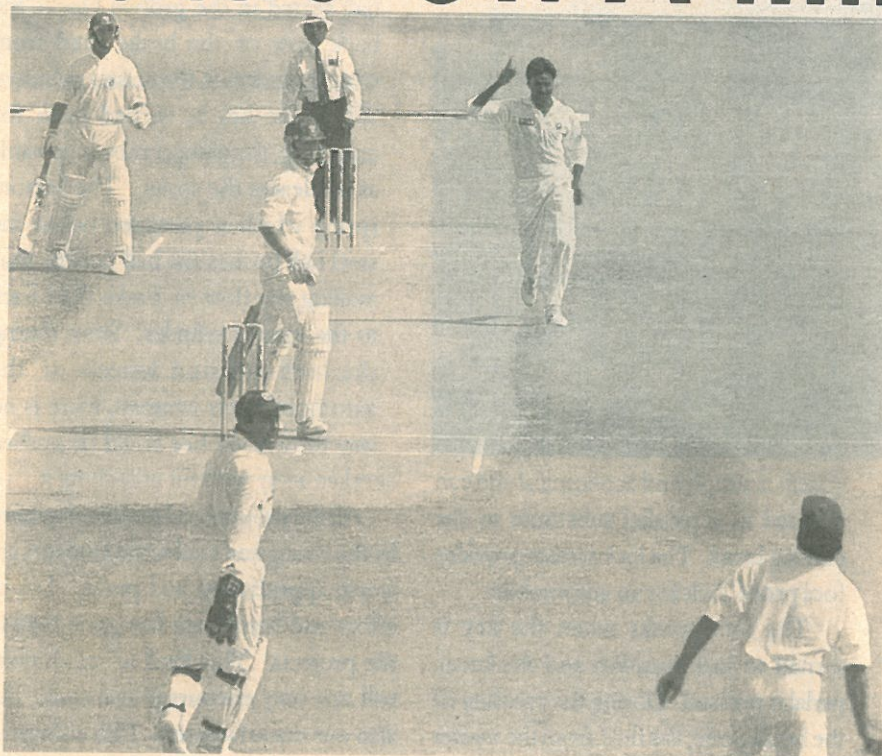
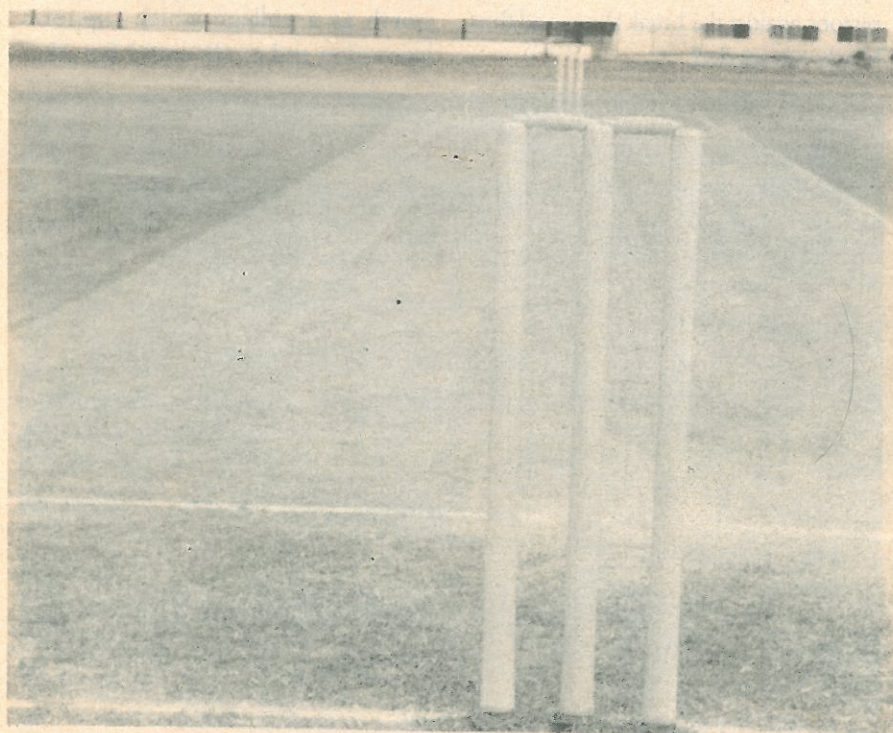


Battle On A Minefield



Cricket is a game of glorious uncertainties. A major portion of this uncertainty is due to the unpredictable behaviour of the pitches on which the game is played. This 22 yard strip virtually dictates the course of a match.

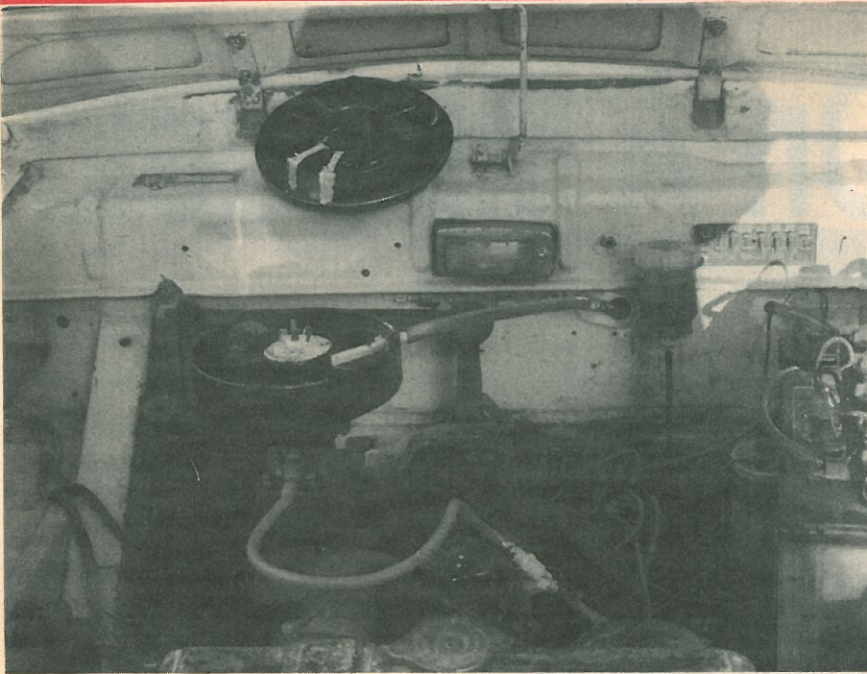
*Harish M.,
Sreenath Bhadram,
G.P. Vinayababu*



The shame of March 13th 1996 cannot be easily forgotten. India's favourite Eden Gardens pitch in Calcutta crumbled, Indian players stumbled and the hooligan crowd took charge of the situation. The Eden Gardens turned out to be a hell on earth. India with all its experience in playing quality spin bowling for once failed to live up to the standards of even a town cricket club. Indians were made to bite dust on a dusty Eden Gardens wicket.

The Calcutta wicket was a classic example of an underprepared strip. The fact that the pitch couldn't last for even a couple of hours showed that it was nowhere near the international standards.

One may wonder as to how the



used to corner the holes to obtain rich and lean mixture. When more number of holes are opened, a lean mixture is obtained and vice versa.

Though this work has been carried out long before the provision to choose a rich or lean mixture of fuel is provided for the first time.

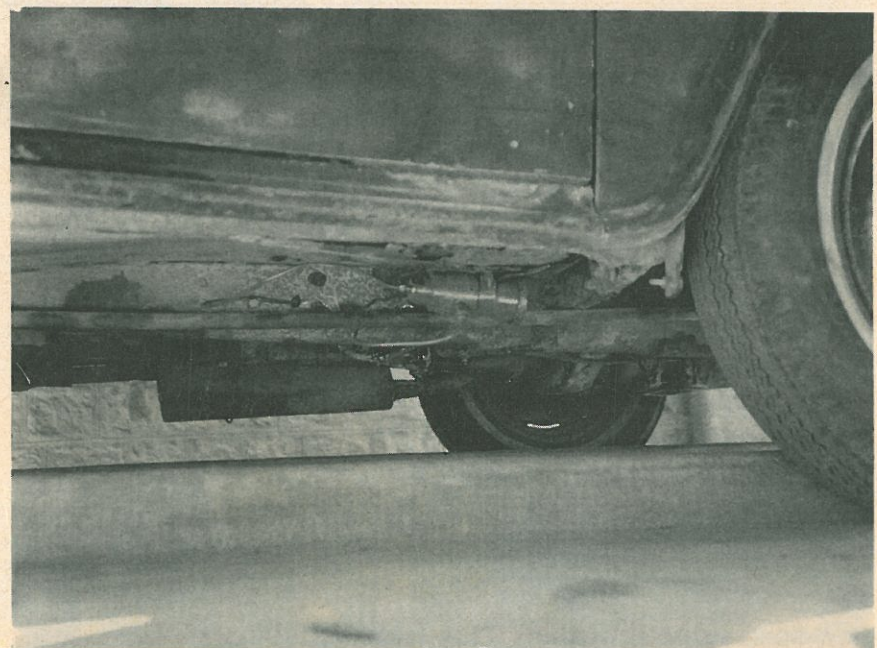
The mileage provided by the gas run car is Rs.0.50 per km., which is definitely much cheaper compared to the petrol mileage given by an average car of Rs.2.50 per km. The car's emission level is reduced to about 75% due to proper fuel combustion.

The gas run engine runs cooler and smoother than its petrol counterpart. Hence it also tries to solve the increasing problem of traffic pollution. This efficient project was developed by Amar Majeri, Sanjeeva C., Shekhar M.S. and Prakash V.R.

The last but the most interesting project was developed by Joe N. Michael, Sibiraj K.P., Nikhil Scaria and Sudeep Ravindran, under the guidance of Mr. J. Nagaraj. The students have developed an anti-theft hydraulic break locking system for automobiles. This

system is simple and economical and can be used as a parallel substitute to the parking break. The lock system provides fool proof lock for an automobile.

The lock works when the key is turned to lock position and the break pedal is pressed. During the pressing of the break pedal, the fluid from the master cylinder pressurizes the wheel cylinder pistons against the break shoes and thus breaks are applied.



While locking, the key pushes the plunger against the spring tension which is placed over the steel ball above the groove. By this action the ball seated in the groove blocks the back flow of the brake fluid from wheel cylinders to the master cylinders. When the key is turned back for unlocking, the plunger moves upwards as it releases the spring. The bottom spring which is provided below the steel ball pushes the ball upside, thus making the flow of brake fluid back to the master cylinder. Since during the lock-position wheels of the automobile gets jammed, there is no way the automobile could be pushed or taken away without unlocking it.

All the projects and models displayed by the young and exuberant students are worth appreciation and praise. Lot of effort and hard work has gone behind the projects. This kind of exhibitions will not only encourage our youth but also our manufacturers. PES college of polytechnic has once again proved its worth as a college which supports innovation and a role model for other

cricket pitch could decide the result of a match. Unlike other popular team sports like football and hockey which requires a flat, lush green outfield (sometimes astroturf in case of hockey), cricket requires a prepared 22 yards pitch on which the ball is made to bounce before it reaches the batsman.

Pitch plays a vital role in cricket. Cricket is all about batsmen trying to score runs of the balls hurled at great pace by the bowlers, and bowlers trying to get past the defences of the batsmen to strike timber. But ultimately the course of a match depends on the way the pitch behaves.

A pitch is not just a piece of ground where cricket could be played. Pitches have to be prepared to withstand the constant hammering of the ball on it. On an average the ball hits the pitch upto 540 times a day in a test match. In a one

dayer, it has to take the beating 600 plus times. To take such a hammering from a hard object (as hard as a stone) as the ball which is approximately 175 grams, the pitch should be real strong.

Laying and preparing the pitch is usually carried out by the curator of a cricket ground. Bangalore's Chinnaswamy Stadium pitch which has played host to many a scintillating encounters between top cricketing nations of the world, is maintained by Mr. Kasturi Rangan, who is also the Vice President of Karnataka State Cricket Association. He was of the opinion that preparing a pitch to suit spin or pace was not difficult. He recalled having prepared hard pitches to suit fast bowlers in many cricketing centres in South India. "When international teams play in India, we obviously have to prepare wickets which suits the home team. Preparing wickets

which suits the strengths of the home team is not wrong. This is done in every country. In

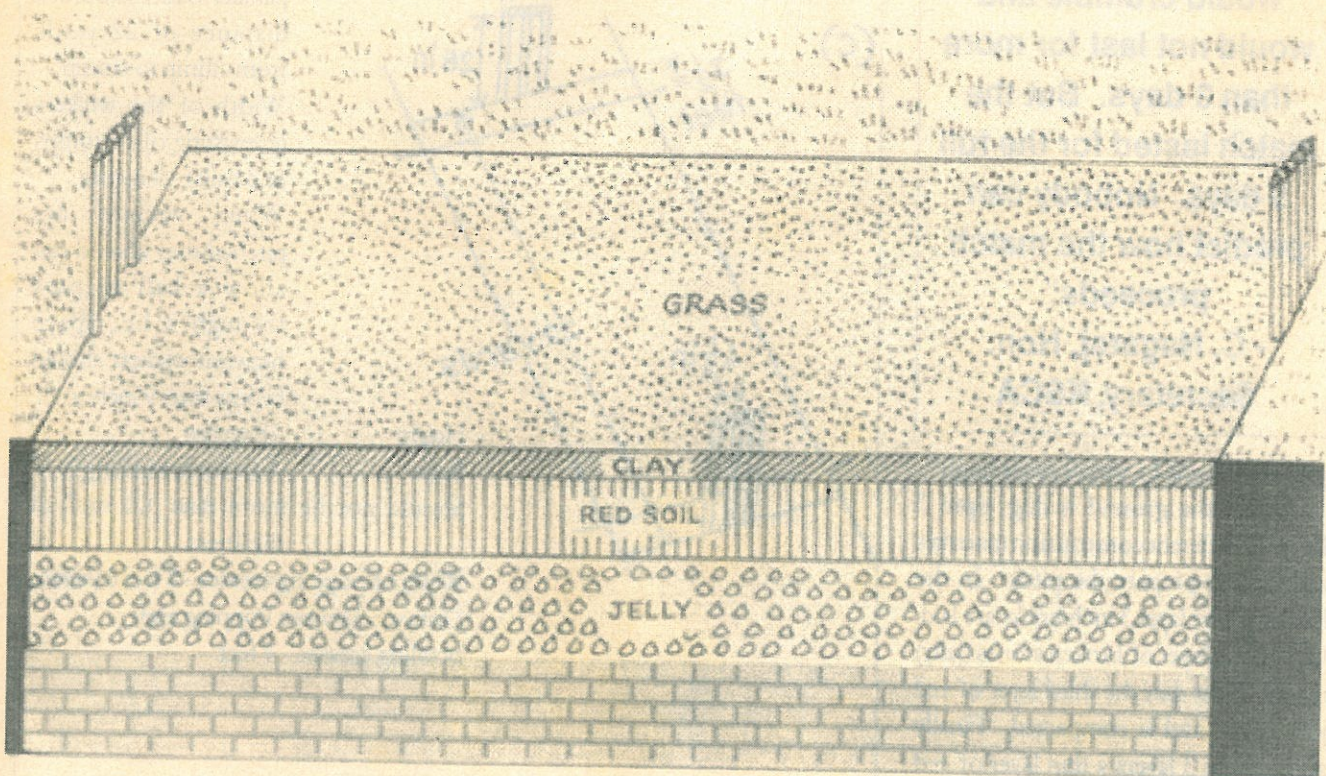
Australia and England the kind of soil used is different and only fast tracks are prepared there to suit their seamers".



Preparing a Wicket

Whether a pitch helps a fast bowler or a spinner, is determined by the way the topmost layer of the pitch is laid. But the basic ingredients which go into making a wicket are the same.

A lot of scientific understanding is essential to prepare a wicket. As Mr. Rangan puts it, "The preparation of pitch depends on the geographical





location of the ground. If the ground is very hard, it is not necessary to dig very deep to prepare the pitch. Usually in such conditions, we dig the ground upto 1.5 feet. If the surface is not as hard, then we can dig upto 2 feet deep. If the area receives more rainfall then the pitch

"See, what happened at Jamaica. Everybody said that the wicket would crumble and would not last for more than 3 days. But the match lasted for the full 5 days. Nobody can predict how the match proceeds"

- C. Nagaraj, Hon. Secretary, KSCA

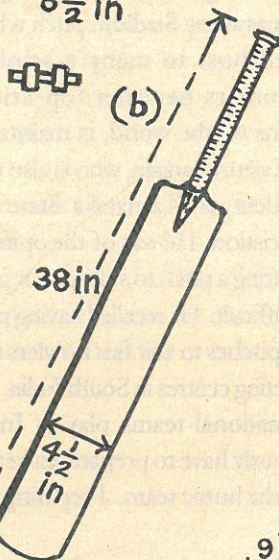
preparation will be varied accordingly".

"After the ground is dug, upto 3 layers of different construction materials are used to prepare the pitch. In the bottom most layer 3 inch bricks are laid. Over that a layer of broken stones (jelly) is laid. Over that the third layer of red jelly is laid and is compacted. Finally above these 3 layers a thin layer of red soil covers the pitch. All these layers

(a) Game Specifications

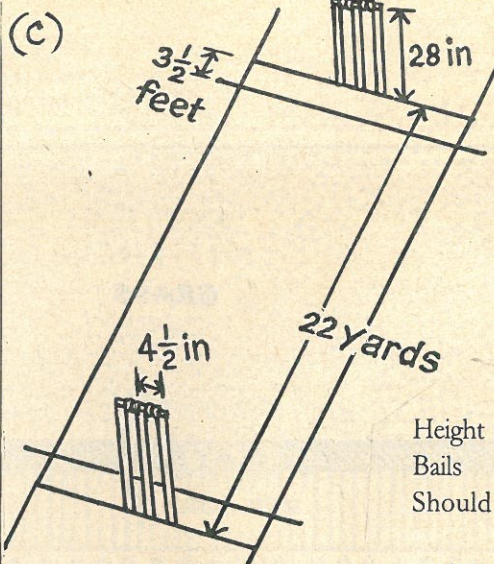


- BALL**
- 5 1/2 to 5 3/4 ounces in weight
 - 8 + 3/6 inches to 9 inches in circumference
 - In first class matches the ball can be changed after every 85 overs.



- BAT**
- 4 1/4 inch width
 - 38 inches length

- PITCH**
- Area between the bowling creases
 - Width - 5 feet on either side of the line joining the centre of wickets



- WICKETS**
- Pitched opposite and parallel to each other at a distance of 22 yards from stump to stump
 - Width of the wickets (consisting of 3 stumps & 2 bails) - 9 inches.
 - When wickets are pitched they should not allow a ball to pass through it i.e., space between wickets should be less than 9 inches.
 - Height - 28 inches
 - Bails - 4 3/8 inches in length
 - Should not be more than 1/2 inch in thickness.

- Width of popping creases - 8 feet 8 inches.
- Distance between Popping and Bowling creases - 4 feet

From the Rule Book

The pitch is an important part of the game of cricket. The cricket law book has special instructions/rules for the care and maintenance of cricket pitches. Here is a reproduction of the rules for care and maintenance of the pitch mentioned in the cricket law book.

ROLLING, MOWING and WATERING. Unless permitted by "Special Regulations", the pitch shall not be rolled during a match except before the start of each innings and of each day's play, when, if the Captain of the batting side so elect, it may be swept and rolled for not more than 7 minutes. In a match of less than three days' duration, the pitch shall not be mown during the match unless "Special Regulation" so provide. In a match of three or more days' duration, the pitch shall be mown under the supervision of the Umpires before play begins on alternate days after the start of a match, but should the pitch not be so mown on any day on account of play not taking place, it shall be mown on the first day on which the match is resumed and thereafter on alternate days (For the purpose of this Law a rest day counts as a day). Under no circumstances shall the Pitch be watered during a match.

MAINTENANCE OF THE PITCH. The Batsman may beat the Pitch with his bat, and Players may secure their footholds by the use of sawdust, provided Law 46 be not thereby contravened. In wet weather the Umpires shall see that the holes made by the Bowlers and Batsmen are cleaned out and dried whenever necessary to facilitate play.

Regulations for drying the Pitch and ground in first-class matches

N.B.: These regulations are primarily designed for First-class Cricket and their application in whole or in part in other grades of Cricket is at the discretion of the ground etc. authorities.

i) Prior to tossing for choice of innings the artificial drying of the pitch and outfield shall be at the discretion of the Groundsman. Thereafter and throughout the match the drying of the outfield may be undertaken at any time of the Groundsman, but the drying of the pitch shall be carried out only on the instructions and under the supervision of the Umpires. The Umpires shall be empowered to have the pitch dried without a reference to the Captains at any time they are of the opinion that it is unfit for play.

ii) In wet weather, the Umpires shall see that the footholes made by the bowlers and batsmen are cleaned, dried and filled up with sawdust at any time during the match, although the game is not actually in progress.

The Groundsman, without instructions from the Umpires, may also clean out in this way footholes, provided they are not on any part of the pitch, more than 3 feet 6 inches in front of the Popping creases.

The drying of the footholds on the pitch itself may be undertaken, as directed by the Umpires, at any time. The Umpires may also direct the Groundsman to protect against further rain, marks made by the bowlers, even though they be more than 3 feet 6 inches in front of the Popping creases, provided they are not between wicket and wicket, with loose sawdust, which, however, shall be removed prior to the resumption of play.

together are compacted to form a hard layer - as hard as a stone. The compaction is done by using a road roller. The rolling is done several times to ensure that no airpockets remain in between the layers".

"We used to go 6 feet deep in earlier days. Actually going so deep is not necessary at all. In South, only in Chepauk which is in the coastal area, we need to go upto 2.5 feet deep. But in Bangalore, 1.5 feet is sufficient".

It is not only the depth to which the ground is dug which matters. The state of the pitch also depends on the number of days the different layers of the pitch are allowed to settle down and get compacted.

Prior to an international match, the pitch has to be prepared 45 days in advance. Mr. Rangan suggests that upto 3 wickets of dimensions 100 * 30 or 100 * 40 or upto 5 wickets with a dimension of 100 * 60 should be prepared. The bottom layers of the pitch like bricks, broken stones and red jellies are not laid every time a pitch is prepared. Only the top two layers of red stones and red soil are laid and are compacted. Once these two layers are re-laid, the pitch is made to acquire the desired characteristics by watering and rolling it continuously till a few days prior to the match.

Generally the top of the pitch will not be compacted. The top 6 inches of the pitch will be made up of clay and red soil in equal parts. Further by planting grass on the wicket and mowing it, it can be made into a lively track for both fast bowlers and batsmen. Mr. Rangan says, "Planting grass is easy in coastal areas. While it takes 15-20 days for the grass to grow in Chennai, it takes more than 2 months to grow in Bangalore".

An ideal wicket is the one which gives

Rollers

To prepare a docile wicket, a fast wicket or a spinners wicket, the rollers play an important role. It all depends on the kind of rollers used and the wetness of the ground. The rolling load ultimately determines the behaviour of the pitch.

Docile Wicket

The pitch should be watered and a heavy roller should be passed over it. By doing so the soil is completely compacted which helps slower bowlers.

Pacy Wicket

The pitch should be made slightly wet and compacted using a medium roller continuously. No heavy roller should be used in this case. The ball pitches and skids on the surface on a pacy wicket.

The rollers are essentially of 3 types.

- a. Heavy rollers
- b. Medium rollers
- c. Light rollers

A heavy roller will weigh about 1 tonne and is usually referred to as a 1 tonner. Sometimes water filled rollers are used. When the water is filled completely in the drum of the rollers, then the roller is a heavy roller.

Medium rollers weigh around half a tonne in weight and are used to prepare fast pacy wickets. Water filled rollers with half filled drums also constitute a medium roller.

Light rollers are very light in weight and weigh around 1/4 tonne. The water filled drums are emptied completely to form a light roller.

Ground Realities

All outdoor games require grounds with neat surfaces. In cricket, except for the pitch which may or may not have grass, the rest of the outfield will have lush green grass. In fact the playing surfaces for most other field sports have grass outfields.

The surface really matters in sports like hockey and tennis. In tennis especially, the kind of surface will affect the pace of the travelling ball. In tennis, the game is played on basically 3 kinds of surfaces. The grass, clay and synthetic surfaces. While the tennis ball travels the fastest on the grass and artificial synthetic courts, it drops and holds back on a clay court.

In hockey, the traditional grass courts are now replaced by astro turf courts which have changed the pace of the game completely. The synthetic tracks are also a part of track and field sports now.

equal opportunities to fast bowlers, spinners and batsmen. By looking at the hardness of the pitch and grass grown one can guess the general behaviour of the pitch. But it is not possible for anybody to predict the course of the match. Says Mr. C. Nagaraj, Hon. Secretary of KSCA, "See, what happened at Jamaica. Everybody said that the wicket would crumble and would not last for more than 3 days. But the match lasted for the full 5 days. Hence nobody can predict how the match proceeds".

How a pitch behaves generally is known by its external appearance. If the surface is hard, the pitch will be fast and

bouncy and may help the spinners on the 4th and 5th days of a match. If the pitch has grass, then it helps both fast bowlers and batsmen equally. Grass acts as a binding for the soil which helps in fast movement of the ball and it will have even bounce and lasts long.

Isn't preparing wickets to suit the native bowlers unfair?

"No! It isn't. We have genuine spinners among our ranks and hence we prepare pitches to suit them. That doesn't mean that we cannot prepare fast pitches. In fact I have prepared fast tracks for many first class matches in South India. But the fact is that our batsmen are not used to fast tracks" says Mr. Rangan.

The Curator of Wankhede Stadium Mr. Sudhir Naik agrees with Mr. Rangan. "There's nothing shameful or unsporting about preparing pitches to suit your home team" says Sudhir Naik (in Outlook).

But by doing so are we not producing batsmen who cannot handle genuine pace. The acute inadequacy in the Indian batting line up to face genuine pace was thoroughly exposed during the recent test match against South Africa in Durban. Apart from a few batsmen like

In countries like Australia and England, very heavy rollers like the road rollers are used to compact the surface of the pitch which makes it very hard and helps fast bowlers.

TEST MATCHES IN CHINNASWAMY STADIUM, BANGALORE

Sl. No.	Series - Test	India vs.	CAPTAINS		Result	Pitch Behaviour: Assisted
			India	Visiting Team		
1.	1974-75 I	West Indies	M.A.K. Pataudi	Clive Lloyd	West Indies won by 267 runs	Spin
2.	1976-77 IV	England	B.S. Bedi	A.W. Greig	India won by 140 runs	Spin
3.	1978-79 II	West Indies	S.M. Gavaskar	Alvin Kallicharan	Drawn	Batting
4.	1979-80 II	Australia	S.M. Gavaskar	Kim J. Hughes	Drawn	Batting
5.	1979-80 I	Pakistan	S.M. Gavaskar	Asif Iqbal	Drawn	Batting
6.	1981-82 II	England	S.M. Gavaskar	Keith Fletcher	Drawn	Batting
7.	1983-84 I	Pakistan	Kapil Dev	Zaheer Abbas	Drawn	Pace
8.	1986-87 V	Pakistan	Kapil Dev	Imran Khan	Pakistan won by 16 runs	Spin
9.	1988-89 I	New Zealand	Dilip Vengsarkar	John G. Wright	India won by 172 runs	Spin
10.	1993-94 II	Sri Lanka	Md. Azharuddin	Arjuna Ranatunga	India won by an innings & 95 runs	Batting
11.	1995-96 I	New Zealand	Md. Azharuddin	Lee Germon	India won by 8 wickets	Spin

Rahul Dravid and Saurav Ganguly, none of the other batsmen could face upto Donald and Co. That's not all, India hasn't won a single match abroad let alone winning a series. While Indian batsmen find it hard to cope with the fast bouncy tracks, Indian bowlers are all at sea bowling on these pitches.

In countries like Australia and England, very heavy rollers like the road rollers are used to compact the surface of the pitch which makes it very hard and helps fast bowlers.

The quality of the pitch directly depends on the rainfall in the area where the pitch is located. This probably explains the horrible state of the pitch during the semifinal at Eden Gardens in Calcutta. The preparation of the pitch

here wasn't completed before the monsoons and went on well beyond the rainy season till the winter set in. This didn't do any good for the pitch as it turned out to be an underprepared pitch which couldn't even last for one whole day. In fact the pitch which was relaid after the March 13th 1996 disaster for the test match against South Africa played beautifully. It had a bit for fast bowlers like Donald and Srinath, spinners like Kumble and Symcox and also batsmen like Azharuddin. The main reason was that in this case it was laid before monsoons.

But why should there be any scope for altering the state of the playing strip. Shouldn't there be a uniformity in the way the pitch is prepared. The

International Cricket Council should look into this matter. But cricket pundits may argue that a true cricketer should be able to prosper under any conditions. Already the cricket ball, the bowling pace and weather conditions play a vital role in creating enough challenges to batsmen. Why should an unpredictable pitch add to their woes. This should be answered by ICC. Not only this, there are several other anomalies which needs to be addressed. Like the dimensions of a ground which varies from 75 yards in some grounds to more than 100 yards in others (from the centre of the wicket). Cricket bats which vary in weight and the outfield which varies from ground to ground. If unpredictability is the name of the game, cricket has enough of it.