man's own skeleton and muscles or from the specialized limbs of the animals. Forearm and fist became the shaft and head of a hammer. The pliers, the chisel, the saw, the scissors, all derived from the world of animals. Man who used the tools himself produced the power and himself directed the tool. Between man and product there was only the small length of the hand which held the tool. Moreover, man at that time was still designer and planner and manufacturer and salesman of his product. Being at work, he could, while working, change and perfect his creation. Man was still creative in many ways.

Only when the power machine made its entrance and more specially the steam engine, did it take over the power of man's strong right arm. The social consequences of this were enormous. I will mention two of them: slavery now became superfluous, because the steam slaves could replace the human slaves. It was only from the moment that the old form of slavery became superfluous, that moral condemnation of it could become effective. But besides this, there was another consequence, which led to a new form of slavery. The machine which develops many hundreds of horsepower in one place, compelled people within the little area to which this power was conveyed via belts, to crowd round machines placed close together.

This social progress is called the first industrial revolution, which took place first in England between the years 1760 and 1830. Previously, every labourer had the power of many horses at his disposal,

working for him. What was there left for him to do? Technical development was left to him, the directing and controlling of the output of power plant. Machines remained still based on those mechanical principles which become visible in the skeleton of man, muscle was replaced by steam; but sense-organ and nerve, observation, thinking and regulation remained with man. And the modern craftsmanship, as it was developed in the 20th century, was based on this ability to deliberate and control machines, which were often enormous. Mechanics is built up on the causal principle. A certain cause at this moment produces a consequence in the future. The causal thinking, developed from the mechanical laws, is a typical one-track thinking. The processes run from the past to the present and form the present to the future.

The second stage of technology begins with the applying of principle that does not come from mechanics, but has been taken (unconsciously) from biology. As soon as life assumes an organized form, an organism arises that as a totality maintains a certain balance. Besides the one-way traffic: cause—effect, there arises the beginning of the reverse process; swinging with a certain regularity, round the point of balance. We see this in the water organization of the unicellular organism. Within the cell an average concentration is maintained against the hypotonic liquid around it. The assimilating and separating of liquid is maintained here as an active process, which process stops with the death of the cell. The plant as a whole follows this principle of active balance in its life-processes between soil structure, absorption of liquid and intensity of light.

Applied to the technical world this principle is seen in the machine with the ability to regulate itself. When this regulation technique is connected with an instruction, mechanically given, then we have got the machine which (as a technical imitation of the plant) is able to fulfil a series of processes in an analogous way, just as from sown seed a series of shoots, conforming to the species, arises. In the biological aspects of the animal there arises a further differentiation. The plant grows from bud to bud according to given principles which lead to the specific flower. The animal develops in the evolutionary series the moment when the regulation principle not only reacts on the immediate surroundings, but when the regulation organism also differentiates itself into a new organ.

In the nervous system a new principle, the storing of information from the memory, begins to work. The more highly developed it is, the more the function of storing operates, and consequently the seeking for the best information in a certain situation, becomes possible. The principle of experience enters here. Real automation begins only with the possibility of connecting the mechanical regulating organ with the memory information of the electronic controlling apparatus. I believe that we have reached this point in technology.

In order to understand the last sentence we have to consider how technology developed in the 20th century. For more than 50

years already human control has become more and more limited. All repeating actions are increasingly replaced by mechanisms, like cams and punch cards (e.g. a pianola). This process is called mechanisation and by 'placing a great number of mechanized machines one after the other, one can make certain products almost entirely without using manpower. This process was first developed in the motor-car industry and is called after the American centre of the motor-car industry, the "Detroit automation". In this, the principle of the reverse process, the "feed-back" has been applied in a mechanical way. If, for instance, a certain hole was drilled too deeply, a measure pin noted this and regulated the machine automatically to drill shallower holes. This reverse process principle is the imitation of a biological principle and was only really perfected when the electronic machines also made possible a kind of automatic memory and automatic deliberation. Thus automation starts in earnest with the application of the so-called *controlling apparatus*.

One can compare these best with the well-known "tape-recorders", the apparatus with which one can record conversation or music for reproduction at all times. In a certain way such an apparatus has a "memory" for recorded conversation. The electronic control apparatus does not only repeat certain given instructions, but can even in case of eventual disturbances, look for the right solution, by methods fixed in advance. By this, the last deed of man, control, is cancelled. The machine once started and controlled by itself now produces fully automatically. The production-worker has become superfluous. What will be the social consequences of this? If one listens to the voices of the employers, one hears nothing but conciliatory explanations. This will not be revolution, but evolution; the machines are so expensive, that they can only be bought gradually; there is such a world shortage of highly trained technical workers, who can invent, build, instal and maintain these machines, that this already makes a quick development impossible with a continuing boom all the workers who have become redundant in the production process can be used immediately to increase further production. For mankind this can only be a blessing: shorter working times, inhuman and stupid repetition work stops, wages are higher, production is cheaper; there will be more free time, etc. etc. In short: automation brings a material paradise on earth. There are also warning voices, which say that even the most developed automation will not bring forth one more potato or a single grain of corn, but these are only feeble sounds amongst the laudatory clamour of the multitude.

How do the workers view this situation from their point of view? The production worker who with a very simple education does this controlling work "unworthy of man", has suddenly realised with trepidation that just this work with which he earns his bread and with which he has got his social status, is being taken over by a machine... and he stands before a bottomless abyss. He listens with suspicion to the assurance that there will be other work for him. What will

this work be? And what will happen if the machines are there and the boom does not continue? Moreover, through this development, an innumerable greater number of technically educated people will be needed, besides people, who only control needles and red lamps, and have to watch enormous rooms with machines, waiting for the moment, when something might go wrong, and when they would have to act quickly and competently to prevent a catastrophe. But technically speaking this moment will not come.

Automation will develop quicker when the electronic control apparatus can make not only one product, but many, according to the "band" of instructions put into it. This development is slowing down or speeded up depending on facts outside the sphere of technique, and wars hasten this process very much. In the automatic factory however, the emphasis in the labour process has been shifted again. The old furniture maker was designer, planner and manufacturer; in the mechanized factory the departments of designing, planning, production and despatch were separated. However, production still took the most important place.

In the fully automatic factory, the emphasis has been shifted to the designing and planning. Designing and planning last years, and once this has been done, the product is made automatically and quickly. The production, designed and planned by the planning department *cannot be changed any more*. In the motor-car industry, the preparation of the new year's type take at least 3 years. The car designed in 1957, will come on to the market in 1960. The whole production process crystallizes because of this, and becomes much more vulnerable. Quick application becomes more and more difficult. But automation goes on incessantly. During the period of transition, great tension will arise between those groups that work in the new clean gleaming white factories where they do very elaborate technical work or very responsible control work, and the groups that work in places where this cannot be realized: in the mines, docks and on the farms. And just these latter groups are in key positions in social life. Great social disparities threaten to grow between them.

The above-mentioned development raises a great number of questions. How will more free time be spent? What relationship will the working man be able to achieve to his work?

Our society is progressing towards a way of life which is comparable with ancient Athens, where the leisured classes (whose leisure was based on the work done by the slaves) had time for free enterprise, philosophy and politics. If now automatic slaves work for us, of what will modern man think? With what will he fill his mind? What will be his world picture, when he starts directing his will towards new aims in life? It is of the greatest importance that they, who have made the guiding of the social aspect of this development their life's task, will be able to work *as industriously and intensively* as the groups working day and night developing the new control apparatus. Modern man, freed from physical and repetitive control work, will have to find a world, from which the ideas can come to form new social relationships.

Play and School as the Necessary Preparation for Working in the World of Present-Day Technology

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THE world of the child and the world of technology are in their very nature so different that one could easily be of the opinion that between these two worlds no bridge can exist. On the other hand we have the fact that even the smallest children are surrounded by technical things; they must grow into this technical world, and, as adults, work in it and learn to deal with it. This leads to two fundamental questions: What does present day technology demand from the person who works in it? and: How, in a practical way, can a bridge be built between the world of the child and the world of Technology?

The attempt will here be made to answer the first of these questions out of the tendencies of technical development. In his well known book, "Wind, Sand, and Stars", the French aviator, Antoine de Saint Exupéry, was still able to liken his aeroplane to a peasant's plough. Thus, as the peasant feels the force of the earth through the plough, so the aeroplane was for him a means of experiencing the forces of Nature. What he experiences when flying in a storm, or when flying beneath the starry night sky, gave him something it brought him knowledge of man's relationship to creation, to wind, sand and stars. Let us consider, on the other hand, the experiences of a modern aviator, as reported by Bill Bridgmann, an American test-pilot. As he released his machine from the parent plane and started off the rocket in order, for the first time, to break through the "sound barrier", in this sphere of speed greater than the speed of sound his machine began a wild dance. In spite of steering in a straight direction he flew in curves. This was not too bad; a test-pilot is prepared to master unforeseen situations. But, as he later reported, he was seized by cold horror when he noticed that he reacted much too slowly to correct this flying in curves. The pilot can only control every fifth oscillation; the machine, so to speak, flies away from under his hands. Even after landing this feeling of powerlessness did not leave him. What remains here of measuring oneself with the forces of the storm, the experience of wind, sand and stars? The result of this unpredictable struggle with the mechanistic conditions of flight at speed greater than sound is the knowledge of human insufficiency. According to present day technical standards, this human incapacity can be corrected by an automatic steering gear, giving the requisite rapidity of reaction. The automation process indicated by this example is recognised today as a general one. There-

by, however – and this must be seen with all clarity – man pushes a barrier between himself and the world, between himself and the experience of his work.

Another example of this. A worker in a motor factory has to carry out the following task. He takes the wheels, already tyred, and places them upon the bolts of the front and back axles prepared for them, and pulls – adapting himself to the slow movement of the assembly line – and with the aid of an electrically driven machine, firmly fixes the bolts into their holes. As soon as the necessary tension of the screws is reached, and automatic friction clutch comes into action and prevents over-strain. During the whole process of this work, no specifically human faculty, no manual skill, is demanded. The feeling which a man can have for the requisite measure of tension needed in pulling tight the screw with the screw-key is taken over by a mechanical friction clutch. The skilful hand of the trained craftsman is being more and more pushed aside by the increasing automation of the processes of production. The automatically driven machine takes over these skills.

But not only this; the testing of the completed piece of work is carried out by automats, which "recognise" the causes of failure. This automation process is not limited to manual work. In our daily life, too, we are more and more inserting mechanisation between ourselves and the world. Things are always being taken off us and less is demanded from us. One could compare the degree of individual activity of weather-observation in Goethe's sense with the final weather report on the radio. The modern camera, too, undertakes the estimating of distance and exposure by means of a coupled range finder. In the system of traffic lights we give over to an automation the responsibility for our safety.

Let us now observe the results which thus ensue for man and his relationship to work. Man is becoming – and this is everywhere being voiced – ever freer through the mechanisation of work. Through the lessening of working hours he has more time and strength for other activities. This leads to the much discussed problem as to how people can usefully spend their free time. But this release from work through automation shows yet another side. Work done with the hands, even when carried out in one's situation as a worker, trains human faculties; the process of the work continually gives us the feeling that our work is dependent on the skilful and exact work of others. It creates the feeling of the necessity of people working together. And this feeling lays on us, too, the obligation to fulfil these demands in our own work. We are stimulated, even though unconsciously, to develop gratitude to others, to follow their work with interest; and from these two things there grows in us the sense of duty to do our part within the general work. Automation, that is to say, demands of people that they carry the urge to activity within themselves, and that their inner development does not need outer support through work.

For education this signifies something immense, the shifting of the centre of gravity to the human being himself. No longer is it enough to equip him for his future calling and to leave his personal development to life. This expresses itself today in the demand for education in a comprehensive human sense. All attempts to limit certain subject matter and to introduce artistic subjects into the upper classes go in this direction, as do also all attempts to educate the pupils, not only with definite subjects, but also with work of a practical and formative nature. The automation of work and of life demands that the idea of the human being himself, the aims of his inner development, should be the determining factors in teaching and education.

In finding the answer to our first question, there is yet another point of view to put forward. The examples mentioned have shown that the manner in which our work and life now take their own course shuts out to an ever greater degree – at least in the sense of the child – actual living co-operation. But the child wants to find his way into the world surrounding him by working with it. And for this reason the child can be guided into his surrounding world, even the mechanical, without harm; but for this exact knowledge is necessary of what the development of the child requires. In the year 1919, shortly before the opening of the first Waldorf School in Stuttgart, thus at a time when technology compared to today was a child's harmless toy, Rudolf Steiner said in his lectures on primary education:

"Technology can only increase in a way which is favourable to mankind, if people who are active in the sphere of mechanisation develop altruism, develop the opposite of egoism".

He placed this, as an invisible signature, over the founding of the Waldorf School. In his educational lectures and courses Rudolf Steiner, in the first seven years periods of life – if his development is rightly guided – lays the foundation of three basic virtues which are demanded by present-day life.

In the following pages the attempt will be made to show that, in these stages of the child's development as presented by Rudolf Steiner in his Spiritual Science, certain educational standards are demanded; the task is, on the one hand, to fulfil what follows from these standards and, on the other hand, to build a bridge between the world of technology and the world of the child. This leads us, to begin with, into the child's "world of play".

Hardly can a greater contrast be presented than a thought-out technology, already complete in itself, and the little child, but lately come to inhabit the world. In the child nothing at all is complete; everything is predisposition only, leaving all possibilities open. What should be done is "told" us by the little one himself.

A little brother and sister once asked their baby brother, only a few weeks old: "Tell us, what does it look like in Heaven? You must still know." The little one laughed and crowed with pleasure and seized his brother's finger in his little fist. "What a pity," said the children sadly, "he still knows, but he cannot tell us. When he is

able to speak, he, too, will have forgotten what it looks like in Heaven". The children were certainly right, but they had not noticed that the little one had given them an answer. If he could have spoken, then he would have said "Yes, I came from Heaven but with this hand with which I have seized by brother's finger I will lay hold of myself and my surroundings." That this is so is shown us by the little one in the next few years. First, by kicking and grasping, he slips into the possibilities of movement of his body. Then he plays his way into the erect posture, the true posture of the human being, and in learning to walk he masters space. After the little one has learned, through speaking, to come into contact with other people, he confronts the world and wishes to understand it, to *grasp* it, as one must say at this age, for the way to thinking results from action. All parents of children of this age could tell the story of this will to action. But with regard to everything of a technical nature one must notice how they go about it. A father tries to pacify his screaming three-year-old by beating on a metal ash tray, which gives out a beautiful, resonant tone. Then the father lifts his two forefingers and says, "Listen". The child, his attention caught, quiets down quickly. The next day the little one sits in his corner and plays with the ash tray. He wraps it carefully in a piece of stuff, strikes it with wood, and then lifts up both forefingers, saying, "Listen". Naturally there is no sound. In spite of this the little one beams and is highly delighted. This shows that it in no way the production of the tone which was of importance to the child; it is into the movement and gesture of his surroundings – in this case his father's – that he wishes to find his way. The same thing shows itself in the case of the little child who, at his mother's side, "cleans" the carpet with an unplugged vacuum cleaner. Utility, as such, does not interest him, but he imitates exactly the movements made by his mother as she works.

Rudolf Steiner once said, "A child's play only differs from the work of an adult in that the latter is fitted into the external purposes of the world".

The recognition of this, however, together with the knowledge of the active wish to share in, to imitate, the movements used by grown-up people in their work show how the surrounding world, even the world of technology, is comprehended in these first seven years of life, and of what kind the technical world must be, so that the children can grasp it. In the first place one must see to it that the possibility remains for the child to imitate with fantasy what people do with mechanical means. How excellently, for instance, can the handling of a vacuum cleaner be adapted, in gesture and movement, to the driving of a tram or a motor car. This, at the same time, gives an indication as to toys which have a special purpose. These can all be carried out with the most primitive means. Toys, on the other hand, which leave no room for an inner activity filled with fantasy – mechanically driven engines, for instance – do not give the children what they need; they train them just to look on.

Important for us now is the question, what does the child, with all his activity, really want? The adult looks for the useful purpose of his work; the child, as we have seen, does not. But this also shows his attitude. A five-to-six year old child spent a great part of his time with a friend, a simple man, who in summer had to attend to the garden of a big house and in winter to the heating. With him he could plant and water, see to the heating he could in fact join in and sample all the work. Once, when the child was faced with the choice whether he would first greet his friend or other grown-up people, he did not consider for a moment. He left all the others standing and went straight towards his friend. Veneration sounded in his voice as he spoke his name, and gratitude shone from his eyes as he greeted his friend. Rudolf Steiner expresses this in the following way: "If there streams out from the inner being of the child that which streams in as imitation, in true reverence, in true love, towards parent or someone else, perhaps who has taught him, then everything that thus streams out from the soul of the child is permeated through and through with love."

Thus, in this first period of life, it is action in imitation of his environment which, not only the work of the adult but his inner attitude also, gives to the child, which predisposes the child for the first basic virtue: gratitude: gratitude to the world and to those people from whom, in his own way, he is able to learn.

With his entry into school the child leaves his enclosed family circle and enters into a community; in singing together, in speaking together, he must learn to listen to the others, must learn to develop a feeling for the others. Slowly his relationship to the world changes. Imitation, that slipping into his environment, fades away. In its place - one can observe this in the children of the lower classes when listening - the picture of what is being recounted is really, as it were, sucked in. One can notice how the children hold their breath when things go badly with the hero of the story, and how the children breathe freely again when the danger is over. Yes, they want to love the good and shun the evil, as this is presented to them by the teacher. In the same way they enter in feeling into natural processes and absorb their physical and technical side in pictures. They absorb the joy of the water drops which flow down to the valley in the foaming mountain stream, driving the mill wheels and quenching the thirst of people, animals and plants. They experience the joy when these water drops reach the sea and are rocked on the waves of the ocean they feel how the water drops, filled with longing for the warm sun, let themselves be carried upwards, when this reminds them of the achievement and joy of completed work. And the children experience how the circle is closed when the water drops, carried by the wind high over the land, shiver with cold and strive down again towards the warm earth. So, too, everything mechanical, insofar as it belongs to the work of man, insofar as it serves man, is taken up by the child in pictures.

When in the fourth class, for instance, one speaks about the journey of food substances, which must be brought into a town each day to meet its needs, then the lorries and tractors of the country people, which the children see each day, need no longer be replaced by poetical, horse-drawn wagons. The railway, too, and even aeroplanes, appear as helpers in the task of bringing this stream of food into the town. This picture can be carried further and the opposite process described of how the wares which people manufacture in the town, with the aid of machines, must flow in the opposite direction, to the country people on the land. Give and take - working with and for each other - should be experienced by the child; he should learn to love. One has such a feeling when suddenly one of the children calls out "I should like to do this work, too, later, when I am big!"

What takes place in the child's inner development at this age, between six and fourteen, is described by Rudolf Steiner approximately thus: From natural, unforced authority in the relationship between six and fourteen, there develops the second basic virtue, love. It awakens gradually and the right pictorial element in the teaching comes to meet this awakening. At first this awakening love understands the fairylike in Nature, but, after the ninth year, the realities of life. From this arises general love, the interest in another. But love of work, also, is implanted, love towards what one does oneself.

This, then, is the task of education: first by fairylike, pictorial descriptions of Nature, then by pictures of human work into which even the mechanical is interwoven, to allow the awakening love of the children to flow into universal human love, into interest in others and into love of work. Thus the seed of the second basic virtue, as Rudolf Steiner called it, is to be implanted.

After the fourteenth year the picture of child-nature alters, as does also the way in which the children confront the world. But the divisions are flexible. The first period of seven years sounds on into the second, and in this second period the third is also prepared. An example from Physics demonstrates this. The plank of a see-saw in a school playground is, during break, crowded with children. The children from the lower classes are sitting on it, packed like sardines, swinging up and down and living with heart and soul in the movement. A bigger, twelve-thirteen-year-old stands in the middle, leaning his weight, now to the one side, now to the other. Simply living in the movement is no longer enough for him; he fills himself with the experience of what this "lever" really is. It is on the see-saw that the law of the lever can first be tried out in practice. Three boys of about the same weight are spaced out on the see-saw in such a way that the one, sitting on one end, should balance the two boys on the other side. Previously it had been estimated by the children, and then drawn in chalk on the blackboard, where the two should be placed. Then the two were shifted as far as was necessary

to establish balance. This "self-proving" was now repeated with one boy on the one side and three boys on the other. The experiment was brought to a conclusion by calculating the relationship between load arm and force arm. On the next day the experiment was tried out, scientifically, as it were, at the Physics bench, using a small lever with exact weights. At the same time there was worked out on the blackboard a chart in which on the one side was entered *load and load-arm* and on the other side *force and force-arm*. When this experiment was ended, the children were asked what kind of a law could be deduced from these experiments. Deep silence, until one boy called out "That is on the blackboard: $\text{load} \times \text{load-arm} = \text{force} \times \text{force-arm}$!" And now the law of the lever was found from the door-handle, the window-catch, from the pedals of a bicycle, from the steering wheel of a motor car, from a crank-lever, etc., and there we were, right in the midst of technical matters. But now it was in a quite new way. No longer was it grasping the gesture and movement, no longer was it the experience of the social significance inherent in work, now the phenomena become, as it were, transparent, and the laws standing behind them are *comprehended* by a new, unfolding, faculty of soul.

This is already preparing in the last third of the lower school period and it becomes fully effective after "earth-maturity" (puberty). Now, at last, the young people leave the Paradise of childhood. Its gate closes behind them, and they stand, lonely, confronting the world. Picture suffices no longer; now they want to understand the world in accordance with its laws, as an experience of the mind – both the natural world, and also the mechanical world created by man. The very laws of his development impel the young person, in this age, to become a rebel, who storms against the old order if he cannot recognise it as filled with order and meaning. In this sense, is not the increase in the problems of adolescence understandable, especially if we bear in mind how difficult to comprehend this mechanical world has become? It is into this age that Rudolf Steiner places the teaching of technology, and this subject was so important to him that he originally called it the Study of Life.

What is aimed at, another example from these lessons can show. After a thundershower the dark clouds withdraw and the rays of the sun shine again upon the wet, steaming street. Little children come out of the houses, paddling barefoot in the puddles, shouting and jumping into the air for joy that they can be out of doors again. One has the direct impression that they experience, that is to say that they actually carry out in themselves, this process of expanding, of rising, the process of evaporation. The next stage is the experience of this process in the journey of the water drops, as was described before in "feeling picture". And now the circulation of the water drops appears again before the seventeen-year-old, but this time as it is seen by the engineer. They recognise here the laws

learned in Physics, and calculate the energy which is present in the water drops, which have been drawn up by the sun. Here the young people should realise that an engineer must feel the urge to make use of this enormous power machines they learn to know the attitude of soul from which they come about. They feel how the ancient Egyptian well-wheel was still drawn out of the possibilities of mechanical movement in the human body. An almost dream-like feeling sensed the pressure of the water on the hand that is plunged into it, and it was hands and arms that put this simple wheel together. The girls of the class notice with astonishment, how the boys get to work when they are confronted with the task of constructing the paddle of a water wheel. They do this out of quite a different attitude of soul. Now various forms of paddle are compared, considered and altered, until the one with the least loss of energy is discovered. And with many "thought gymnastics" it is at last understood how the modern turbine paddle is formed from the absolute and relative course of the water drops through the turbine. They realise the difference between this modern machine, thought out to its uttermost detail, and the old and sacred water wheel of the Egyptians, which was still fitted into the processes of Nature; that is to say, the pupils experience from technology the process of the development of human consciousness. The regulating of the household water of a district by means of constructions connected with these machines – dams and weirs – shows the young people that man has the task to consider at the same time the life-conditions of the living earth, by altering, for instance, the underground water-level so that the levels of evaporation are influenced. The concentration of energy made possible by these constructions, and their possibilities of transporting energy by means of electricity, lead to the discussion of the mechanisation of work. The law of effective result which dominates the machine demands the dividing up of work, which, leading finally to completion on the production line, turns the whole process into a machine, yoking the human beings to its rhythm. A further step in the understanding of technical development is taken when the automatic control of water power machines is presented, whereby one can demonstrate the first approach to the present day automation of technical work. Through this teaching there would be awakened in the young people the understanding for the necessities which arise from this development, the mechanisation of work, world-wide co-operation in work, and also for the fact that every detail of execution in this process, however inconspicuous, is essential in order that the whole may function.

Past is the active work of the little child, past the pictorial world of feeling of the age between seven and fourteen; now, after "earth maturity" quite exact demands are made on the thinking. But – and this is fundamental – behind the study of the mechanical circulation of water, stands the glittering journey of the water drops from the first school year.

But, beside this understanding of the technical world, something else also is necessary. About the same time as Henry Ford brought into operation the division of work by the system of production line, Rudolf Steiner introduced Eurythmy into the world. That is to say, while the movements of human beings in their work were being rationalised, in order to save time and strength, in Eurythmy an art of movement was being built up, which draws its impulses from out the soul and spiritual world. Here the human form moves in space according to artistic laws. The question as to their external purpose is without meaning. The movements of the arms in space are not outwardly imposed by a machine, but the human being guides his arms, right into the finger-tips and beyond them from within outwards.

This is the other necessity which the young person must experience. Naturally, at a certain age, this is somewhat embarrassing, for we have all accustomed ourselves in a high degree to "rationalise" our movements, to direct them according to external purposes. But just as youth can recognise in technology the social necessities of work, so what he experiences in the Eurythmy lessons throughout twelve years in the school will make him ready, as man, for the mechanical demands of work.

With this knowledge of the inner human necessities, and the external ones brought about by the mechanisation of work, at this age - after "earth-ripeness" - there develops the predisposition for the third basic virtue: the sense of duty; a sense of duty, however, which, as Rudolf Steiner shows, blossoms forth from the first two virtues, gratitude and wide human love.

In this article the attempt has been made to show, from the three first great periods of life, how the eternal individuality of man forms the inherited model of his body according to his needs, raising, it through play into the human posture. We have seen how the child this little bundle of will, living in his limbs, in his senses, imitating in fantasy the movement of his surroundings, arising from within and not according to the purposes of human work, founds in himself virtue - gratitude.

When, in the first school period, through pictures given by the teacher, the children live and feel with the beauty of Nature, and also the work of man - against not induced from outside but deeply founded in the inner being - then the second virtue awakes. Through the right experience of this picture of universal human love, the foundation is laid for interest in others, and love for his own activity, the love of work.

The young person in the upper classes, however, wishes to understand the world in its sense and meaning. There grows in him the world in its sense and meaning. There grows in him the under-

standing for the division of work of modern life but also, through the knowledge of the true and beautiful, the understanding of how to exist as *Man* in this world of mechanical laws.

Thus Rudolf Steiner's education shows a method which answers both the postulated questions, a method which allows the young person, in this mechanical world, to develop in full freedom, form within outwards: gratitude to those who work for him, loving devotion to his own work, and understanding for the activity of others, so that there grows in him the sense of duty to make his contribution also, whether modest or significant, to the work of the whole.

GOETHE, THE PERCEIVER

Herbert Hahn,

Stuttgart

IN a small collection of poetry by Goethe entitled: "God and World" we find a poem called "Bequest", the fourth verse of which runs as follows:—

Den Sinnen hast du dann zu	Then you will have to trust the
trauen,	senses
Kein Falsches lassen sie dich	They will not deceive you,
schauen	
Wenn dein Verstand dich wach	When your reason keeps you
erhält.	awake.
Mit frischem Mut bemerke	Courageously take note around
freudig	you
Und wandle, sicher wie	And walk, confidently as well
geschmeidig,	as gracefully,
Durch Auen reich begabter	Across the world's many
Welt.	meadows.

An attitude is described in this verse, especially in the line: "Courageously take note around you", which Goethe had developed for himself since earliest youth. The great artist and thinker was well aware that the fruitful connection which he had with the world and with life could not have been possible, had he not previously been able to perceive with a childlike freshness of sense observation. Goethe had raised with an ever increasing maturity to consciousness that quality of naive unconscious directness, which is present in the perception of children. But again not to that consciousness that disturbs and destroys the creative forces by analysis, but to the consciousness of pure play penetrated by artistic strength.

The educated man of today recognizes in Goethe unmistakably the great poet and thinker, a bearer of the entire occidental culture. To recognize Goethe's genial way of perception is for most of us a different matter. And yet it could be of curative value for the present day and for succeeding decades, if we were to learn to know and understand this side of Goethe's life as well.

With this aim in mind the following incidents from Goethe's biography have been chosen:

When he was very young, even before he studied at Leipzig, Goethe had to overcome an inner conflict, the severity of which almost destroyed him. His first innocent romantic love for a young girl at Frankfurt, whom he sometimes called Kaetchen, sometimes Gretchen, had come to an abrupt, cruel end. Goethe, as he describes it in his autobiography, had, out of his connection with this girl, joined certain circles which must have been displeasing to the middle

class dignity of his parents. Was the girl in love with him or was she merely playing with his affection? His doubts drove him to a state of mind varying between apathy and rage.

During this time he opened his heart to nature and received with purity and chastity that which the outside world offers. And it cured him. He roamed the forests around Frankfurt, accompanied by an older and understanding tutor, whom his worried parents had employed. Often he had a strong urge to be alone. The tutor, obeying a sign from the boy, stayed behind. He knew he could trust him to himself. And now Goethe's nature reacted out of the fullness of its disposition. He certainly did not allow himself to dream or to brood. He noticed the things around him with "fresh eyes". At first not joyfully. The wounds in his soul were still too painful for that. Seriously, quietly, collected, he took out his drawing block and pencils which he had secretly taken with him. He began to draw—trees, bushes, hills, outlines of more distant mountain ranges. He forgot himself in order to perceive and reproduce concisely and consciously what he actually saw. And with himself he also forgot the problems and doubts which were still gnawing in the depths of his soul. By penetrating into the pure ordering of the world, he—without noticing it—also brought an order into his soul once more. He was filled with a light and tender gaiety. And thus, becoming his own doctor, he gradually effected his own cure.

At the same time, even if in a dreamlike way, he became filled with a new knowledge: Only he can understand the world, who is able to recreate it artistically within himself.

That which at that time was only dawning knowledge, was already to awaken to greater consciousness some years later. The study-years of Leipzig lay behind him. The haemorrhage, that had ended these years so abruptly, the grey, slow, leaden time of convalescence in Frankfurt, seem like a gap in his biography. But now the exciting years of Strassburg had begun. His meeting with Johann Gottfried Herder and Friederike Brion left inextinguishable traces in Goethe's life, the one of a spiritual, the other of a soul nature. A not less important impression during this time was that imprinted upon him by the Strassburg Cathedral.

This meeting, when regarded from a more inner aspect, can teach us much about the method of Goethe's way of perception. He had hardly arrived in Strassburg, when he climbed the tower of the Minister in order to get a large overall picture of the district. He looked at every part of the lovely county with which he was destined to be connected later on through his friendship with Friederike. And each day he studied the building in all its details, the outside as well as the inside. And as he tried to connect the outer proportions with environment, and also the various parts with each other, he asked himself: How does the inside correspond to the outside? In this way he reconstructed, rebuilt as the architect had done. At the same time Herder had awakened in him a deep interest in the

Gothic style, an interest that became for him a spiritual revolutionary experience. Going a step further he now compared the building with other great buildings of the past. The impressions which the outer eye had received day after day, were now placed in newer and greater perspective before the inner eye. Detail and whole became ever more tangible, more plastic. Goethe remembered how much he once before had owed to his gift of drawing, and thus again began to draw, recreating what he had seen. Sometimes he copied directly, but at other times, with the quite definite purpose of self training, he reproduced in a free, imaginative way. We do not know if by these activities he tried to calm an inner storm again. He does not mention anything in his diary or letters. But the happy and warm encounters with Frederike took place at that time.

An inner voice taught Goethe that nothing could be achieved in the field if true perception if one became impatient or tired. Therefore he took frequent periods of rest during his studies and exercises.

And ever again, when resuming his task after such an interval, he did so from a different angle. Impressions, which he got during the day, were no longer sufficient. Tipping the night watchman, he succeeded in gaining permission to enter the building after closing time. Occasionally he would do the following: He approached the object of study during the night with a torch, suddenly threw down the torch, extinguishing it by stepping on it and with these new impressions and reflections in his soul he hurried home. And there he would draw and draw again what he remembered. It can be assumed that this method of observation also applied to Strassburg.

Apart from conquering the Minister for his soul and spirit he also conquered it physically. At the beginning he could not climb very high into the tower. A sudden giddiness stopped him. But he did not give in. Day after day he tried and each time he got a little higher, until at last the giddiness was overcome and he was able to look down from the highest point.

Is this not like a symbolic event? One could think that such secret, self-educational, self-pedagogical attempts are part of the great school of perception, of observation.

And the results of all these efforts were surprising. The days in Strassburg were numbered. The painful parting from Friederike was already an inner, accomplished fact. Once more Goethe was together with some good friends, most likely with those who are mentioned as his companions on the plaque erected on the rampart of the spire. But this time he was not up above in order to look down with them across city and county, but, as he himself described in Book 2 of "Truth and Fiction":—"In a country house, from where one could see magnificently the front and spire of the Minister."

This is what he says:

'Somebody said that it was a pity that the Minister had not been completed and that only one spire had been built. I replied

that it was even a greater pity that even this one tower had not been finished. The four volutes were too flat, there should have been four small points above and also one a little higher and in the middle where the course cross is at present.

'After I had said these words rather passionately, a small merry man asked me: "Who told you that?" - "The tower itself", I replied, - "I had observed it so closely and paid it so much attention that at last it resolved to confess to me this open secret". - "It has not told you an untruth", said he, "for I know. I am the administrator in charge of the architectural side of the building. In our archives there are still the original designs which I can show you and which will prove the truth of your statement". - Because of my impending departure I asked his permission to see the document as soon as possible. He showed it to me; I quickly traced through oily paper the points which were missing in the final draft and was sorry that I had not heard of this invaluable paper before. But this was always the case with me: By perceiving and observing the objects I arrived with great labour at a concept which may perhaps not have been as fruitful and striking had it given me in an easier way.'

So far Goethe's account. In a simple words a great thing is related. We learn that the comprehensive way of perception awakens a purified side of phantasy, which surpasses all fancy. We could call it *exact phantasy* or imagination. By it we experience in a wonderful way that pure perception, the foundation of all factually faithful and at the same time creative-artistic observation, is not satisfied with the reproduction of dull everyday reality, which at first confronts us. Pure perception and true observation approach the deeper plans and intentions of the Creator. They only lead towards initiation into full reality.

It is possible that a deeper connection exists between the paragraph from "Truth and Fiction" quoted above, and the passage immediately following it.

Here Goethe describes the tragic parting from Friederike and how, during a lonely ride on horseback one night this pain suddenly called forth a prophetic picture of his own future. It is possible that something of this pain had already been in his soul when the true picture of the Minister had unveiled itself for him. If this were so, then another truth would manifest itself for us: The fact that individual human pain - which to the pragmatic philosopher is perhaps the most subjective of all subjectiveness - participates in a mysterious way at the birth of the greatest objectivity.

We can here only indicate another experience in perception, perhaps Goethe's most significant. A detailed description would really be necessary. We are thinking of his experience concerning the archetypal plant in the Botanical Gardens at Palermo. In sketches contained in his "Italian Journey" Goethe describes how he was guided to this "manifest secret" step by step by a painstakingly careful and living observation of plants, from morning till

late at night. Important stages preceding the sudden realisation at Palermo, were at the Brenner, at Padua, Venice and Naples. And when we remember the technical details employed by Goethe, the Genius of Perception, at the great and worthy object of the Strassburg Minister, then we possess a golden key which opens for us from within the experience of Palermo.

He who has really followed Goethe's way of perceiving things will understand why he so vigorously fought against all accusations that the archetypal plant was construed, a combination of single, abstract ideas. Even Schiller, when daring to make such an objection, during the important conversation at Jena, so significant in its spiritual-historical aspect, was not spared Goethe's passionate displeasure.

A most striking remark, on the other hand, was made by a young man who had attempted to clarify for himself during quiet meditation the experience at Palermo. He said: "Was there not something corresponding in every respect to the discovery at Strassburg? In Strassburg Goethe found the archetypal plan of the Minster, in Palermo the archetypal plan of the plant. I think that this time Goethe looked into the archives of the Creator Himself. He discovered God's architectural conception of the Plant."

The knowledge of such truths, by which we are here confronted, is decisive for the whole civilised world, and therefore especially for education. Our intellect has greatly developed during the past centuries. By it the miraculous technical achievements were made possible. At the same time, however, it has mechanised our entire outer and inner world to a frightening degree. Yes, our intellect has awakened, but our heart has become lazy and our senses dulled. The dynamic strength, by which we rule the outer world, has paralysed our inner life.

If civilization is to rise again to a true culture, it demands generations of people, who will wake up with "unspoilt senses". With senses wakened in a healthy way from one organic-spiritual stage of development to another.

Everything surely depends on our solving the burning social problems of present day and the future. But the social question itself is an organic-spiritual matter. To attempt a mechanical solution is like the hopeless struggle of squaring a circle. It will, therefore, be of the utmost importance if we are able to place into the outside world which will out of necessity further mechanize itself, a generation of people brought up and educated in a way that will enable them to perceive and understand the organic life around them.

And here Goethe, the Genius of Perception, can help us: the man who has worked his way from the hidden artistic secrets of the Strassburg Minister to the manifest secret of nature.

A Contribution to the Question: Are Films Harmful to the Young?

Heinz Muller,
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ONCE when I was present at a juvenile court, I heard the young offender describe how, after a visit to the cinema, he had experienced the feeling: "Something has got to happen now". The judge immediately asked what the story of the film was, which the boy had seen, but as there was no direct connection between the content of the film and the boy's offence, further enquiry along this particular line seemed unfruitful. The fact that the first impulse towards a misdemeanour had originated just after he had seen the film was looked upon as unimportant.

As for myself, I could not agree. The brief remark made by the youth who, although guilty, was clearly a likeable character, became ever more significant to me. What was it that the youngster meant to imply by these words? He sounded as though he were speaking in his defence, when he pointed out that the impulse towards his misdemeanour had first arisen in him after a visit to the cinema. Yet the possibility of the film's having exercised a harmful influence was quickly discounted after the enquiry into its content.

This is where nowadays such matters are usually allowed to rest. During an examination of the influences of films on illegal acts committed by adolescents, H. W. Lavies, the director of the West German Institute for Film Research, stated that a harmful influence could be proved in only astonishingly few cases. Out of 140,000 youths who, according to official statistics, were found guilty and sentenced by a criminal court within the seven years from 1945 to 1952, there were not even 30 cases where such a bad influence could be proved or even supposed to have existed. Lavies writes in his article "Film and Juvenile Delinquency", published in the West German Criminal Pamphlet "Campaign Against Juvenile Delinquency", Wiesbaden, 1955:

"It can be safely assumed that film can exercise a harmful influence if a youth commits a robbery, for example, after he has witnessed a similar crime in a cinema performance. The evidence then appears conclusive that this particular film has damaged the mind of the adolescent, who is still very open to outside influences.

"If one agrees with the above statement, one will understand that an answer to the problem of the film can be readily found in the creation of laws which impose a strict censorship on both the content of films and the way in which they are presented to the public, in order to protect the young. In October 1956 a German teachers' magazine published that "the measures taken so far to protect the young from unsuitable films have shown themselves to be by no means ineffectual".

Despite such reassuring statements, one remains dissatisfied, wondering whether films may not harm in a more subtle way. But this is difficult to grasp clearly.

Such thoughts came to my mind again and again during the sitting of the Juvenile Court. I asked myself several times what was actually happening within the will-life of a young man who is entirely given over to the enjoyment of a film, which he is following with rapt attention.

Then suddenly an entirely different situation reappeared before my mind. As a young teacher at the then "Freie Goethe Schule" in Hamburg, I frequently had the opportunity of consulting Rudolf Steiner on all kinds of pedagogical questions.

Among the small group of my first pupils there was a child who had great difficulties in exercising his will in order to translate a thought into a deed. Often he was full of good intentions, but only too quickly did his willingness evaporate. Sometimes he would hardly make a beginning at all. Very soon the impulse, which should have been followed by the deed, came to nothing. I had already done many exercises with this child in order to strengthen his will; I had made him do vigorous movements, stamping, etc. Yet, no sooner was he sitting by his desk, than he again was lost in dreams and remained inactive. So I asked Rudolf Steiner for advice.

He answered roughly as follows: "The exercises which you have done with this child are good, but something else which is essential needs to follow. Let the child run a circle one or even several times and then ask him to stand beside the circle. He now must live through the whole movement once more very vividly in his memory and in his imagination. His eyes may follow the outward path, which he has previously run. Ask him now and again to show you exactly which outward point in space he has reached while he is doing his circular movements mentally. Finally you bring it about that the child does not need to make any outward movements at all, that he does not need to follow the circle with his eyes any longer and yet he should be able to go through the whole procedure actively in his imagination with the utmost clarity. Another way would be to let the child do the Eurhythmy gesture for A (as in star, or father) or another large ad sweeping movement with hands and arms. Then let him do this same movement less and less outwardly until he will only slightly indicate the original movement but, if possible, he should experience it inwardly in a much more beautiful and bigger way that would ever be possible with arms and hands. Finally the child, while looking at you with a steady and clear gaze, should again make the same movement in his imagination and yet remain perfectly still outwardly."

Rudolf Steiner concluded by saying that such a purely inward experiencing of outer activities could fire the will also with regard to other activities which had not been practised previously.

Is it not possible now to understand the situation where a young man has the urge to "do" something after having seen a cinema performance?

Fixing his gaze on the screen, the spectator is forced into a state of concentrated rest. Even the depth of space (3rd dimension) no longer exists. The eye of the onlooker, robbed of its natural tendency to accommodate objects moving in a third dimension (i.e. towards or away from the onlooker) is now rigidly glued to a vertical plane as it follows the actors' apparent movements towards or away from the audience.

What a terrifying caricature of a normally healthy training of the will is being practised when we look at films!

Does not even an adult, when he comes from a film performance, sometimes experience a strange kind of stimulus which his will has received? He can adjust himself to his everyday life more quickly than young people. He soon resigns himself to the fact that he has lived in tempting illusions only. This can often be observed quite distinctly in the faces of grown-ups who are just leaving the cinema. But if young people who are still flexible and impressionable, are thus led astray in the holiest and most intimate part of their being, namely in their will, is it then surprising that they feel the sudden impulse: "Something has got to happen now"?

If something really does happen then, its cause need not necessarily be traced back to the actual content or plot of the film seen, nor to the particular way in which it was acted.

Such distortions of what man really needs today for his development towards the spirit must be recognized, if healing impulses are to be found to counteract the injurious influences of modern times.

Technology Faces Education with a Problem

A. C. Henny,

The Hague

SOME months ago there were alarming reports in the American press about the shortage of trained engineers and technicians in the United States, compared with those in the Soviet Union. Henry Ford II also gave a warning recently in a talk to the students of the Wharton Technical School that in the Soviet Union three engineers finish their training against one in the United States.

This shortage becomes dangerous (the president of the Ford Co. continues) because the Soviet Union is now able to send greater numbers of technicians to the less developed countries in order to compete with the free world in obtaining the support of those countries, which could turn the scales of world power.

One sees here a problem which technology has set education, where two enormous powers in the West and in the East compete with each other in the training of engineers. This race will be won, it seems, by the country which is most successful in inspiring the young people to train themselves for technology. How to solve this question has become much more complicated in the twentieth century than it was in the nineteenth. Much was expected in the previous century of the progress of technology. Prince Albert said on the occasion of the opening of the World Exhibition in London, 1851: "Through the success of new inventions the distances between the different peoples on the earth will disappear... We live in a wonderful period of transition that will soon reach the most important goal, namely the realisation of the unity of mankind." This question of "progress" not only as a technical or economic matter, but also as a theological one, has been considered in the United States as well. Poverty, illness and want should no longer be contemplated as afflictions of the Devil, for humanity would shortly be able to do away with these evils by dint of its own efforts.

All these expectations are voiced in the period of the so-called "first industrial revolution" in which the machine principally replaced work done by hand. Since then, the so-called 2nd industrial revolution has begun, in which the machine is also going to replace mental work. The expectations of this revolution are far less optimistic and the doubt whether it will turn out to be a curse or a blessing, belongs to one of the uncertainties of the present-day scientist.

An example of this is Norbert Wiener, the man who can well be called the father of the modern robot. He affirms that man has developed so far that he can now design machines, which he can "teach to learn"; that means that they would be able to correct automatically certain mistakes and shortcomings. He thinks it possible to construct a mechanical chess player, which can perfect itself

automatically, just as his living partner educated himself while perfecting his own play.

With the introduction of this new "learning machine" a new process seems to come about of which the consequences cannot, as yet, be visualised. Will it really be possible for the machine, created by man, to lead its own existence independent of man? Will it ever be possible, to quote the Arabian story, to put the spirit back in the bottle after it has been released?

All these considerations occupy the scientists who have in one way or another the important task of furthering the so-called second industrial revolution. One is certainly conscious of a dangerous game being played with human freedom and what a nightmare a vision of the future can become; a future in which a technical revolution takes place without being accompanied by a spiritual-moral revolution. For this reason the challenge to education has acquired yet another greater urgency.

At present it is not only the question whether sufficient engineers can be trained in the race of technical advances. With it comes an ever more pressing question: how can a moral counter balance in an "automatic" age be formed, strong enough to command the mechanical powers which we have summoned to our aid?

As soon as one talks about "educating a machine" one makes completely new demands on the education of man. It is not by chance, especially nowadays, that the ordinary school and in particular the technical school are reproached for their inability to teach young people how to "learn". In the present phase of the industrial revolution, it is said, everyone who has been trained for a technical job will have continually to face new situations of life. Will he be able to review and refresh himself continually, so that he can face different situations without stagnation?

Now that the computer has entered our society, it might well be possible that gradually all human computation becomes superfluous.

Do we educate people to be creative in every situation, or do we think it sufficient to perfect them in certain specialised directions only?

In the latter case we educate men only at a superficial level. This is the conflict of conscience that the computers arouse and is a new aspect in the problems which technology presents education.

Naturally we realise that the capacity to construct one of these machines has nothing to do with the capacity to teach young people how to learn. In the first case we can speak of a technique and in the second of an art of education. Now education as an art is still not yet a general enough concept among teachers. One rather speaks of "Pedagogy" and feels oneself safe by employing scientific terms which are used in every university.

Every village schoolmaster nowadays has experimented in his turn to rouse creative abilities in his pupils. Everywhere one begins to find in the schoolroom plasticine and paintpot, even if they are not current requirements in the college room of university and high-

school. Here one merely talks about the importance of art for education and leaves it to the training college to impart this art.

Might one expect that in the second half of this century "art" will give an answer to the challenge of technology? Through one's own activity in the field of plastic, music and dramatics, creative forces can be awakened which will be of great value in the battle against the process of automation, that takes part inside as well as outside oneself.

Side by side with the challenge of the automatic computers which will be of increasing importance in the future, other challenges exist.

There is first of all radio and television and their influence on young children. Nowadays one hears and speaks quite often about "the generation without words", by which we mean that young people seem to be more and more incapable of learning by means of the spoken and written word. The "word" is not capable any more of awakening the capacity of thinking. To this is ascribed the enormous influence which film, television and comics exercise on young people. This hunger for comics is already in itself a very interesting phenomenon which points to the more-or-less latent existence of strong powers of fantasy. The attempt to satisfy this hunger for fantasy in an external way only calls forth many psychological problems.

We can also observe the decaying process of the capacity of perception. It is evident in ever increasing measure how great a dulling influence the so-called technical means of communication have. There also one can speak of a challenge of film, radio and television to education. A different development of the perception is the answer to this challenge. This again is not so much a question as an "art of education".

How - with the help of art - can perception be developed into a creative force which makes us not only a spectator but at the same time an active participant of the world around us? This is the central problem for the education in the second half of the 20th century.

For along this path an inner counter balance can be developed against the outward superficiality of the mere perception. It is increasingly evident that our children find it difficult to listen and their impressions are more superficial. They do not take part sufficiently in their surroundings and this leads to many forms of indifference. It is impossible nowadays to reject film, radio and television, but we must accept them in their function of means of outward communication while being detached inwardly. It does not lead us far only to be supercilious about the dulling influence of technical progress. In view of the powerful opportunities which are made possible by technical progress, one would be unrealistic and foolish to wish to put the clock back.

Active inward powers on the other hand can be awakened through the developing of one's own creative powers and a deepening of observation.

These are the tasks of education in our age.

Education in the Technical Age

Hans Rudolf Niederhauser,

Zurich

A reform of education and of the form of instruction is being urged today from two sides. On the one hand, the observant teacher can read this demand from modern children themselves, because the great change in present-day youth cannot remain hidden from him. We can briefly indicate this as follows: modern children live, by comparison with earlier generations, much more in the dynamic element of movement. That applies not only to small children who are able to transport themselves on wheels of some sort with striking agility and real passion, but it applies in an inner sense to older scholars. In them the impulse manifests itself in that they bring towards the teacher a diminished intellectual capacity to learn by means of the memory in the traditionally understood sense, but they show a healthy need to be active themselves. They want to learn through experience and they require to be spoken to much more imaginatively. (Obviously they do not express this consciously.) These few indications already make it clear that the "how" of teaching must be entirely transformed, or - expressed in picture form - it must be placed on its feet instead of its head, if the instruction is not to bore the children but rather to grip and educate them. It can do this if it is presented in such a way that the pupils can take an active part - it is appeals less to their memory and more to their formative forces.

On the other hand, the necessity for a reform of the educational "what" as well as "how" can be deduced very clearly from symptoms of our cultural life.

Intelligent people are already pointing to symptoms, which show in how great a measure modern mechanisation of life and its results are about to transform the human being. The effect can be so great on the human being that his further existence as an independent individual is highly questionable. If one reads what is written in periodicals and books concerning these things, one finds abundant confirmation.

The following is a small selection, mostly from German speaking sources. These statements appear to be negative because they only state what is lacking or in danger. That they are made at all, however, and that they refer so pointedly to fundamental questions of human existence in different ways, is important and deserves notice. One can gather from them how high the tide is already running. In considering these statements, the reader who can relate them to a healthy understanding of the human being, will be able to judge in what direction the therapy lies.

It is being unanimously stated that with the increasing mechanisation of work the human being is becoming a part of the functioning machine. He is degraded to the status of a soulless assistant. (See among others Strehl "Robots are among us".)

This statement alone contains serious and complex questions. It is said that a "patterned" mode of thinking is developed by those who find themselves part of an automatic factory process. Immediately the question arises concerning the nature of thinking. Machines exist which "think". The makers of such machines state clearly that the mechanism can only "think" what has been built into it as the content of thought, but still the question is put as to the nature of this sort of thinking. How is this different from human thinking? Is there a possibility of influencing the development of thinking in the growing human being? If so, what form should such an education take so that the human being is not a victim of mechanical thinking?

The vacuity and devitalization of the human being through mechanised work, together with shorter working hours, make the question of the utilisation of "free" time one of the most pressing social problems. (See N. Wiener: "The Human Being and the Human Machine.") How can people bear the still further extended period of boredom? What form must education take, so that the creative forces in the human being are stimulated and kept alive?

* * * *

It is very enlightening to study what was said on the occasion of the introduction of television, this characteristic symptom of our technical civilisation, into Switzerland.

Apart from eye-strain, a spoiled sense of colour and a characteristic chin and tooth malformation due to supporting the chin for hours on end, the following disturbances were confirmed (this applies in some measure to the cinema also): an increase in passivity, of disinterestedness becoming apathy, nervous restlessness, lack of the capacity for concentrating and memorizing, and also, a decrease in school work.

The children lose every interest in play and in any occupation which necessitates being active themselves. Even the small children wait for an outside impulse. Then the next minute they have finished and are bored anew.

Seminar director Schmid in Thun, among many other excellent observations ("Children's Film - No", Berner Schulblatt 1952, No. XI) says that the film overwhelms the child who has still only a small capacity for forming connections and completing the synthesis, and that is continually excites tension without releasing it. In this way the childish audience is over stimulated. In "Technical Information", the magazine of the P.T.T., J. Gold describes television as an "illusions machine" which represses the real in favour of the imagined. Television is an hours-on-end conscious training in illusion. The critical

relationship to the surrounding world is abolished and there arises an intellectual malformation, just as an acoustic one arises through listening too much to the wireless. Equally decisively, Karl Bednarik (The Young Worker-a New Type) expresses himself about the cinema. "The effect of a film is to create an illusion of wholeness through a sort of self consciousness. The fact of the illusion not only weakens the one succumbing to it, it transforms him."

In the Neue Zürcher Zeitung one reads, "Television has a great faculty for impressing something on the mind which no other means of mass influence possesses." Not only does one know of the compelling power of television as used by business advertisements, but in America an experiment in hypnosis was carried out. This showed that the person who took part in it through television fell into a deeper trance than any of the others. The writer Elliott, who was able to observe the effect of television on his son, sees a force there which fundamentally destroys thinking and the spiritual individuality.

* * * *

In different cities the appearance of gangs and rowdyism is creating problems for magistrates, social workers and educationalists.

Among many reasons for this, people are unanimous in pointing to the over-stimulation to which is particularly susceptible. Through it, an aggressive readiness to destruction arises and this manifests itself in spontaneous acts of violence.

A technical failure at a jazz concert Hamburf caused a psychological blackout among young people and the foyer was shattered. From Paris it is reported that during a hot jazz session by Sidney Beckets and his Orchestra, the audience was gripped to such an extent that almost the entire contents of the room were demolished.

Charles Morgan's essay "Mind Control" with which he introduces his book "Liberties of the Mind", leads to great depths, indeed to the fundamental questions of human experience. It seems to Charles Morgan, contemplating the signs of the times, that the freedom of thinking, the freedom of willing, even the innermost individuality of the human being, is threatened and questioned. Considering the intrinsic importance of certain modern phenomena he states that power is sought not only as formerly to influence the human being in decisions from outside by means of intimidation and mass influence, but, an attempt is made through scientifically discovered ways of interference, to rob the human being of his individuality, to settle an "alien tenant" in the house of his body, to make him possessed by something foreign.

As proof that attempts are made and advanced in this direction he points to the enigmatical behaviour of the accused in the Russian courts. These human beings must have been handled so "cleverly" and "successfully" that even those with a feeling of high moral responsibility like Cardinal Mischcenski, have submitted to the court procedure without any exercise of will and have testified with apparent conviction against their real conscience.

Elsewhere, Morgan speaks of experiments which are being conducted in American laboratories, and followed with great attention, which should make it possible to shorten the course of education, the process of learning. This is done by treating certain parts of the brain presumably electronically, to counterbalance spiritual shortcomings, to eradicate hereditary faults and criminal tendencies and to substitute something worthy for them. This has the object, so American in its naivety, of changing bad citizens into good ones.

How far these experiments are in preparation, have succeeded, or whether they have succeeded or not, Morgan leaves as an open question. That such ideas arise is for him the deciding factor. Such thoughts cannot arise in isolation. Their appearance shows that something is in the air, that humanity moves in a direction towards a yielding up of the spirit. It is a denial of individual power and leads finally to the possibility of an artificial, fundamentally formed satrap of a personality.

With conscientious alertness Morgan looks at the symptoms of present and recent civilisation and shows such invasions everywhere. In varied spheres of life, through small partial steps and unnoticed by those affected, more and more spiritual freedoms are destroyed. The tendency towards the surrender of the spirit makes itself increasingly noticeable.

To conclude the enumeration of symptoms we would mention the excellent essay by Hans Buscher, a technical instructor in Basel ("Apprentices and Technics" in the brochure 'CHILD & TECHNICS')

Buscher noticed that the majority of technical pupils show a certain attitude of absentness. They appear to be following the instruction but they are not there. They possess the faculty of being able to appear as interested, with a complete lack of inner participation, a capacity which is obviously founded on years of training. The technical school pupil yields to this condition quite automatically and mechanically and begins to cut himself off from the world around as soon as the opportunity is favourable.

He describes the condition of the pupils further:

"They are neither able to work on their own nor can they do much with what they have learnt in school. The material only sticks to them - it has not been transformed into substance - the creative power of the personality is simply not sufficient to build the bridge from something which has been learnt to something new but analogous.

"The pupils have - spiritually speaking - indeed learnt to walk, but they move like robots without inner impulse or inner participation. Everything (this refers to ages 17 to 21) which does not somehow touch the accustomed mechanism of their thinking, remains outside their understanding. One comes to the conclusion that factually in the centre of the personality of the majority of pupils there must be a dumb blind spot, which appears to have remained in its embryonic condition. The organic factor, however, develops into a robot and the two continually oppose one another.

"Initiative, in the narrower sense, what is creative, is lacking in the individual pupil in an astonishing measure and it is indeed as if the educational material has been able to form the pupil but not develop him. Sense organs are developed in the best manner and the scholars are able to think most easily in the form of clichés. What they say and write also reminds one of clichés.,,

A shattering statement!

Buscher traces the different influences which produce such malformation in young people. He describes the effect of mechanical toys, of the wireless, of the cinema. But he does not stop there. He has the courage to say that the school itself (urged on by parents) plays an important part by its way of instruction. Through present day school activity the direction towards complete mechanisation is increased.

* * * *

The phenomena described above should not be taken only in their negative aspect. If one considers most deeply what has been mentioned it can be looked upon as the necessary reverse side of the situation regarding freedom in which man finds himself today. In this total disappearance of everything that was obvious up to now or seemed to have an unquestioned duration, is contained the guarantee and possibility that the human being can achieve freedom through his own powers. It can never be a question of condemning modern technical achievements and their results, or wanting to flee from them. On the contrary they are to be welcomed as the necessary opposition, like the anvil, on which the human being forges his freedom as independent achievement.

One thing, however, is very clear. The growing human being cannot be left to himself in this attack on his spiritual existence. The stronger the attack in the future, the more must forces be awakened and strengthened within him so that he can hold his ground. No knowledge, no learning, no moral precepts, however beautiful, will give him the capacity - this can be done only by the spark of the power of the individual which slumbers within him. This can flare up to a strong flame through an invigorating education based on knowledge of the human being.

This development of capacities, of real soul forces, necessitates a complete change in our ways of teaching and instructing: rejection of all the traditional burden of humanistic education; rejection also of the mediaeval nominalistic spell - and cram-schools which are still so common today, and particularly those where the modern teacher practises mental arithmetic with a stop-watch.

A pedagogy, however, which meets the outer and inner demands of our mechanised age, does not have to be invented. It is there in the Waldorf School Pedagogy, founded by Rudolf Steiner.

Fate decreed that the starting point of this pedagogy should be the education and development of working class children. The completely changed situation in life for modern man is therefore included in Rudolf Steiner's art of education.

EDUCATION AND AUTOMATION

Alan Howard

ONE of the most characteristic features of a school founded on the principles of Rudolf Steiner is that the children, between their seventh and fifteenth years are taught by the same teacher. He is called the Class Teacher and it is his task during those eight years to teach them all they need to know of reading, writing and arithmetic, together with the various other branches of knowledge by the time they are ready to go into the Upper School.

Naturally he doesn't teach them all day long throughout that time. They have lessons from the other teachers of the school as well; but for approximately the first two hours of every morning, the Class teacher is solely responsible for their education. That morning period is known as the Main Lesson.

How any particular Class Teacher shall carry out this programme is for the most part left to him; but there are certain general principles which are invariably followed by all. It is customary, for instance, to pursue a given subject during the main lesson for the space of three weeks or so, and then to give it a rest and pass on to something else. This will then be taken at the Class Teacher's discretion for as long as he thinks necessary, before he again passes on to something else, or returns to something he has done earlier. What is most important however, is that the various branches of knowledge shall be introduced at times corresponding with the child's development. It is obvious that no one would teach the elements of Algebra to a child of six, for the simple reason that he isn't old enough to be able to understand it. In an even more subtle way, Rudolf Steiner showed that one must seek the right age at which to present every other subject and the various aspects of it.

Such a method of procedure might seem at first sight to be rather disjointed and arbitrary. It is, however, based on one fundamental objective, which is as clear in the mind of the teacher during his first main lesson with Class One, as it is during the last with Class Eight. For he has the task during those eight years to bring the children, by the time they reach their fifteenth year, to such a view of themselves and the modern world into which they have come, that they shall with confidence and a sense of responsibility be ready to take their places in that world. Their education is naturally not finished in Class Eight. They still have much to learn. But they should now be able to co-operate more consciously in that process, just because of the age they have reached, and the way they have been educated so far.

Let us glance for a moment at the curriculum for those first eight years and see what it comprises.

The child enters Class I during his seventh year, and, unless he has already been to another school, the teacher's main task is to

begin to teach him the fundamental skills: writing, reading, arithmetic. As this work continued, however, through all the eight classes - and, indeed, beyond - we will say no more about it here but consider what else is done. During that first year the child hears a lot of stories of fairies, elves, witches, giants, enchanted princes and the like drawn from the fairy lore of bygone ages. He also hears stories about the world around him: the clouds, mountains, stars, plants, animals. This continues until as he approaches his ninth year he begins to learn in a more direct way something of the work men do in the world: ploughing, sowing, reaping, building, pottery; and he also makes his first acquaintance with the myths and legends of animals and saints, and later the Old Testament stories. After the ninth year, little by little the 'subjects' are introduced. He begins to learn local geography; about the world as a plant-being; about the animals and the way each is adapted to its special task - and unique position man holds in the world. Later the stories of the old civilisations are introduced, with the great leaders who inspired them; Rama, Krishna, Zarathustra, Hermes. Geography is extended to include the various regions of the world, and the kind of people who live there. He begins to get his first impressions of Astronomy and Geology. Gradually from the twelfth year the sciences are introduced: Heat, Light, Chemistry, the rudiments of Electricity and Magnetism - all of course keeping to the basic phenomena and the men who first found out these things. History - following a biographical method - opens up the Roman Empire, the development of Europe, the age of Discovery, the beginning of modern times. The Sciences are extended and the rudiments of Physiology are presented. Mechanics is introduced; and arithmetic broadens into Mathematics with the beginnings of Geometry and Algebra. Finally in the Eight Class all this is gathered together; and the history of the nineteenth and twentieth centuries is presented, with the application of the scientific and other developments to the life and work of mankind in the modern world.

Now, what is achieved by all this? Or, more precisely, what really has been done if this has been done properly? Let it be granted that we hope the child has retained some, if only a little, factual knowledge: that he can tell us, for instance, when printing was introduced; who discovered the circulation of the blood; when the telescope was invented, etc; but all this really is of secondary importance. What should have happened is that in his fifteenth year, he should have a vivid picture of the world into which he has come. The teacher should, as it were, have taken him to the summit of a cultural eminence from which he can see clearly where he stands and the way by which as man, as a member of the human race, he has come and something of the future into which he now goes.

Everything they have 'learned' should have helped, first, to extend and clarify their view backward into what has brought them to this point; and then, forward into the future evolution of the human spirit.

In short the youth of fourteen should be able to experience - irrespective of whether he can put it into words, or even think it in clear thoughts: All that I have heard about has had to happen in order for me to be able to be here to-day. Being here today I am a part of all that I see around me and I must take my part in what is pressing forwards into the future. I have been given a picture of what and where I am; I must now find out more about this picture, if I am going to be able to advance confidently into the future.

But there is something else; something even more important. If the youth has been led to such a view as has been here outlined; if he can see in vivid images the pattern of the world in which he stands, he should also - by reason of the way in which it has been presented to him - be able to see, too, that this present pattern is but part of the whole. It is a passing manifestation of the evolution of man. It is not the final result. All these aeroplanes moving faster than sound, these atomic power plants, these wireless, television and radar appliances are a transitional stage. They are something he has got to know about certainly; but only in order that he may develop beyond them. He cannot rest here. This is not yet the city built by God. These things do not represent the summit of human achievement save in respect to the past, and *that* only in so far as mankind has during the last few hundred years concentrated his abilities in one particular direction. They must not be his gods though they must become his tools; and any tendency he has to become absorbed in them for their own sake would only throw him back to the condition of a child who has been given a new and rather dangerous toy to play with. These things are not toys. They are constructed by means of titanic cosmic forces which ages ago helped to shape the universe itself and which man has now been able to discover. If he treats them lightly, he will find too late that these forces are in another respect also beings in their own right who can - and will, if allowed - overpower and destroy him.

And so his education during the eight years with the class teacher goes full circle. He started in Class One with stories: of giants and necromancers and younger sons who set out on a journey through a land of enchantment, and who found before they had gone far that further progress depended on whether they could tame the mighty giant, or outwit the cunning wizard. He passed later through a stage when he thought he had outgrown such childish tales. He laughed and joked about then with his companions in the playground. Did they still believe in such stories? He didn't. He sometimes even challenged his teacher on the point, but couldn't understand then how his teacher who seemed to know quite a lot about this modern world where, after all, nobody ever saw a giant, could still say: Yes, I believe these stories are true. But later as he neared the end of Class Eight, he himself found these stories were true. He himself *was* that younger son living in a world of enchantment; here were those giants in the form of atomic power plants, great hydraulic

presses, jet engines; here were those wizards with voices that came out of the air, who could conjure scenes from the ends of the earth into a magic box, who could peer for him into the depths of the earth and tell him where the jewels lay hidden, who could lift him on a magic carpet across the seas. But they, too, had grown and developed. They had learned the trick of making themselves invisible and letting their deeds appear; so that he, the younger son, had to find the way of recognising them and mastering them.

He had reached a stage in his journey where he must learn to know these powers, to know them without being bewitched by them. Somewhere he had to find a secret; he had to obtain a magic talisman, a password, a wand - something which was more powerful than those powers, something which was more clever than their cleverness. What was it? Where was it?

And so the end of Class eight - and of course, increasingly afterwards - the teacher can begin to talk to him of the human spirit, not in any vague, pious or sentimental phrases, but in concrete terms. For it is the human spirit, that which carries mankind through evolution, which has conjured forth these tremendous powers, this bewitching magic. The youth as a member of mankind is the bearer of that human spirit, which, powerful as it was to bring forth these powers also to understand and control them. Not *one* man has done all this, but that which works in all men. Only as he seeks in himself that which works in all men can he find the strength and confidence to learn - indeed, to live - the next chapter of history, which is his own. And that chapter, his chapter, begins in exactly the same way, as the old stories;

Once upon a time there was a young prince in the kingdom of whose father lived a mighty giant called Machine. This giant had been brought there to help his father and his grandfather before him to do the work of their country. But now this giant was beginning to assert himself. He had become so important that he threatened to take things into his own hands. Already he had begun devouring men and women, boys and girls so that people were losing their youth and laughter and goodness, and only did what the giant told them. The prince knew that before long the giant would be master in his father's country unless a way could be found to tame him. And so one day, the young prince set out

Our children must know that *that* story is true, and that the end of that story is something they must tell with their own lives. They are in the world of forces and machines. They must find the power of the human spirit that controls forces, and the understanding that masters machines.

* * * *

How concretely this may be put before the modern child may be illustrated from the following actual experience. During the last few weeks of Class Eight, a teacher took his class to a large ironworks.

First they saw a film with accompanying explanatory sound-track of what they were going to see in the works : a cast-iron pipe spinning plant. Then they went to the plant itself. There, in a huge open shed, they saw five or six great, hollow cylinders moving up and down an inclined plane. As these cylinders reached the top of the inclined plane, molten metal began pouring into them ; then, spinning at hundreds of revolutions a minute, the cylinders, as they returned down the slope, flung the metal against the inside. By the time it reached the bottom again, a red-hot tube was tipped out on to a conveyor-belt and carried away for further processing. Around each apparatus stood some half-dozen men : one to pull a lever which started the cylinder up the inclined plane ; another to open the sluice which set the molten metal pouring into it, and so on. Over and over again, up and down, went these huge cylinders, and each time the workmen repeated the actions which resulted in another section of iron piping. And so it went on, hour after hour, day after day, year after year, for these tubes are indispensable for our modern civilisation, and the demand for them comes from all over the world.

Next day in the classroom they talked over all that they had seen and it gave a great opportunity to recapitulate all they had learned about the Industrial Revolution, the conditions in factories, the smelting of metals, the nature of ores, the principles of mechanics, the conditions of centrifugal and centripetal forces, the drainage, water and other systems in great cities. There was hardly an aspect of modern life, hardly a 'subject', that could not be brought into it.

Finally the children were asked : How many of you would like to do that work ? Care was taken to point out that this was a firm of excellent reputation ; the wages were good ; every provision was made for refreshment, recreation, health, protection - culture even. Moreover the job was not difficult. Many of them, themselves, could very soon be taught which lever to pull, what wheel to turn, how often to do it, etc., to keep all that huge process going.

But not one of them would willingly have liked to do that work.

They all saw that there was something unhuman in it. Those men - and women - weren't really working as men and women, though their work was so essential to mankind. They were merely a kind of machine themselves. At the appropriate moment, they pulled a lever, or made a movement - some even only made a sign to another - or turned a wheel. Then they did it again, and again, until their shift was finished and they were released.

And so it was possible to pass directly from this to the great problem of our modern time : Automation. It was quite easy for the children to see that before long the human spirit which had created such wonderful, beneficial machines, must go even better and would create one that would pull the levers, turn the wheels, even make the signals that men and women were doing. Then what would happen to those people themselves ?

Immediately they were deep in the problems of our time, indeed

of their time - for they could see that this would not be solved overnight. They began to understand another aspect of the tremendous mechanical and technical advantages of today. What formerly was admiration for the skill and ingenuity of man which had made all this possible, was now tinged with awe at what machines could make of man. They could see the advantages to be gained, and fresh from their lessons of the human and brutal factory conditions of the nineteenth century, they could also see that even the abundant leisure that this must give to mankind in the future, was not an unmixed blessing. They could see that *that* needed thinking about and now for the first time they began to realise that perhaps it wasn't just spite that drove the half-crazed Ned Ludd and his companions to smash machines in the early nineteenth century. Perhaps these men had a dim, half-conscious premonition of what power-driven machinery would one day involve.

And so the whole problem of the modern world and mankind opened up before the minds of these children. They were not yet able to tackle that problem with sharp, clear thoughts and well-informed judgements. That would come later. But in their feeling life they knew something of what is meant to be a man in the modern world. They began to realise we couldn't just go on developing bigger and better machines indefinitely ; just as we couldn't scrap the whole lot and go back to simpler ways of living. Mankind had to become more than ever the masters of their own destiny, and more immediately the masters of their own creations. But to find the means to achieve *that*, mastery must be sought for in other sources that the clever brain and the skilful fingers which had brought forth these things - for it implies the mastery of oneself. And to find and develop that is man's only real and true life.

All that machines can do for us, however ingenious they may yet become only contributes to the satisfaction of our animal and personal needs. If a youth at fifteen cannot already begin to feel that he is something more than a creature who must be fed, clothed and entertained, then however efficiently he has been instructed, he has not been educated. For education must seek to awaken higher man in every individual, which alone will enable him to become master of his destiny, and to live together with his fellows in a way which will bring the solution of the social-moral problems arising from material progress.

These social-moral problems arising out of technical development are the most important of our time ; and education will not be in conformity with the time, will not be truly modern, if at fifteen the youth has not already some feeling of this. It cannot be too strongly emphasised, however, that it is only a feeling, a premonition of this that the youth can feel at 14 - 15. One just can't say these things to the children as a kind of valedictory in Class Eight. One can't just let them study them in books, and then set examinations on the books and grade the results accordingly. For these things are not

information data which the children have to know in order to reproduce or to carry about with them for reference. These are experiences which they must feel in their hearts. Only thus can they work educationally.

And this can only be achieved if the whole education from the time the children leave the Nursery to their fifteenth year, has been so directed that the children shall have a strong soul life in which such feelings can take root and grow. To develop this strong soul life is the task of the Class Teacher, to which he directs his efforts from the first lesson in Class One; a task which not only obliges him to know his 'subject', but more especially to know his children. That is why the class teacher remains with his particular group of children throughout the eight years during which the child's soul comes to certain maturity. He knows that these boys and girls belong to this modern technical age, and that they will have to learn to work in it efficiently. But he also knows that mankind stems from a far distant past where far different conditions obtained than obtain now. He knows that mankind is moving into a future where again there will be different conditions. And every child in our schools today is not only a citizen of our modern technical world, he is a representative of mankind. He is the bearer of the human spirit out of the past into the future; and education – if it is to be education – and not a kind of education applied to the mere training of human capacities according to current demands – must never forget this nor relegate it to a secondary place.

BOOK REVIEWS

"Saving The Appearances : A Study in Idolatry

It is a criterion for an appropriate introduction to Anthroposophy, established by no less a person than Rudolf Steiner himself, that it should lay a foundation in the thoughts and impulses of the modern world. It is not easy to do this. It requires, in the sphere of the communication of ideas, something of that moral imagination and technique of which Steiner speaks in the second part of his *Philosophy*.

In his recent book, *SAVING THE APPEARANCES*, (Faber 21/-) the author, Owen Barfield, has not only done this, but done it so well that it is a book worth reading by any standard. Yet it is *not* a book about Anthroposophy; nor is it primarily intended for anthroposophists. Mr Barfield only refers to Steiner himself twice in the whole book, and contents himself with no more than a hint at the possibility of repeated lives only, out of all the wealth of spiritual-scientific detail at his disposal. None the less the book is a shining example of how one can make an approach to the modern educated mind in its own realm, so that the next step – if taken – must be a study of Steiner himself.

Mr. Barfield's main argument rests on the fact that the world as we see it, is the product of what we perceive and what we have come to think about it. Whether the world which we see is, however, the same as that seen by men of the middle ages, and more particularly earlier, is another matter. He contends that it is not; and when we today draw conclusions about the way primitive conceptions of the world arose, we run the risk of projecting on to the primitive mind a picture of the world – namely, our own – *which was never there*.

Our 'picture' of the world is not only what we see: it is what we see *plus* what we have come to think about it (called 'figuration' by Mr. Barfield). Earlier man took part more in the phenomena presented to his senses, and as a result of this taking part (or 'participation', to keep to Mr. Barfield's terms) he identified himself in a different way with what lay behind these phenomena – the unrepresented. It is totally without foundation to say that earlier man looked at the world, and drew logical conclusions from what he saw about what lay behind it all, and that therefore his belief in spirits etc. arose. His *experience* of what lay behind the appearances was something altogether different from our modern inferences about it (atomic structure of the universe, etc.).

The concept of 'participation' to which Mr. Barfield constantly refers is the basic one of the whole book. The understanding of it hinges on the recognition that with the development of modern science, we have more and more pushed our view of the world further from us, until now we stand over against Nature as separate beings, and look upon it as something going on *outside of us*. Earlier man could not and did not make this clear distinction. He took part more intimately in what was going on. We merely *know* and in that knowing we are in danger of forgetting that what we know is not the world, but simply our *contemporary view of the world*. In forgetting this we make idols of those views. Granted they explain, or 'save' the appearances – the phenomena caused by the interaction of our senses and the world; but they are not that which causes these phenomena to arise.

The evolution of Nature in this sense is correlative with the evolution of consciousness. To equate Nature entirely with our present view of it is to lose sight of what is at work within Nature, and alone really is Nature. Only when we find a way of linking ourselves with what Nature really is – that is of participating in the unrepresented – shall we break the enchantment in which we are now held by the idols of our own views. (No one who has studied Rudolf Steiner's philosophical works need fear in this any harking back to such concepts as 'the world is my idea' or that of 'the thing in itself'; but rather he will find in Mr. Barfield's book a means of understanding one of the most difficult, but at the same time most living, of Steiner's contradictions: namely, that while our knowledge is real it is also 'Maya').

The aim of knowledge is to penetrate to what lies behind the appearances, to participate in the becoming; but this 'final' participation towards which we must now consciously strive, must not be a return to the 'original' unconscious participation of earlier man. The way is forward, not back. It is at this point, after discussing Goethe's contribution to final participation, that Mr. Barfield, with an artistic sense of timing, brings in one of his only two references to Rudolf Steiner:

"At the same time that he (Rudolf Steiner) was editing Goethe's scientific works in Weimar, he was writing his book *The Philosophy of Spiritual Activity*, in which the metaphysics of final participation is fully and lucidly set forth. Educated on 'the modern side' (as we should then have said) at school and university, he was thoroughly at home with the idols and never relied on any relic of original participation there may have been in his composition to overcome them. It is in his work, and that of his followers that the reader should look for further signs of a development towards final participation in the field of science."

According to St. Paul

One of the most stimulating biographies to use in leading older children to an appreciation of Christianity is that of the apostle Paul. It offers innumerable aspects of heroic idealism both in the personality of Paul himself and in the struggles of the early Christian community to which he belonged. The dramatic incidents of its narrative in the hands of an imaginative teacher can become as thrilling as the most exciting fiction. With even older children - "Sixth formers" - one may go even further into the philosophical and theological aspects of Pauline Christianity * and the EPWORTH PRESS has recently published a little book (*ACCORDING TO ST. PAUL*: H. F. Matthews) which gives great help in this further study. The material of his letters is grouped under various subject headings, and the author comments on the particular texts he has chosen, and suggests further themes for discussion arising out of it.

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Dear Friends,

We are happy to announce that we have now acquired a new home ! We evacuated from London to Fladbury in the early days of the war, but the need to be nearer London and centres of anthroposophical activity has become increasingly clear to us.

A fine house, with a beautiful garden cultivated entirely by organic methods for over 20 years, has been purchased at East Grinstead. During the coming months we shall transfer our work, stage by stage, from The Chantry to Littlehurst, East Grinstead, Sx. We expect this process to be completed by the New Year.

In spite of this upheaval we shall strive to maintain, without interruption, a prompt and efficient service to our customers. Details of the arrangements will be announced in the December issue of our Weleda News, together with an account of the development of the work of the Weleda in many other countries. This issue will also give particulars of attractive Christmas Gift Boxes being offered this year and of other products. If you are not already on our mailing list then may we have the pleasure of hearing from you at The Chantry?

Yours sincerely,

THE BRITISH WELEDA CO. LTD.

P.S. It would help us greatly if, whenever possible, you could kindly send us your orders in advance of immediate requirements. May we suggest that you check up on your anticipated needs of medicinal and toilet requisites.

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