

The Scholar



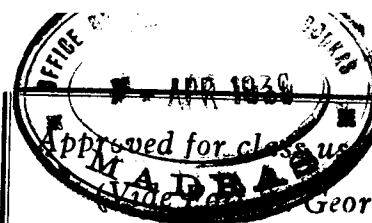
NOVEMBER & DECEMBER 1938

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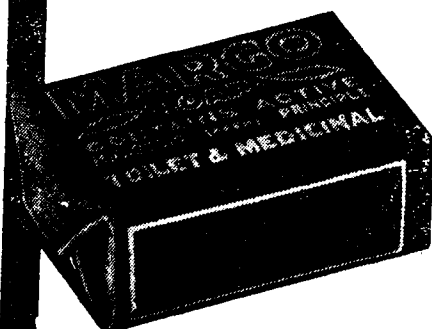
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THE SCHOLAR

NOVEMBER—DECEMBER 1938

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Nos. 2 & 3.

Sacred Ashrams

By NICHOLAS ROERICH



AILASA, Manasarowar, Badrinath, Kedarnath, Triloknath, Ravalsar—these glorious gems of the Highest always fill the heart with special blissful tremor.

When we were within a day's journey from Manasarowar the entire caravan already became uplifted—thus far around does the aura of a holy ashram act.

Another vivid recollection arises from the path to Triloknath. A long line of Sadhus and Lamas stretches along this road—the old sanctuary, the site of pilgrimage and prayer. These pilgrims have met here from many different roads. Some already completing their spiritual journeyings, are walking along with a trident; some carry bamboo staffs; others are without anything, even without clothing. And the snow of the Rotang Pass is no impediment for them.

The pilgrims proceed, knowing that the Rishis and the Pandavas dwelt here. Here is the Beas of Vyas; here is Vyasakund—the place of the fulfilment of all wishes. Here, Vyasa Rishi compiled the Mahabharata.

Not in legend alone, but in reality, did the great Rishis live here. Their presence breathes life into the cliffs which are crowned with glaciers, into the emerald pastures where the yaks graze and into the caves and the roaring torrents. From here were sent forth those spiritual calls of which humanity has heard through all ages. These calls are taught in schools; they have been translated into many languages—and this crystal of acquisitions has been stratified on the cliffs of the Himalayas.

"Where can one find words with which to praise the Creator, after seeing the incomparable beauty of the Himalayas?" sings the Hindu. Along the paths of Guru, along the peaks of the Rishi, along the mountain paths of the pilgrims of the spirit, lies that treasure, which no torrent of rain can wear away, nor any lightning turn to ashes. He who walks towards the Good is blessed on all paths. How touching are all the narratives which tell of the meeting of the righteous ones of various nations. The tops of the deodars in the forest touch each other in the wind. Thus, everything that is of the highest meets without injury and harm. Time was when quarrels were settled by single combat and decisions were reached by a conference of chiefs. So do the deodars discuss matters between themselves. What a meaningful word: deodar—the gift of God. And this significant name is not without reason; for the resin of the deodar has healing powers. Deodar, musk, valerian, roses and other similar substances comprise the beneficent medicines of the Rishis. Some have wanted to do away with these medicines by substituting an invasion of new discoveries; however, humanity again reverts to the foundations.

Here is a photograph of a man who walks through fire without harming himself. This is not a fiction. Witnesses will tell you of the same trials by fire in Madras, Lucknow, Benares. And not only does the Sadhu walk harmlessly on the flaming coals, but he leads behind him those who desire to follow him and hold on to him.

In Benares a Sadhu sits in sacred posture upon the water of the Ganges. His crossed legs are covered by the brim of the water. The people flock to the banks, amazed at the holy man.

Still another Sadhu has been buried alive for many days; another swallows various poisons without any harm. Here is a Lama, who can levitate himself; another Lama by means of 'tumo' can generate his own heat, thus protecting himself against snow and mountain glaciers; there a Lama can give the death stroke with his 'deadly eye' to a mad dog. A venerated Lama from Bhutan relates, how during his stay in the Tzang district in Tibet, a Lama asked the ferry-man to take him across from Tzampo free of charge, but the cunning man replied, "I will gladly take you over, if you can prove that you are a great Lama. A mad dog is running about here doing great harm—kill it." The Lama said nothing; but looking at the dog, he raised his hand and said a few words and the dog fell dead! The Bhutanese Lama saw this himself. One hears frequently in Tibet and in India of the same "deadly eye" and the "eye of Kapila". And on a map of the XVIIth century printed in Antwerp by authority of

the Catholic clergy, is mentioned the name of the country, Shambhala.

If one can walk through fire, and another can sit on water, and a third remain suspended in the air, and a fourth repose on nails, and a fifth swallow poison and a sixth kill with a glance and a seventh lie buried without harm, then one may collect all those grains of knowledge in himself. And thus the obstacles of lower matter can be transmuted! Not in a remote age, but now, right here where Millikan's cosmic rays, Rhine's thought transference and the reality of finest psychic energy are also being studied and affirmed.

Every Rishi pronounced in his own language the sacred pledge for the construction of a revived, refined and beautiful world!

For the sake of a single righteous being, a whole City was saved. As beacons, lightning rods, and citadels of Good, stood the Rishis of various nations, of various creeds of various ages yet one in the Spirit of salvation and ascension for all!

Whether the Rishi came upon fire, whether he arrived home upon a stone, whether he came upon the whirlwind—he always hastened for the general Good. Whether he prayed on mountain summits, or on a steep river-bank or in a hidden cave, he always sent out his prayers for the unknown, for the stranger, for the labourers, for the sick and the crippled.

Whether the Rishi sent out white horses to save the unknown pilgrims or whether he blessed unknown sea-farers, or guarded a city by night, he always stood as a pillar of light for all, without condemnation and without extinguishing the flame.

Without condemnation, without mutual suspicion, without weakening each other, ever upwards, the Rishis ascended the eternal Mount Meru.

Before us is the road to Kailas. There rises one of the fifteen wonders described in Tibetan books: The Mount of the Bell! Along sharp ridges one climbs to its summit. It stands higher than the last junipers, higher than the last yellow and white mountain ranges. There Padma Sambhava once walked—this is recorded in the ancient monastery Gando—La. It is exactly here that the caves of Milaraspa are situated. And not one but many have been sanctified with the name of the hermit, who hearkened before dawn to the voices of the Devas. Here also are the spiritual strongholds of Gautama Rishi. Not far away are also legends which surround Pahari Baba. Many Rishis walked here. And he who gave the mountain its enticing name "Mount of the Bell"

also thought of the call of the Bell for all, of helping all, of the Universal Good !

Here Rishis lived for Universal Good !

When Rishis meet on the mountain paths they do not ask each other : " From where do you come ? " Is it from the East, or West, or South or North ? This is quite apparent : that they come from the Good and go to the Good. An exalted refined flaming heart knows where is the Good and in what it can be found.

Some of the travellers in our caravan were once discussing the qualities of the various Rishis. But a grey-haired pilgrim, pointing to snowy peaks, effulgent in their complete beauty said :

" Are we to judge the qualities of these Summits ? We can but bow in admiration before their unattainable splendour !

" Satyam, Shivam, Sundaram "

Spiritualism in India

By G. C. SAJNANI, B. A., LL. B., KARACHI



R. HORACE LEAF, the well known medium and clairvoyant of London, in one of his letters to me, wrote :—
" It would help me much if you told me more about the psychological attitude of your race to religion. We have only a hazy idea of the Indian mind on such matters. All kinds of remarkable stories of an occult and magical nature pass around, leading the ordinary person to think that India is full of people who know all about the ' next world ' "

The difficulty in India, just as it is abroad, is the inability to grasp the real meaning and aim of Spiritualism. At the best, it is vaguely understood. To the masses it is taboo for one reason or another, or for a whole dozen reasons together. To the few stimulated into interest, it is something sacred, but these are very few indeed. There is an intermediate section who, having grasped the possibility of contacting the " dead," whom they regard as super beings, omniscient, God-like, rush in where angels fear to tread with Planchette and Ouija Board to tap their oracles for their chances on the Stock Exchange, and Race Course. In some instances, by some happy fluke, the predictions have proved correct. The result is that the jubilant tapper of the awesome Unknown has bruited his fortune abroad. And so on goes the merry work of spreading a cult that hides its perilous head beneath the head of Spiritualism.

Another aspect of the picture shows the religious bigot, the sceptic, and the superstitious. The Hindu religion teaches almost the same things as Spiritualism. It has principles running parallel to nearly all of those of Spiritualism. It teaches survival after death, the reality of the Spirit existence. It has a lofty philosophy, but like other religions, it has lost the spirit for the letter, the soul for the ritual.

Hindus believe in re-incarnation, and there have been striking cases of memory of a former incarnation to support the belief. So the Hindu is inclined to regard the spirit realm as a *caravan-sarai*, and not as the permanent abode of spirit people. It is ridiculous to him to be expected to believe there are homes, gardens, rivers, mountains, and all the natural beauties of this world but in a greater degree. " Why should migratory souls need homes ? " he perplexedly asks. Tell him that spirits have real bodies which, in their own spheres of being, are as tangible and substantial as ours are on earth, and he smiles incredulously,

for, what need have spirits for bodies when they must need return to a body on earth?

India has a dearth, nay, a veritable famine of mediums, so the difficulty of solving these mistaken notions cannot be handled adequately. If there were physical mediums capable of demonstrating materialisations that can be tested, felt and tried, as have been done abroad, the nebulous dream of airy beings of the Hindu idea of spirit life would be dispelled.

And why should this India, the land of Yogi, the Fakhir, and the Mystic, not have any mediums? It does seem a strange situation. India has her purdah system, her prejudices, her fanatical conventionality. Only those who have laboured and broken their hearts to abolish these ideas can understand the Indian abhorrence for publicity of its women. Mediumship, as all spiritualists know, preponderates in this sex. But which respectable Indian father or husband will gladly consent to his daughter or wife taking up public work, should she discover she has the God-given gift of mediumship? Indian women themselves are new to the semi-freedom from the influence of the veil, that they themselves shrink from public gaze and comment. They cannot be blamed. They are but the products of a system.

The sceptic, it is superfluous to portray, is familiar even in England, but here with less excuse, for, in India he knows of his Yogis, Fakhirs and the Mystics who come out of their mountain fastnesses and forest retreats to walk among men like echoes of India's one-time spiritual glory.

The religionist has his "isms". To him it is anathema to talk with the dead. At the best, to contact the "dead" is no cause for jubilation, for he contends that only the restless, those needing prayerful and ceremonial assistance return to communicate with those left behind. A friend told me that he had a sitting with Mr. Rishi and received a loving message from his father. It was so thrilling that he rushed home to tell his grand-father all about it. The old man was quite perturbed upon hearing the news and remarked that some religious ceremonies must at once be performed to free the soul from earthy attachments which, he said, were manifest by the fact that he communicated with the son.

There are others of the religious sort who hold that it is harmful to our loved ones when we communicate with them. It does not occur to them that if it were harmful, nothing we could do would force these spirits to return.

The superstitious have it the reverse way. It is harmful to us to communicate with the spirits of the departed. A highly educated

friend of mine has such a curious mentality that he avers that it is detrimental to his health even to sit in a room where others are sitting with the object of obtaining light and guidance from the other side. Another says it is unlucky to use a planchette, table or Ouija Board.

Then the man looking for thrills, or a new sensation, takes up what he thinks is Spiritualism, and under that name, forms a cult of fortune-telling; or under the guise of spiritual healing, sets up a money-making business, whether he has the gift or not. This does not mean there are no genuine healers in this country, for India has her healers like any other country. But they are a sadly discredited band.

Recently a "Spiritualistic Society" has been started in this city by a set of unemployed youths. Its big, high-sounding name promises much, but that is as far as it goes. They have neither a medium nor any other necessary means of spreading a great truth; no qualifications, and sadder still, no knowledge of the subject they have set out to demonstrate. They sit with a planchette off and on, at any odd time, at their sweet will and pleasure, and confine their questions to the success or failure of litigations and other affairs of a like earthly nature. None of them desire to be spiritually educated, or welcome the advice of those who would warn them against the dangers they run.

As everywhere else where interest has been stimulated, people are more interested in the phenomenal aspect rather than the philosophical side of Spiritualism, and it is a painful fact which I and others know from experience that, where no demonstration of psychic phenomena can be given, the most stirring, the most convincing of arguments falls flat.

And India has only one public Medium—Mrs. Rishi; in other countries there are numbers of mediums—spiritualistic churches, centres and all facilities to help enquirers. In India there are no facilities for developing mediumship, though undoubtedly there is psychic power in this country. There are no societies, no trance mediums, voice mediums, or any sources of help. One has, therefore, necessarily to adopt the only method possible, the much described planchette and Ouija Board.

The only propagandist for Spiritualism in this country is Mr. Rishi, and his difficulties are indeed great. Mr. Rishi is making a superhuman effort to spread the facts of Spiritualism, but is unable to teach the people the higher philosophy, and is reduced to giving them just what they want—proof of survival, because they do not understand anything else. They regard a Spiritualist merely as a means of talking to the "dead".

Mr. Rishi needs help. India needs Spiritualism, real Spiritualism, and not the imitation that it is taken to be. The fair name of this ancient country is be-smirched by communal unrest. Bloodshed and arson are committed in the fanatical cause of religion. There is no spirit of brotherhood. The contesting sects do not follow the higher teachings of their prophets and philosophers. Let us, then, prepare India to receive the message of peace and goodwill that Spiritualism gives. It is the only means of uniting this vast but divided country into one whole.

We need fluent speakers capable of demonstrating by evidence the great truth for which we stand. And if India must foster or raise her own mediums, we must have developing classes. We must have somebody experienced in running them.

There is only one Spiritualist Society in India, as far as I am able to ascertain, and that is in Bombay and known as "The Indian Spiritualist Society". And it is the outcome of the labours of that indefatigable friend of India, Mr. Rishi.

Practically no books or Spiritualistic papers are to be had out here, except the Bombay Bulletin published by Mr. Rishi, and the journal named "Parloka" published in Hindi. The editor of the latter works under tremendous difficulties, financial and otherwise, for it has a paucity of subscribers, and part of the trouble is due to the language difficulty. We would gladly welcome any honest controversy, for such controversy would stimulate public thought and interest, but for some strange reason the newspapers seem to be afraid of controversy here. Lacking this publicity relevant to the facts and fundamentals of Spiritualism, this country has the queerest ideas regarding the subject. It is the cause of most of the misunderstanding.

The Hindu religion is quite clear regarding the spiritual nature of man. This world again and again has been emphasised upon as a mere inn, where we stay for a short time, and then go on to the Other World, where our place and rank will be determined by the life we have led on earth.

At least five of the Seven Principles of Spiritualism are clearly given as rules of conduct in the Hindu Scriptures. There are various ceremonies for the "dead", which rest upon the clear assumption that the "dead" do live again in another world, and that they are in touch with those left behind.

In spite of this, the Hindus are a bundle of contradictions. They do not know where they stand. Every individual has his own peculiar notions, and what will satisfy one will not satisfy another.

When a Hindu "dies", we say he has gone to Parloka, (the other world) and thenceforth we prefix his name with "Parlok-wassi" or "Swargawassi" (the resident of heaven). And yet, though running so closely to Spiritualism in religious ideal, Hindus hold the oldest beliefs.

The masses need educating in the real meaning of life and death, the dabblers, in the real meaning of Spiritualism, which also applies to the prejudiced and the sceptical. But at the present stage, I personally believe that it is hardly wise to carry on a work of propagation among the general public. The masses are attracted by phenomena only, which for lack of properly trained mediums we cannot demonstrate. An endeavour should first be made to form a society in every leading city, a society of earnest seekers who would meet to discuss and study the problems that face the future propagandist.

A few lectures then could be arranged, once we have discovered individuals fit for this duty. Not lectures on the public platforms but at some clubs, associations or gymkhanas. At these places we will meet respectable and educated members. Discussions then should be invited and they should be asked to offer their own views about the fate of the "dead". If they feel interested, as I am sure they are bound to be in this important subject which concerns every man and woman, books and journals and other papers such as 'Two Worlds', 'Light' and 'Psychic News' could be lent them for further enlightenment. Such papers will indeed astound them; they will at least begin to 'think' on reading the accounts of this movement in Europe. We should give them an intellectual 'kick' and arouse them from their lethargic slumber and indifference. The masses will then easily follow them.

But the principal consideration, and the crying need is that a medium of some experience should come to India to start and finish a developing circle, with the idea of training one or two or as many mediums as possible to carry on the more important work of propaganda in the future, which mediums, in turn, will be competent to start other developing circles and train still more mediums to help the growth of this much-needed knowledge. Such candidates can be found among the Parsee and Anglo-Indian communities, if not among the Hindus and Moslems.

With these ideals fulfilled, I am hopeful of much. Hinduism teaches noble ideals, and the people do not know that Spiritualism teaches the same. Once they grasp this fact there will be a marked improvement.

What is Radio Broadcasting ?

By K. SREENIVASAN, B. Sc., A. I. I. Sc., A. M. I. E. E.,
Mem. I. R. E., Mem. A. I. E. E.

*A short imaginary conversation between RE (Radio Engineer)
and LF (one of his lay friends).*

[Note:—In the attempt below to supply a brief answer to the question, "What is radio broadcasting?" in a manner that can be understood by an interested non-technical reader, strict accuracy in defining and describing essentially scientific and technical terms and functions was found very difficult. For this inability, I have to crave the indulgence of the reader.]

RE—Would you like to hear something on the radio? Shall I switch on the receiver?

LF—Yes, there might be something interesting. But how does it all happen; a person talking and singing at one place to be heard by thousands of persons at large distances from him sound quite mysterious?

RE—I shall try to give a brief idea. Consider, for example, what happens when either of us speaks and the other listens. The vocal chords, the tongue and the lips co-operate in performing a series of complex movements in acting on the breath and controlling its movements. These result in setting the surrounding air into a corresponding series of vibrations.

LF—But what is vibration in the air?

RE—Just this: as the physicist would put it, the various vocal organs bring into existence by their movements, pulses of pressure and rarefaction in the air; these pulses are handed on from one point to another and thus spread away all round. A pulse of pressure along with that of rarefaction next to it constitutes a sound wave.

LF—Are these similar to what one sees on a sheet of water?

RE—No. In the case of water, the motion or movement of the wave is perpendicular to the water surface along which it travels in expanding circle; in the case of air, the wave motion is longitudinal, along the direction of travel. But in both cases, it is the disturbance or wave that travels, not the substance itself, whether it is water or air.

LF—Yes, I have noticed that on water; the water as a whole hardly moves although the little humps and shallows move on rapidly in expanding circles. But is air necessary for sound to travel?

RE—Absolutely essential; sound is a form of energy which requires a material medium to travel in. I would recall the

simple school experiment of an electric bell kept inside a glass dome on the bed plate of an air pump. As the pump works and air is withdrawn, the sound from the bell gradually diminishes to silence; yet one can see that the bell continues to strike as vigorously as ever.

LF—Yes, I remember it well; it was quite intriguing.

RE—The sound vibrations in the air spread round travelling at the rate of about 1100 feet per second and ultimately reach the ear of the listener. When a person speaks, the voice energy is exceedingly small; and the amount that reaches the ear is but a minute fraction of it. But the mechanism of the ear is so wonderfully delicate and sensitive that it responds to incredibly small sounds as well as to extremely loud ones. With its help, the brain registers both the volume and character of the sound impinging on it.

LF—But what has all this to do with broadcasting?

RE—I was using the transmission of sound as an analogy. In the case of radio broadcasting, the microphone and the radio transmitter correspond to the mouth; the medium of transmission is the all-pervading ether; the receiving aerial, the receiving apparatus and the loud-speaker correspond to the ear. They form the links of the chain. If any of them fails to work satisfactorily the listener is the loser; he will not be able to hear anything.

LF—What is a microphone?

RE—It is an electro-acoustical instrument. When a person speaks before it, the air vibrations set up by the speaker impinge on the face of this delicate instrument and cause a change in its electrical conditions; the nature of this change depends upon whether the instrument is a carbon, electro-magnetic or electro-static microphone. The sound energy falling upon the microphone is very small; and the electrical changes produced by it are therefore of exceedingly tiny magnitudes. These are magnified by well designed amplifiers using thermionic vacuum tubes.

LF—So the microphone causes a transformation of energy from acoustic to electrical?

RE—In effect, it is not incorrect to say that.

LF—What do you do with what you obtain from the amplifier?

RE—The output from the amplifier is put on to a good pair of telephone lines connected to the radio transmitter, which is installed at some distance on a fairly high spot free from obstructing trees and tall buildings in the vicinity.

LF—I suppose the radio transmitter is some sort of an electrical apparatus.

RE—Yes, it is a rather elaborate type of very special apparatus to generate electric power.

LF—Is there any reason why you should not use the usual electrical machinery to do the work?

RE—I fear not. You will have occasionally noticed, specially in mills and factories, that the electric lamps flicker badly and hurt the eye. That is because the electric current changes or alternates its direction comparatively slowly. The flicker does not exist either with current from a battery or with current which alternates rapidly, say more than 40 times a second. The human voice when converted into an electric current by the microphone shows amazingly complicated variations. The frequency of these might range from 50 to 8,000 times a second. And in the case of women and children, the upper value goes up to 15,000 times a second.

LF—I did not know that the human voice was so complex. But what connection has this with the radio transmitter?

RE—I was about to remark that a radio transmitter used for broadcasting generates electric current which changes its direction vastly more rapidly anywhere about 200,000 times to many millions of times a second. No electric machine that we now know can do that, except the thermionic vacuum tube; and even that has a limit above which it cannot work. But there is probably no limit to the quantity of power that can be generated.

LF—I appreciate the point; please continue.

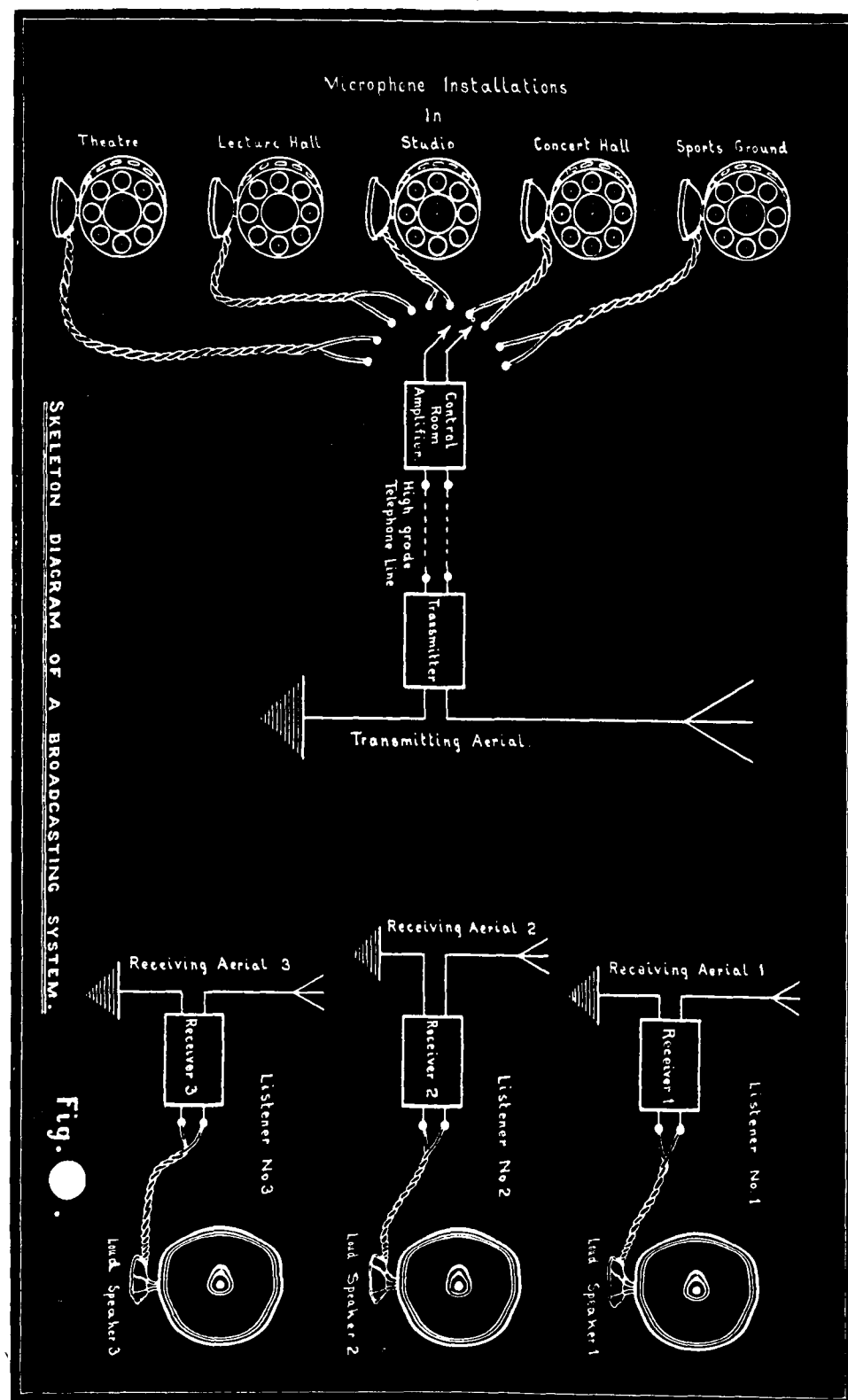
RE—The telephone line carrying the speech currents of the microphone is connected to the radio transmitter through the relevant apparatus, so that the lower frequency acoustic currents control or modulate the amplitude of the high frequency one of the transmitter. You can even speak of the speech frequencies as being superposed on the transmitter frequency.

LF—Do you suggest that high frequency electric currents travel faster than low frequency ones?

RE—No, that is not so. They are like two men walking together and covering a given distance in the same time. But the short person walks with quick short steps while his taller companion takes long strides. But under certain circumstances that we need not go into now, the reverse of what you say is true.

LF—What is the function of the tall masts near the radio stations?

RE—They support the aerial or antenna consisting of one or more copper wires which are electrically coupled to the output



end of the radio transmitter. By this means, the modulated high frequency electric power is transferred from the transmitter to the aerial and thence to the ether.

LF— I do not understand how electric power gets off from the aerial to the surrounding ether.

RE— Perhaps an analogy will be helpful, though it is really crude and grossly inaccurate. The aerial is like a catapult throwing electric boulders into the ocean of ether and creating electromagnetic waves in it. The efficiency of the aerial and the power put into it by the transmitter correspond to the size of the boulders.

LF— If that is so, why should not the speech currents themselves be the complication of high frequency power modulation?

RE— They can be; but your method is terribly wasteful; high frequency electrical energy can detach itself from the aerial and into space much more easily. It has, so to say, better "spring" or "take off". Aerial structures need only be of modest dimensions with high frequency currents. High frequency waves carry very much better. They are much less interfered with by spurious electrical disturbances so prevalent in the atmosphere. Even as things are, we are not free from various troubles due to vagaries in the behaviour of the transmission path.

LF— Surely the ether or whatever you call it behaves uniformly?

RE— That is so; but the energy which gets off from the aerial into the surrounding air as electromagnetic waves travels in the earth's atmosphere. The latter is of a very composite character, not merely in its chemical constitution but in its electrical and magnetic properties as well. The sun's light and the earth's magnetism, the seasons of the year and the condition of the earth's soil modify the physical properties and behaviour of the atmosphere very profoundly and this reacts on the radio waves passing through.

LF— Fading, interference, echoes, etc., are, I suppose, due to the variable conditions of these properties of the atmosphere? It appears to be somewhat of a miracle that the listener can get anything to hear at all under these conditions.

RE— That is so. We can now go on to the listener and his apparatus.

You will have noticed that a light straw on the surface of a calm sheet of water partakes of the transverse movements of the water at the point due to a wave travelling over it. Similarly, the receiving aerial of a listener has an electric voltage induced

in it by the travelling electromagnetic waves from the broadcasting station. At a great distance from the centre of disturbance, the intensity of the wave may be so small that a microscope may be found necessary to watch the movements of the light straw. In a rather similar manner, an amplifier is essential to magnify the minute induced electro-motive forces in the aerial. The receiving set connected to the receiving aerial not only magnifies these small voltages, but removes the radio frequency part giving only the acoustic frequency portion at the end.

A loudspeaker or a telephone is an electro-acoustical instrument too; the microphone may be said to convert acoustic to electrical energy; the loudspeaker and the telephone do the reverse. Thus a loudspeaker connected to the output end of the listener's radio receiver is acted upon by the acoustic or audio frequency currents and reproduces the programmes of speech, music or entertainment originating in the studio more or less faithfully.

LF—Is not what comes out of the loudspeaker exactly the same as that originating in the studio? Why do you say more or less faithfully?

RE—There are in all seven principal links in the chain between the persons before the microphone and the listener in his house. Each of them has its own peculiarities. The result is that perfectly faithful reproduction is impossible to attain. There are persons whose ears are so sensitive and accustomed to good music that they cannot bear to listen to broadcast music from the receiver. From their point of view, broadcasting is an outrage music. They think that it is far better that people should go without any music at all than that they should be served with music distorted even slightly. They call it vulgarisation and cheapening of a great art.

LF—That is very interesting; I can sympathise with that view. I have two more questions to ask you. First of all, what is a studio and why is it necessary?

RE—A programme is not always taken from a studio; it can be taken from any place of entertainment, such as a theatre, a lecture hall, a place of worship or an open air platform.

Ordinarily, our rooms and halls are not free from extraneous disturbing noises, of people walking and talking, of machinery and of those innumerable sources in the streets which come in through the window and the door. A studio is built to keep off these so as not to ruin the enjoyment of some serious piece of music or an important talk.

Secondly, public places of entertainment, except the open air without any surrounding buildings, are generally unsatisfactory from the acoustic point of view. The architects of our houses and our public places have, I fear, paid but insufficient attention to the question, in spite of the work of scientists like the Sabines and others. A programme coming from a place which is boomy or depressingly still prevents full enjoyment and appreciation of it.

This is not to suggest that there are no buildings at all which are satisfactory from the acoustic point of view. But such cases happen more by chance than by design.

In a studio, on the other hand, the walls, the floor and the roof are acoustically "treated", so as to obtain the best possible results. Drapery and materials developed from straw, seaweed, felt, cork, horse hair, etc., are used in the requisite proportions with painted wall and polished wood surfaces and decorated over to give a pleasing effect to the ear and to make the place cheerful and attractive to the eye.

It should not be forgotten that the acoustic properties of the room in which the loudspeaker of the listener is kept also contributes in no small measure to the enjoyment or otherwise of the listener.

LF—I suppose then that a room with hard, smooth, polished walls would be uninhabitable?

RE—Quite so; the reflections from these surfaces would persist for so long after the termination of each sound that speaking and hearing would be an exasperating experience and quite impossible.

LF—The other question which intrigues me much is this; in any progressive country to-day, there are numbers of radio broadcasting stations fairly close to one another. What is there to prevent them from muddling into one another and causing complete confusion? I do not suppose that the receiving equipment has the discrimination to pick and choose from amongst them.

RE—There are two methods of prevention; yet this question of the interference of stations is easily the most ticklish and baffling difficulty for the radio authorities of the world.

You know that the (natural) voices of no two persons in the world are the same; if these were not so, it would not be difficult to imagine the utter confusion the world would be in: life would be almost impossible. If nature has given a different voice peculiar to each person for easy intercourse, the radio authorities have mutually agreed to make the tone or more accurately the

frequency of each radio station different from those of the rest. Each has to stick as closely as possible to its authorised frequency on pain of penalty.

But the frequencies available are quite inadequate to give a satisfactory separate frequency to each station. Man's resources are very restricted. So, similar frequencies have to be allotted to a number of stations situated far away from each other and hence unlikely to cause interference.

The second method is also interesting. If two or three of your friends are talking simultaneously, you can always say who is who even with closed eyes without the assistance and co-operation of the eye; the ear can select out the voice of each person.

Similarly, in radio, there are certain devices which help to select out a station from amongst others in virtue of its particular and fixed voice or frequency. This valuable property of selection by "tuning in" of a station is helpful to a remarkable degree.

LF—How do you do this?

RE—Essentially, with a suitable combination of coils of copper wire and condensers. The latter consist of thin plates or laminae of copper or aluminium alternating with air, mica or paper. This thermionic vacuum tube is in this connection, a very valuable aid and quite indispensable.

LF—Thank you very much; I believe I have now obtained some notion of what broadcasting is. However, turn the receiver on and let us hear what is being sent.

Greater India

By RANGA RAO NIPPANI



N the twilight of recorded history, when India was young, her valiant sons sallied forth into the dark and impenetrable jungles of Malaya, Siam and Indo-China to the East, over the Himalayan and Karakorum snowy peaks to the North and North-West, over the broad expanse of the ocean to the South, and founded colonies of imperishable glory, which even to-day after several centuries of transition bear the indelible marks of the unique culture and civilization of ARYAVARTHA.

For a long time historians have been content to treat India as an isolated unit, and have held that the history of India should cease with its boundary lines. This treatment of history on a purely water-tight compartment basis is regrettable. The insurmountable natural barriers have never shut out India and Indians completely from the rest of the world. Traces of early communication between India and the other countries from the earliest times are a matter of common knowledge. But till very recently only a very few gave a thought to the significance and the need for the study of the "History of Greater India".

A casual observer of the march of events to-day notice that behind the scenes of struggle in European diplomacy, as between the "haves" and "have nots", the one significant factor that looms large is that of "colonial expansion". For colonies are to a growing empire what back-bone is to a human being.

Italy staked the resources of her empire for the conquest of Abyssinia. The flower of her youth and intellect lie low in the battle fields of Addis Ababa. She dyed the country red with the blood of innocent women and children.

Herr Hitler has once again carried the day. Sheer bluff has accomplished for him without the loss of a single soul what armaments could not do, and he looks ahead for the reclamation of lost colonies.

Japan launched upon a most inhuman war in China and while trying to get a little more elbow-room, she has broken her elbow. Nippon stands to-day perplexed at cross-roads between victory which is far off, and defeat which is nearer home.

India too had colonies of far wider extent and permanence than any of the modern powers—colonies which she acquired by peaceful methods, by the assimilation of her superior culture with those of the new, based upon the fundamental principles of Hindu culture which regards all beings as images of that divine energy forming one family, "Vasudevai Kuttumbakam."

India never presented herself to the outside world in the person of a world conqueror, a Caesar or a Napoleon, a Hitler or a Mussolini, carrying fire and sword at the head of a legion, bringing death and destruction to many and leaving a trail of blood behind. It is the evidence of history that the Brahmin with a scanty loin cloth and the Bhikku with a begging bowl went to Indonesia and Indo-China like the fire hidden under the ashes. Hers was a mission of fulfilment, never that of destruction. She gave largely to others without imposing herself on them and received also largely from others without having recourse to violence. Her conquest was that of Dharma over Adharma.

Empires founded by Hindu monarchs like Champa in Indo-China, Khemer in Kambuja, Srivijaya, Madjapahit and Silendra in Java flourished for centuries in Indonesia.

Though these dynasties and empires since vanished out of existence and most of the Indonesians happened to be under the thralldom of a foreign yoke, yet the glorious architectural monuments like the temples at Maison in Indo-China, Angkor-tham and Angkor Vat in Combodia, Prapatham Chedi near Bangkok in Siam, the pagan temples of Burma, the Panatharon Chendisewu and Chendimenduth in Sumatra and Borobudur in Java are all that remain to tell us the sad story of the vanished glories of a wonderful civilisation. The whole of greater India is still under Hindu influence. Hindu traditions can be traced, Hindu customs may be observed in the everyday life of the people. "The Malay Hikayat Serirama," a Javanised version of the Indian epic Ramayana is still read with love and reverence. The Wyong Shadow plays, though Indonesian in technique, are purely Indian in origin. The arts and crafts betray a close resemblance to the crafts and arts of India. The physiognomy of the people is purely Aryan in its make up. Greater India bears the indelible stamp of India. India's sons founded colonies of imperishable glory. In any other country they would have been remembered with love and gratitude, but in India nobody cares to know about them. To the sacred memory of those valiant sons of India who perished braving the storm of the typhoon in their desire to carry the torch of knowledge and culture of India whose sepulchre is the deep sea and whose graves bear no epitaph, it is high time that historians bestirred themselves and included this beautiful chapter in the history books that may be written in the future.

If it be necessary at all to go back to the past for inspiration or for determining the course with due regard to all that is best in one's civilisation, then the history of *Greater India* has a justification for coming into existence.

Two Royal Patrons of Literature— Prataparudra and Sarvagna Singabhupala

By V. RANGACHARYA, M. A.



King Prataparudra of Warangal (1295–1328) lived in critical times, but found time and resources to encourage learning on a lavish scale. A man of highly cultivated tastes, he did not hesitate to personally embark on literary adventures. There was not only a delightful *camaraderie* between him and men of letters, but his name has been directly associated with some extant works. One of these is a *natika* called the *Usha-ragodaya*, which is a play devoted to the love of Usha, the daughter of Banasura, to Aniruddha, the grandson of Krishna,—a favourite theme for poets.¹ Another extant work of Prataparudra is the *Yayaticharita*, a drama in 7 Acts, dealing with the fascinating romance of Yayati and the Asura princess Sarmishtha,—a theme even more popular than the *Ushaparinaya* with aspirants for literary fame. Prataparudra seems also to have left a commentary on Krishnamisra's Vedantic drama *Prabodhachandrodaya*.²

Vidyanatha.

Next to King Prataparudra may be mentioned Vidyanatha, the author of the *Prataparudriyam*, the well-known work on rhetoric and poetic composition. It is generally known as the *Prataparudra-yasobhushanam*. This *Yasobhushana* style of composition was discovered by Vidyanatha, and has been profusely imitated from this time. According to some, Vidyanatha was only a title, and the poet's real name was Agastya. This is said to be evident from this stanza (11,57) which occurs in the *Prataparudra-yasobhushana*:

औन्नत्यं यदि वर्ण्यते शिखरिणः कृष्यन्ति नीचैः कृता
गाम्भीर्यं यदि कीर्त्यते जलधयः श्रुष्यन्ति गाधीकृताः ।
तत्त्वं वर्णयितुं बिभेमि यदि वा जातोऽस्म्यगस्थितः
तत्पार्श्वे गुणरत्नरोहणगिरे श्री वीररुद्रप्रभो ॥

Regarding Vidyanatha's work, Mr. M. Krishnamachariar's terse and full statement can be quoted. The *Pratapa*, he says, "is an elaborate treatise on poetics with illustrations in praise of

1. See Aufrecht's Catal. Catal. 1, 71; Wilson's theatre, II, 388.
2. Bodleian catal. Oxford. 281.

his patron. This mode of panegyric imbedded in a work of instruction is a new device of Vidyanatha's creation. In dealing with the canons of dramaturgy he has ingeniously interposed a model play known as *Prataparudrakalyanam*, which performs at once the functions of apt illustration of the technique of the Sanskrit play and of giving a description of the goodnesses and exploits of Prataparudradeva. The object of the work is avowedly to show how the importance of composition depends on the apt characterisation of the merits of the hero. Accordingly the first *Prakarana* classifies heroes and heroines, and describes their qualities. The second *Prakarana* propounds the nature of poetry and the several species of poetic composition. The third *Prakarana* contains the model drama describing the coronation of Prataparudra and his glorious rule and conquests. The fourth *Prakarana* deals with *Rasas*, the next two with the faults and merits of composition, and the last three with figures of speech. This treatise is very popular among later writers and is specially in Southern India never missed as a text book in rhetorical study¹.

Agastya.

A literary genius who was either identical or contemporary with Vidyanatha—for he was known by that title—was Agastya. He belonged not only to the court of Prataparudra II of Warangal but also that of Bukka I of Vijayanagar (1343–79), and was therefore in his later years apparently a contemporary of Vidyanatha. He was a natural poet who was able to chisel fine thoughts into portraits which, in later days, received the applause of writers like Gangadevi and Rajachudamani Dikshita. Gangadevi of whom we shall speak presently, in fact, attributes to him as many as 74 *kavyas* :

चतुस्सप्ततिकाव्योक्ति-व्यक्तवैदुष्यसंपदे ।

अद्यस्त्याय चद्यत्यस्मिन् स्पृहयेत्को न कोविदः ॥

We have no clue to the identity of most of these works; but it may be that one day it will be possible to do it. If what Gangadevi says is true, and if Agastya was really a 'Vidyanatha' as his contemporaries styled him, he must be pronounced to have possessed the mental playground of a man of variegated tastes. As it is, we have now got among his extant works a poem of 20 cantos on the theme of the Mahabharata under the title *Bala-bhagavata*³. The naturalness of Agastya's poetry is evidenced by its easy flow and graceful movement. His achievement was not

1. Commentaries and criticisms on the work by Appayya Dikshita, Kumarasvami, Mallinatha, Visvesvara and Tirumalacharya, exist and are available.

2. *Madhuravijaya*, I, 14.

3. Tan. Catal, II, 2228; Decen. Catal, XX, 7784.

that of a recalcitrant muse with the aid of a lexicon. Another extant work is the *Krishnacharita*.¹ It is in prose, and indicates that as a prose writer also he could enthral scholars. One of the Tanjore manuscripts gives the spurs due to him in this language:

अनादृश्य श्लाघयन् भुवि कविनिबन्धामिव तर्ति
कृतो वैयासिक्यां रचयितुरगस्त्यस्य विदुषः ।
वसन्ती वाग्देवी कृतिनिरसनाग्रे वितनुते
निर्पर्यङ्कं पङ्क्तोरुहि महति शङ्के विहरणं ॥²

The other works of Agastya available are the *Nalī-kīrti-kāu-mudi*, a poem in two cantos; the *Lakshmistotra*; the *Sivastava*; the *Lalitasahasranama*; the *Mani-pariksha* and the *Sakaladhikara*.

Gangadhara.

A nephew—sister's son—of Agastya was that Gangadhara who dramatised the *Mahabharata*. This treatise is referred to by Poetess Gangadevi in this verse:³

स्तुमस्तमपरं व्यासं गङ्गाधरमहाकवि ।

नाटकच्छन्ना दृष्टं यश्चक्रे भारती कथां ॥

Gangadhara also wrote two other plays called the *Chandravilasa* on the allegorical story of Chandra's union with Kumudini³ and the *Raghavabhyudaya*. One of his sons, Narasimha, earned his spurs as a dramatist by dramatising the *Kadambari* in 8 Acts under the title of *Kadambari-kalyana*.⁴ Another son, Visvanatha, is depicted as a tiger-cub of the race. Losing his parents early, he was brought up by his uncle Agastya, and then introduced to King Prataparudra. Visvanatha made a mark in the royal assembly of scholars by his vigorous one Act drama *Saugandhikaharana*, in which we find an energetic disputation between Bhima and Hanuman, the two chief figures in that well-known story of Bhima's search for *Saugandhika* flower for the sake of Draupadi. Gangadevi, the author of the *Madhuravijaya*, was his worthy pupil. She has immortalised him in her poem in this verse⁵:

चिरं स विजयी भूयाद्विश्वनाथः कवीश्वरः ।

यस्य प्रसादात् सार्वज्ञं समिधे मादशेषापि ॥

Gangadevi.

Gangadevi, the talented poetess referred to above, was the wife of Kampana Udayar II, the second son of the Vijayanagara

1. Burnell's Tanj. Catal, 10203; P. P. S. Sastri's Catal. VII, 2994.

2. *Madhuravijaya*, I—15.

3. Catal. Catal. II, 36.

4. Trien. catal. III, 348. The work is quoted by Vemabhupala. On the ground of the resemblance in a verse Narasimha has been identified by Kuppusami Sastri with Vamanabhatta Bana.

5. *Madhuravijaya* I, 16.

king, Bukka I (1343—79), who brought South India under Vijayanagara rule, and who pre-deceased his father in 1377. The *Virakam-parayacharitra*¹ is a beautiful romance on her husband's heroic military career. The poem is full of glowing and realistic descriptions of the city of Vijayanagar, of the movement of Kampana's army, the city of Kanchi, and of Madura, and ends with the record of the magnificent endowments which crowned Kampana's military triumph. It is one of the important literary sources for the construction of the early history of Vijayanagar.

Sarvagna Singabhupala.

An equal of Prataparudra as literary patron was Sarvagna Singabhupala II of Rachakonda. He was the seventh in descent from Vetlabhupati, the founder of the estate of Venkatagiri in Nellore district, and the grandson of Sarvagna Singa I. He ruled about A. D. 1400, as inscriptions show. He was an ardent votary of the muse, and wrote a technical work on dramaturgy called the *Nataka-paribhasha*.

Visvesvara.

Poet Visvesvara of Singa's court wrote two fine works on *alankara* called the *Chamatkarachandrika* and the *Rasarnava sudhakara*. In the former all the illustrative verses are on his royal patron. In the latter, which is in three chapters, a classical, comprehensive and immensely valuable treatment of the evolution of the dramatic art is given, and it is therefore historically indispensable. Though written by Visvesvara, it has been traditionally associated with his patron as the author. It was not uncommon in those days for the literary savants to pour out all the best and purest in their head and heart before their royal supporters. Such self-abnegation was quite in harmony with their own nature and love of resignation, and the *Rasarnavasudhakara* is a classical example of the author's desire to perpetuate the memory of such a bond of dependency. Visvesvara also wrote a *Kandarpa-sambhava*, for we find it quoted in his classical work. Visvesvara's disciple, Naganatha, who was the son of a certain Pasupati, was the author of the *Madanavilasabhana*, and of an inscription of his patron dated in S. 1291 (A. D. 1369).

Nainar-acharya and Sakalyamalla.

Sarvagnasingama had another scholarly dependent in Appayarya, the author of a commentary on the *Amarakosa*. More famous was Sakalayamalla, also known as Mallayarya or Kavimalla. According to the *Vaishnava Guruparampara*, he was defeated by the famous Nainar acharya or Varadacharya, the son

1. Edited in Trev. Series by Harihara Sastri with Introduction by T. A. Gopinatha Rao. See also *Sources of Vijayanagar Hist.*

of Vedanta Desika and the author of the *Kokilasandesa* and *Sukasandesa*. The story as given by the Vaishnavite legend places Sakalyamalla under a cloud of disgrace. Unhumanized by the sting of defeat, we are told, he resorted to the aid of witchcraft, and made a Bhetala or demon carry Varadacharya's palanquin in the guise of a professional carrier, and drop it down to the risk of the Vaishnavite teacher's life, but Varadacharya's magic power was not only beyond the control of the disguised devil, but converted him into a loyal and willing slave. The legend goes on to state that the victor presented Singabhupala with a commentary on Vedanta Desika's ethical treatise *Subhashitanivi*, called the *Ratnapetika*.

So far as reliable materials are available, however, we are able to say that Sakalyamalla was a devotee of Rama, who was inspired in a vision to write about the exploits of his hero. The spell of Rama's personality held him ever after in power, as the result of which he composed the *Udara-raghava*, an exquisite poem in the model of the *Raghuvamsa*¹, seven out of the original eighteen cantos of which are at present available. Sakalyamalla's poetry visions Rama in a world of holiness and purity. The spell of the divine hero kept him in constant company, and inspired him with a rich imagery and every desirable literary quality. The poem was so much appreciated in later days that two commentaries² on it came into existence.

1. Printed at Bombay. Vide Seshagiri Sastri's Rep. II, 373.

2. Ibid, 74 and Tanj. Catal III, 3212. One of these was by Chaundi and known by the name *Pradyotini*, and the other by a Rampilla Gopinatha.

Alcohol and its Applications

By B. H. IYER, M. Sc., A. I. I. Sc.



THE word 'alcohol' is derived from the Arabic *al-koh'l*, meaning native antimony sulphide, which latter in the form of impalpable powder had long been used by Eastern women for darkening the eye-brows. Gradually the word came to be used for any fine powder. Some of the finest powders can be obtained by the process of sublimation; that is, by heating a solid when it directly vapourises without passing into the intermediary liquid state and condensing the vapours by cooling. The process of distillation by which alcohol is produced being somewhat similar to the process of sublimation, the name 'alcohol' happened to be applied to it. Later on the word assumed a generic meaning. To-day alcohols form a special series of chemical substances with specific properties, methyl alcohol being the first member. Alcohols are generally liquids; but as one goes higher up in the series one finds solid alcohols also. Ethyl alcohol—the one with which we are immediately concerned—is the second and the most popular and useful member of the series. It is present in all the fermented beverages like wine, beer and brandy to which it imparts the exhilarating and inebriating properties. Because of its great importance and wide application, ethyl alcohol has come to be commonly known as 'alcohol' only. Ethanol and methyl-carbinol are two other generic nomenclatures by which chemists designate it. From times immemorial fermented liquors have been used by mankind. "Arrack distilled from toddy, has been known in India since at least 800 B. C., and in Ceylon from 'time immemorial'. Toddy itself is a fermented liquor obtained from rice and various palms."

Alcohol is produced by the fermentation of several types of saccharine (sugary) juices like grape and beet juices and of molasses, through the action of a vegetable micro-organism called yeast. It can also be produced from starchy materials, such as cereals and potatoes, and from cellulosic materials like saw-dust and wood-pulp. But in the latter cases, the alcoholic fermentation by yeast must be preceded by a saccharification process through the action of chemical agents called enzymes (diastase or amylase) when the starchy or cellulosic material will be converted into fermentable sugary substances. Ethyl alcohol has the chemical formula C_2H_5OH . When decomposed by heat in presence of concentrated sulphuric acid, it splits into a gas called ethylene (C_2H_4) and water (H_2O). Conversely, the incorporation of the

elements of water in the molecular composition of ethylene gas leads to the synthesis of alcohol. Towards the middle of the 19th century the French chemist Berthelot and the English chemist Hennel independently achieved this synthesis of alcohol from ethylene. Although fermentation industry is the chief source of alcohol at present, increasing demands for industrial alcohol have led to the successful development of synthetic processes for the large-scale production of alcohol from ethylene.

The success of every industrial enterprise depends partly upon the effective utilization of its by-products. Recent years have witnessed rapid increase in the manufacture of white sugar from sugar-cane juice in India. Molasses is the main by-product in this industry. When cane-juice, after preliminary treatment and purification is subjected to concentration and subsequent cooling, the whole of it does not set into crystals of white sugar. There always remains an appreciable amount of dark, semi-fluid substance after all the sugar is removed by centrifuging the concentrate. This fluid stuff is called the molasses. Finding out useful employment for this difficult-to-stock and difficult-to-handle product has been the subject of varied researches here and elsewhere. One of the most common utilization of molasses is in the production of alcohol. In the United States of America the cane-sugar molasses is the chief source of alcohol although corn and maize also find application. Germany makes her fermented alcohol from potatoes and France from sugar beets. Carbon dioxide is a by-product of the fermentation industry which may be compressed into cylinders or converted into solid or dry ice. On an average 0.4 gallon of alcohol and 2.75 lb of carbon dioxide are obtained by the fermentation of a gallon of molasses. The annual Indian output of molasses is rated between 500,000 and 600,000 tons. At present a portion of it is being used in tobacco curing industry. Another small quantity finds application in minor industries. But the major part of it is disposed off in a comparatively uneconomical manner. There are only a few factories in India producing alcohol from fermented molasses. A portion of Indian alcohol is obtained from the fermentation of *Mhowa* flowers. Perhaps demand for alcohol is a condition precedent to a wide expansion of the local fermentation industry. With the advent of the Prohibition Act in India and the consequent availability of fermentable palm juices for industry there again occurs another source of raw material for the production of alcohol. With careful pooling up of all the resources, India may be assured of a perennial supply of industrial alcohol provided ways and means are found out for its utilization. It appears to the author that the problem of the disposal of the molasses, which at present

looms large in the minds of sugarists, may be solved to a great extent if a few of the very many alcohol consuming industries are established in India. Today pharmaceutical industry is the only one wherein our alcohol finds any appreciable outlet. A small amount is employed for the production of 'foreign liquors' while a further small quantity is used for educational and research purposes.

In the earliest days the only use for alcohol was for the preparation of spirituous beverages. In this popular use the Government found a very good source of revenue. So they imposed custom and excise duties on all alcoholic substances. The original duty rates and the rules governing the production, transport and sale of alcoholic substances were very stringent. Such restrictions enhanced the price of alcohol and hampered its ready application for industries. But with the growing demands for alcohol for industrial purposes the Governments in advanced countries have found it necessary to reduce the rates and relax the rules. While they permit free circulation of alcohol through industries, they take proper precautions to prevent abuse of privileges. All industrial alcohol will be suitably denatured with poisonous and evil smelling substances like wood naphtha or pyridine bases in order to make it unfit for drinking purposes. Furthermore, the Government insist upon the industrialist entertaining a Government officer in the latter's services who will watch the course of alcohol through the factory under question. In spite of these difficulties, with the proper co-operation between the consumer and the Government, every country is placing alcohol within reach of expanding industries.

As a result of continued research and application, alcohol has come to be recognised as a chief raw material from which many interesting and valuable compounds can be prepared. It can be used as a source of light, heat and motive power. From the earlier part of the 19th century alcohol has been used as a source of light. As it burnt with a non-luminous flame it was employed for this purpose after admixture with turpentine or other hydrocarbons. The invention of the incandescent mantle, later on, enabled alcohol alone being used as an illuminant. Availability and price permitting, the advantages of an alcohol lamp over a kerosene lamp are as follow: It is practically odourless and smokeless. It radiates less heat and gives a whiter and more uniform light. Further, alcohol is safer than kerosene in as much as in the case of a fire the flame is more readily extinguished by water which is miscible with alcohol but not with kerosene. The spirit lamp is the commonest example where alcohol is used as fuel for heat production. For this purpose it can be employed in several

appliances like stoves and burners where it is first vapourised, then mixed with air and ignited.

As a source of motive power, alcohol claims to give as good a performance as petrol when used in internal combustion engines. But the limited supply, the restricted distribution and the consequent enhanced price of alcohol, coupled with the necessity to slightly modify the engines for continued use of this fuel, prevent its 'solo-application' for power purposes. Nevertheless the possibility of producing alcohol in abundance, in a national scheme for the economic utilisation of agricultural raw materials, has enabled several countries in the world to formulate laws demanding admixture of a definite percentage of locally made alcohol with petrol for use as motor fuel. Power alcohol is a chemurgic problem, i. e. a problem for the production of useful chemicals from agricultural raw materials. Mr. F. P. Garvan, President of the Farm Chemurgic Council, Detroit, once observed:

Power alcohol, it seems to us, is not so much a problem of technology and economics as it is of agricultural distress and farm relief. So we repeat that there should have been no controversy—least of all among technical men. From a strictly chemical engineering view point, it is a bit unfortunate that the power alcohol problem is not one that can be readily solved by purely technical and economic reasoning. It has social and political implications that cannot be easily evaluated, yet nevertheless are controlling factors to-day in many countries of the world.

May not this view be equally applicable to an essentially agricultural country like India? A year ago commenting on the possibilities of Drink Prohibition Act Mr. N. S. Varadachari, Parliamentary Secretary to the Minister for Agriculture, said:

Prohibition has pushed to the forefront the major industry of 'industrial alcohol'. We have no more use for distilleries and we cannot also allow the wealth in the molasses that we can pick up to go to waste. It becomes the primary task of the Government of India, is primarily a provincial one. There is nothing which stands in the way. It is possible to produce the grade of alcohol which will mix easily with petrol. In fact new distilleries that are proposed to be licensed by Government should be granted such licences only on condition that they instal the proper plant that would be fit for the production of industrial alcohol. While this may be so, Government should immediately investigate the question of legislation which would make it obligatory on vendors of petrol to sell it only with a recognised admixture of alcohol. Unnecessary fears are raised that the Government of India may object to this. In fact the Government of India has made it clear that this subject is no concern of theirs and that it is one primarily for the Provinces to tackle. The real difficulty is the Government of India will stand to lose a part of its excise revenue on petrol. Even this is not an insuperable difficulty, for a smaller excise duty than that on petrol on local production of pure alcohol can still be levied by the Government of India to make good part of this loss. It is well known that

the cost of production of alcohol is much higher than the cost of production of petrol and if the present price of petrol is not to be exceeded, the excise duty on the alcohol taken for the purposes of mixture with petrol has necessarily to be on a lower level than the one on petrol. It has yet to be determined as to whether petrol prices have to be maintained on their present level. (Vide *The Hindu* of October 19, 1937).

Time has rolled on but there has been little progress made.

Alcohol as it comes out of the distilleries is unfit to be mixed with petrol because the former contains anything between 8 to 15 per cent of water depending upon the efficiency of rectification. If aqueous (water-containing) alcohol is mixed with petrol, the resulting product will not be homogeneous but will separate into two layers—water and the rest—causing difficulty. Anhydrous (water-free) or absolute alcohol does not have this defect. Therefore the primary problem in the utilization of alcohol for power purposes is the production of anhydrous alcohol. Several methods have been worked out and patents taken for this purpose. These methods can be classified under two headings: (1) where the aqueous alcohol is first treated with a solid dehydrating (water-absorbing) substance and distilled; and (2) where the alcohol-water mixture (i. e. aqueous alcohol) is fractionated in presence of a third immiscible liquid called 'entrainer' which forms a constant boiling ternary mixture (alcohol-water-entrainer) having a boiling point lower than that of absolute alcohol. The second process is called the 'azeotropic' process. Quick lime, calcium carbide and gypsum are some of the widely used solid dehydrating agents. In our country where lime is available in plenty, it may be a convenient process. The lime absorbs the water yielding absolute alcohol and slaked lime. Benzene and toluene are two of the entrainers used in the second process. The finished product from this process though perfectly anhydrous may retain traces of the entrainer as impurity and hence it may not be safe to use this absolute alcohol for medicinal purposes. For the same reason, azeotropic process may appeal for producing power alcohol in that no extra governmental precaution is necessary the alcohol being intrinsically denatured during the process alone. In foreign countries both these processes are in operation on a large scale. Mysore State is producing alcohol from molasses. It is learnt that absolute alcohol too will be made available ere long. So, may we hope that in the near future newer industries utilising alcohol will be established in this progressive State?

Alcohol is used as solvent in a great many industries. In the manufacture of polishes, varnishes and stains, embrocations, liniments and lotions, plant washes, insecticides and sheep dips,

cattle medicines, dye solutions and collodion, alcohol remains as a part of the finished product. In the manufacture of celluloid materials, transparent soaps, solid medicinal extracts, photographic plates and artificial silk (rayon), alcohol, after having played its role as a solvent during the process, is expelled in the later stages so that the finished product is free from it. Alcohol is employed in pharmaceutical industry chiefly for the preparation of various tinctures.

In other industries alcohol enters into chemical combination with various substances, losing its identity and yielding new products. Production of anaesthetics and antiseptics, dyestuff intermediates, esters of organic acids, synthetic drugs and many other fine chemicals are instances of such industries. Ether, ethylchloride, ethyl-bromide and chloroform are used in medicine as anaesthetics. Ether is prepared by passing alcohol vapour over a suitable catalyst maintained at optimum temperature and condensing the resultant vapours and fractionating and purifying the product. Only just a year ago locally prepared ether has been made available in India. A process has been perfected and is in operation at the Indian Institute of Science, Bangalore, for the production of this substance. Apart from its small consumption for anaesthetic purposes, ether finds wide application as solvent in laboratories for research purposes and in factories for manufacturing purposes. The action of concentrated hydrochloric acid on alcohol leads to the formation of ethylchloride. When a mixture of sulphuric acid, sodium bromide and alcohol is distilled ethyl bromide results. Chloroform is prepared by the action of bleaching powder on alcohol. Chloral, chloral hydrate and iodoform are a few more examples of medicinal substances prepared from alcohol. With all organic acids alcohol forms neutral bodies called esters. Ethyl acetate or 'acetic ether' prepared from acetic acid and alcohol is used both in the pharmacy and in the manufacture of other chemicals. A great many esters find application in the manufacture of synthetic perfumes. Under the influence of high temperature and pressure alcohol combines with suitable substances to yield intermediate products for dyestuffs like alkyl-anilines.

Recently claims are being made for alcohol as a potential source of plastics or synthetic resins. From alcohol and ethylene which are inter-convertible three substances called ethylene oxide, vinyl alcohol and acetaldehyde may be obtained. Each of these three will lead to a number of interesting thermoplastic type of resins. By a catalytic process acetone can be prepared from alcohol. By a series of further reactions and combinations with acetone, 'Organic Glass' can be prepared.

During the course of a short article like this no complete or detailed account of the immense industrial applications of alcohol can be given. Neither is it easy to achieve at once even a few things mentioned here. Despite abounding literature and accumulated experience, difficulties peculiar to local conditions will become apparent only when one sets about 'to do things'. Then it is for our scientists, technologists, economists and the Government to sit together, solve the difficulties and 'get the things done'. Sketchy as the article has been, it is believed that the subject dealt with is of immediate importance to stimulate thought. Let us hope that the National Planning Committee will consider it worth while to investigate into the possibility of producing alcohol and utilising it for new industries in India.

THE SHEE

When the full moon is in the sky
The twinkling stars in glittering throng
Shimmer in shining maze on high,
Till dawning comes with birds' gay song.

Then is another dance below
With woven paces, hands which cling,
The Fairy partners circling go
The Wonderous Dance will sway and swing.

All mystery its movements show
Deep hidden things its music tells
That which the heart alone can know
Beyond life's welcomes and farewells.

The ancient Hazel trees alone
Ever behold the vision fair
With magic knowledge as their own
But that sweet truth may never share.

—F. H. Aldhouse,

Michael Faraday

By S. V. RAMANUJAM, B. A.



MICHAEL FARADAY, "The Founder of the Science of Electricity" is a great name in the annals of modern science. Most of our present knowledge of Electricity—electrical illumination, electrical methods of transmission, sound and matter and now wireless are derived from his brilliant researches. He owed his greatness entirely to himself. The incidents of his life are highly interesting and are worth following for the benefit of the present generation. His had been an astonishing career. Poverty and struggles of his youth played an important part in moulding Faraday's character and work.

Born in a poor family of Newington in Surrey in 1791, to James Faraday, a village blacksmith, and Margaret, a farmer's daughter, Faraday evinced in early life but little promise of his later phenomenal success. Being but an indifferent student, though clever and amiable, he made very little progress in his studies. He early imbibed a love for science subjects and used to admire the treatises in Chemistry. His father thought it expedient to withdraw him from school and put him on as an errand boy to a book-seller. While an apprentice under the book-seller, Faraday made full use of the opportunities for self-improvements and read many books on science which came his way. He evinced pleasure and mental satisfaction in reading "Marcet's Conversations in Chemistry" and electrical treatises in the Encyclopedia Britannica. He used to spend a few pence a week out of his income for performing simple experiments in Chemistry and construct miniature electrical machines.

At the age of 20 and when nearing his apprenticeship, Faraday borrowed money from his brother (a blacksmith) which enabled him to attend a course of lectures on natural philosophy delivered by one Mr. Tatum. He met many young men, including Richard Philips and Benjamin Abbot, who became his life-long friends. He used to write long letters to Messrs. Philips and Abbot, describing his experiments and discussing scientific matters although not possessed of advanced education. He was in an atmosphere very strange to him, but he soon accommodated himself to it and there his genius came out. His youth had been canalised and moulded for scientific research.

It was during this period that the event occurred which changed the whole course of his life. One of the customers of his shop, Mr. Dance, took him to the Royal Institution to hear some lectures delivered by Sir Humphrey Davy. This led him to

introduce himself to Davy. After this, his character sobered and he laid himself out for hard work. Faraday himself says in one of his letters "when I was a book-seller's apprentice I was fond of experiment and very adverse to trade. It happened that a gentleman, a member of the Royal Society, took me to hear some of Sir Humphrey Davy's last lectures, and I took notes and afterwards wrote them out more fairly in a quarto volume. My desire to escape from trade which I thought vicious and selfish and to enter into the service of science, which I imagined made its pursuers amiable and liberal, induced me at last to take the bold and simple step of writing to Sir Humphrey Davy, expressing my wishes and a hope that if an opportunity came his way, he would favour my views; at the same time I sent the notes I had taken of his lectures". Davy asked the young apprentice to come and see him and then obtained for him a post of laboratory assistant at the Royal Institution on 25 shillings a week.

It was at this time Mr. Tatum, whose scientific lectures Faraday had attended, introduced him to the City Philosophical Society, which provided immense facilities for discussion and opportunities of meeting foremost scientists of the day. He desired to learn the art of lecturing and took instruction in Elocution.

The greatest event in his life was in 1821 when he married the daughter of a silversmith, who comraded him in the ups and downs of his chequered life, kept him company in his studies and inspired him in his thoughts.

In 1823 and at the age of 35, Faraday delivered his maiden lecture at the Royal Institution. He was regarded as the ablest and the most attractive lecturer in science. Commenting on his lectures a contemporary says: "He had the art of making philosophy charming, and this was due in no little measure to the fact that to grey-headed wisdom he united wonderful juvenility of spirit.....Hilariously boyish upon occasions he could be and those who knew him best knew he was never more at home, that he never seemed so pleased, as when making an old boy himself, as he was wont to say, lecturing before a juvenile audience at Christmas". Six months later he had the honour and privilege of accompanying Sir Humphrey Davy as Secretary on a lecturing tour in Europe. This enabled him to acquire more scientific knowledge and experience of men and affairs. Dr. Thompson aptly says: "Foreign travel took in his life the place of residence at a University".

In Paris, he attended Gay-Lussac lectures and assisted Davy with his experiments in the laboratory of Chevreul on the newly discovered substance, Iodine. At Florence, he participated in the famous experiments in which Davy burnt a diamond and demonstrated that it was nothing but carbon. On his return from

Europe, Faraday worked on a variety of chemical and physical subjects and published several important papers which thrilled the scientific world. His outstanding publication was on electromagnetic rotations. It was thought by many that it was due to the mutual action of the wire conveying the current and magnet, to forces of attraction and repulsion, but Faraday found that the actions were due to 'the result of a force in the wire, which instead of bringing the pole of the needle nearer to or further from the wire, endeavours to make it more round it in a never ending circle of motion while the battery remains in action'. His first piece of original work was the analysis of caustic lime, besides experiments in flow of gases through capillary tubes, properties of flames and steel, new compounds of carbon and hydrogen etc.

Faraday was elected a Fellow of the Royal Society and appointed Director of the Laboratory of the Royal Institution. He spent most of his time not only in research and consulting work, but also in delivering regular courses of lectures at the Royal Institution. Numerous honours were showered upon him by learned societies at home and abroad. The first few years at the Royal Institution constituted a period of intense work, which enabled him to acquire scientific habits of thought, experience and mastery of laboratory technique. His was an inquisitive and acquisitive intellect. His great discovery was electro-magnetic induction. Since the discovery of magnetic effects of electric currents envisaged by Oested, Faraday tried to discover the converse effect, namely, the production of electric currents from magnets. Amongst other researches were Voltaic currents, generation and transmission of electricity, the forerunner of the now famous Dynamo.

In 1840, his health began to fail and his intellectual powers gradually waned. He was invited to take up the presidency of the Royal Society which honour he had to decline owing to his failing health. He died on the afternoon of August 25, 1867, in the chair of his study.

His discoveries, his skill and his teaching establish him amongst the immortals. Faraday was deeply religious and passionately loved music. Much has already been written and said of his achievements, but as a man he was kindly, good humoured, debonnaire and precise. All his precepts were corroborated by triumphant personal examples. Yet in this record of his life, it would be impossible to find a tribute elsewhere as that paid by his contemporary, Tyndal, himself a scientist of repute who says: "Faraday was more than a philosopher: he was a prophet." Faraday was, indeed, a visionary and philosopher. Faraday was a genius and his inspired voice is a trumpet call of Science to-day.

Nicholas Roerich

By BARNETT D. CONLAN

(Continued from our September issue)



IN the art of Music Russia has, for a century, been in advance of the West so that the most modern of European Composers, Debussy, was content to follow in the footsteps of Moussorgsky.

Moreover, the principal creators today in modern music are Russian—Stravinsky, Prokofieff and Oboukhoff.

There is reason to suppose then, that Russia cannot have been very far behind the West in the more modern tendencies of Art.

In 1895 a group of well known painters—Vroubel, Serov, Somov, and Roerich began to lead a crusade against academic traditions with very much the same ideals as those which inspired men like Courbet, Manet and Cezanne.

Roerich's early contact with Byzantine Art gave him an oriental sense of colour, something almost Persian in its richness, whereas Western artists like Matisse only began to acquire it towards 1905, by a careful study of Persian miniature.

Gauguin, perhaps from his heredity, had something of this innate sense of colour, but Roerich, in this respect may be considered to be in advance of the West.

Like the colour tones in the orchestra of Moussorgsky, Rimsky Korsakov, and Borodin he has an oriental wealth and depth which is not to be found in Western painting.

In this he is especially Russian and the same may be discovered in the works of two other well known Russian painters—Gontcharova and Larionov, whose colour schemes have a dash and spontaneity which is not always to be found in the work of their contemporaries Matisse and Picasso.

In some ways Roerich might be considered to be one of the very greatest of scene painters.

The Russians have produced other great stage painters—Bakst, Benois, Gontcharova, Larionov, some of whom have brought stage setting to a science in itself, but none of them have the breadth of power and the wide poetic outlook into the world of legend which Roerich possesses.

In this, his creative intuition brings him near to Wagner. He is the counterpart, as it were, in painting of those great creators

of Music Drama—Wagner, Mussorgsky, Rimsky—Korsakov and Borodin and he has a sense of rhythm and poetry which is obviously of the same scale.

In the snow Maiden of Rimsky—Korsakov the artist found a theme well suited to his genius.

Here he was at home. This fairy-like legend of Ancient Russia had all the elements that have since appeared in the artist's work. It was full of myth and poetry, for it had that poetry of the earth which is always associated with early pagan ritual.

It may have given Roerich the idea of the Rite of Spring, it certainly attracted him more than any other work of the Stage so that we find him producing no less than three different settings.

The costumes which he designed for this Opera, for Migir and the Boyars have a Tartar simplicity, a Chinese beauty which show that the artist is himself something of an oriental.

Later, when he came to travel through Mongolia and Tibet he discovered many of these designs and this is particularly interesting for it would seem to show that what is called Imagination is often nothing but the evocation of our experiences either in the past or in the future.

All the poetry of Russian legend and folklore is to be found in the scenery which Roerich painted for this Opera.

The valley of Yarila with its pine forests and clear vistas recalls the snowy beauty of those landscapes in which he had depicted the exploits of St. Sergius. It is something specifically Russian in its northern purity and fresh poetry, something akin to spring torrents and the music of Grieg.

It is not surprising then that Roerich should have been commissioned by the Moscow Art Theatre to supply the setting to Grieg's Peer Gynt.

In the atmosphere of this poetic drama he was so much at home that when the Directors of this Theatre proposed to send him to Norway to study the local colour, he refused explaining that a close study of the music and the text would be likely to bring him nearer.

In this he was right and when the other artists and actors had returned from Norway, they recognized the remarkable truth of his setting.

And he was no less at home in the Drama of Maeterlinck. The settings which he produced for Princess Maleine, at the request of the Moscow Art Theatre, are among the finest stage paintings that have ever been made. Not that they are brilliant

in colour or otherwise extraordinary as works of Art, but they are remarkably suited to the Drama.

Here, as with Russian Opera and the works of Wagner, Roerich entered into the tragedy with a leitmotiv of colour. The scheme is that of a nocturne outlined in dark cypress tints and the sombre blue of old towers seen under moonlight.

In the scene of Maleine's chamber, where the unfortunate princess lies listening to her murderer's approach, he has depicted the mediaeval vaultings like the limbs of some giant spider.

This shows to what extent his settings help to create the psychological atmosphere of the Drama.

The costumes have a delicate beauty of design and show that Roerich can be a master of the human figure when he wishes.

In sister Beatrice, Pelleas and Melisande, Aglavaine et Selysette, he gives us gothic mystery and mediaeval beauty as perhaps no other painter could have done.

Roerich, in his way, is a poet like Maeterlinck, like Tagore, whereas most of our modern stage painters can hardly be included in this category.

His studies in archaeology, his researches into the Stone Age, his knowledge of the mediaeval cities of the north gave him a unique advantage over other artists.

These mysterious corridors, ancient towers, fabulous forests and vaulted chambers are all products of the artist's experience.

He has passed through these fantastic streets and market places in Moscow, in Ancient Pskov, in Nijni Novgorod; he has gone through these underground passages, he has himself lived in these ancient towers.

I remember just before the war losing my way one winter's twilight along the banks of some old water-way outside of Gand. Ancient walls and towers quivered in the slate coloured waters and a wintry after-glow, silent and clear, as silver peopled the place with ghosts.

There lay the spirit of the North and all the poetry of Maeterlinck.

In later years when I saw the settings that Roerich had painted I immediately recalled this scene.

Roerich who is also a poet of the North has been called the Maeterlinck of painting.

This is true in a sense but only to a limited extent.

As an artist, that is as a poet, Maeterlinck never got much beyond this twilight stage, this pre-war state, of feeling which may, for all we know, have been the twilight of a passing world.

To Roerich however, it was but a passing phase, his work pointing rather towards dawn and the light of the Future.

The poetry of Maeterlinck is drawn from that mysterious atmosphere of the North in which the invisible world plays almost as much part as the visible. This is the land of the Hyperboreans, the country of the Beyond, from which Apollo was said, significantly enough to arrive every springtime.

Roerich was born in these regions of myth and legend, he is at home in such an atmosphere, and in painting the settings for Maeterlinck's world he was only continuing much of his former work.

Modern students of Art tell us that the aspect of the world and man's position in it has been completely changed by the discoveries of Science.

"Man may be in the foreground but the drama of man's life is acted out for us against a tremendous background of natural happenings: a background that preceded man and will outline him; and this background profoundly affects our imagination and hence our art. We moderns are in love with the background. Our art is a landscape art."

This passage which defines the attitude of modern Art and the Drama of Maeterlinck might serve as an excellent description of almost all Roerich's work.

It shows that he is in keeping with his time, that his outlook is the result of Science and its influence; for, as already shown, it supplies that poetry of life which Science at first seemed to have taken away.

Many of his theatre settings, especially those for Russian opera, are complete in themselves. The scenes from Snow Maiden, Prince Igor and Tsar Saltan have a strange fascination, a poetic appeal like that of the Arabian Nights, a peculiar property which, at times, evokes 'magic casements and faery lands forlorn.'

An advanced cubist or futurist might consider all this as foreign to Art, something out of date. The only thing however that will eventually prove to be out of date is a mere sleight of hand void of spirit, and this is becoming common enough.

The inspiration behind most of Roerich's work is something rare, unique, indefinable.

Like the spirit that forms the works of Rimsky-Korsakov and Wagner, Maeterlinck and Tagore, it is the product of centuries of stored up experience, of deep heredity, of the accumulations of spirit.

It is not to be explained or arrived at by any technical system, because, after all has been said, it remains a form of great poetry.

In the work of all real artists and creators there is a preparation, a gradual leading up to some definite style, which afterwards changes under fresh innovations into another aspect.

Beethoven's work has often been treated in this way, by those who, for convenience, divide it into three periods. The same might be said of Roerich.

There is the early Russian phase, that of the Theatre, and lastly his Asiatic period.

It is interesting to see how almost all his early work up to the War is a preparation for his Theatre settings.

The scenery he painted for the Maeterlinck dramas was, as we have seen, a synthesis of all those early works painted in the mediaeval cities of Russia.

The scenery for Wagner and Russian Opera might also be considered as a resume of all those landscapes which he had produced in his native North and in Finland.

It is there that we shall find the natural decor for many of the scenes in Moussorgsky, Rimsky, Wagner and Grieg.

The affinity of these early landscapes with the folk music of the lands they represent is often quite striking.

One need only listen to a concert of Sibelius or, better still, to the folk songs of Finland to see how the landscapes which Roerich painted there near Lake Ladoga will gradually emerge on the mind's eye.

In both there is the same sense of pure and simple lives, of a long forgotten state of innocence still preserved amidst the solitude of forlorn regions, and if the music is melancholic and full of yearning, nevertheless it has a strange depth and poetry which is denied to the city and perhaps unknown to modern civilization.

Roerich has outlined these profound sentiments in landscapes of rare simplicity, where the shafts of the setting sun trail their strange searchlights across the floor of glimmering lakes.

Unless it be in parts of Western Ireland there is nothing more inscrutable perhaps in all Europe than these far off regions: like Tibet, like landscapes of Roerich they are full of mystery.

This explains why the settings made for Tristan and Isolde evoke as by some magic process the prehistoric coastline of Ancient Ireland.

Roerich is at home in the country of this legend. I imagine that after Snow Maiden this was the theme which came to him most naturally, that it was the work in which he took a particular pleasure and which gave him the greatest inspiration.

It is significant that the style of primitive dwellings, the rocks, mountains and sea coasts in many of Roerich's works suggest scenes from the West of Ireland.

There is the same prehistoric simplicity and those immense stretches of solitude that are peculiar to Connemara.

No doubt he has seen all this amid his own Northern gulfs in and Finland, but I am inclined to think that there is a deeper reason, and that is that much of his work might be defined as a subconscious evocation of the Stone Age.

The atmosphere and scenery of the West of Ireland has probably changed very little since those remote times, it is one of those rare parts of Europe where a prehistoric past has never been trampled on by the feet of civilization.

In all Roerich's work there is a sense of the Theatre and this, because he is a man of action.

His pictures are settings to some invisible drama, some unseen achievement which often refers to the future.

In some of the early canvases such as 'Sea Coast Dwellers' where primitive folk are seen hunting wild duck at dawn, there is a freshness which reminds us of Chaucer.

The colour scheme subtle and varied pleases the eye with its delicate repetitions, which render in painting what a Prelude of Chopin gives us in music.

The series of prophetic canvases—'The Last Angel', 'The Cry of the Serpent', 'The Doomed City', 'The Lurid Glare' and 'Human Deeds'—painted before 1914, and all obviously inspired by the coming war, belong to a category which, curiously enough, modern art critics seem to have overlooked. Had they foreseen one they might possibly have labelled such work 'apocalyptic'.

(To be continued.)

Indian Students in England

By Miss PADMA CHINNAPPA, BELLARY.



ANY articles have been written on this topic. They are usually full of grievances against the English people. Mostly Indians gather their information from newspapers and friends who have been to Europe. We are told that Indians are not treated properly in England. But there are some who belong to the aristocracy of India who declare that there is no such discrimination in England. Such people stay at the most expensive hotels and move in the highest society where of course, there is no prejudice nursed. Then, there are the middle class bureaucrats and rich businessmen who come on short visits and they cannot possibly come in contact with the masses of England. Sinclair Lewis gives a vivid portrayal of such tourists. "There were Mrs. Meece from Ottumwa Fowa, at a Palm-smothered hotel in Italy. Mr. M. had been a druggist for 46 years. They plodded on sight-seeing all day long; they took things exactly in the order in which the guide-book gave them and they missed nothing—Art galleries, aquariums, the King Ludwig monument in two shades of pink granite, or the site of the house in which Gladstone spent two weeks in 1887—but neither did they look bored; their expressions showed precisely nothing. They returned to the hotel at 5 daily and always dined in the grill at 6". Mostly tourists go on pleasure trips and sight-seeing. Their knowledge is often limited to hotel waiters, shop girls, some commercial people and a few acquaintances here and there.

A student sees more of life than a tourist. He has to live with students and he cannot help noticing things. A majority of the people who go to England are students. The students' life is centred round all sorts of activities. Most of the students in London are day scholars. There are licenced "digs" and boarding houses for them. There are many hostels for women students, such as College Halls. Here the colour problem does not exist. In Oxford and Cambridge too, Indian students are admitted in the College hostels. An Indian student sometimes experiences certain unpleasantness in the College atmosphere. An English student seldom takes the initiative in speaking to a foreigner. A foreign student naturally expects cordiality from an English student. It is not that an English student is indifferent towards Indians alone. He is equally indifferent to every foreigner. Funnily enough, an English student does not feel at home among foreigners in his own country. He admits that he is very

shy. In the Universities foreign students form their own groups. In the beginning every foreigner feels terribly lonely in his College. There are a few students who try to entertain them. They either belong to the Students Christian Movement, or the Oxford Group, or are Communists and Socialists. Unfortunately the number of such people is very small. I still remember an incident very well. In my college, an Indian girl friend of mine complained against the indifference of the English girls in her class. She was a fresher and she felt lonely and home-sick. I had a talk with my English friends at lunch time in the refectory, after listening to her grievances. I said to them that it was disgraceful on the part of the English students not to bother to talk to us. They never thought of making us feel at home and comfortable. We would never behave in this fashion with foreigners in India. My friends protested, and replied that they always felt like talking to foreigners but they suffered from shyness and they felt rather nervous in approaching foreigners themselves. I have been given this same statement from many English people. It is their nature. They are reserved and cold. Two Englishmen would travel for hours together without talking to each other. Each of them expects the other to break the ice. This peculiar attitude distinguishes the English from the other nationalities. But once we get to know them, they are solid and sincere, although they are not demonstrative. They can make excellent friends. I know many cases where English friends have done more for their Indian friends than their own countrymen. There are so many Indian students who spend years in England and return to India without having made a single English friend. Our students do not seem to realise that they should also study the cultural life of the English people. There is an Indian Students' Union at 112, Gower Street, often called the "Zoo". Here most of the Indian students flock: birds of the same feather flock together. When a fresher enters the hall, he is perplexed. He could hear Tamil and Bengali spoken and he would certainly make a mistake in distinguishing which is which (they all speak together). When there is a break, he may hear murmurs in Hindustani. Most of them come here regularly. These students attend lectures in colleges and spend most of their time among their countrymen at the Union. They do not mix with the English people. And unfortunately some of these men, when they return to India, try to speak about the English people with authority (as many retired colonels and other officials do about India when they return home). The Indian Students' Union is doing more harm to our Indian students than good (except perhaps serving hot Indian dishes and which, I dare say, is the main reason for the popularity of the Union).

In the social activities of the college, it can be hardly said that any colour prejudice prevails. In the college dances only rarely is an Indian refused. And that may be due to personal reasons. In sports and games they show due respect to merit. Of course, in the case of election for offices, it often happens that the question of nationality is emphasised but after all, that is human failing which one could understand, though not appreciate.

In London almost all the Indian students are day scholars. They can obtain addresses of boarding houses and private houses from the University Lodgings Bureau. It keeps a separate register of such houses for coloured students. Students who get addresses from the Bureau are saved some bitter humiliation and insult. Some of them, especially women students, live under happy illusions during their stay in England. They do not realise that they are not welcomed in many houses. Women students seldom run risks. Most of them go to England to take diploma in teaching. And the training colleges are usually residential colleges. Some women students who do degree and diploma courses stay in Y. W. C. A. hostels and in digs. Those digs are usually recommended by the college authorities or by the East and West Friendship Council or by some experienced Indian friends.

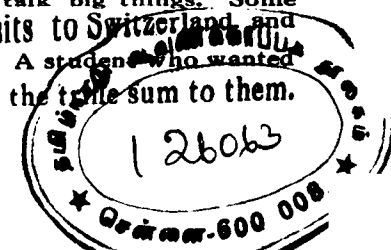
It is usually men students who undergo unpleasant experiences. Very few of them take advantage of the facilities provided by the Lodgings Bureau. It is true that often the lodgings which are recommended by the Bureau are more expensive than the boarding houses which are advertised in newspapers. Most of the students do not wish to spend much on boarding and lodging. They are, therefore, led away by the advertisements in the newspapers and on shop windows. And here, they often find themselves in hot water. A young man reads in the local paper that a bed-sitting room is vacant. He visits the house and knocks at the door. Usually the housemaid opens the door. The young man says that he read in the local paper that there was a bed-sitting room vacant. The maid goes upstairs to see her mistress. She comes down in a minute or two to say that the room is occupied. Our young man, if he has just arrived in London, believes the maid. But the next morning he sees the same advertisement in the newspaper. He is baffled, but soon recovers. He comes to the conclusion that the landlady did not wish to take "darkies". Sometimes the housemaids and even the landladies are rude enough to say before Indians that they do not take coloured people. Some landladies have the cheek to add in their advertisements that coloured people are not taken. A new-comer usually feels such insults intensely. He gradually gets used to things and learns where he is not wanted.

London is a very big town and Indian students are never short of shelter. In Oxford and Cambridge, day scholars have to stay in licenced digs. But Indian visitors there have to hunt for hours in search of lodging just for a night. In licenced boarding houses, outsiders are not taken. Outside London and especially in towns in the north and still more particularly in Scotland, the colour problem becomes most intense. Many students have to undergo very unpleasant experiences.

In London there are some swimming baths and dance halls where Indian people are not admitted. About two years ago, a very unpleasant incident took place at the Charing Cross swimming bath. Tickets were sold to some Indians but they were not allowed inside the pool, lest they pollute the water. The affair was settled in favour of the Indians after a heated controversy in the papers. Certain dance halls, even certain dancing instructors, are meant exclusively for white men. In some dancing clubs even if they are admitted, Indian men will find many English dames refusing to dance with them. This happens in all except Communist and college dances.

Most of the landladies take Indians to eke out their living. They usually belong to the lower middle class or more often to the working class. Many of us who have returned from England have stayed with hair-dressers, butchers, drivers, postmen and porters. Only a few have been lucky to get anything higher than that. Some have found lodgings with clerks, which is a rare honour indeed! These landladies do not charge much as their standard of living is fairly low. There are other landladies who think that all are equal before the Lord. This Christian spirit allows them to play godmothers to the unfortunate lonely Indians. Such landladies belong to the lower middle class or to the middle class. Before such women, the lodgers have to observe certain decorum, as the rules of the house might dictate. Now and then they have to listen to church chorus and sermons. The landladies would give notice to quit to any rash young man who is "profane". Some of these women have a tendency to cheat the Indian students, pretending to be religious. Another group of landladies consists of either spinsters or women who pretend to belong to the upper middle class. Indian students who stay with such women are either very rich or fools. Such women are interested in politics, in the international situation and they know something about Gandhiji and Dr. Tagore. Their houses are usually like auction shops. They always talk big things. Some of them will talk to you about their visits to Switzerland and Italy on your first visit to their lodgings. A student who wanted a room for two pounds dare not mention the true sum to them.

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Their terms are generally high. Very few Indians stay with such people. They usually leave the house within a month or so. The students are shocked and frightened by the extras and their monthly allowances from their homes just suffice only for boarding and lodging.

On the whole, life in England is not unhappy. Those students who live in London are very happy indeed! There are many Indian students around them. There are many international clubs. In this respect the Quackers and the Young Men's and Women's Christian Associations need special mention. Especially the former are very nice and hospitable to Indians. The Friends House in London which is the meeting place of Quackers—is the centre of international activities. Lectures are arranged on Indian subjects here. The Quakers are called "Friends" as well. They are really the friends of the whole world. They try to get in touch with many Indian students. They want to show us the real western culture and they want us to feel at home in their country. Many families often invite Indians to their country home for week ends. They entertain them most hospitably. Those who have such invitations know how they are looked after. Sometimes the "Friends" arrange international parties where the students of different countries assemble. As a rule the Quakers whom Indians meet belong to the middle class. They introduce us to many other cultured people. It is often very enlightening for us to have a tête-à-tête with such people instead of having tea at our digs with the butcher's wife—I mean the landlady.

The East and West Friendship Council is also proving very useful in bringing the English and the Indian together. The name of the association itself suggests its aim. Indians are often entertained by them. They introduce us to decent people and also arrange excursions and picnic parties.

One thing is certain—that Indians feel more strangers and awkward in England than they do anywhere else on the Continent. And this feeling of being suppressed is likely to remain as long as we remain dependent.

Making Success of Life's Failures

Walt Disney's Example.

[Readers of Walt Disney's cartoons on the screen would have read with interest the interview which the world-famous cartoonist gave to the press on the details of his picture-making which appeared in *The Scholar* of June 1938. In this further and concluding article more interesting details are given, offering a complete study of the process of making motion-picture cartoons.—Ed.]



WALT Disney in his statement continues:

"I decided to go into business for myself as a commercial artist. I felt well qualified, with my two months' experience, so I went out and sold myself to a couple of printing concerns and got a few odd jobs designing letter-heads and theatre ads. This led to a contract with the publisher of a small Western journal. He saw a chance of adding an art staff to his paper at very little expense, so he gave me desk space free if I would draw his advertising for him. He paid me at a rate of two pounds a page for every full page ad that I drew up. I then met a young apprentice artist who was out of a job, so we formed a partnership and established ourselves with this publishing concern. We made a total of twenty-five pounds the first month, which we thought wasn't bad. We were well into the second month when I answered an ad for a cartoonist. By some manner I impressed the boss that I had prospects as a cartoonist and he gave me a job at seven pounds five a week, which almost floored me. I knew I wasn't worth it, but decided to try it. I turned what there was of the commercial art business over to my partner, and went to work. This is where I got my start in the animated cartoon game. Through the courtesy of my boss I was allowed to take home one of the old cameras which was lying around the shop. I rigged up a little studio in my father's garage, where I started experimenting in my spare time, applying what I had learned in the day time at the Slide Company.

"Their animation was done by the old cut-out method, joining the arms and legs together with pins and moving them under the camera. At home I followed a more modern method of making animated cartoons, getting my instructions from a book which I found in a public library. I later convinced my boss of the merits of this method and he installed the system in this plant. This home experiment I was conducting led me to the making of a short reel of about two hundred feet, concerning the various local incidents of Kansas City. I sold this to Frank

Newman, who was then owner of the largest theatres in Kansas City. I worked out a deal with him whereby I made a subject a week, cartooning local happenings. It is interesting to note that I made this film and sold it to him, including the finished positive, for a price of one shilling and six pence per foot. Our Mickey Mouse and Silly Symphony cartoons today cost well over five pounds per foot.

"This work for Newman started me on the idea of animating the old fairy tales in regular cartoon length of 500 or 600 feet. With the consent of my employer at the Slide Company for whom I was still working I enlarged my studio where I worked at night, to accommodate a few more artists.

All stories used in our productions are original. We have a very large library of children's books, and reference books which are of the imaginative and fantastic type, and we often refer to these books for ideas in writing continuity for our pictures. Some stories are based on a burlesque or popular pictures that audiences have liked, or popular subjects with which an audience is familiar.

In making our Mickey Mouse subjects we always build around the characters: they are never changed to suit the picture. The characters in our Mickey pictures have definite personalities which we endeavour to keep before the public so that they will recognize the idiosyncrasies of each particular one. Therefore, our choice of stories for the Mickey pictures is more restricted than for the Silly Symphonies, where we are in the realm of complete fantasy and our scope is unlimited.

We aim to have our subjects appeal to the child mind in the adult. At the same time we try to inject action in the stories that will keep the children amused if the other subject matter is a little too deep. Our cartoons today run in some of the largest theatres all over the world, which makes it very necessary that they appeal to the adult. It is interesting to note the different reactions to the same subject, from a child audience and an adult audience. In the kiddies' matinee, the children laugh at entirely different things from those which amuse the adults. When possible, we try to find a happy medium which will appeal to both.

I think the cartoon industry has a wonderful future. I believe it will be the great medium of fantasy. Eventually we will see feature length cartoons.

The possibilities are absolutely unlimited. If there is any limit it is confined to the limitations of those in the industry. The success we have met has inspired us to finer work, we have a feeling that we can't let down now, we must keep building.

The idea of coloring cartoons has appealed to me since I first started in the business. The main thing that kept us from doing it a long time ago was the prohibitive costs and the remote possibility of recovering that cost. From the laboratory standpoint, it costs approximately three times as much to produce a colour print as a black and white, and on our own production end, the additional expense is about a fourth.

Cartoons have always kicked around; they have been the stepchild of the industry. Everyone has regarded cartoons as so much filler, so much film to fill in on a bill, and it was not until recently that we considered the time ripe to include colour. The public's reaction to our product gave us the courage to go ahead and try colour. Also the colour processes were not perfected to a point where we felt it would be worth while using colour. It was not until Technicolour improved their process to the stage of being able to photograph in natural colours that we thought it advisable to go ahead. The colour that we are getting today is, in my estimation, wonderful, and I think Technicolour deserves a lot of credit for the advancement they have made in this end of the industry.

Such shorts as "Santa's Workshop," "Babes in the Woods," "Flowers and Trees" are created in the same manner as any feature production. First, there is the rough idea, something that appeals to us and which we think will appeal to the public; then we continually work on it, possibly for months ahead of the time it is ready to go into production. The idea is thought over and discussed and developed until finally we have some definite outline. Then this outline is written up in synopsis form with suggestions of situations which may be elaborated on, or may be worked out to good advantage in the story. A copy of this outline is handed to the entire staff individually; they read it over at home or in their spare time, then with very rough sketches they illustrate any ideas they may have for this story. These are handed in two weeks later, and our story department then goes to work on it. The story department looks over all the material and finally arrives at some definite scenario or continuity, in which we try to use all the good gags and suggestions that have been submitted by the staff.

The next step is to find music which will fit the continuity of our story.

After the music is selected we start to lay out our story into scenes, finally we arrive at very rough scenario outline, which includes rough sketches of all the various scenes, in sequence. From this point the lay-out department starts to work on these rough sketches, enlarging them to workable size and putting them

in shape so that the artists will have a definite sketch to start on for the animation. By this time the music and timing of the action is all laid out complete. The story is divided into various sequences and scenes and handed out to the different artists or animators, who put them into action on paper.

We have a great variety of artists, some of whom are very versatile and can handle any type of scene, while others have their particular type of action which they excel in portraying. We try to cast the men in the manner of casting actors or actresses, so that they will all be working on the type of thing they do best. From the time a story is conceived until the picture is finally finished takes a period of about three months. However, we have a finished picture coming out of the plant every two weeks. Our studio is divided into three separate organizations, as far as story and direction is concerned; however, each one of these three organizations uses the same artists interchangeably.

Each organization is allowed a period of six weeks per picture, and with the three working individually it allows us to produce a new picture every two weeks. There are about 75 artists in the group of 125 people. The others are technicians, sound men, camera men, the inking and painting department and the business administration staff. Part of these 75 artists are engaged in other work outside of picture production, such as comic strip, books, toys and novelty designs, publicity, etc. It takes very nearly 15,000 drawings to make every picture. The smoother and better the action, the more drawings required.

There is no trade secret as to how the colour is applied. It is painted on the drawings in the same manner as the black and white colours are applied.

From this point the Technicolour process takes care of everything; we strive for the colours we would like to see, and Technicolour tries to reproduce them.

We have quite a few patents on various methods of production that we now use; in fact one patent on the synchronizing method was filed when we first started to produce sound pictures in 1928. This method is quite general in use in the cartoon industry. We have also various other patents on minor things that save the artists time and improve their efficiency and technique.

The idea for the Silly Symphonies came after we had started to make Mickey Mouse. This was after sound had hit the public with such a wallop that it impressed on us the value of sound and action. Mickey Mouse was more a product of necessity. A Mouse has always appealed to me. While working in Kansas

City I caught several in waste baskets around the studio. I kept them in a cage on my desk and enjoyed watching their antics. One of them was quite tame and would crawl all over my desk while I worked. He seemed to have a personality of his own, and I gave him a pet name. That is what more or less started the idea of Mickey Mouse. I first decided to call him Mortimer Mouse, but the name did not seem right. After trying various names out on all my friends, I decided to call him Mickey Mouse. Of course I had to have a girl friend for Mickey so I called her Minnie Mouse. I became quite enthusiastic over this idea, although I had no definite deal and no prospects of getting one. So with the help of Mrs. Disney, I managed to write the first Mickey Mouse scenario while on the train on my way back to Hollywood from New York where I had gone to make twenty-six Oswald subjects for Winkler, leaving my brother Roy in charge of the studio in Hollywood. Winkler and I had a difference of opinion and he decided he could get along without me, hence my return.

When I arrived in Hollywood, I was all set to go, with a scenario, a character, and a name. At our first meeting with my brother and two of the loyal men who stayed with us, I explained the whole idea. We all agreed that the best thing to do would be to take a chance with what little money we had saved and see what could be done alone. We all dug in and started the first Mickey Mouse.

We still had three or four subjects of Oswald to complete for Winkler, therefore it was necessary for us to keep quiet about the fact that we were making this new series of cartoons. So we decided to make the first Mickey in the garage at my home while we continued making the Oswalds at our studio. The first Mickey Mouse was practically all made under these conditions. Of course, I did not visualize the enormous popularity that Mickey is now enjoying.

It is true that we have been putting back everything that we have made into the Mickey Mouse and Silly Symphonies. It is our own business and we have faith and confidence in what we are doing and are willing to gamble on ourselves.

By this method we have been able to struggle along and build the business to where it is now almost on its own feet and at the same time we own and control the business entirely ourselves. Therefore we are able to dictate the policies we think should be carried out. This has been a most important factor, as in this way we are able to make better pictures, because we know what we want to do, what we feel we should do to make good pictures

and we don't have to be asking the advice and permission of some one who is interested from a financial standpoint only.

There has been a great improvement in the mechanical end of production. In the old days, before sound came into existence, most of the cartoon equipment used was make-shift and crude apparatus. There were very few people in the business with enough faith to invest any amount of money in equipment. Today we have well over \$ 150,000,00 invested in studio and studio equipment. This improved equipment and working conditions have done a great deal to help us advance. Our improved cartoon technique makes the cartoon steady and flickerless, and aids the animators in producing better and smoother action.

The artistic development of the cartoons, in my estimation, is remarkable. We make our characters go through emotions, which a few years ago would have seemed impossible to secure with a cartoon character. Their facial expressions and actions are worked out very carefully to be certain they will not be overdone to the point of appearing silly. There is just kept just enough exaggeration to take them out of the real and into the imaginary, yet it must all appear natural to be effective. It has been said that some of the action produced in the cartoon of today is more graceful than anything possible for a human to do.

Current Comments

BY AN OBSERVER

The Linguistic Society of India. In 1928, when Sir G. A. Grierson completed his monumental work on the Linguistic Survey of India, a Society of Linguists belonging to the different Indian Universities was started in Lahore under the presidentship of the late Dr. A. C. Woolner, the Vice-Chancellor of the Punjab University. Its object was to continue the work of Sir George Grierson, and to conduct researches in the different languages of India. The society has been doing substantial work, and has published several monographs on the different dialects, their grammatical structure and other peculiarities; but of late has shown signs of comparative paucity of work. The Trevandram Oriental Conference considered the question of resuscitating and reviving it, and resolved that Calcutta would be a more suitable place for it; and, in accordance with that resolution, the society is now about to be handed over to the Calcutta University group of Linguistic scholars and researchers. The move is certainly bound to be beneficial as Calcutta is more accessible to the generality of scholars than Lahore; and it is hoped that a new era is dawning in a field of investigation to which Indian genius has shown an aptitude from the early ages of history.

The Bhagavatgita and the Anugita. The *Anugita* is a supplement to the *Bhagavatgita*, and forms chapters 16 to 51 of the *Asvamedha Parva* of the Epic. It differs from the former, points out a writer in a recent issue of the *Dharmarajya*, in the fact that, while the Gita proper begins with *gnana* and ends with the instruction to perform *karma* without caring for the result, the *Anugita* begins with *karma* and ends with the necessity of *gnana* for the goal. The processes are, in other words, exactly opposite in the two cases; and this is due to the fact that, while on the former occasion Arjuna had become morbidly obsessed with spirituality and needed to be unselfishly employed in worldly duties, he had, on the latter occasion, achieved everything belonging to this world, and needed only a spiritual goal to bring his earthly career to an end. Differing in their circumstances, the two discourses differed in their purpose. We find several verses, and most of the ideas regarding *gnana*, cosmology, yoga, Purusha, to be common to both; but the treatment of the subject is reversed in one work as compared with the other. Both, of course, are based on the original substratum of the Upanishads; but the *Anugita* is not in the form of a dialogue between Arjuna and

Krishna, but in the threefold form of the discourse of a Brahmana to a Kasyapa, of a husband to his wife, and of a Guru to his disciple. The subject-matter again does not only proceed from *karma* to *gnana*, but deals incidentally with the problems of creation, *gunas*, *dharma* etc., as they play their part in the realisation of *Brahmam* and *Moksha*.

Prof. Wilhelm Filckner. The great German explorer, Prof. W. Filckner, has written to the press in Germany announcing his desire to visit Nepal in order to carry out some important explorations. "My work in Nepal", he says, "will link up with the investigations about the earth's magnetic current which I have made in Central Asia." He states that his desire is to establish a magnetic registration station in the capital of Nepal, which will continue the measurements he made in the surrounding country with the aid of hundreds of sub-stations. He further observes that the government of Nepal is showing great interest in his investigations and giving him substantial help in connection with the matter.

Pre-historic paintings in the Central Provinces. One of the most valuable discoveries of recent times which go to elucidate the evolution of pre-historic culture in India is at Hoshangabad in the Central Provinces. Within two miles of this city, there are some isolated sandstone hills with many rock shelters, the overhanging roofs of which afford natural protection to men and animals. These shelters contain scores of interesting figures of the bison, elephants, horses, monkeys, goats and birds, with which the men of the age were acquainted. There are also several scenes of hunting and fighting characteristic of the age. All these paintings are drawn in a red colour made from red iron oxide. They are of great value in throwing light on the food, religion, tools, dwellings and other features of the then culture. All the drawings do not belong to the same period as some have been drawn over the earlier ones by later peoples. It has been in fact suggested by a writer in the *Times of India* that the latest paintings come down to the tenth century A. D., while the earliest go to the upper paleolithic age 20 milleniums ago. The drawings thus cover a period of several thousands of years. But the most interesting feature is that, while there is the figure of an elephant with two riders attributable to the latest period, there is the figure of a giraffe in the earliest portion of the paintings which go to about B. C. 20,000. This indicates the contact between the Indian and African cultures in the late palaeolithic and early neolithic times, which has been proved by other evidences also.

Pre-Buddhistic Relics. A discovery of unusual importance has been made by Mr. V. N. Singh, the Superintendent of Archaeology, Indore State, at Kasarawad in the local Sthupa. There have been found several antiquities including "triangular bricks, grihamandal symbols, smalachakras (*sic*) and akasdip". According to Mr. H. P. Vanish, the Curator of the Jaipur Museum, some of the things were used in the sacrifices of the Vedic Age, and therefore must be assigned to the pre-Buddhistic times. He further infers from the relics that the Sthupa style of architecture went back to pre-Buddhistic times. The latter conclusion is by no means original; for it has been a long-recognized fact that the Sthupa is only a spiritualised form of the ancient sepulchral tumulus which goes back to very primitive ages in the history of mankind.

The Tripitaka in different Scripts. The Calcutta Mahabodhi Society, which has already got the *Tripitaka* of the Buddha in various scripts, is now expecting to complete the series by the acquisition of the Cambodian Edition. The *Tripitakas* which were first given a form in the Rajgir Synod which met immediately after the Buddha's death in B. C. 543, and which were revised and pruned from unauthorised intrusions from time to time by the later Synods, came to exist in their present form by the 3rd century B. C. They were committed to writing in the original Pali in Ceylon in the fourth century A. D., and spread from there to Burma and Siam. The Tripitaka of the Mahayanas, in the meanwhile, had arisen in Sanskrit, and spread from North India to the countries of "Nothern Buddhism". The *Theravadi* or Pali *Tripitakas* have been edited in several scripts—the Roman, the Siamese, the Burmese, the Cambodian and the Sinhalese. It was only recently that the Calcutta Mahabodhi Society was presented by the Rangoon Society with forty-five volumes of the Burmese edition of the Pali canon; and the acquisition of the Combodian scripts is bound to be of great value to lovers of religion and history. It is the object of the Sarnath branch of the Mahabodhi Society to publish an edition of the Pali canon in Devanagari script. It is worth while to investigate how far the Buddhistic works exist in the different Indian scripts. There are of course translations of stray portions and summaries of perhaps the whole; but no systematic versions in the vernaculars. The *Hindi* translation of the Sarnath Society is apparently the first systematic attempt to give the holy treatises a comprehensive form in a living popular tongue.

Lt. Col. Pawa Jiwan Singh. The death of Lt-Col. Pawa Jiwan Singh on the 15th of December 1938 at Calcutta in the residence of his son-in-law, Major G. L. Pasricha, has removed not

only a distinguished medical man but a literary savant and promoter of culture. A descendant of Amardas, the third Sikh Guru, the late Lieut. Col. qualified himself for the I. M. S. by his studies in London. He rose to be Inspector-general of prisons in two provinces and the Rector of the Medical and Sanitary Departments in Hyderabad, and earned by the time of his retirement in 1924 high honours from Government. He spent his retired life at Ranchi and devoted his leisure to literary pursuits and promotion of cultural understandings. Amongst his literary works the most note-worthy are his translations into English of the *Japji Sahib* and of the *Gita*; and last year he presided over the Sikh section of the All India Theological and Cultural Conference at Calcutta.

The Snow-men of the Himalayas. There has been a strange tale long in circulation that, high up in the Himalayan region, there is a strange race of men, generally known as the snow-men. Traditions of their visibility have been floating from time to time to whet the appetite of the enterprising mountaineer and the stay-at-home sociologist. The usual belief about them is that they occasionally visit 'the roof of the world' and possess supernatural powers. Two different sets of European climbers are said to have discovered, in the course of this year, clear traces of the foot-prints of these elusive men on the Nanga Prabat region at the height of 24,000 feet. In September 1938 certain Bhutanese coolies who were engaged in their usual annual business expedition claimed to have seen the snow-men on the peak known as Manas Saroban at the height of 20,000 feet, and reported the matter to the Maharaja of Bhutan; and he is organizing an expedition to track down the men who have so long and so tenaciously roused the curiosity of scientists. Whether the existence of the race is a fact or a myth is likely to be ascertained in the near future, and the long-eluding mystery is likely to be solved one way or the other.

Ancient Town Planning and Architecture. The recent discoveries of the Indus Valley civilization have thrown much additional light on the amenities of urban life. As the city was much affected by the flood of the river which flowed near it, provision was made against that danger. The work of reconstruction and re-planning from time to time was in vogue, though the ruins of only the buildings of the later stages have been discovered. The streets and lanes were regularly laid out. The roads were broad and hardened with solid material; and the alignment of houses intelligent and comfortable. There must have been a watchful municipal authority to prevent encroachments, so that traffic was not obstructed. The buildings were broader at the base, and

so the streets and lanes became broader as the level increased. In the earlier layers there were larger open spaces; in the later ones they were built upon. The houses were constructed of burnt bricks, of admirable beauty and technique. The size of the bricks was $11 \times 5\frac{1}{2} \times 2\frac{3}{4}$ 'fingers', a measure which is, curiously enough, given as the standard in the *Kasyapa Samhita*. This indicates that the art of brickmaking must have been standardised throughout the country. The masonry construction was quite scientific. The use of the level instruments was in vogue. There was no ornamentation or decoration in brickworks; but different sizes and shapes were made to suit arches, walls, drains and wells. The Sindh men built solid and substantial residences, and paid no attention to elegance and decoration. Storeyed houses were not unknown. All the houses opened in the by-lanes and not the main road, indicating the value attached to privacy; and the main house was usually separated from the gateway by a hall and courtyard. The roofs were supported by beams and cross beams, and made of reeds daubed with clay. Though built together in blocks, the houses had no common walls, the space between two neighbouring walls being closed at either end. Some of the houses were spacious, and had a number of rooms, halls, and courtyards, showing the habitation of a large number of residents. It has been plausibly suggested that there was probably the joint family system prevalent among the Sindh people. The water supply was provided for by wells. These were bound and rivetted in good brick-work, and care was taken to keep them pure by the provision of paved washing places and proper drainage, which was connected with the street one. The central and lateral drains and the water supply show the great care bestowed on the needs of urban life and would do credit to a modern city. The channels were spanned by limestone blocks and "there were cess pits and small jars used for collecting drainage water at houses."

One of the amenities of urban life was the public bath. "The beautiful flight of steps leading to the bathing pond, the walks around built with brick and bitumen, wells close by to supply pure water to the bath, and capacious channels draining out the water from the bath, a number of rooms on the storey above, the finestrated walls, and the care taken to secure privacy for each individual resorting to the bath, all made the bath one of the finest discoveries in the city. It was probably an adjunct to a temple or place of worship or most probably a centre of hydropathic treatment."

The Mohenjo-daro city was amply provided with shops. The presence of local industries has been proved by pottery works and dyeing vats; and the security in marshy areas was secured by the construction of buildings on piles.

The Indian History Congress at Allahabad and the Roerich Pact. Prof. Roerich's Secretary has drawn attention to the fact that, at the Second Indian History Congress at Allahabad, on October 10th, the Roerich Pact was approved by the world of Indian historical researchers. He writes: "Dr. Tara Chand moved and Rai Bahadur Brij Mohan Vyas seconded a motion for the endorsement of the Roerich Pact, and the following resolution was unanimously passed: 'Resolved that the Second Indian History Congress held at Allahabad approves of the International Pact for the protection of artistic and scientific institutions, historic monuments, missions and collections, originated by Nicholas Roerich, and records its support of the said Pact'. Rai Bahadur Brij Mohan Vyas, in seconding the motion, paid tribute to Prof. Roerich, and mentioned that the Pact has already been adopted by 21 countries and by a very large number of learned societies and associations. He stated that he had no doubt that, by solemnly endorsing that great pact in the cause of peace and culture, that most distinguished and learned assembly of scholars from all over India would not only be following the footsteps of similar assemblies and organizations in other parts of the world, but would be lending support to a most emergent and significant measure.

"In addition to the many previous adoptions, the Roerich Pact has also been recently unanimously endorsed by two International Congresses in Paris: The International Federation of Art, Literature and Science, and The First Congress of International Studies".



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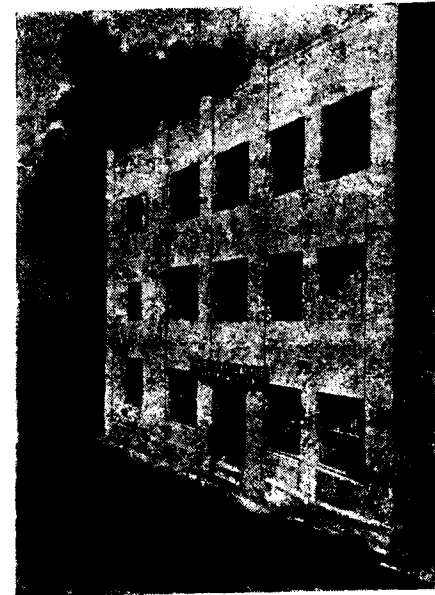
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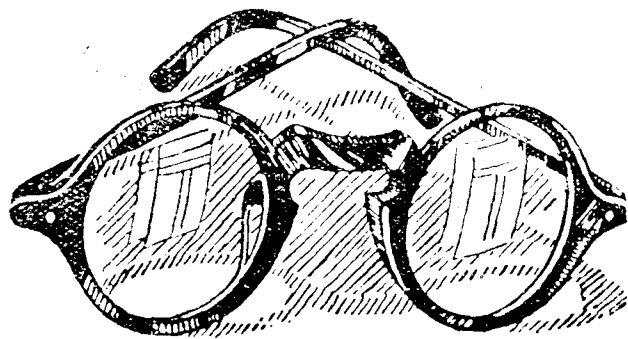
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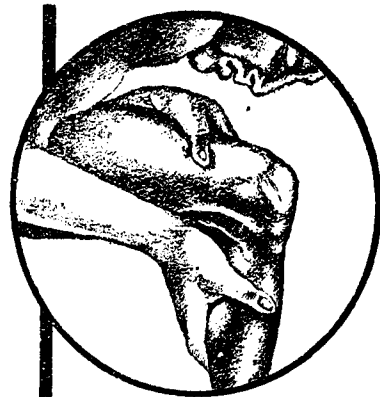
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