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Child and Man

A Journal for Contemporary Education

Vol 13 No2

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Anthroposophical Medicine

an extension of the art of healing

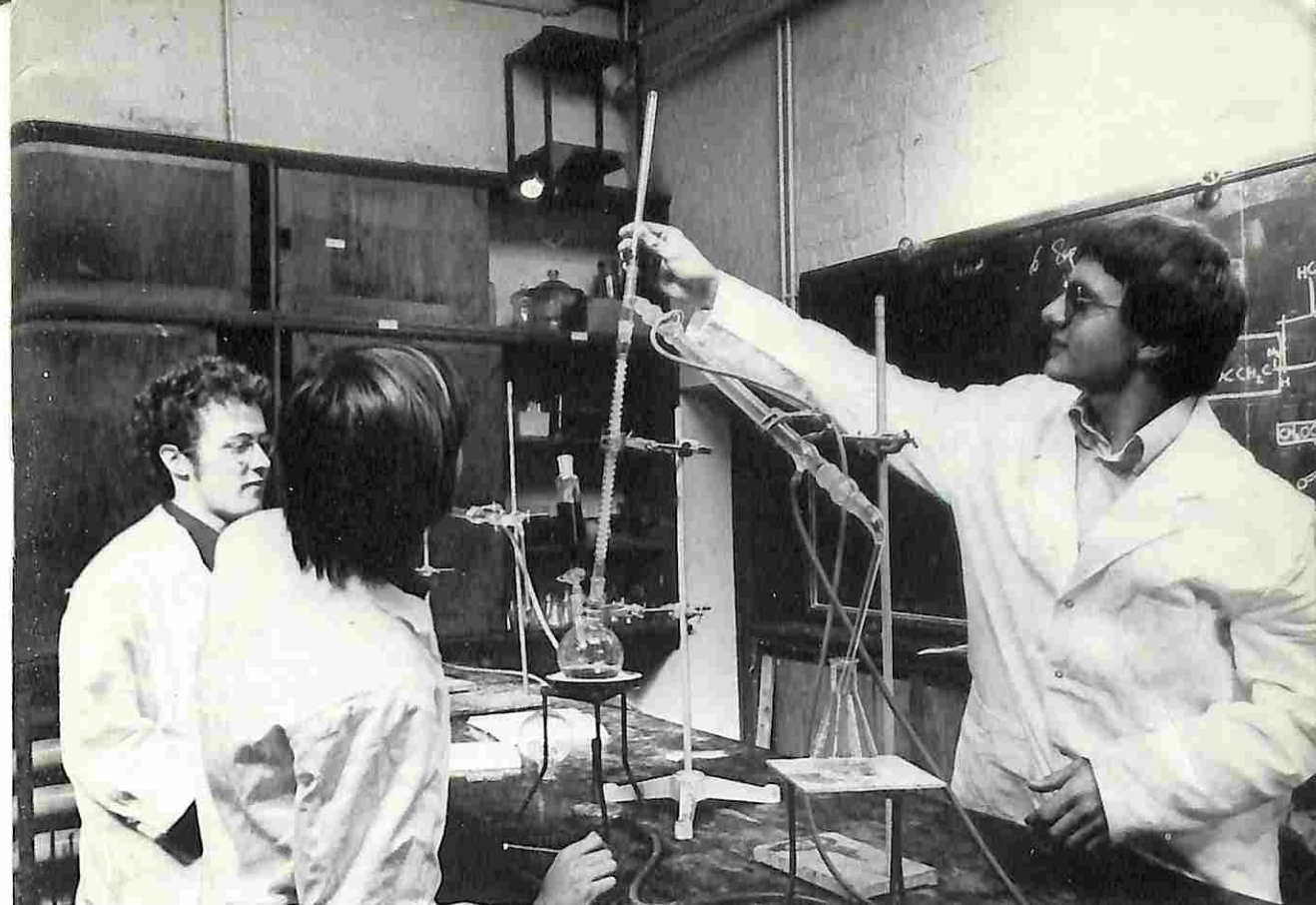
Man's ideas about his own nature have always been reflected in his attitude to healing. Thus today the legacy of nineteenth-century materialistic thought has given rise to a view that the processes in the human body are analogous to laboratory experiments. The doctor at his patient's bedside, however, knows the inadequacy of such an attitude. His knowledge fails to do justice to the suffering individual.

This book places modern medical knowledge within the context of Rudolf Steiner's view of man as a being having a soul and spirit as well as a body. Both medical practitioner and layman will be greatly served by this extended view.

Victor Bott

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Eighteen-year-old chemists in action. *Sugar loses qualities* . . . (see page 24)

Photo Simon Carreras

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Editorial

Science — A Question of Life and Death

Summer — Autumn 1978, Vol. 13 No. 2 *Child and Man* is a medium for the expression and discussion of the ideas underlying Steiner, Waldorf and all truly human education, for contributing to their wide application, and for improving the quality of education through a sharing of children's work and of teachers' insights and experience.

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What is science doing to our world? How is science affecting our children?

In February this year, an interesting conference took place in Kassel, organised by Dr. Manfred von Mackensen, a scientist and Waldorf teacher, who spends half his time engaged in research funded by the West German Fellowship of Waldorf Schools. The results of this research flow directly into the teaching of science, and the area upon which recent research has been focussed is, surprisingly, not at the advanced end of school, but at the point where the sciences are first introduced. This research is concerned not with electrons, but with such questions as: what is the ideal way for acoustics to be introduced to children? How can light be studied in a way that is free from materialistic theory? How can the world of chemistry be presented in a way that is true to its nature?

To hear von Mackensen, a Goethean scientist, speak and to see his experiments was to experience new hope for science and for the world.* Here was science deepened by reverence, enlivened by imagination and made human by humour. 'Take two or three red cabbages,' he said at one point, in a domestic science tone of voice, 'the third and fourth leaves from the outside are best. Chop them up, puree them, and you have the basis of good litmus ink.' This clear blue liquid was transmuted into a spectacular array of colours, from acid red to alkaline green; the experiments were large as life; it was a vivid experience for us to see acid derived from the fumes of a wood fire and alkali from the ash.

* A full report of this conference — Goethean Science in the Waldorf Curriculum — is available from Steiner Schools Fellowship Publications, Michael Hall, Forest Row, Sussex RH18 5JB.

This, we felt, is the way to kindle in young hearts a love for chemistry.

The cello

Acoustics, for example, should be introduced through music (at about the age of 12): a class orchestra could play and then a stringed instrument, ideally a cello, could be examined in a way that leads to an understanding of intervals. Later on, after forms have been seen to appear on Chladni plates, the phenomena of vibrations have been explored and charted, the telephone and radio analysed and understood, the children can finally be led back (at the age of 17 or 18) to a study of a whole historical development of music. Science should lead the child into the natural world always in a way that includes man. Theoretical concepts of waves, rays, electrons, etc. interfere with the healthy development and co-ordination of experience and thinking. Experiments should be large and experienced in a way that leads the child to the nature of the phenomena.

Static electricity, for example, can be generated with dry, dead, warmed-up materials, artificial fibres; to remove it from objects, you need to wash them with water. Materialistic or Baconian science teaches you *how* electricity works; Goethean science leads you to understand what electricity *is*. Baconian science seeks the formulae of substances; Goethean science seeks to understand *processes*.

Science teaching can be truly related to the human being when it is taught in harmony with the incarnating development of the child: each science should be introduced in its most spiritual form and then be explored into its full earthly character before being raised again to the level of accurate, imaginative thinking.

Front Cover: Drawing illustrating an experiment with the expansion and contraction of air, by twelve-year-old Jane Hitchcox, Class Six, Michael Hall, Forest Row, Sussex.

Physical substances can be understood as congealed cosmic processes, but, for fear of losing their way in fanciful and nebulous ideas, scientists have limited themselves to the physical realm, examining it with increasingly complex and powerful instruments. This path has led to a colourless, mechanical, abstract world; it has uncovered enormous forces of death. Baconian science is concerned with forces of death. Goethean science is concerned with life. Both are necessary, but we should be clear where they lead.

Ernst Lehrs, in his book *Man or Matter*,* showed how all phenomena can be understood in terms of the two primary polarities of gravity and levity, or, from another point of

* Faber & Faber, London, 1958.

view, the physical realm and those realms which enliven and animate the physical. The ideal instrument for the examination of the non-physical realms is the human being himself, but this instrument has to be developed, schooled, made reliable. The Goethean scientist must hear the call: Man, know thyself!

This is the real challenge facing science. The death by pollution and mechanization that is facing the world in our time is a direct result of Baconian thinking. It may possibly not yet be too late for this powerful stream to be turned in a new direction, if we can develop Goethean thinking, Goethean science; the articles in this issue of *Child and Man* are heart-felt encouragement in this direction.

D.B.

Comment

Responsible School Government; Responsible Sex Education

This series of comments will deal with two main issues, both touching on the responsibility of parents. The focus here is on Britain, but comparable situations are certainly occurring in many other countries. In September the Taylor Committee presented their report on the future government of schools. At present this lies in the hands of boards who to a large extent consist of elected councillors and some others, mainly teachers and retired teachers whom these politically motivated men and women co-opt. The advantage of the present system is that the majority of governors are democratically elected and therefore accountable to the general public. Lately, the disadvantages of this practice have been much more in the foreground of our attention. The question of the retention of grammar schools has by now become a political issue. Conservative-controlled local education authorities occasionally delayed or resisted the full implementation of the comprehensive re-organisation. This in turn caused the Minister to issue directives of a kind previously unknown. Some local authorities followed these direct-

ives, but one, Tameside in the Manchester area, decided to take on this challenge. They declared they would defy the Minister, won a local election in which this issue figured prominently and then went to court. Judgment was given in their favour.

Experience voted off

Whether this was felt as a political triumph or not, it certainly is a fact that since this time the attitude of some Conservative-controlled councils has hardened. In Humberside, for instance, complaints were made that experienced governors with no political affiliations were being replaced by inexperienced political (Conservative) appointees. The widest publicity was given to the action of Kent County Council. There, it appears, all the political appointees are Conservative — the traditional policy is to share out governorships according to the relative strength of the parties — and a number of co-opted non-political and highly experienced people were voted off the governing bodies, apparently because they were not members of the Conservative Party. This is a

sad state of affairs and indicative of a general hardening of attitudes in the Conservative, and Labour, parties. Fortunately, a good number of people do not like this trend and it is they who will welcome the findings and recommendations of the Taylor Committee.

Teachers, parents, to be governors

For the most exciting recommendations of the Report are that nobody is to be a member of more than one board of governors for the same age group and that on each board there should be equal representation for the teachers of the school, for the parents, the local education authority and representatives of the local community. 'One of the beauties of the Report is that it says that nobody should be in control of a governing body' said Mr Taylor when presenting his report to the public. Unfortunately, this latter proposal did not meet with universal acclaim. The chairman of the Association of Metropolitan Authorities thinks, fairly predictably, that 'responsibility for education must rest with the local education authorities elected by the whole community'. This view, if accepted, would of course perpetuate the present system. More surprisingly, perhaps, the teachers' organisations were, if anything, even more hostile.

A warm welcome

Their line is that responsibility for education must lie in the hands of professionals, that is the teachers themselves and the education committees. Taylor allows for this lack of trust in lay people by recommending that local education authorities are to run training courses for governors, and that these should be made compulsory for all new governors. The teachers, however, insist that their work should not be subject to the scrutiny of parents. But there was a warm welcome for Taylor's recommendations from Mr St. John Stevas, the Conservative spokesman for education, from the National Confederation of Parent Teachers Associations, from the National Association of Governors and Managers, and from the Headmasters Association. They in particular realised that the recommendations would stem the growing tide of bureaucracy and 'unwarranted abuse of political power.' It is also good to know that Mr Stevas agrees

with the proposed emasculation of political control over education. People concerned with Steiner education can only hope that the recommendations will be accepted without too much watering down. For the proposed system is flexible and liberal, and three quarters of its members are those which, ideally speaking, should also be concerned with the administration of a Steiner school, teachers, parents and representatives of the local community. At the time of writing Mrs Shirley Williams has not yet announced her decision nor even her preferences.

Potential for good or evil

The tragic death of a four-year-old girl made people realise for one moment the enormous potential for good or evil which sex lessons have. The unfortunate girl was killed by a twelve-year-old boy who later said in evidence that following a sex lesson in school he tried to have sex with this girl. When looking at the implications of this tragedy it is first of all necessary to realise that for years hundreds of thousands of children have had these lessons and this is the first time that such terrible consequences have resulted. Secondly, it is just possible that we have not heard the true story. It is just conceivable that there was a different chain of events which triggered off the tragedy and that the matter of sex lessons was either invented or overplayed by the defence. But having said this there still remain anxious questions. I happened to hear the mother of the boy speak on the wireless. She sounded utterly overwhelmed by what had happened to her son, very loving and concerned. I did not receive the impression that this was the case of a deprived or particularly vulnerable boy. Unfortunately, I cannot remember having come across any statement by the staff of the school which threw any light on the personality of the boy. This would have been of the greatest importance for anybody who wanted to evaluate the impact of these lessons. Nor have I heard that any commission was appointed to investigate, and draw conclusions from, this case.

Human aspect of sex neglected

Questions which arise are: Even if only one boy reacted in this tragic manner how many more

children are hurt to a lesser degree? Is it possible that, taken all in all, these lessons do more harm than good? Is it possible to talk about human sex without discussing human issues? Is a weekly lesson in the biology laboratory, possibly blacked out to show a series of slides, the ideal condition for such lessons? Is a teacher the right person to give such lessons, a person from whom the children might possibly be alienated or who might be hated, feared or ridiculed by them? In our society endless investigations are made to ascertain the best method of examining, but why are, as far as I know, no studies of the desirability and effectiveness of sex lessons being undertaken? Do we just start with the proposition that in the world as it happens to be a child should know what are called the mechanics of sex and that he should know them at an early age, certainly before puberty? Is there no more to it? At the time of the trial some serious doubts were raised, and not only from Mrs Whitehouse. The *Times Educational Supplement* of 30.9.77 quoted a university lecturer on human sexuality, Dr Elizabeth Stanley. She said: 'There are some pretty rotten sex education courses going on... It is this part (the human aspect) that I believe in so many schools is simply not catered for.'

Questions left out

On the same day the *Times Educational Supplement* carried an article by their science correspondent who happened to know something about the origin of the particular policy which shaped the course in which the boy had been involved, the Nuffield Combined Science Course. He tells us that some members of the Science Teaching Project wanted to include animal reproduction in this course, while others doubted the wisdom of doing so. Again, a similar controversy arose: should the affective aspects of human sex be included? In the end it was decided to include animal reproduction and leave out questions of human concern. After all, this is a science course, they said. It was the teacher's responsibility to deal with individual questions, which were bound to vary from class to class, and all the authors of the course could do was in the

accompanying teachers' guide 'to provide ample warning of the kinds of questions likely to come up.' He then went on to defend this decision and conceded that sex education might also be given by teachers of sociology or English literature, but these 'are unlikely to be more ready than, say, teachers of biology to shoulder the responsibility of sex education in the schools.' — The teacher to whom this combined science course might be assigned could just as well be an expert in chemistry, physics or rural science, and doubt could be felt whether, other things being equal, the teacher of English literature might not in the end be the best qualified who, after all, is used to dealing with human values. From this article emerges a truly terrifying account of how little questions of principle are being asked before such far-reaching decisions are taken.

A loved and trusted adult

However facile the defence of this Combined Science Course might be, at the end of his article the author makes a most valid point which I want to take further. Sex education is too important to be left to the teacher. In a healthy and sane society it would, without doubt belong to the home. In our contemporary society it seems indefensible to let a child grow up without a certain knowledge of sex and its problems. This is best transmitted in personal and intimate conversations with an adult the child loves and trusts. Only he can gauge when the psychologically right moment has come. He can concentrate on the two essentials which the child instinctively expects: the assurance that love is a reality, and the other that the whole area of sex is no dark, terrifying secret, but something which fully belongs to the sphere of human experience and which can be discussed openly and intimately. Without parents' willingness to take on consciously this responsibility or, if they feel totally unqualified, consciously seeking the help of the teacher they will not be able to safeguard the moral — and physical — health of their children. This needs a change of mind on the part of some parents who prefer not to bother and leave matters to 'the qualified expert'.

R. Lissau

Learning to Read from the Book of Nature

An Exploration with Eleven-year-olds

by BRIEN MASTERS

How evocative the plant world is: ferns clinging to a stalagmite cave entrance; sunflowers beaming from a cottage garden; Scots pine triumphantly breaking a gaunt granite skyline; a laden rowan merged in the spray of a mountain torrent; sainfoin — the robed pink of a Fra Angelico annunciation angel — bedewed amongst the grasses near Stonehenge at sunrise. Every petal, every leaf, every stamen a source of wonder, a nature story¹, or the object of intense observation and discovery.

Garlic at the opera

How often are we reminded of plants' and man's interdependence: the crown of summer blossoms bobbing on the brim of the morris dancers' boaters; the threatening red of the lentil jar, barking but not biting, on the kitchen dresser; the alpine enthusiast groping in plus-fours round the peak of Ben Lawers; mother-in-law's tongue — as symbol status — dressing the local Building Society's street front; a whiff of garlic during the first interval of The Mastersingers; or the hint of valerian, high above the clerestory — a dab of rouge on the grey visage of an abbey ruin.

Plants adorn our whole lives, from the vase by the font, to the last visible deed of one heart for another — the red rose being covered by the soil of solemn burial. We make daisy chains; we squeeze our tubes of plant dental-cream; we steep conkers in vinegar; we rasp away at our

first wooden darning-egg; we savour our first curry; we carry our first bouquet; we measure our longest kidney bean; we drive along our 'scenic routes'; we 'say it with flowers'; we hang our Durers and Constables over the mantle-piece; and we replace the rubber ferrules on our walking-sticks.

Experiences form the humus

These and a thousand other impressions of the plant world slumber in the twenty or thirty-odd souls of every class of eleven-year-olds, like the sleeping forests and groves, hedges and lawns that may pass through the seedsman's hand any day of the week.² During the conversations in their plant lessons, such experiences awaken, like the face of the desert after rain, helping form the humus into which the teacher can implant the pedagogical substance he had been cultivating for this particular moment.

Obviously this is not the first classroom encounter with the life of plants. The earlier years have seen such activities as bulb-planting; the collecting of turkish oak acorns, maple or poppy seed heads, tulip-tree leaves for pressing, conifer bark etc. for collage plaques and calendars; and the ubiquitous objets trouvés brought by any class of younger children, a kind of still-hope Still Life, rich in gnarled roots, statice, speckled fungus on a birch twig, honesty or newly sprouting

¹ *Key of the Kingdom*: The violet by Rudolf Steiner. The 'classic' example of a so-called nature story.

² An idea which is poetically incorporated in: 'The Seed Shop' by Muriel Stuart, used by the author for class recitation during Botany main-lessons.

bracken fronds. There will have been³ a whole-hearted entry into the farming practices of an age before labour — the true and living echo of the redemptive labour of the Middle Ages — had been usurped by leisure; followed, the next year, by the stepping out from this more archetypal picture into the local environment, entering into a full and active appreciation of the barley-growing in one district, the A to Z of besom-making or the trug-trade in another, forest conservation in a third, or the joys and vagaries of fruit-farming somewhere else; while in the background there has been the ever increasing fertility of the mother tongue, itself revealing, through words and phrases stemming from the plant world, how close the heart of the people and the heart of the land can be.

Apple-blossom hues

Yet, vital though all this has been in cherishing and nurturing the children's connection with the earth, as far as the plant itself is concerned, these are, as it were, still only side-shoots: now that the children are developing — and need help in developing — a certain delicacy of outer and inner perception, the time is ripe to come nearer to the 'growing point' — the plant kingdom itself.⁴

The awareness of the *seasons* deepens. Autumn ripening takes place in the abundance of reflected rather than direct warmth, right up to the oncoming of the first frosts. The ecstatic growth through Ascensiontide to the Summer solstice is like the midsummer night's dream of earth itself. A wax-crayon sketch of the stark blue branches of Winter surrounded by, but not penetrated by, a pale slightly acid-yellow, engenders a mood not merely of outer death, but of inner awakening and expectancy. Still in colour — such a contrast is transformed in the Spring with the alighting from above of apple-blossom hues, pressing before them, as it were, the yellow into the blue, to bring the first tender greens into play. The children have no difficulty in deciding, through the coldness in colour, whether Sophie's drawing of the season is earlier or not than Rupert's, sometimes

³ In Class III — Age 9/10.

⁴ There are of course many approaches to this kingdom at this age, (not to mention the more senior approach discussed by Frances Woolls, *Child and Man*, Vol. 12 No. 2 where there is also a helpful list of reference books). This article is limited to only a few.

discriminating even by a day or two.

Having spent a week, perhaps, sharing through the word and colour the cycle of the year (in India how different that would be!) it will be fruitful to work systematically through the plant families, seeking a satisfying *qualitative classification*.

A mound beneath white cotton

It is Monday. The class have changed from their wellingtons which have waded through the falling lime leaves, or show signs of the manner in which a choleric tackles a muddy cart-track well impregnated with sodden beech-mast. Sweet chestnuts have been exchanged, a bunch of late marigolds presented, the last hazel-nut cracked and swallowed with the shells fished out of the ink-well, the effects of a holly leaf gleefully explored, and a few treasures added to the individual jam-jars of twigs, grasses and flowers. When at last the moment comes, some have the expression: Will he do it now? Others look very vague when reminded that on Friday last they were told that... we would be going on to *fungi*.

"Children!... Before the time which any of you can remember⁵ you used to lie in your cradle for hours on end — a hardly noticeable mound beneath neat white cotton sheets, surrounded by a veil of coloured silk through which the sunlight softly filtered... After feeds you would gaze dreamily around, or suck your toes, or gurgle with pleasure... When you walk in the woods at this time of year, with the fading light sifting through the canopy of russet and gold, or the morning mist lingering in the hollows or swathed around the ferns, you will come across plants that remind you of what you were like then... They are the toadstools: the flyagaric, the boletus, death caps and truffles — or in the fields, the field mushrooms... They have no green, the colour of more advanced life... The younger they are, the more rounded. Their appearance is as brief as a babe's awakening. They can hardly lift their soft-skinned heads from the pillow of earth..."

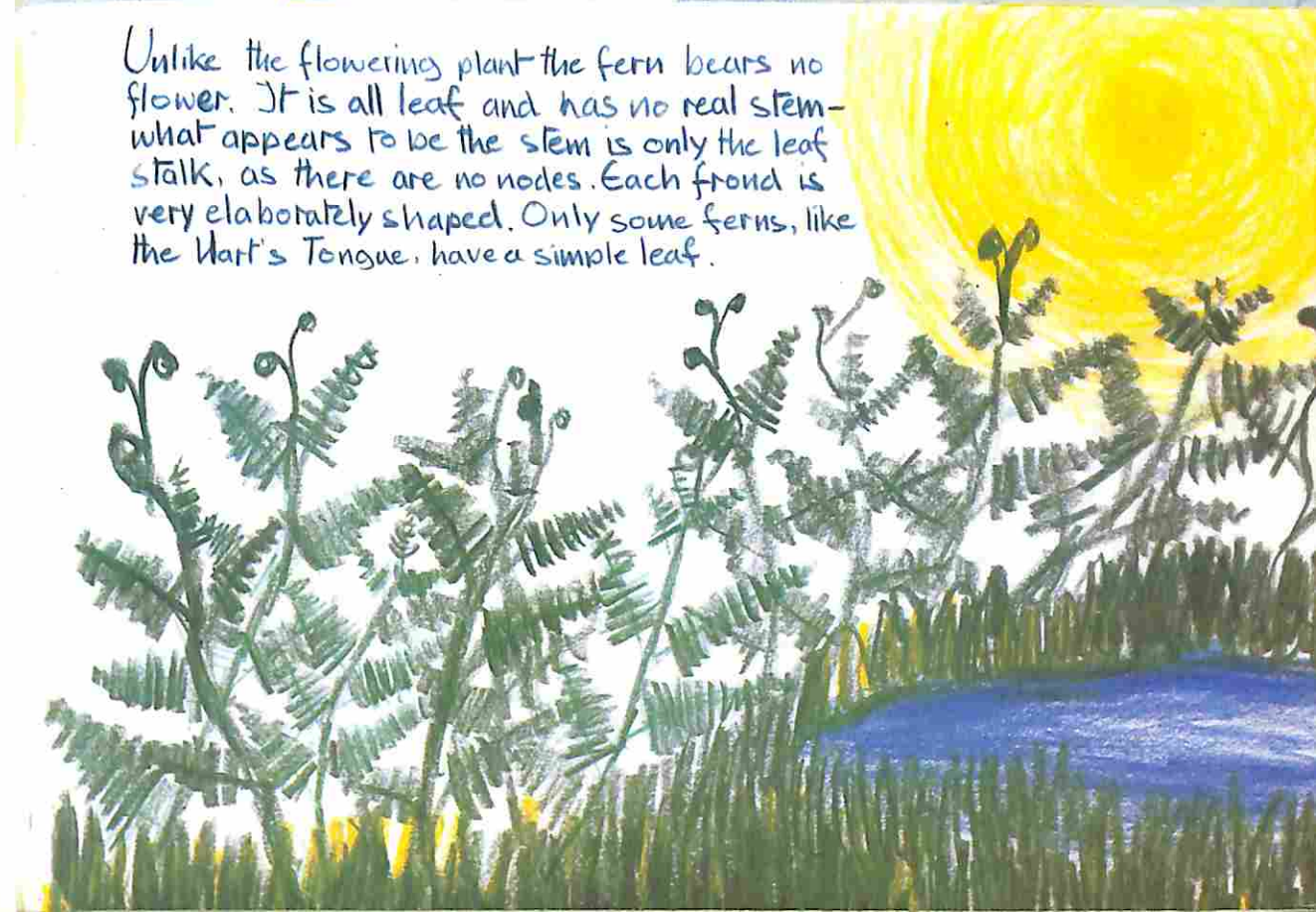
Sending down a tap-root

The response is remarkable! To mention only

⁵ See: 'Discussions with Teachers' by Rudolf Steiner, published by Rudolf Steiner Press 1967, Discussion XI.



Unlike the flowering plant the fern bears no flower. It is all leaf and has no real stem — what appears to be the stem is only the leaf stalk, as there are no nodes. Each frond is very elaborately shaped. Only some ferns, like the Hart's Tongue, have a simple leaf.



one side of it: rural children bring so many samples from their gardens and escapades that the classroom needs extra airing before school each morning. One spare trestle is not enough as one moves 'up' the plant-scale and has to accommodate liverwort, lichen, moss, ferns, cones, pampas grass and so on. The news gets around. A colleague brings in a spray of spindle⁶ from a downland walk; Deborah turns up with some splendid teasel; Dani finds some Jack-in-the-pulpit and discovers that her mother calls it by another name. A crop of hitherto unmentioned observations springs up. Golden opportunities occur for the teacher to bring home the importance, through rarity, of *preservation*; to inculcate the respect for nature — one of the desperate needs in an epoch of vandalism; to recall a verse written for a foreign student, who has meanwhile returned to her native land, about a transplanted seedling which through all the care and help given, was able to send down its tap-root and thrive in its new situation. Through the plant study a big stride can be made towards satisfying the healthy yearning children have to enter into their surroundings stage by stage. This is not merely of parochial significance. It symbolises the need for mankind today to reconnect with the whole of his *earth-environment*.

Citizens of earth

Many people in our time are afraid of the 'fall into matter'. One so often wonders what has happened when one sees the matted manes of today's journeymen which have so painfully obliterated the sun-dangling curls of childhood. The jostling tonnage of the Waldorf Niagara is not designed to turn into thistle-down as it reaches the brink, thence to float aimlessly away at the first prevailing puff of wind, and eventually to take shallow root in the dirtless earth of an oasis where no telephone is heard. But neither is it designed to become a scurrying congestion, rat-racing through the hum-drummed debris of bourgeoisie.

Children of this age are still some way off the fall into puberty — though not all of them the same. They are gathering their last strength. They are to become citizens of earth.

⁶ See the poem at the end of article. Verse 2.

But earth needs *balanced* citizens. The indigenous plant is an image of balance to perfection: it mirrors the cosmic-seasonal influences perfectly as well as those of altitude, geology, latitude and so on. A free-man must have moved from perfect balance to imbalance, *on* to a new self-restored balance. The secret of the twentieth century Humpty Dumpty is that, although indeed the king's horses and king's men can do nothing, he can *pull himself together*. Until he has done so he is as adolescent as the rest of us. But he is not destined to do this grovelling in terrestrial forces alone. Even the biggest and most complacent of turnips has leaves.⁷

Gold-centred

Amongst the Archangels, Michael holds the balance. When the Michaelmas daisies are in bloom — mauve, magenta or violet but gold-centred — we turn to his inspiring leadership. The eleven-year-old is a young Discobolus springing free from all marble impediment, a Caryatid visibly moving along the school corridors. Yet he and she will have to say adieu to the fair summer of balance and follow the Fall in Nature. Without this, the possibilities of his *own* freedom will never widen into the full horizon of a new heaven and new earth. A full experience of spirit in the early years, can become strength which casts away the fear of the fall, which prevents the sleep in and through matter and which can culminate in a willingness and ability to take the task to hand firmly in hand. Such an Athenian will return triumphantly from the labyrinth, however scathed.

Brien Masters has a Class Six at Michael Hall;

⁷ Tolstoi: The Turnip... and elsewhere in folk-tale collections.

Glimpses of Autumn (facing page) is a working poem for the classroom by R.B.M. written and used at Michael Hall, Sussex. Teachers in different districts of the world could easily omit irrelevant verses or plants unknown and insert local impressions species and varieties. e.g. What is particularly characteristic of the sequoia in autumn?

Glimpses of Autumn

Kindling the mist, the sun slants through,
 Drooping daylight, cobweb dew,
 Welcome autumn, summer adieu:
 Fleabane yellow, the hedgerows wink,
 Berries aglow at the lake's thirsty brink,
 Rowan-red-ruby, and spindle-pink:
 Damson-purple and burnet black,
 The fun-fair red of pulpit-Jack,
 Sovereign crabs, come open your sack;
 Celibate buds to cheer the pope,
 Bryony-black in its autumn dope,
 Drooped and draped like an onion rope;
 Old man's beard in a puff of down,
 Cloth-teasing Teasel stiff for the town,
 Kerneling filberts hazel-war-brown;
 Rambling and brambling with walking sticks,
 Golf-sock burdock, goose grass pricks,
 Bees in the heather, corn in the ricks;
 Sycamore's scimitars fresh for the fight,
 Feathery rose-bay's willow flight,
 Hanging jelly bags plopping all night;
 Patient meadow-sweet dewy and damp,
 Clouds without warning, broily and gamp,
 The beard-bobbing nibble of a toothless tramp;
 Grains for the biscuits, the flapjack, the fusk,
 Cup for the acorn, nut for the husk,
 Chrysanthemums prised in the resting dusk;
 Mop-headed dahlia flop by its stake,
 The loose-spiked hop with its scaly flakes,
 The soft rain falling - are you awake?
 Kindling the mist, the sun slants through,
 Yearning daylight, laddery dew,
 Welcome wide autumn, fair summer adieu.

By Brien Masters

Waldorf in India

Report of an initiative

BY LESLIE ANNE DOUGHERTY

A Waldorf School in India? Impossible! it might be said: an education for head, heart and hand clashes with the ageless and firmly entrenched caste system which keeps these spheres separate. The belief that freedom or 'moksha' lies in release from the wheel of death and rebirth is simply pre-Christian. Freedom A.D. is of quite a different nature. The Hindu way keeps the physical world and the spiritual world separate and irreconcilable, except by rigorous self-discipline. A caste is a caste, separate from other castes. How, in such a setting, can one hope to bring in true initiative and stir a child from apathy, an unconscious acceptance or moral and physical degeneration?

Caste or a passion for freedom?

In order to help, one must first believe that help is necessary. To see the hopelessness on the faces of the old, and the yet unsmothered joy in the faces of the young arouses compassion — precisely the element missing in Indian society which could bring a saving grace. We know there can be enough food for all who hunger. We know that the cross of caste need not be dragged throughout the centuries. We *do* have a responsibility to proclaim release for the captives.

There is no doubt that Brahmanism as a religion centering in the Brahman is being slowly undermined. By this I mean the unconscious acceptance of caste practices, rituals and the inability to think for oneself. It can even be seen in the recent intellectuals' political victory in India. Some of the shell may be falling away, but there are behind these practices some ideas that constitute the living

spirit of Hinduism, that have made it survive throughout the centuries. These living seeds are well worth preserving — the ultimate reality of spirit, perfect justice within the universe, the unity of all life, the worth of a holy life, and a passion for freedom. Paradoxically, these are at the root of the caste system, the worship ritual, the sacredness of the Ganges (where men brush their teeth in decaying water); the unity of life — the justice of the universe to place me at birth where I deserve to be.

A rural school

Nanhi Dunya Schools are a network of schools centred around Dehra Dun in Uttar Pradesh district, India. There are 10 centres each with a different task and flavour. Some are in Dehra Dun itself catering to many castes with a special programme for the outcasts. Some are small rural schools or larger village schools. They may be only lower grades or up to eighth grade. I lived at the main branch in Dehra Dun for a year and 3 months. It is about 6 hours bus ride north-east from New Delhi over one range of mountains. The climate has three distinct seasons. July — September is monsoon, November — February is winter and April through June is sweltering heat. In between are nice fall and spring times and a brief winter rain. The vegetation is largely deciduous with many palms and very few evergreens. I lived in a room in the school/hostel half of the building. It was adjacent to classrooms, another hostel room and a bathroom, with doors going to each. The other hostel rooms usually had girls from the Condensed Course for Adult Women, 18 year-olds who had never

gone to school. My first project was to help them weave beds because they were accustomed to sleeping on the floor which was very cold in winter as there was no heat. The bathroom was shared but it was no great blessing without hot water — the quicker the better! So the overlap of 14 people was rarely felt. Some deaf and dumb children also lived in the hostel with us.

The town of Dehra Dun is rather large by Indian standards. The buffalo milk often has to be brought by bicycle over a range of mountains. A lot of lumber yards there send wood to other districts. The streets are pell-melled with walkers, bicycles, 3-wheeled auto rickshaws, horse-drawn tongas and ox-carts, respectively in number. Nanhi Dunya school is in a district with many private schools, where the impact of English education is comparatively strong. The highest standard of English medium schools are those begun by missionaries. Nanhi Dunya is funded largely by the government as a welfare project for the poor class. I was not the first to go there to work with Lekh Raj Ulfat at his schools. the connection began long ago. Mr Ulfat and his family attended Emerson College. Mr Van Bemmelen had conducted a teachers training

Waiting to receive their certificates. *Some teachers were deeply touched...*

programme at Nanhi Dunya 5 years previous to my going there and Ivar Hecksher from Sweden had lived there for 2 years concentrating on a branch of Nanhi Dunya 25 miles from Dehra Dun. I could see the efforts of both men — the building Ivar built and Mr Van Bemmelen's books and paintings.

An Affair of the Head

When I went, I believed that Waldorf inspired education could help change things. The Indian educational system as it is is incredibly dry. It is an affair of the head. Three-year old children chant A B C's in Hindi and English for four hours a day in preparation for the annual exam. There are no play periods except recess and virtually no artistic activities. A 3-year-old passes from Nursery Junior to Nursery Senior when he writes his numbers from 1—20, and so it begins — and ends. The college graduates cannot speak English even though they have had it since Nursery Junior. They are only taught to read and write it. The degree necessary for a teacher to qualify to teach up to fifth grade level includes no studies about the nature of the young child, and what he is like inwardly, or how to teach reading or writing to such a one. It is expected any fool can do it and emphasis for the degree is instead



placed on higher intellectual studies. Thus they are sent out ill-equipped to teach a child whose nature they know nothing about.

A new direction

A new single-room kindergarten was built with a wide variety of wooden and soft toys adapted to Indian culture. There were the familiar scales and eatables of the shopkeeper, the wooden sitar, costume and havan for the wedding, the doll corner as in an Indian home and Indian dolls with the customary dress of all castes and regions, etc. Special programmes in hygiene, many artistic activities and new methods in teaching gave fresh new life. A Teachers' Training Course was given over a six months period with practical application required of the 34 participating teachers of Nanhi Dunya's centres. The teachers made main-lesson books, painted profusely, learned many new songs, carved toys and sewed clothes for the Indian dolls they had knitted for their own centres. The teaching of English was given a new direction which will hopefully carry into other subjects. The confrontation with thick texts of required English curriculum challenged us to produce artistic adaptations. Whereas before, emphasis was on memorisation of answers to certain questions at the conclusion of each story (for exam), the emphasis shifted to understanding and the ability to use the English language. An entirely new procedure was introduced to the teachers encompassing songs and games, illustrations, summarizing, conversation, and telling the story first in Hindi for the imagery before the children are asked to try reading the foreign print. These elements had been absent while abstract memorisation was the procedure for all ages. Whereas some teachers were deeply touched, others were virtually unmoved. One works in faith that the real work is never lost. It appeared to me that success with the teachers came through the children because it became obvious that the children were retaining more than before. At the end of the Teachers' Training Course, a certificate was given to those teachers who, through fulfilling certain requirements, had let their hearts open up to a new way.

Not just beeswax and watercolours

When I went, I thought Waldorf education could help change things. In reflection now it has been hard for me to admit that I honestly think it doesn't stand a chance of contributing lasting help until something else happens first. Everyone is pleased if someone comes bringing colour, life and freshness into something dying. But that wisp of newness passes and what is left? The shell of a beautiful building, or paintings rolled up in a corner collecting dust. What will endure is what is at the very core — like the living seeds of Hinduism described earlier. What is the living seed of Waldorf education? Nothing else will stand the test of time in a culture like India except that from which it all proceeds. What we graft on will fall away and we can never replace that which we neglected to give. I went thinking it best to remain silent and to let my heart speak through deeds. Now I see we cannot expect colour and form to say what must be spoken. What is the living seed of Waldorf education? It is not beeswax or watercolours. Those indications have grown out of an inner experience. We can't hope to apply outer practices such as integration of head, heart and hand in a caste-conscious society and expect that to have a lasting effect. It is like rubbing for aeons against a stone that has been there for aeons. I went to India thinking Waldorf education could help change things. I come away thinking Waldorf education *can* help change things only if the people turn their hearts to Christ. To establish an education that is truly human in spirit: this is the one thing which will continue to make lasting changes long after we have left.

The possibilities remain of creating circumstances in which to work, by going in groups, seeking Christian schools, or beginning a new impulse centred around the Camphill movement which could make a deeper impression than work within the normal educational system. Please get in touch with David Schwartz, c/o Camphill Village, Kimberton Hills, Pennsylvania, or myself, c/o Green Meadow School, Hungry Hollow Road, Spring Valley, New York 10977.

Leslie Dougherty is a class teacher at Green Meadow School.

Science Reveals Secrets of Life

The Wisdom of the Universe discerned in its Form

BY LAWRENCE EDWARDS

Science today has assumed so large an influence over our life that the class teacher must feel a sense of very special responsibility when he comes to present this subject to his class for the first time. How can he present the world to the children as a subject of thoughtful study without seeing it as some vast machine, grinding slowly and relentlessly to some conclusion at which we can only dimly guess, ruled by the inexorable laws of cause and effect, heartless, soulless and utterly indifferent to the race of human ants which have somehow been thrown up in the cause of its development? How, above all, can he preserve a sense of primal wonder, while inheriting the legacy of accurate and precise thinking which is ours from the struggles and labours of the last four centuries?

These, I think, are the two problems which face us above all. The modern attitude to science has led us to a view of a mechanically driven universe in which man, and the activity of the free human spirit, have no real place and the sense of wonder, of religious awe even, which impelled the early scientists to their search for truth, seems almost to have departed. It has been explained away by the abstract explanations of an arid intellectualism.

Much might be written...but one small concrete example is worth more than reams of paper covered with abstract generalisations, — so away with them!

Secrets of life

Let us start with the simplest matters. Let us consider an equilateral triangle. We can con-

template its beautiful threefold symmetry, and so doing we are led to the idea of bisecting its three sides. If now we join up the midpoints we obtain another triangle, half as big in the length of its sides but a quarter as big as regards its area, apparently upside down as compared with the first one, but still equilateral. We can repeat this process with ever smaller and smaller triangles, until the thickness of our pencil lead prevents us going any further. It is such a simple exercise and it can be done at the very beginning of the first geometry period in a child's school career, — yet there are contained within it mysteries untold!

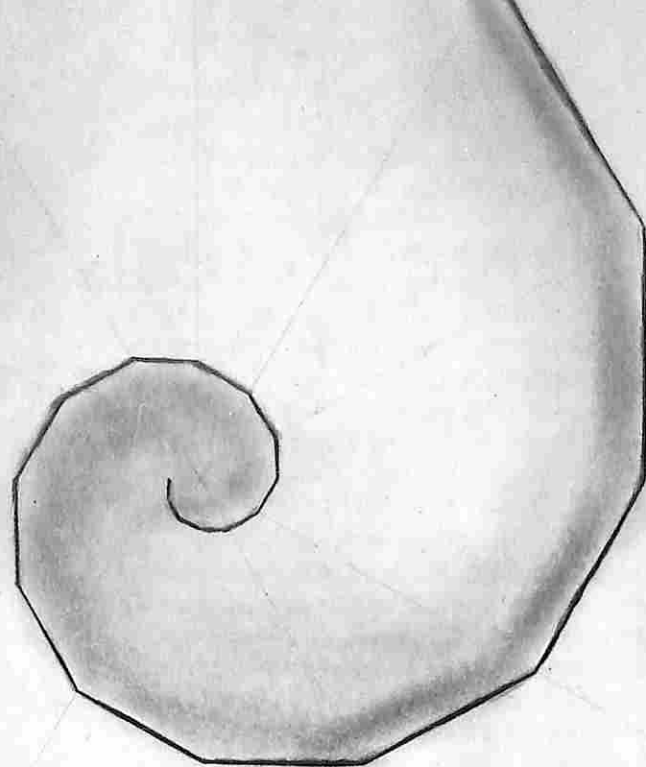
Let us consider what we have really done. We have made a family of triangles related to one another in such a way that each is exactly half the size of the one outside it. If we were to start with one of the inner triangles and move outwards we should have to double our size with every step we took; it would be times two, and times two and times two again. We have made a picture of multiplication!

When we multiply we manipulate an abstract process in our minds, based largely on memory and habitual methods of working, and the true nature of the process never enters our consciousness. Yet this process in its reality is wonderful beyond our imagining; it contains the secret of life and of all living things. And now we have made a picture of this process.

Journey outwards and inwards

Let us examine it more carefully. We could continue our journey outwards, doubling our

The Logarithmic Spiral



size from triangle to triangle, and there is clearly no limit to the distance we could go. We follow our triangle outwards into the far reaches of space until our imagination reels as they melt into the infinite distance. But suppose we were to turn and go inwards; how far could we go? It is lovely to watch a class of 12 or 13 year-olds wrestling with this problem. Some think a dozen steps, others, more adventurous, guess at a hundred or more, before the centre will be reached. Then one of them suddenly realises that here too one could go on for ever. No matter how small the triangle one has reached, there is always another one within it. Just as before one had looked to an infinitude without, so now one gazes down an infinite vista toward an infinite centre within. Qualitatively the journey in towards the centre is as long and as rich with form as that to the infinite periphery.

Thus we begin to see the process of multiplication in a new light; it is a process of transformation bounded by two infinitudes, working between an infinitely distant centre within and an infinitely distant periphery without. In contradistinction the process of addition is one which is bounded by only one infinitude: in this lies the true nature of the

basic difference between these two very different processes.

Now we can take another step. Let us repeat this diagram, subtracting this time from each side not one half of its length as before, but a smaller fraction, say one tenth. Immediately the drawing springs into life. Where before we had only a jerky jumping from triangle to triangle, we now see the tendency to form three beautiful logarithmic spirals. These are the curves of multiplication par excellence, they sweep away into the infinite distances, but they also coil inwards toward the centre, wrapping endlessly round one another, but never touching, and never reaching their destination.

Now what happens to the shells of all these little creatures? Well, they fall to the bed of the sea, and there they get pressed together in great layers until they become limestone. And many of the greatest mountain ranges of the earth are largely limestone. And so through the ages we see the bones of the earth gradually forming out of the living ocean.

But how do the bones form in our bodies? In our blood there are millions of little cells whose function it is to specialise the calcium out of the blood (which is really lime!) and lay it down as

the substance of our bones. And thus through the years, out of the living blood, the rugged mountains of our frame are built.

A fountain, leaping spirally

And now let us take one of these bones in our hand, perhaps one of the long bones of the limbs, or a rib. Let us admire its superb artistry, its subtlety of form and line. And as we examine it we will begin to perceive that in the most subtle way possible the spiral principle is in evidence here too. Examine the bones not just according to their outline shape, as it were, but according to the planes which would be tangent to their surfaces, and again and again, in all sorts of unexpected places one finds the spiral principal leaping into life before one's eyes. Look at an X-ray of the femur and one finds that this spiral form is built into the inner structure of the bones as well. This great weight-bearing shaft of the body is formed of little laths of bone lying side by side. These laths form two families of spiral curves which run criss-cross, left hand and right hand, forming a column that is a truly wonderful engineering structure. But as one gazes at it one sees more than an engineering structure, — a fountain of life, leaping spirally, frozen.

Thus can we look into our bodies and find The Canine Femur. *Spiral form is built into the inner structure as well . . .*

the secrets of the great outer world at work there. But first of all we found the spiral in another place, — in our minds! And it was as real there as it is on the seashore. Thus we learn to see the world as permeated by a living spirit of wisdom which is as real as any substance which we could hold in our hand. How else could the world have become such a wonderful place? And when we look into the secrets of our own thinking we find there the same spiritual realities which have built the world. Thus can we come to confidence in life.

In the course of a short article it has been possible only to show, by means of an example, something of the sort of attitude which I believe the class teacher needs to bring to his science teaching. This attitude has to be varied and adapted to the needs of the various aspects of science which the class teacher needs to touch upon, and to the different situations which meet him in the classroom. The children will learn much else of detailed knowledge beside, of course. I have here been concerned to picture a basic attitude which the teacher brings to his task.

Of course we could make a spiral which went outwards in even, instead of multiplicative steps, then it forms a picture which gives a very



different impression. It is called sometimes the spiral of Archimedes. It coils endlessly away with dull and even steps, which gives an impression of apathy and boredom, while the logarithmic spiral flings outward into space with 'a dynamic urge which is beautiful to contemplate. The spiral of Archimedes bears within a sort of poverty; it winds inwards and reaches its centre in a finite number of steps; it has only one infinity, that of the periphery. The logarithmic spiral moves between to infinities, for it has an inexhaustible centre! What far secrets we touch whenever we add or multiply!

Rhythms of the fluids of life

But what has this to do with our picture of the universe? Let us go back through the history of the earth. As age succeeds age in our backward review we find the earth originating more and more from a fluidic, living state. Rightly has the mighty ocean, with the ceaseless flow and rhythm of its tides, been called the great mother of all that is. We can look back to a time when in a sense the earth was all sea. And this sea is not just water and salt. We know today that it is filled, permeated with the very stuff of life.

Once we were in the sea! And its rhythms flowed in us, and through us. And now we are on the dry land, but the rhythms of the water of life continue in us as the pulse and flow of our blood. It is a significant fact that the chemical constitution of our blood very closely resembles that of sea water. Probably the children one is speaking to are 12 or 13 years old, and the bones in their bodies are already fairly firmly formed, but it is possible to look back to the time when they were tiny and had practically no bones in their bodies at all. In a way one could say that they they were all blood. It is not a fanciful comparison one is drawing, man is part of the world, and its very nature flows through his being too.

But what goes on in this living texture of the ocean? The children will not know of the countless millions of micro-organisms which form an inexhaustible reservoir of life; they can hear a little about it from their teacher, but they will know many of the forms of sea-shells, and will have recognised in them the logarithmic

spirals which they have already drawn in another lesson. Now they learn that this is a form of life for vast quantities of minuter creatures as well. While they have been laboriously *learning* their multiplication tables in class, all these little organisms have been *doing* theirs under the sea! The mysteries concealed in the process of multiplication are so profound that we are most of us only able to glimpse their possibilities, but the ocean is permeated with this, through and through, as with a living wisdom.

This article is reprinted from Child and Man, Michaelmas 1956. Mr Edwards has taught for more than twenty years and is now engaged in teacher training and research.

A Childlike Conversation by Paul Matthews

'Why aren't the stars visible in daytime?'

'Because the earth is thick inside.'

'Why is it thick?'

'Because we don't smile enough.'

'What is there to smile about?'

'A ladybird on a leaf.'

'What's so special about ladybirds?'

'Your blindness makes the stars invisible.'

'Why do you say that?'

My tongue knows it better than I do.'

'Do you think tongues are wiser than brains?'

'They are replicas of God's fire.'

'You don't believe in God, do you?'

'I believe in ladybirds.'

Alternative Technology in Waldorf Schools?

Young people want to know about energy without pollution

BY PETER CLEMM

There is much talk these days about 'alternative technology', 'appropriate technology' and 'intermediate technology'. Is this something we should not only be aware of, but something we should actively cultivate in our upper schools?

It is the aim of the Waldorf curriculum not only to give a historical perspective of science and technology, but also to awaken an awareness of what is going on around us today and its implications for the future. In the form of centralized mass production, automation and vast computer networks, present technological developments and the way they are used threaten ever more to invade our privacy, curtail our freedom of action, and make us become slaves of 'the system' in order to survive.

The recent upsurge of interest in alternative life styles is in large part a response of the individual to this threat. But it has also arisen out of a real concern for what the technological aspects of 'the system' are doing to our environment and to our prospects for the future.

It is in this area that I would like to put forward some tentative thoughts for areas of study and practical work in the upper school.

Used or abused

The problems of pollution and irreversible destruction of the environment are particularly connected with the following: the production of energy and raw materials, and methods of transportation and waste disposal.

In each of these four areas one can explore the various ways in which the basic Four

Elements are being used or abused. For example in energy production solid fuels, some renewable, some not, are extracted from the earth and made to produce energy in a variety of forms. Principally coal, but also wood, peat and dung are burned, and uranium is reacted, to produce heat. This 'fire' energy is then usually transformed to mechanical, then to electrical energy. The other two of the four Elements are usually called in to assist in this double transformation: water and vapor in the steam turbine. Actually, in most modern steam turbines 'supercritical' pressures and temperatures are used, under the influence of which the distinction between liquid and vapor disappears and these two elemental states of matter are reduced to a kind of intermediate mush. Under these conditions, one might ask oneself, (if not the students), what is happening to those other elementals, the sylphs and undines, when their physical sheaths are subjected to this kind of treatment? But there are also solid fuels which are directly converted to electricity, such as the electrolyte in a torch battery.

Renewable?

Then there are liquid sources of energy: petroleum, but also the water in a hydraulic turbine. The oil, when used, is irreversibly changed and depleted. The water only changes its position with respect to the earth's gravitational centre — or is that the only change? Is it totally restored when it is again raised by the sun into the clouds, to fall and be collected once more into a mountain stream, eventually to be engorged and spewed out once more by

the hydraulic turbine?

What about Air? Natural gas is another non-renewable energy source, similar in use to coal and oil.

Digesters

'Bio gas', on the other hand, is a renewable fuel. A relative newcomer on the energy scene, bio gas is made by allowing animal manure (from cattle, pigs, chickens) mixed with water to ferment in a closed vessel. The gas is produced by a bacterial digestion process and consists of two parts of methane to one of carbon dioxide. It therefore has about 2/3 the calorific value of natural gas, and is an excellent fuel. In India there are currently about 25,000 such methane digesters in operation. Their value to small Indian farmers lies as much in the excellent fertilizing properties of the 'spent' slurry as in the fuel gas which is extracted from it. With the present high cost of fuel, methane digesters are now also being manufactured for use by English farmers.

High performance windmills

But to continue with the airy realm, what about the wind? Because of anticipated fuel shortages in the next decades there is currently a great resurgence of interest in windpower. Between 1880 and 1930 over 6 million windmills were in use in the U.S.A. for pumping water, sawing timber and grinding grain. Today only a scattered few remain. But a recent estimate by a reputable engineer indicates that 1 million modern high performance windmills strung out along the wind corridor of the Great Plains could supply 25% of the future energy needs of the U.S.A.

Again one is tempted to ask the question, what would be the overall effect of so many mighty fingers in the wind (propellers over 100 feet in diameter rotating at high velocities) extracting such vast quantities of energy? Effects of some kind there might be, perhaps, but would they be irreversible? At all events they would probably be very subtle compared to the potential hazard to organic life of accumulating highly radioactive nuclear wastes where aura will remain lethal for many millennia to come.

Finally there is Fire itself. The radiation of the sun can be captured as heat in solar panels

or converted directly to electricity in photovoltaic cells. Geothermal steam wells provide power in Italy and California, hot geysers in Iceland.

Projects

So much for a few of the present day aspects of just one major area of technology: energy production. These can be seen and studied. But they can also be experienced directly in projects involving the actual designing, building and operation of smaller scale solar panels, windmills, waterwheels or methane digesters. The further problems of continuous or intermittent operation, and the associated problems of energy storage can also be tackled.

Much help in actual projects is available in the rapidly growing alternative technology literature, * as well as from such centres as the New Alchemists in the U.S.A. and the Centre for Alternative Technology in Machynlleth, Wales.

These thoughts are not primarily intended as actual suggestions for curriculum content, but rather to stimulate further thinking on ways to incorporate this important aspect of human life as both a study and a practical activity in our upper schools. Particularly if it were combined with vocational type training in electrical and machine shop skills, projects in the building of usable alternative energy devices and systems might provide the kind of challenge and contemporary interest necessary to overcome the apathy and lack of involvement one so often meets in teen-agers nowadays. It would also help prepare the ground for an increased awareness of our relationship with the being of the earth and its physical resources which is sorely needed today and will become ever more crucial to the future evolution of mankind.

* References: Producing Your Own Power, Rodale Press, Emmaus, Pa., U.S.A. Technological Self Sufficiency, Robin Clarke, Faber & Faber, London.
Literature Sources: Natural Energy Book Service, 161 Clarence Street, Kingston, Surrey. Intermediate Technology Development Group, 9 King Street, London, W.C.2.

Peter Clemm has been a metallurgical engineer and has taken a class through eight years at Green Meadow School, N. Y.

A New Way of Knowing

The Goethean approach to science

BY DAVID LANNING

Bernard Levin, writing in *The London Times* recently, was asking the question why the film *Star Wars*, which to him seemed to be singularly lacking in merit, should none the less attract such large audiences. He came to the conclusion that what really struck a chord in the hearts of cinema-goers was the fact that, at the very end of the film, at the most critical point, when it was a question whether the evil empire would triumph or be destroyed, the hero achieved his ends by abandoning all the advanced technology which was at his disposal, and obeyed 'the force' that was within him. The idea of an advancing technology creating a soul-less and spiritless world is one which probably lives, at least sub-consciously, in most of us, and the present image of science is that which is the basis of such a technology. This is one of the problems of a teacher of science.

Truth, beauty, goodness — a by-product of molecules?

Another is that in the scientific world picture there seems to be no particular place for man. The whole process would go on just as well without him, in fact rather better if we consider how we are at present destroying our environment. Values such as truth, beauty and goodness become merely relative, and in the end just a by-product of certain molecular aggregates. If we are of a religious disposition, we might wonder how it is when Christ said, 'By their works shall ye know them', by knowing His work we do not come to know Him. There are

really only two conclusions — either He is not, or we are not knowing in the right way. This, too, is the business of the science teacher.

It was not always so. The interest in science at the time of Darwin's 'Origin of Species' was tremendous, and in fact, the 'Origin' itself, although rather heavy and cumbersome in style, was a best-seller, and soon went into several editions. Vast crowds would line the streets to watch the professors arriving for their scientific congresses, and much of the adulation now reserved for pop-stars and footballers, was then the lot of professors of zoology. (Let pop-stars and footballers take note!) The feeling was strong in the 19th century that science had the key to unlock the problems of the world, and that scientific knowledge would show the way to a new and better time. The hope was high, and the confidence in science was great.

Mastery ahead of understanding

The authority of science was also great, and continues so even now, having entirely replaced the authority of the church. This is largely the church's own fault. When they denied the spirit and advanced the dogma of man being body and soul alone, they did not foresee that the soul would slip into the domain of science along with the body. Otherwise they might have kept the spirit. When they warned the early scientists to keep off the major questions of life, on which the church alone would pronounce judgement, and confine their efforts to weighing and measuring on

pain of burning at the stake, they did not foresee that ultimately this would prove so successful in giving birth to an almighty technology, that the time would come when the scientists would set the same limits by their own volition. We have consequently achieved a way of knowing the world which has given us a mastery over Nature, but it is questionable whether it has given us an equivalent understanding of Nature. And the authority of science is still almost absolute. A television programme a little while ago featured a spiritualist medium who claimed to be in communication with extra-terrestrial beings in flying saucers, whom he said came from Venus. The interviewer, a psychologist, asked him to describe conditions on Venus, and then terminated the interview by sending for a physicist to describe what the conditions on Venus were really like. It never occurred to him to subject the physicist to the same critical questioning as he did the medium. If he could have foreseen the subsequent Venus space probe, he might well have done so!

Scientific consciousness is, according to Steiner, a very recent development in man's evolution. We are all of us, whether we like it or not, scientists as compared with men not too far back in historical times. Steiner accepted Haeckel's Theory of Recapitulation which suggests that in our development we repeat the history of the type or species; and in fact extended it further into the field of consciousness. We should not therefore expect young children to have a scientific consciousness, and if we are correct in adopting Steiner's views on the development of man which forms the basis of all Waldorf pedagogy, then we should expect to have some idea when scientific consciousness should appear, and in what manner.

Objective study can begin at ten

The young child has a strong connection with animals, but he needs to be about ten years of age before he can look at them with some detachment. Previous to that he so identifies himself with them, that stories such as Aesop's fables are the best material. But at ten something like an objective study can be made. Even then it needs to be very strongly connected with

the entelechy of man, eg. those animals which swim around like disembodied heads, such as cuttlefish and other cephalopods, can be likened to man's sense activity, ruminants can be related to man's digestion, etc. There is in fact considerable truth in the idea of man as a compendium of animal forms, and one animal type developing a certain part of the human anatomy predominantly. A year or so later this idea can be extended to the characteristics or soul life of animals, and perhaps something of the feeling can arise of the tremendous debt man owes to the animal world which, in taking over the extreme manifestations of certain instincts, allowed man to continue the evolution of his balanced development. At this time plants too are studied, and it is also the period of Greek history. The Greeks, with the possible exception of Archimedes, had more connection with the living sciences than with the physical sciences.

It is not, in fact, until about the thirteenth year that a child can really come to grips with cause and effect, and so come to appreciate the physical sciences. Steiner was quite specific about linking intellectual and emotional readiness with physical growth. In this case the pre-puberty spurt in skeletal growth — the skeleton being one part of the body which works by mechanical principles — is accompanied by a growing intellectual ability to grasp mechanical principles. This is not to say that it is impossible to teach such things before, just as one can teach reading before the change of teeth, but usually at a cost elsewhere. If you want to buy something before you can afford it, you have to get a loan, which must be repaid later with interest. It can be like this, too, in education.

Acidic vapour — alkaline ash

Physics for twelve-year-olds deals principally with acoustics, heat and optics, usually in that order. Acoustics starts with music and leads into the forms created on a Chladni plate, and optics starts with the observation of light and darkness. Chemistry is perhaps the most material of all the sciences, and it comes the latest. It starts with burning, which is chemical reaction of common experience. What is burnt are leaves, just as one might in a bonfire. Then



A twelve-year-old exercises careful observation. *A spiky plant has a spiky flame . . .*

these are compared with the burning of other parts of the plant and with other natural substances. This provides an opportunity for the exercise of careful observation — what colour flame, how fast the burning, how much ash etc. Strict objectivity should be insisted upon — 'pretty' colours or 'nasty' smells will not do as a description. It can then be shown that the vapours given off when something burns are usually acidic, and the ash alkaline.

Primeval upheavals

This leads on to the burning of limestone and the subsequent slaking of lime. The latter is a key experiment, and it is worthwhile taking trouble in its execution. If a large lump of marble, best obtained from a stone-mason, is used the final effect can be quite dramatic. It is best placed in a solid fuel boiler for at least forty-eight hours. It is then removed and allowed to cool, and brought into the classroom. Differences in consistency can be pointed out, but usually the form of the original piece of marble is retained. Then water is added. At first nothing happens. Maybe for quite a time nothing happens. This is excellent if properly treated, as suspense can be built up.

I have known class teachers go away at this stage, writing it off as another failure; and certainly the class will be ready to dismiss it as (possibly another) experiment which has not worked. But they will all be wrong. Cracks, reminiscent of primeval geological upheavals, appear in the lime, which puffs itself up to several times its original size. Tremendous heat is evolved, and clouds of steam are given off. But what is perhaps most fascinating of all is that, with a really decent sized lump of lime, one can add up to about a pint of water, and it is still as dry as it was at the beginning. The difference between chemical combination and merely wetting becomes a matter of experience, as does the terrific heat change which is also a feature of a chemical reaction. It is not so easy to find the solid fuel furnace for such a demonstration, and if this is not feasible it is still possible to carry out this experiment on a smaller scale with some fire bricks, a steel pipe and a bunsen burner.

When the children are 14-15, the chemistry centres around photosynthesis. This again is key knowledge. The chlorophyll of the plant is the gateway through which the sun's energy keeps the earth alive. All the energy we use in

coal, wood, petrol, our own food, comes from it. One cannot live in the world today and have no knowledge or interest in this. Steiner warned that making use of scientific energies and processes without any knowledge or interest in what lay behind them, led to a severe weakness of will.

Organic slant

In the Upper School, in Class IX, at the age of

15-16, the organic products of photosynthesis, and the substances that can be obtained from them, are studied. The chemistry is seen here to have rather more of an organic slant at the beginning, than is usual. The way things are first presented is very important, and the conventional method of the building up of compounds from simple elements suggests that more complicated molecules and eventually life itself arose in this way, which at least is non-proven. Similarly in arithmetic building up the sum from its parts can lead to acquisitiveness. But organic chemistry can be complicated, and the emphasis here is on *qualities*. For instance, if we ferment sugar to make alcohol, we can see that if the sugar loses the

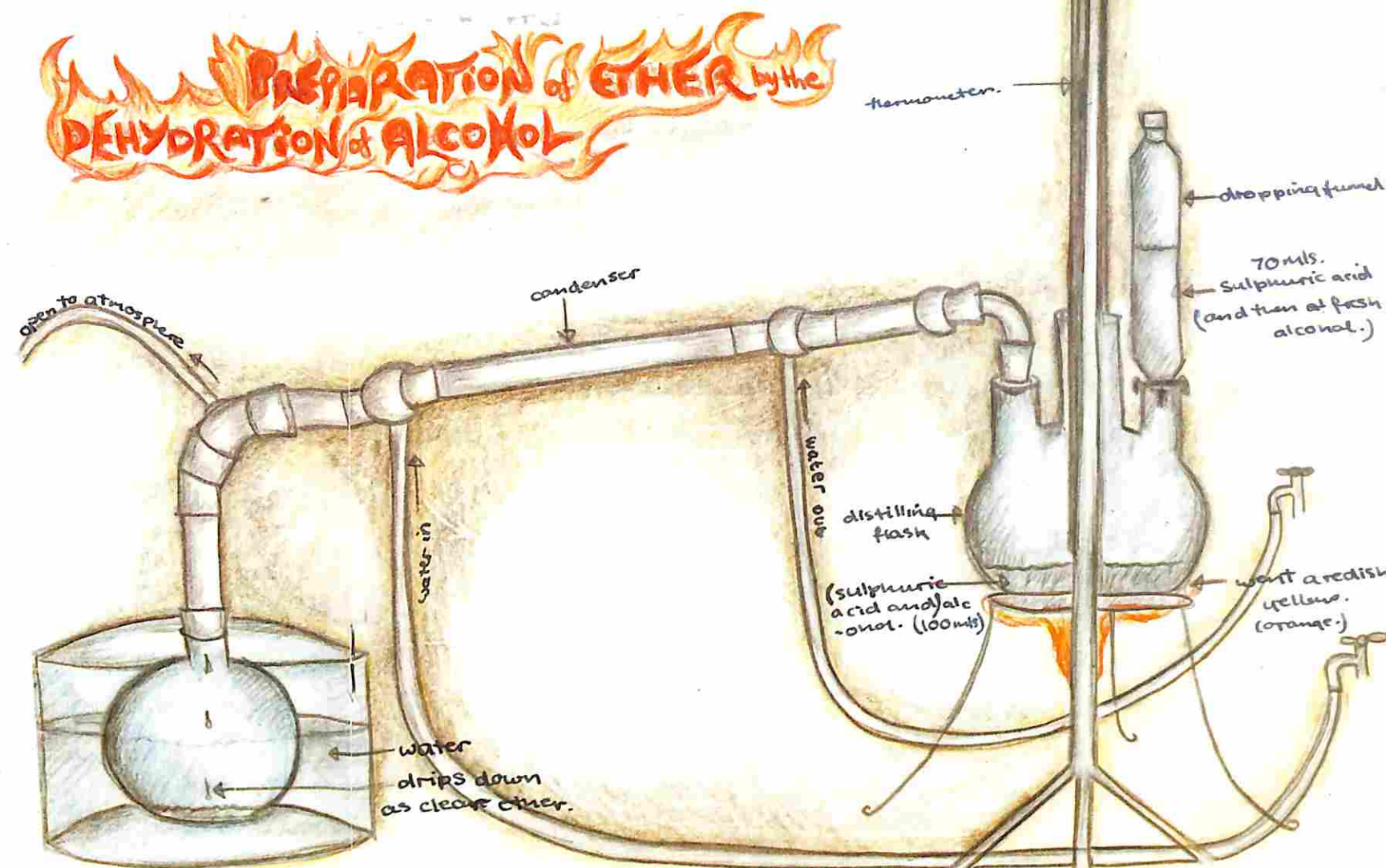
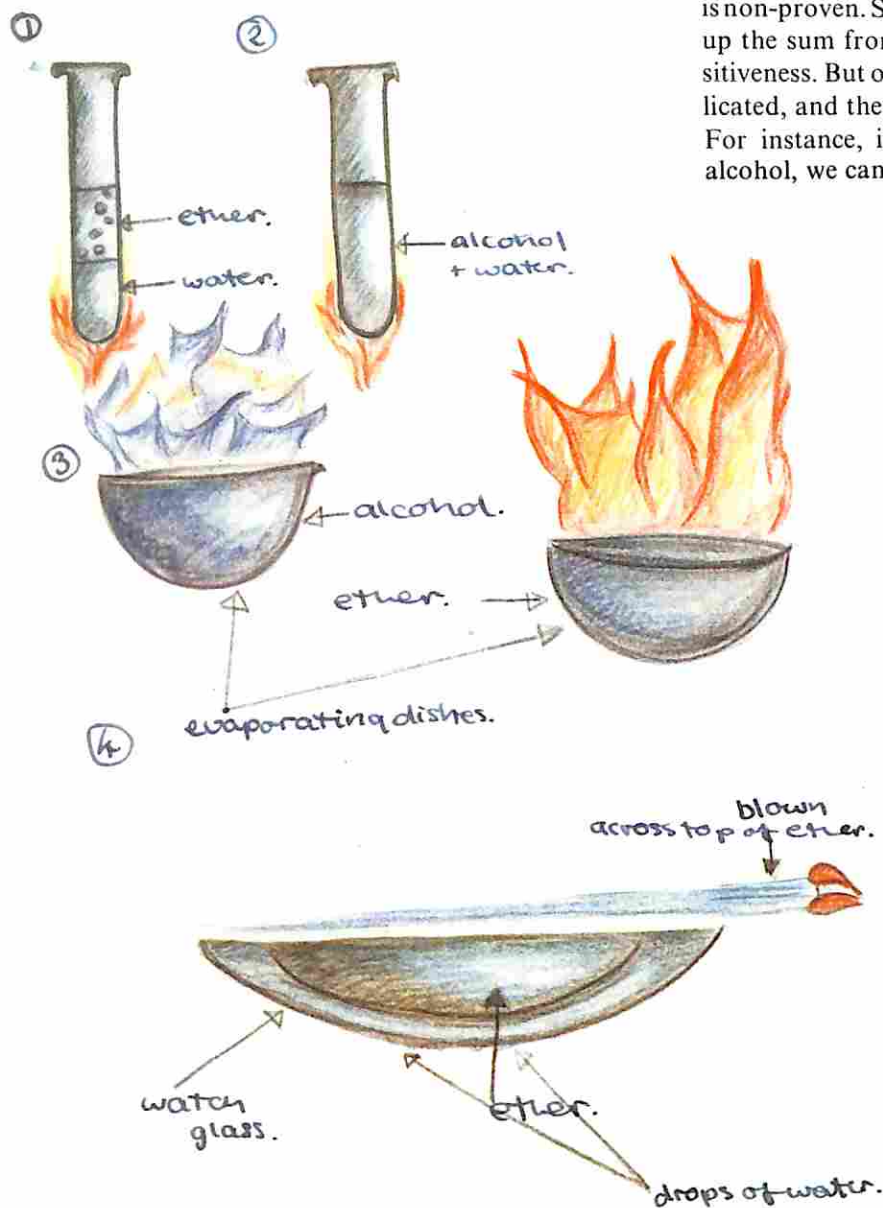
qualities of carbon-dioxide, something which has the qualities of alcohol will remain. This is different from breaking up a molecule of sugar much as one might break up a jig-saw puzzle or meccano model into smaller molecules, which is what is suggested by the chemical equation.

The whole story

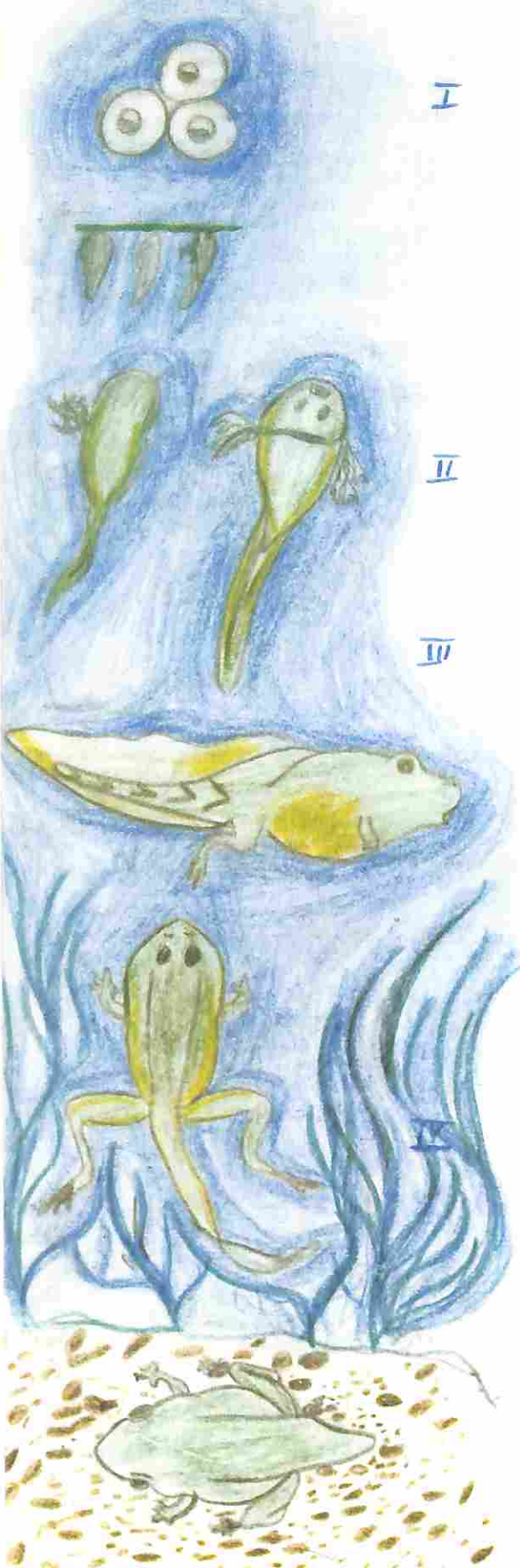
In Physiology, the *blood* is described as *creating* the pattern of veins and arteries, including the heart, rather like a river creates its path across a landscape. This, it is gradually becoming apparent, is much closer to the truth than the easy image of man as a mechanical model, with the heart as a pump, the liver as a chemical factory and the brain as the control centre. Elementary text-books do not always

reflect the insights of leading scientists, for they cannot go into the whole story. But for those who are not going to go further, this may be the only picture they will get. Again, for instance, has Darwinism completely explained the mechanism of evolution, or should we still keep our minds open? Are we merely higher animals or machines? Perhaps mankind will act in the future according to how men believe themselves to be.

The pattern of science teaching in the Waldorf curriculum is remarkably symmetri-



A fifteen-year-old studies *qualities* in organic chemistry. Different from a jig-saw puzzle . . .



Above: Female and male lamprey.
Left: Life history of a frog. *The development of faculties is as important as the acquisition of knowledge...*

cal and the concept that it contains is clear: the being of the child incarnates on a descending and then re-ascending path. At the lower end of the school we find the introductory sequence: man, animal, plant, mineral... At the upper end we have the sequence: mineralogy, botany, zoology... In Class XII at the age of 18, a review is made of all the main animal phyla. In seeing how one animal form develops into another one, imaginative thinking can be developed, which is as much a demand of the present age as the logical thought developed by a classical education was a demand of the previous one. In his work of education a teacher must always have in mind the development of faculties as much as the acquisition of knowledge.

It is the task of the science teacher at least to keep the doors of the mind open. It is generally agreed that the more one knows the more one realises how little one knows, and the reverse is also true, for in the realm of science it is easy to think that all is explained by a superficial, mechanistic approach. But a little knowledge need not always be a dangerous thing if it is based on a true experience of the subject, accurate observation and thinking, and keeps abstractions and theories to a minimum. It can then be the springboard for the radical and flexible thinking which made science great.

David Lanning is an experienced upper school teacher at Michael Hall, and has also taken a class through eight years.

A Lesson in the Dark

Description of a classroom experience at Michael Hall School

BY NORMAN DAVIDSON

I walked across the school playground towards the classroom thinking about Ernest Hemingway. It was a fresh, sunny day in late autumn, but inwardly I was transporting myself to the seas around Cuba where big fish are caught, and to the sun-drenched arenas of Spain where the ritual of killing the bull is enacted. In both, man relates to nature in a strange and contradictory way — he is predatory yet awe-filled in the presence of death; sensing his own end, hunting himself. Such contradictions, translated into social relationships, lie in the feeling life of many a young teenager, and wait to be solved.

Many things go through the mind of a teacher on his way to the classroom, especially if he is new to the school as I was. Had I prepared the lesson properly? Would it be received well? Would it relate to the young people before me? I was sure that Hemingway related sooner or later to the class of thirty or so boys and girls around the age of fifteen towards whom I now walked. But nevertheless the night before I had wondered about presenting Hemingway just at that time in these literature and English lessons. I entered the school and walked down the corridor. It was too late now to change.

Expectancy

When I arrived outside the door it was shut. On opening it there was a double shock. Firstly, I stepped from a bright, sunny atmosphere into complete darkness. The window blinds were tightly down, and I could hardly see my way to the teacher's desk. Secondly, although I could sense a lot of people in my presence, there was hardly any sound.

I had to think quickly. This was not a particularly easy class in some ways. A few days before, a group of them had sat in the playground in a circle after the school bell,

protesting against something. So now they were testing me. Instinctively I knew why they were doing it. "Who are you?" they were saying. "Throw away your book and your briefcase. What are you going to do now?"

I walked towards the window where light showed, but quick hands closed up the chink. The first impulse was to admonish them strongly for being so silly, switch on the light and demand that they immediately pull up the blinds. After all, *my* lesson was being infringed, and time was being wasted. But the hush in the class made me hesitate. I could hear them breathing and listening and occasionally whispering — all thirty of them. The air was full of expectancy. I stopped myself from reacting as a conventional 'teacher' and wondered what I could do as an unconventional one.

Reversed mime

I felt my way round to the front of the teacher's desk and stood staring into darkness. Boy, could these children wreck a lesson! So I thought that the best thing would be to say the first meaningful thing that came to me and take it from there. I heard myself say — "For today's lesson you are going to have to use somewhat more imagination than usual." (There was a ripple of appreciative laughter. Well, that was something) "You will have to listen to my voice today without the help of seeing my movements, gestures and facial expressions. A kind of reversed mime. So you'll have to listen more carefully. (Sounds of "Shh.") "When you don't see someone's face who is talking, you can more easily be led astray as to shades of meaning. I might, for instance, be saying all this to you in a serious voice, but without you knowing it could be grinning like an ape." (I grimaced crazily into the darkness and, sensing it, the class rippled

with laughter again, then fell silent, waiting.)

I was at sea, but it was less and less Hemingway's Caribbean. The big fish and the bulls were receding into the dim distances in my mind. I was brought intensely to the here and now of thirty young people who needed something and were teaching me how to teach it. So I plunged into this new sea and into the uncanny experience of having to *imagine* the young people to whom I was talking, even though I knew them. Gradually, the lesson was drawn out of me. The following are paraphrases of parts of it.

Pure thoughts

"You'll have to see today with your thoughts. For someone like the great philosopher Plato, to think was to see. Even in English we say 'I see' when we understand something with our thoughts. Some people can see with their thoughts very well. Being without sight is a help. During the last war there was a blind resistance fighter in the French underground movement to whom all recruits for the resistance were brought. He could tell by the tone of the person's voice in answer to questions whether he was a spy or not. It is also known that blind people dream in pictures. . . .

"Now take a subject which involves pure thoughts which you can see inwardly. This is geometry. Next year I shall be taking you for a Main Lesson in this subject. At the beginning of the century a famous geometrician called Klein deliberately gave a lecture in the dark. He asked his audience to imagine the geometry he was talking about in clear thought, without distraction, showing that mathematics lives in the realm of pure thought. So, imagine now what I shall be asking you next year. Picture two points in space. Now through these you can draw one straight line. What about three points? Three lines. And what else goes through any three points in space? One plane. What about any four points in space? How many lines and planes can pass through them. . . . ?

"In two years' time we shall be together again for a Main Lesson in the history of language. We shall first study speech. Speech reveals the whole human being. A whole human being is expressed in its sickness or

health, balance or unbalance, in the expression of the voice. . . .

Awake

"Darkness. What is it? Is it merely an absence of light? Or has it another content? We look for the dark when we want to do something we are ashamed of. (Giggles) What, then, is shame? Why is one ashamed? Should we do things we are ashamed of. . . . ?

"We also seek darkness to meditate. We shut out the outside world and step into an inner one. Homer was a blind poet. . . .

"Why does darkness sometimes bring fear if we are alone? What are we really frightened of. . . . ?

"Yet in darkness a certain intimacy can grow which is not so easy in broad daylight. I feel your presence stronger, I think, than if I could see you. One can feel more awake in the dark, more sensitive. There is a grand old lady teacher at my previous school who is now blind. The little children run to take her hands and guide her when she appears. Her hands are beautifully soft and one knows that she can see with them when she touches things. And her mind is as clear as a bell. . . .

"In Class 12 we are studying astronomy at the moment and today we discussed eclipses. An eclipse is an absence of the sun's light when normally it should be there. It is an intervention in life. It brings effects which would not normally arise. For instance, the sun's corona becomes visible which is normally invisible. The activity around the periphery of the sun actually becomes visible against the darkened sky during a sun eclipse. This lesson does the same. I am not teaching what I prepared, but a completely new subject has become visible to us today. It is the question of light, darkness and inner life of the human being. This will lead us on to further work in other lessons. . . .

"At least I think it will lead to further work with you. I am assuming that you are my English class, although I can't see that you are! In any case, it's been interesting talking to you. Thank you for the opportunity to discuss something unusual. Whoever you are — good morning."

Inner Polarities

I made my way to the door, went out and closed it behind me. Next day not a word was said by myself or the class about the lesson. There was a warmth in the air, but nothing was said. Something was living inwardly. It was like a secret between us. It would have seemed empty and superficial to have talked 'about' it.

The incident opened up for me in a special way what I had often thought about concerning the puberty age-group and had discussed with my colleagues — the question of inner polarities experienced at this time, of subjective and objective, freedom and authority, inner and outer, light and darkness, etc. Something was drawing inward, and the

A Day in the Life of a Blind Person by Emma Kaye (Class Nine)

I woke up. The birds were singing and I could feel a warm breeze on my face from the open window. It was a warm, spring day; everything was shining with colours.

Some people think that blind people live in darkness, but they are wrong. I live in a world of colour and beautiful forms. I see people as colours, not shapes. If I know them then I can tell them by the way they move and the noise they make. My mother is a warm yellow and my father a deep blue.

I felt a thud on the bed by my feet. I knew it was my dog. He walked up the bed and began licking my hand, telling me it was time to get up. I could smell the coffee and toast as I went into the dining-room. I heard my mother moving around the kitchen. Dad was reading the newspaper with the cat on his knee as usual. My little sister came tumbling into the room, a little red bundle of energy.

I left for school with my sister and my dog. It was a small school, with about fifty children. We only had a short day because it was the last day of term. My sister always told me everything that was happening when she walked with me. She said things like: "There's a lady wearing a funny hat over there talking to someone's baby." Or, "My teacher has got a new car. He just drove past in it."

darkness had given it space to work. And behind it was an imaginative, inventive call from young people for new life from their environment — a justifiable call on entering the realm of secondary education.

The dry book of instruction had been left unopened, the briefcase left on the floor, and even the sight of the teacher had been dispensed with. So, in the clear daylight of the lesson which followed the next day, I worked, much to their interest, on the life of Helen Keller who was deaf and blind from a young age, and set an essay on what one would experience as a blind person. One of the essays, with the permission of the girl who wrote it, is here printed:

After lunch I went for a walk with my dog. My dog was very well trained and full of love and affection. He seemed to have a sense for knowing when somebody didn't mean well. He would growl softly in this throat or sometimes he would bark.

We went to our favourite place in the wood. It was an old gnarled oak with big roots shaped like seats. I sat there for hours. I would think or listen. It was amazing what you could hear if you were at peace in your mind and soul. Apart from the birds you could hear other animals away off in the forest. You could almost hear the trees, the plants, the whole earth breathing.

At these times I felt the love of God all around me. That was when all despair of living left me. I didn't mind being blind. I knew, in some ways, I could see more than other people. God must have had some reason for wanting me to be blind, even if it was only for experience.

I could feel it beginning to get a bit colder, so I got up and we walked home.

That night, when I was in bed, I thought about other blind people. I wondered if they saw the same beautiful colours. I have never met other blind people but I am sure, unless they are very bad, that none of them lives in darkness.

Norman Davidson, formerly journalist and critic, has taught in Waldorf Schools for more than seven years.

Waldorf and Curative Education work together

New training for teachers wishing to work with handicapped children

HANS GEBERT, WERNER GLAS, RALPH MARINELLI

When Hamlet wants to describe his remarkably *balanced* friend, Horatio, he says

'Blessed are those

Whose blood and judgment are so well co-mingled

That they are not a pipe for fortune's finger

To sound what stops she pleases . . .'

Waldorf teachers know that balance of the soul is something one has to work for consciously in the process of education. Indeed, they have always been aware that when they are helping children to balance one or another one-sidedness, the work of education draws close to that of healing.

Children born into the contemporary world need a balanced diet of educational experiences — a curriculum based on the outer and inner needs of the developing human being. Often forces acting in the environment require balancing, and current professional literature is full of 'deprivations' which militate against healthy development. At other times, one-sidedness is more psychological in origin.

In handicapped children, one-sidedness, be it in the realm of physiology or psychology, is often pronounced. Tendencies towards extremes can lead to unbalance, be it behavioral or organic. Lack of balance can distort development and shape 'fettters' for a child. Such 'fettters' become handicaps for the in-dwelling being of the child.

Main streaming

Our century is rich in diagnostic terms relating to handicaps. It is less secure in its knowledge of the relationships between that which is eternal in the child and his handicaps. The insight into the nature of individuality, into the eternal essence of man, and how the tool of the body and the soul is related to the eternal essence of a human being is one of Rudolf Steiner's great gifts to psychology and education. Without such knowledge the true nature of the needs of children who require special care can be obscured by a complex network of technical terms. The semantic struggle for more appropriate characterization of the field has led to expressions like mentally impaired, physically impaired, and emotionally disturbed children. Yet another category is that of children with learning disabilities. Each of these areas has become the focus for a specialized sequence of study. The danger inherent in this approach is that one can easily focus on aspects of the whole and lose insight into the total being of the child. Or, to put it in other words, one might begin to approach the human being in a fragmented fashion. The great challenge today is to develop a special curative education based on the whole child.

In America, responsible educators are becoming increasingly aware of this fact. They want a holistic approach to special education. In some states it has been suggested that all

children who can be moved should attend state public schools and that the special classes and the normal classes should become one. This point of view, adopted but not yet implemented by the state of Michigan, is called 'mainstreaming.' Other authorities, particularly some of those concerned with the economics of special education, fight for even tighter and more specific classifications. However, both groups are looking for new solutions to an identified problem. The ongoing debate is lively and vigorous.

New training programme

This is the external sociological background of a new initiative made possible through the cooperation of the Camphill Special Schools, Inc., a children's village for the mildly retarded; the Esperanza School, Chicago, a day school for the trainable mentally handicapped and emotionally maladjusted; and the Waldorf Institute of Mercy College of Detroit. Through this cooperation between the educational movement and the curative movement, four programmes will now live side by side: a year of Anthroposophical Studies, the Teacher Training Programme, the Early Childhood Education Programme, and the Special (Curative) Education Programme. The primary intention of the new programme is to provide educational training for work with handicapped children below the age of nine. In addition to course work, students will have two field experiences. These will provide exposure to and practical involvement with mentally impaired, emotionally impaired, and multiple handicapped children. The fact that the programme focusses on work with children below the age of nine will help to emphasize its holistic approach. In these early years behavioural, emotional, and mental retardation frequently overlap. The programme is intended for . . .

1. *Teachers of handicapped children in anthroposophical special schools.* These are located all over the globe; Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Great Britain, Iceland, Ireland, Israel, Netherlands, New Zealand, Norway, South Africa, Switzerland, and the United States of America.

These institutions provide a wide range of activities. Some are day schools; a larger number are residential schools. Specializations range from a sanatorium for drug addicts to village communities for the mildly handicapped.

2. *Teachers who want additional preparation in curative education for those handicaps they are likely to encounter in the so-called 'normal' classroom.*
3. *Workers in a home or village providing a total environment for children in need of special care.*
4. *Social workers and special education tutors providing services for handicapped children at home or in hospitals.*
5. *Teachers in public schools confronted with the problem of mainstreaming.*
6. *Adults who seek a deeper insight into the nature and problems of handicapped children.*

The programme is open to both graduate and undergraduate students and is considered a third-year professional programme. Necessary background for admission includes: (1) the major in Anthroposophical Studies provided by the Orientation Year of the Waldorf Institute, or an equivalent programme of study such as that provided by Emerson College and (2) Waldorf Teacher Training, or Waldorf Early Childhood Education Programme, or an equivalent programme of study elsewhere. However, special arrangements may be made for practicing teachers and other mature persons with appropriate life experience. As the programme is university accredited, students will have the benefits of the federal and state loan and grant possibilities which, in increasing measure, are used by the bulk of the college population in America.

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The Dangers of Early Schooling — A Shock

Better Late Than Early: A New Approach to Your Child's Education, by Raymond S. Moore and Dorothy N. Moore, New York: Dutton and Co., 1975. \$7.95. Reviewed by Earl J. Ogletree

This is a book that will shake the thinking of those who are complacent about education. It will make British and American educators rethink the educational priorities that have been traditionally established and accepted by educators and parents alike. Advocates of early schooling and certain preschool movements, such as the Montessori movement, will find no support in this book. Neither will this book be pleasing to parents who send their infants off to preschools, because they are more interested in their personal freedom than the welfare of their children. Some parents will find this book a revelation, others a shock.

What parents can do

Better Late Than Early, a book for layman parents and educators, presents well-balanced, research-based arguments against early school and practical, detailed recommendations for what parents can do for their children at home to ensure their best development.

The Moores take the following position on child rearing practices and early childhood education:

1. The home is the primary institution for the young child. "Not even the best schools compare favourably with a good home."
2. There is no research evidence to support the

need for preschool for the larger portion of our population.

3. There is evidence that particularly academically oriented preschooling can have damaging affects on children's learning potential, emotional-stability and physiological development.
4. The home is more cost effective than the school for developing young children, and the projected governmental preschool programmes may be so costly as to ruin the whole early childhood movement.
5. Educators, legislatures and parents are moving too far too fast into early-childhood education programmes without responsible reference to research.

Late school entrants do better

The Moores, who have mounted a formidable attack against the advocates of preschooling, not only support their conclusions on the basis of an exhaustive review of the literature but use a multidisciplinary approach, combining the knowledge and research of the educator, neurophysiologist, the developmental psychologists, the child psychiatrist, the sociologist, the reading specialist and the parent.

The title of the book *Better Late Than Early* is appropriately a reflection of chapter nine —

"Comparing Early and Late Starters," perhaps the heart of the book from a researcher's view point. The research overwhelmingly supports later or delayed schooling. The Moores state:

In nearly every case, these long-term studies favour the later (school) entrant — In fact we know of no such studies that clearly support the idea of early entrance to school, or that demonstrate early entrants make significant continuing gains in attitudes, motivation, achievement and social emotional growth.

Their research shows that later school entrants do better than early school entrants in achievement and social emotional development. The rationale for these findings and the position taken against early schooling by the authors are based on the research findings of developmental and child psychology. The "research suggests that developmentally, early childhood (the formative years) encompasses at least the first eight years, even though, by age eight many children are in the third grade." Children are not maturationally-ready for school until age eight or nine. All developmental factors — cognitive, vision, hearing, perception, emotions, sociability, A Waldorf Kindergarten. *Treat their imagination with respect . . .*

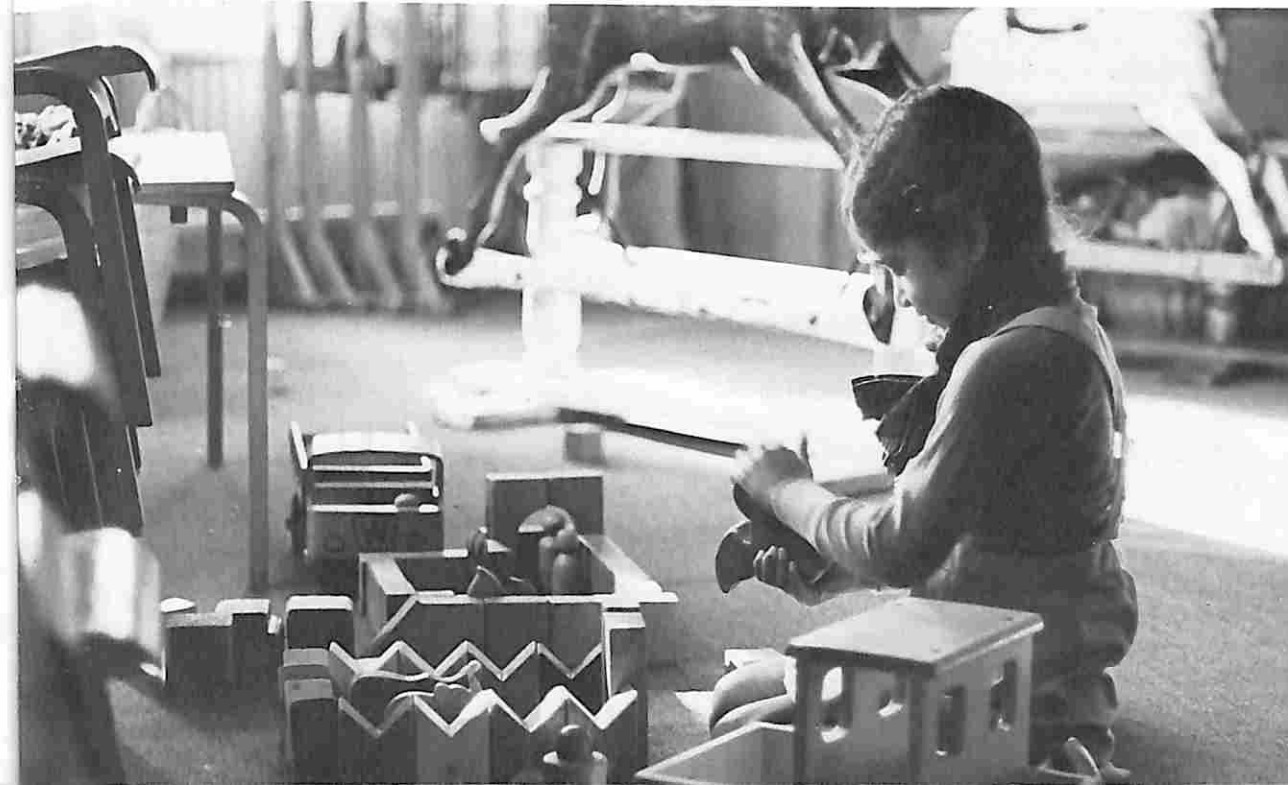
family and school relationships and physical growth are integral and interdependent factors of maturation and must be taken into account when considering a child's maturational-readiness. The Moores define the attainment of maturation The "Integration Maturity Level." This implies an integration, or co-operative functioning, of the various aspects of human development in a level or degree of co-ordination that becomes more productive as maturation progresses. Until a child has reached his Integration Maturity Level, he is better off at home than in school.

The Moores have written in a lucid style, buttressing their opposition to early schooling, while supporting a good case for keeping children at home until age eight with an equilibrium of much research and many examples.

Helping children at home

In the latter section of the book, the authors express their views, based on research and their thirty-seven years of personal, educational and clinical experience with young children, on how young children can best be served at home. They "deal with common childhood reactions in simple, constructive

Simon Carreras



ways." In each group from birth to age nine, the authors examine the stages of development from four perspectives: "1) reactions that may be expected at this age level; 2) special needs of this age; 3) play things; and 4) activities and opportunities for learning. The Moores made the following recommendations:

- 1) Encourage children to use their own judgment, while being cognizant of the choices within the limits of their ability.
- 2) Treat their imagination with respect.
- 3) Give them security, love and affection and be reasonable and consistent in managing them.
- 4) Develop routine and rhythm in the children's daily living, avoid overstimulation (radio and TV) and pressure to perform.
- 5) Instill in them the joy of learning and discovery and the pleasure of work and completion of a task well done.
- 6) Play things should be kept simple, in line with their development and ability and the natural learning environment, such as kitchen work, gardening, house work, music and occasional trips.

The responsible parent

The authors place the onus of the responsibility for the child's development on the parent, with the caution: "What your child hears and sees in his early years is imprinted deeply in his mind. You (as a parent) are ultimately responsible for what these things shall be." Rather than exposing the child to the competition, separation, pressures and overstimulation of most early preschool courses programmes, they conclude, "he will probably become more stable and better adjusted socially if he stays at home with you and shares practical, every day activities."

The authors are cognizant of the strong and popular movement toward early school by society and the difficulties in reversing this trend. According to the authors only educational planning based on research and documented findings can reverse the Early Childhood Education movement currently based on tradition, intuition and economic concerns.

The Moores ask parents to ask themselves the following questions: Who shall control the mind and thoughts of my developing child?

Shall the family remain as the basic unit of our society? How long will our culture survive without the family?

Demand a higher school-entrance age

To counter the E C E movement parents should demand parent and family care education more than early schooling, demand that legislation increase the school-entrance age to a responsible level in line with the realities of child development. The Moores "suggest that business, industry and government consider offering half-day employment for mothers who need to work and feel obliged to fulfill the responsibility of child rearing better than they can if employed full time."

The establishment of child-care by mothers who have successfully reared families and foster day-care homes would be viable alternatives to the present or proposed preschool system for working mothers. The Moores conclude: "If E C E planners will use their teachers to give parent education a try, and if legislation will, for the moment resist vested interests and pressure groups, a new day will dawn for young children."

The authors have courageously challenged the establishment. *Better Late Than Early* will elicit few compromising responses from its readers. Either readers will agree or disagree with the views presented. The responses will range from lavish praise, on the one hand, to legitimate disagreement, to indignation or even abuse, on the other. In any case, in the educational climate of today, *Better Late Than Early* cannot be ignored. "It is an important book for parents, politicians, and professionals." It may be the most important book on early childhood published in this generation.

Earl Ogletree is Associate Professor of Education at Chicago State University.

Michael's Sword of Iron

An examination of the true nature of iron

BY DAVID LANNING

Is it entirely a poetic fancy that a spiritual being like an archangel should overcome the dragon, with a sword made of iron? Surely one is a being of the heavens, and the other very much a substance of earth, and the two do not really go together to our way of thinking, if we really think about the picture? One does not discuss the properties and nature of iron in the same sort of breath, or even with the same sort of people with whom one might discuss the attributes of the Archangel Michael. The nature of the substance of Michael's tools or weapons must be irrelevant, if not immaterial, in the realms in which he operates.

Transforming the earth

But the very word *substance* has a Latin origin whose literal meaning is *standing under*, or perhaps rather *behind*. *That which stands behind*. What is it that stands behind iron? Well, of all the metals, iron is the one most used by man to transform the earth, whether in the right way or not is not so much the point, as that through iron, man has wrought his will upon the earth. The next most used metal is aluminium, but the total world production of aluminium is about equal to four blast furnaces producing iron; and in a liner like the Queen Elisabeth, some 60,000 tons, all but a few hundred are iron. It is all indicative of our widespread use of iron. Even when some of the substances used in technology are not iron, we are likely to find that the tools which fashioned them, the furnaces which prepared them, or

the mixers which churned them up, were made of iron, and that it is through iron that our will has been done. Iron too is associated with the planet Mars, and Mars with the god of war, and so iron also becomes the substance of warfare, which is basically an activity whereby one people imposes its will upon another. We associate it with forceful strength, with cruelty and destruction, but is this the true nature of iron?

Green and red

Iron, in its own nature, shows a state of balance, and an avoidance of extremes: it is not extremely heavy, nor light, neither is it very reactive, nor very passive. The chemist finds it half way down the Periodic Table, that is midway between the lightest elements like hydrogen and helium, and those which appear to disintegrate under their own mass into sub-earthly states of nature, like the radio-active elements. If the chemist is also a follower of Goethe, he will also note that iron and its allies form coloured compounds, as for him colour will arise as an interplay between the dark substances and the light. It is iron which makes the ruby red, the sapphire blue, and the emerald green, and which turns quartz into amethyst. It is iron which gives us the greensands of the south-east of England, and the red sandstones of the West Country.

The incarnation of will

But if mankind has imposed its will upon the earth through iron, it is also through iron that

the individual man carries out his own acts of will. For iron we know forms an important part of the blood, and whenever we perform an action, the blood streams to that part of the body concerned in making it, whether it be digestion, cerebration or moving the limbs. We all know that this is why it is not good to eat too much before swimming or taking an examination. Even when we make to take a step in the dark which is not there, the blood goes to the limbs, and we tend to stumble. Iron is also in muscle in its own right, except when, as in the breast of a chicken, it is the muscle of a flightless wing, and so the meat is white. The meat of a chicken's leg, or the breast of a pigeon which can fly is red — or brown when cooked, as it contains iron. It is through iron that the will is incarnated.

But will incarnates in stages. At first it is instinct, as we see it in lower animals like insects. Then impulse, as in the snapping of a fish at the baited hook. Then urge, as in the higher vertebrate. Finally in man it becomes resolution, but now it undergoes a sea-change as it were, a sort of inversion, for the cause of the willed action no longer precedes it. It follows it. Human will points to the future.

If the will is incarnated into the blood through iron, so does the iron, through its affinity with oxygen, purify and re-charge the blood. An affinity with oxygen is manifest in burning, and iron burns in a special way, as we see in sparklers at fire-works time. We see it also in the shooting stars or meteorites as they flash through the atmosphere in the autumn, and burn up the sulphurous summer haze which spreads right over the sky, separating it off into the mists and clear air of autumn. There is a big difference between the mists of autumn and the haze of summer, and beyond the mists the air is clear, and the outlines sharp.

Iron — the vehicle of love

Iron also has a very strong affinity with warmth. It appears first (apart from a brief flirtation with it in the earthworm family) in the blood of cold-blooded vertebrates, but this is really only a preparation for the chief function which is to come. The affinity can be seen in the light degree of warmth which iron will absorb before melting, and its ready

conduction of heat. Anyone who has seen a blacksmith's forge will have no difficulty in associating iron with fire and heat. The connection with warmth is not altogether separate from that with will, and we often speak of warming to a task when we gain enthusiasm for it. Enthusiasm, warmth and will rather go together for they are carried by the same vehicle of iron. But if we can feel warm to a task we can also feel warm towards a person, when we get rather to like him or her. Perhaps here there is another qualitative change like the one between urge and resolution, when the faculty becomes no longer shared with animals, but specifically human; that is, the warmth becomes love. Then iron, which was the substance of forceful and cruel will in warfare, becomes the vehicle of love. It is interesting that the animals which can best be tamed and made into gentle pets are the carnivores, the cats and dogs, which in nature have the claws and fangs to rend their prey. A turtle dove kept in a cage with another may tear it to bits. And dare one suggest that there is probably more brotherhood in the fighting services, where dangers are shared, than among those who campaign strictly for peace?

The Archangel Michael used his sword of iron to drive the dragon from the heavens. He is shown as the strong angel, the fighter and the conqueror. But he does not seem to have done us a service, for he has driven the dragon down to earth, understandably in great wrath, knowing he has but a short time. However, Michael gives us his sword of iron in our blood, knowing that, if through it we can transform the warmth which nature has given us into love and compassion, we too can overcome the dragon on earth.

There is another side to the picture of Michael. As Michaelmas precedes Christmas, so Michael lifts the veil to point the way to the approaching birth of the God of Love, and beckons us to the picture of Mary and Joseph with the Child in the manger. He could still do this with his sword of iron, as it still lies in the nature of iron to be used for this task too. And we can only beat our swords into ploughshares because they are both made of iron.

David Lanning has taught for twenty-five years at Michael Hall, Sussex, England.



Waldorf Schools are News in the Netherlands

A report from CHRISTOPHER CLOUDER

There has been a phenomenal growth of Waldorf schools in Holland over the last few years. Five years ago there were eight, now there are twenty, as well as many groups of parents preparing to start more than fifteen others. All the new schools have been started by parents themselves who were uncomfortable about the education offered their children in state schools. After forming themselves into groups and accomplishing all the necessary ground work with the close co-operation of the Dutch Federation of Waldorf schools they have started these schools which are growing at an unprecedented rate. Some after only a year or two have had to form parallel classes.

Care and mutual help

Through the undertaking of such tasks new communities have been created within the established social structure. Communities transcending class barriers and in which new parents and children have been taken up with great warmth. In fact this warmth and sense of belonging has induced many parents to place their children in a Waldorf school. There is feeling of care and mutual help which seems to develop with this pioneer work. Parents help one another in many fields quite apart from the school-life as such.

All schools are fully used in the evenings for multifarious activities, whether music, puppet-making, study of anthroposophy or education, class evenings, drama groups, jam-making, lectures or social gatherings. Schools

are also used as book-shops, distributors of organic food and social centres.

Money no hindrance

After satisfying basic legal requirements each school is subsidized by the state, the sum being based on that given to state schools. As the Waldorf school curriculum includes more subjects than a state one and as the materials chosen are of the best quality, the parents are asked to pay a monthly subscription. The amount is usually left free for the parents to decide but the schools recommend a payment in proportion to earnings. Money is never allowed to be a hindrance to a child's Waldorf education. Unfortunately this subsidy is tied to various restrictions that can cause great difficulties to schools. There are various curricular requirements that do not fit the ideal Waldorf curriculum. Difficult compromises have to be reached on lesson times, length of school day, teacher qualifications and building designs.

Working groups fight threat to freedom

The Minister of Education is now preparing a new and very far-reaching education act which produces a certain unrest in Waldorf circles. The age of compulsory education is to be lowered to five and parents may send their children to school at four if they wish. There will be a regional education plan so that Waldorf schools may be limited to one for each region. There is also cause for concern in the

photo: Maria Austria



Nine-year-olds all aboard with Noah in Holland. *New communities have been created...*

Minister's determination to do away with classes and to introduce greater restrictions on the starting of new schools. English is to be a compulsory subject in the higher forms of the primary schools, a step which means the Waldorf schools will finally be subsidized for these lessons, but other modern languages are still excluded. Although at the moment the wording of the proposals is vague they are felt to be a threat to the freedom of the Waldorf schools, and by setting up working groups, involving parents, lobbying at all levels, they hope to exert some influence before the final decisions are made.

There is another side to the picture. The Waldorf schools are acknowledged, together with the Montessori schools, as an important source of educational innovation and the Minister refers to them as such. They are closely involved in ministerial projects and working groups with specific tasks regarding the future evolution of the Dutch educational system. Many proposals in the new act and ideas current in contemporary educational thinking follow principles established fifty years ago in the first Waldorf school: the curriculum must be child-centred and based on the development of the child, creative subjects are of great importance, and parents

must be closely involved in the life of the school.

Waldorf in the national consciousness

When the 1970 education act was formulated the Waldorf schools were caught somewhat unprepared, but from this a great deal has been learnt and since 1970 the developments within the movement have been astounding. Four years ago, a state recognized Waldorf teachers' training college (Vrije pedagogische Academie) was founded. The course lasts three years; no subsidy is received from the state and the college thus depends entirely on free contributions from the Waldorf school movement. In 1977-78, twenty-three students have graduated and joined many of the new schools.

Within the last five years through the birth of so many new and vigorous schools, the many contacts with the educational world and with officialdom, the increasing involvement and interest of parents, the success of the educational journal *Vrije Opvoedkunst*, the Waldorf movement has achieved a penetration into the national consciousness. Very few Dutchmen do not now know of Waldorf schools and of Rudolf Steiner.

Christopher Clouder, teacher and co-founder of a school in Holland, is now teaching at Michael House school in Derbyshire.

Reviews

THE SILMARILLION

by J. R. R. Tolkien: Published by George Allen & Unwin; £4.95

Hobbit fans and admirers of 'The Lord of the Rings' will be delighted at the advent of a new book by J. R. R. Tolkien. But be ready for disappointment if you are expecting more tales of the adventures of Bilbo, Frodo and Sam Gamgee, for you won't find them in *The Silmarillion*.

This book, published after the author's death by his son, is a collection of 'legends' relating to times earlier than those of *The Lord of the Rings* — the Elder Days or First Days as Tolkien calls them. They form a kind of mythology and tell of a world formed out of chaos by the power of the Music of the Ainur. They tell of a time of strife when the dwellers of Middle Earth made war on the Forces of Darkness for the recovery of the Silmarils. There is a beautiful description of the making of those three great jewels fashioned by the Elves and containing the deepest secrets of creation. But they brought about the destruction of that ancient world, for even their makers' hearts were bound to them, and ruin followed those who desired to possess them. This struggle forms the kernel of the tales and is the longest part of the book. But there is a shorter section dealing with the Ringbearers and the Rings of Power with a slight reference to the future and the part to be played by the Hobbits.

A feeling of ancient times

The work should not be compared with *The Lord of the Rings* which is complete in itself. One feels that this book is a collection of

thoughts and imaginations. They were written down over the past fifty years on scraps of paper and pencilled in note books. After the success of the Hobbit stories, Tolkien was asked for more and, while his patient publishers waited, he tried to sort out his notes into some order. Tolkien never completed this. He delved deeply into his imagination, even creating a new Elvish language with its own alphabet and syntax and it was left to his son to edit and publish these writings after Tolkien's death. This is the result. Beautifully written in a language (English!) that gives a real feeling of ancient times — one picture follows another in poetic harmony. The numerous names and changes of name are somewhat confusing. However, there are detailed genealogies and maps at the back which are helpful.

Is the book interesting? Yes, and gripping in some parts, but the last section seems to have been hurriedly put together and is incomplete.

Effort is needed to get into the spirit of the book but the reader is well rewarded for his initial struggle.

S.M.R.

THE PUFFIN BOOK OF GARDENING

by Mary Kelly. Puffin Books 1977, 50p.

This is an excellent little book, and should appeal to children and parents alike. In its clear, concise way it touches on every aspect of

gardening, from buying one's first packet of seed ("be sure and read the instructions on the back!") to cocooning the crocuses with black cotton in the spring.



The reader, young or otherwise, is taken encouragingly through the garden year, with suggestions of easy flowers to sow, how to cope with a few vegetables such as dwarf beans and peas, warnings (under "garden gloom!") about slugs, and sparrows and plagues of caterpillars, and how to compost your weeds. There are two fascinating chapters on miniature gardens, an aspect of gardening which has never before appealed to me. Here again the instructions are clear and cover all contingencies from precise quantities and kinds of earth, to suggested plants, dwarf conifers, and so on, for the container.

At the back of the book is a helpful list of seed-merchants and specialist books. The book itself is full of delightful illustrations which never become 'whimsy', a failing in many of the cheaper gardening books. It is really wonderful value at 60p, and I am sure will give its readers many days — and I hope years too — of happy gardening.

Roma Browne

THE LIVING EARTH

The Living Earth — The Organic Origin of Rocks and Minerals — by Walther Cloos, translated by K. Castelliz and B. Saunders-Davies from Lebensstufen der Erde. In his preface Walther Cloos writes:*

'In this book we have attempted to look at scientific fact concerning the world of rocks in the light which Rudolf Steiner has shed on all

spheres of human life and endeavour in his anthroposophy or spiritual science. Seen from this point of view the Earth is a living organism whose life is interwoven spiritually with the life of the heavenly bodies in the solar system and the whole realm of the stars. What has developed gradually within this life as the kingdom of nature — mineral, plant and animal — are stages left behind by the being which is the culminating goal of all Earth existence — *man*.'

The author is aware that his attempt to arrive at a comprehensible picture of the world of rocks contradicts the view currently held. The fact that this view has led to a 'Rape of the Earth' and the threat of atomic death may excuse the attempt with all its shortcomings. If we would prevent the premature end of the Earth through arbitrary and thoughtless actions of the present-day, we must come to a new conception of man and the Earth.

D.B.

*published by the Lanthorne Press, Peredur, East Grinstead, Sussex. 1978. £2.85

DER KÜNSTLERRISCHE UNTERRICHT IN DER WALDORFSCHULE: MALEN UND ZEICHNEN.

Margit Jünemann and Fritz Weitmann. Verlag Freihees Geistesleben. DM36.

Every School should have one . . .

The greatest revolution in modern education has perhaps been in the way colour has entered the classroom. The Waldorf schools who pioneered this development in 1919 have at last come up with a guide to the teaching of painting and drawing in a twelve year comprehensive syllabus. This beautifully produced volume has 30 coloured illustrations, which even for the non German reader give a guide to Goethe's theory of colour and Rudolf Steiner's indications about the educational effect painting can have for each age group. For the younger children, the three primary colours are used on wet paper

and the children discover the qualities of red, blue and yellow, while the teacher can learn a great deal about the temperament of each child as it reveals itself in the pictures. Therapeutic exercises follow and a wide variety of examples show how Geography, History and Religion can be taught via Art. The Form Exercises balance the work with water-colours; black and white drawings and perspective balance earlier painting techniques, so that after twelve years a mastery of all different possibilities is experienced by the pupils. A profound understanding of the need for creative activities throughout the school years is expressed in this outstanding book.

S. Alexander.

CONVERGENCES: RECUEIL d'ARTICLES by Samuel Roller. Peter Lang. ISBN 3-261-03080-1.

Like his compatriots Jung and Piaget, Professor Samuel Roller, who was Co-Director of the Geneva Institute of Education with Piaget, has throughout his experimental education research career remained loyal to science. This he shows clearly and at times passionately in *Convergences*, a just published selection of his articles that have appeared in various learned journals over the seven years before his recent retirement.

These articles, each now prefaced with a reflective comment, cover a wide range of topics, including the aims and methods of teaching specific subjects, the aims of education as a whole, the political and social parameters of educational research, and the thorny question of the individual state teacher's own outlook if and when it conflicts with the demand that he be "neutral".

Dr. Roller has trodden the path of the scientific discipline which Rudolf Steiner holds is essential as preparation for the wider vision on which the future of education, not to say of the world, depends. *Convergences* reveals that its author has reached the point where that discipline can be carried further with undiminished precision but with enhanced faculties of perception, into fields it

has hitherto been unwilling and unable to explore.

Frank Newell.

VON DER ZEICHENSPRACHE DES KLEINEN KINDES by Michaela Strauss Verlag Freies Geistesleben DM28.

A beautiful book, full of profound insight into the child's 'language' of drawing, from the first dynamic action-drawing onwards; the results of over forty years' study; eighty-five illustrations, twenty-five of them in colour.

ERRATUM: There was a mistake in the hand-written poem *The Ways of the Whale* in our last issue. The fourth line should, of course, read: His breath is like a fountain gushing through the air.

Forum International seeks to further the freedom of education, which it sees as the seedbed for a free cultural-spiritual life. It seeks also to foster understanding between young and old alike. (It is published in English, Dutch and German each edition possessing its own editorial board and its own specific centre of gravity.) Subscriptions per annum: £1.50 (3 issues) to J. C. Lin, 129 Highlands, Green Lane, Watford, Herts, G.B.

World List of Waldorf (Rudolf Steiner) Schools

ARGENTINE

Buenos Aires Colegio Paula Alberacín de Sarmiento
Wernes 1322, 1602 Florida, Provincia de Buenos Aires. Tel.: 797-9248
Buenos Aires Escuela Waldorf, Ituzaingo 368, San Isidro. Peia. Buenos Aires. Tel. 743-2812

AUSTRALIA

Dural Lorian Novalis School for Rudolf Steiner Education, 456 Old Northern Road, Dural, N.S.W. Tel.: 651 1891
Melbourne Rudolf Steiner School, Melbourne, 213 Wonga Road, Warramwood 3134, Victoria
Sydney Glenaeon School, 5a Glenroy Avenue, Middle Cove, Sydney, N.S.W. 2068, Tel.: 4073193

AUSTRIA

Vienna Rudolf Steiner Schule, Endresstr. 100, A 238 Vienna 23 Tel.: 88 12 75

BELGIUM

Antwerp Rudolf Steiner School, Charlottalei 29 & 3, B2000 Antwerpen. Tel.: (031) 30 25 89
Antwerp Parcivalschool, Lamorinierestr. 75, B2000 Antwerpen. Tel.: (031) 37 89 88
Antwerp Hibernia School, Prins Albertlei 19, B2000 Antwerpen. Tel.: (031) 30 50 40
Antwerp Parcivalschool, Lamorinierestr. 75, B2000 Antwerpen. Tel.: (031) 30 24 44
Bruxelles Ecole Rudolf Steiner, 227 Av. Moliere, B1060 Bruxelles. Tel.: 343-17-37

BRAZIL

Sao Paulo Escola Rudolf Steiner de Sao Paulo, Caixa postal 21, 108, Rua Job Lane 900, CEP 04639, Sao Paulo/Brasil. Tel.: 247 87 92

CANADA

Toronto The Toronto Waldorf School, Box 220, 9100 Bathurst St., Thornhill, Ontario L3T 3N3, Tel.: (416) 881-1611
Vancouver Waldorf School, 2725 St. Christopher Road, North Vancouver, British Columbia, V7K 2B6, Tel.: (604) 985-7435

DENMARK

Aarhus Rudolf Steiner Skolen, Strandvejen 102, 8000 Aarhus C. Tel.: (06) 14 09 00
Kopenhagen Vidar Skolen, Rudolf Steiner Skolen, Brogårdsvej 61, 2820 Gentofte, Tel.: Ge 7118 (Rudolf Steiner-Skolen i Gladsaxe, Krogshøjvej 53A, DK 2880 Bogsvoerd, Tel.: (02) 98 9821
Odense Rudolf Steiner Skolen i Odense, Lindvedvej 64, 5260 Hjallesø, Tel.: (09) 14 46 83
Vejle Rudolf Steiner-Skolen, Gronlandsvej, DK7100, Vejle, Tel.: (05) 88 17 97
Vordingborg Rudolf Steiner Skolen, Kirke, Vordingborg, Tel.: (03) 77 43 49

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Troyes Ecole Perceval de Copainville, F 10000 Troyes
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Benefeld Freie Waldorfschule Landschule Land-schulheim Benefeld, 3036 Bomlitz-Benefeld, Tel.: (05161) 4021 u. 4022
Berlin Rudolf Steiner Schule, 1 Berlin 33 (Dahlem), Auf dem Grat 3, Tel.: (030) 832 70 86
Berlin Emil Molt, Freie Schule für Erziehungshilfe 1 Berlin 37 (Zehlendorf), Claszeile 60-66, Tel.: (030) 815 57 57
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Braunschweig Freie Waldorfschule Braunschweig, Kralenriede 73, Tel.: 0531/352200
Bremen Freie Waldorfschule Bremen, 28 Bremen 1, Toulser Strasse 3, Tel.: (0241) 44 78 02
Dortmund Rudolf Steiner Schule, Mergelsteichstrasse 45, 4600 Dortmund 50, Tel.: (0231) 71 38 98
Engelberg Freie Waldorfschule Engelberg, 7065 Engelberg Post Winterbach/Wurt., Tel.: (07181) 704-1
Essen Freie Waldorfschule, 43 Essen 1, Schellstrasse 47, Tel.: (0201) 47 39 58
Esslingen Freie Waldorfschule Esslingen, Zweig-schule Engelberg, Geschäftsadresse: Landenberg-strasse 28, 7300 Esslingen, Tel.: 0711/31 46 15
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Freiburg Freie Waldorfschule, Parallellzug St. Georgen, 78 Freiburg, Zechenweg 2, Tel.: (0761) 412 14
Göppingen Freie Waldorfschule Filstal, 7341 Auendorf/Bad Ditzgenbach, Tel.: (07334) 5601
Hamburg Rudolf Steiner Schule, 1 Hamburg 70 (Wandsbek), Wandsbeker Allee 55, Tel.: (040) 68 50 00
Hamburg Rudolf Steiner Schule, Nienstedten, 1 Hamburg 52, Elbchaussee 366, Tel.: (040) 82 99 17
Hamburg Rudolf Steiner-Schule in den Waldorffern Hamburg-Bergstedt, 2 Hamburg 65, Bergstedter Chaussee 203, Tel.: (040) 6047090
Hannover Freie Waldorfschule, 3 Hannover, Rudolf-von-Bennigsen-Ufer 70, Tel.: (0511) 88 01 38 (Kindergarten: 88 37 71)
Heidenheim Freie Waldorfschule, Ziegelstr. 50, 7920 Heidenheim, Tel.: 07321/41038/39
Homburg/Saar Freie Waldorfschule, Parkstrasse, 6652 Bexbach, Tel.: 06826/32 60
Karlsruhe Freie Waldorfschule Karlsruhe, Im Eichbaumle 1a, 7500 Karlsruhe 1, Tel.: 0721/68 80 81
Kassel Freie Waldorfschule Kassel, 35 Kassel-Wilhelmshöhe, Hunrodtstr. 17, Tel.: (0561) 3 20 15
Kiel Freie Waldorfschule Kiel, 23 Kiel 1, Hotholz-allee 20, Tel.: (0341) 52 38 14
Krefeld Freie Waldorfschule Krefeld, 415 Krefeld, Kaiserstrasse 61, Tel.: (02151) 5 31 57
Loheland Rudolf Steiner Schule Loheland, 6411 Kunzell 5b Fulda, Tel.: 0661/6909
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Mannheim Freie Waldorfschule, 68 Mannheim 24, Neckarauer Waldweg 131, Tel.: (0621) 85 1081
Marburg Freie Waldorfschule, 355 Marburg/Lahn, Ockershauser Allee 14, Tel.: (06421) 2 52 56
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Nürtingen Rudolf Steiner Schule, Nürtingen 7400 Erlengweg 1, Tel.: (07022) 31767
Ottersberg Freie Rudolf Steiner Schule, 2802 Otters-

berg 1 Amtshof 5, Tel.: (04205) 366

Pforzheim Goetheschule — Freie Waldorfschule, 753 Pforzheim, Schwarzwaldstrasse 66, Tel.: (07231) 2971-3

Rendsburg Freie Waldorfschule, 237 Rendsburg, Nobiskruger Allee 75/77, Tel.: (04331) 2 35 51
Reutlingen Freie Georgenschule, 741 Reutlingen, Moltkestrasse 29, Tel.: (07121) 3 65 04

Schloss Hamborn Rudolf Steiner Schule, Landschulheim Schloss Hamborn, 4/91 Borchon 3 — Schloss Hamborn, Tel.: (05251) 38 92 10

Stockach Freie Schule des Pestalozzi-Kinderdorfes Wahlwies, 7768 Stockach 14, Tel.: 07771/2036

Stuttgart Freie Waldorfschule Uhlandshöhe, 7 Stuttgart 1, Haussmannstrasse 44, Tel.: (0711) 24 02 41 (Kindergarten: 24 02 75)

Stuttgart Freie Waldorfschule am Krahewald, 7 Stuttgart 1, Rudolf-Steiner-Weg 10, Tel.: (0711) 29 18 20 (Kindergarten 22 47 47)

Stuttgart Michael Bauer Schule, (mit Förderklassen) 7 Stuttgart 80, Othellostrasse 5, Tel.: (0711) 73 46 36

Tubingen Tubingen Freie Waldorfschule, 74 Tubingen, Frischlinstrasse 4, Tel.: (07071) 2 21 19

Überlingen Freie Waldorfschule am Bodensee, 777 Überlingen-Rengoldshausen, Tel.: (07551) 6 30 77-78

Ulm Freie Waldorfschule Ulm, 79 Ulm/Donau, Romerstrasse 97, Tel.: (0731) 3 80 94

Wahlwies Freie Schule in Pestalozzi Kinderdorf Wahlwies, 7768 Stockach 14, Tel.: 07771/20 36

Wanne-Eickel Hiberniaschule, 469 Herne 2, Holsterhauser Strasse 70, Postfach 2849, Tel.: (02325) 4 10 81

Witten Rudolf Steiner Schule Witten, 2.Zt. Mergelsteichstrasse 45, 4600 Dortmund 50

Würzburg Freie Waldorfschule Würzburg, 87 Würzburg-Hdfl, Oberer Neubergerweg 14, Tel. 0931/8 66 20

Wuppertal Rudolf Steiner Schule, 56 Wuppertal 2 (Barmen), Schluchstrasse 21, Tel.: (0202) 8 12 33 (Kindergarten 8 33 71)

Wuppertal Christian Morgenstern Schule, Schule für Erziehungshilfe, 56 Wuppertal 2 (Barmen), Haderslebenerstrasse 14, Tel.: (0202) 8 26 44

ITALY

Milano Fondazione Lavinia Mondolfo, Scuola a indirizzo pedagogico steineriano, Via Francesco Sforza 23, Milano, Tel.: (02) 79 54 88

NETHERLANDS

Alkmaar Vrije School, Drechterwaard 12, NL Alkmaar.

Almelo Vrije School Twente Binnenhof 53, NL Almelo, Tel.: 05 490/603 43

Amsterdam Geert Groote school, Hygieaplein 47, Amsterdam, Tel.: (020) 71 47 53

Bergen De Vrije School, Prins Hendriklaan 58, Bergen, Tel.: (02208) 3613

Breda Rudolf Steiner School, Minckelerstraat 27, Breda, Tel.: (076) 81 01 76

Bussum Vondelschool, Oud Bussumerweg 22, Bussum, Tel.: (02159) 12698

Driebergen Vrije School, Rijsenburgelaan 14, Driebergen, Tel.: (03438) 3856

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Gouda De Vrije School Gouda, Aalberseplein 5, Gouda, Tel.: (01820) 13278

Groningen De Vrije School, Hoornse Diep 72, Groningen, Tel.: (050) 25 27 54

Den Haag De Vrije School, Waalsdorperweg 12, Den Haag, Tel.: (070) 24 73 20

Haarlem Rudolf Steiner School, Engelandlaan 2, Haarlem, Tel.: (023) 34 34 69

Krimpen a/d IJssel De Krimpener Vrije School, Arena 20, Krimpen, Tel.: (01807) 19776

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Middelburg De Vrije School Zeeland, Beneluxlaan 12, Middelburg, Tel.: (01180) 15643



Michael Mount Waldorf School, Bryanston, Nursery School building South Africa . . .

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Rotterdam De Rotterdamse Vrije School, Vredhofweg 30, Rotterdam, Tel.: (010) 11 65 19
Wageningen Vrije School, Ritsema Bosweg 7a, NL Wageningen, Tel.: 08370-12027
Zeist De Zeister Vrije School, Burg van Tuyllaan 35, Zeist, Tel.: (03404) 12054
Zoetermeer De Vrije School, Kerkebos 14, Zoetermeer, Tel.: (079) 21 3994
Zutphen De Vrije School Zutphen, Berkelkade 12, Zutphen, Tel.: (05750) 16380

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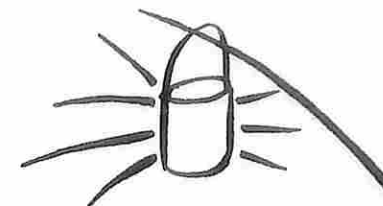
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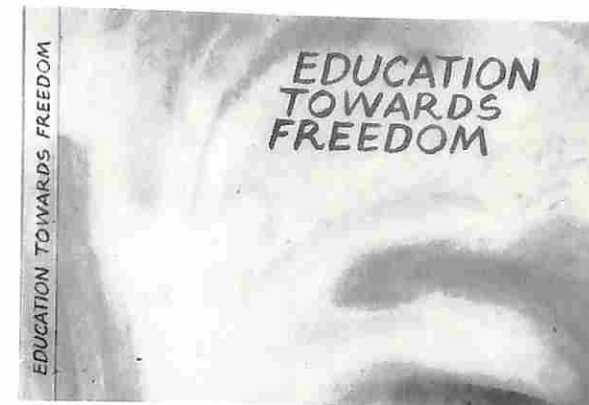
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