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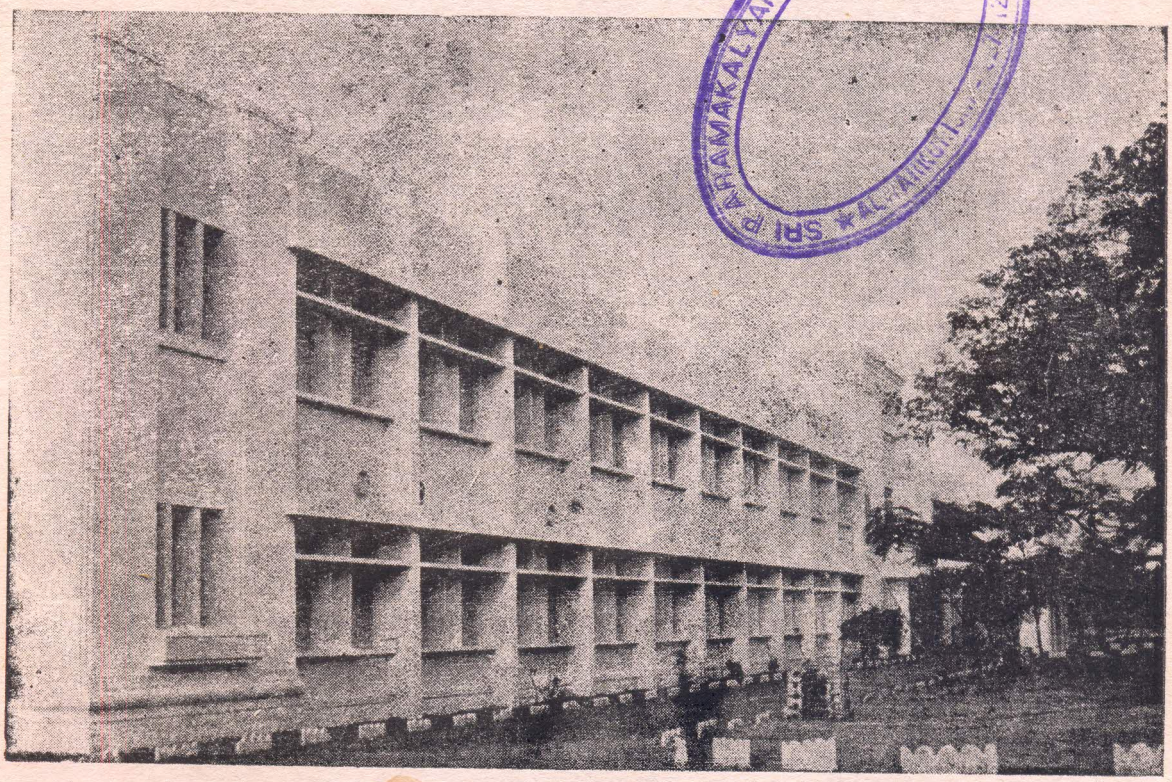
SRI PARAMAKALYANI COLLEGE

Alwarkurichi



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Sri Paramakalyani College

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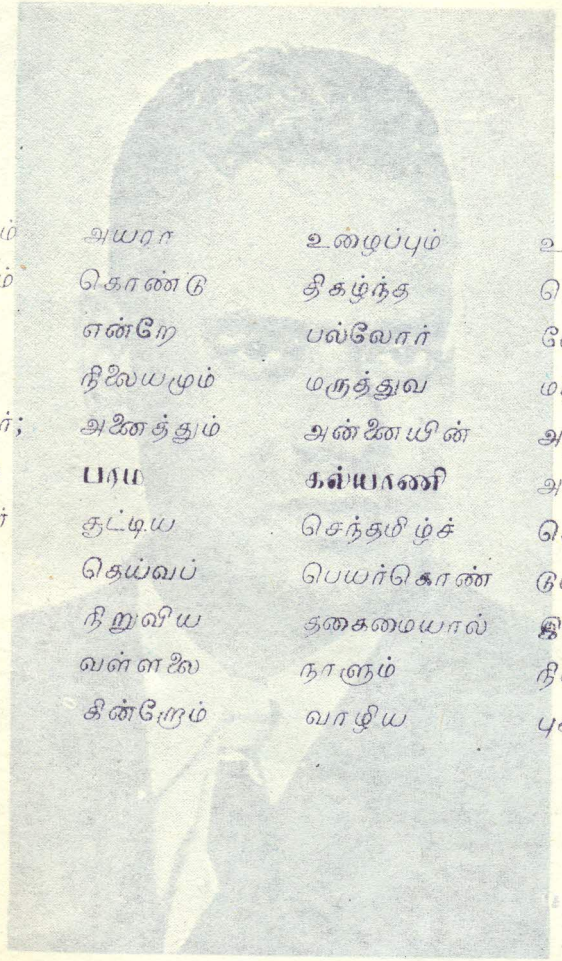

உண்மையும் அயரா உழைப்பும் உள்ளத்
திண்மையும் கொண்டு திகழ்ந்த செம்மல்
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வணங்கு கின்றோம் வாழிய புகழே.

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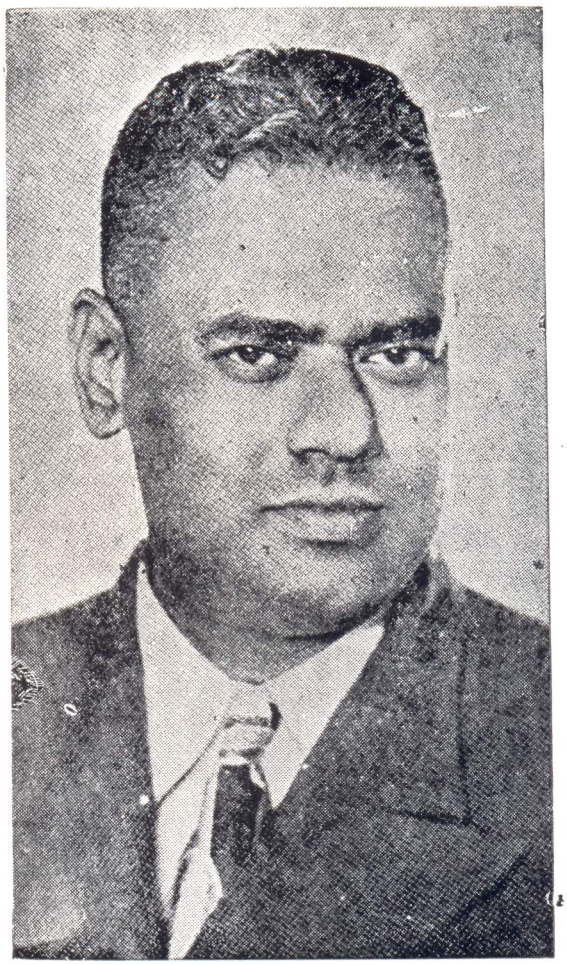

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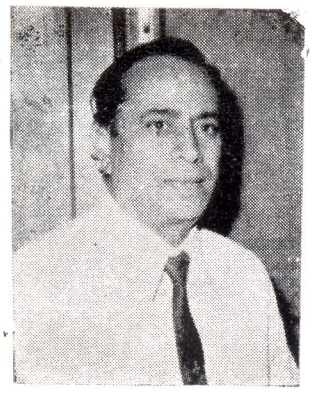

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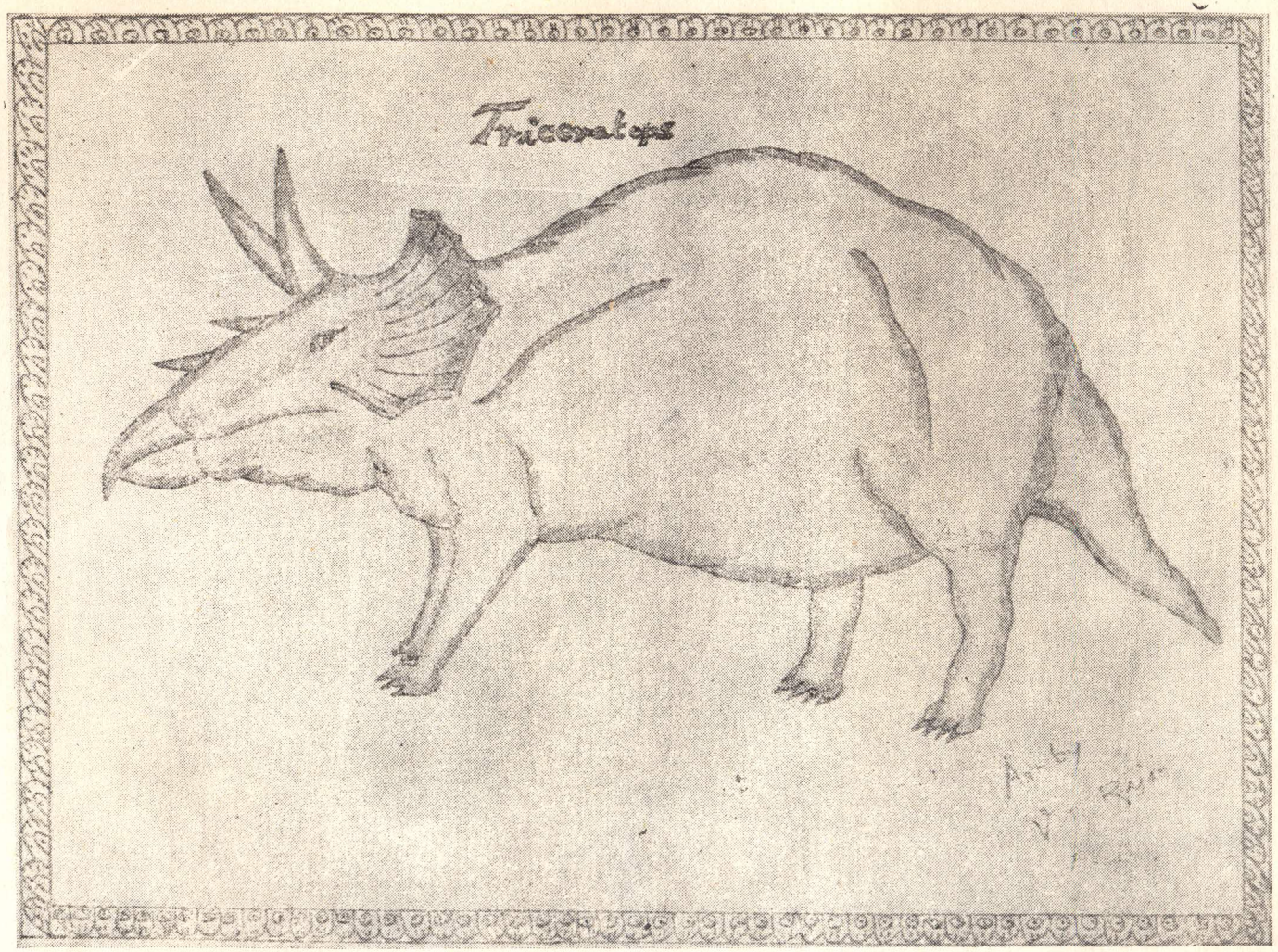
III. B.Sc. (200)


Triceratops

அருட்பெருஞ் சோதி ! ॐ தனிப்பெருங் கருணை !

ஆன்மநேய ஒருமைப்பாடு

S. ஆனந்தருயினார்
இளமறிவியல் மூன்றாம் ஆண்டு
வேதியியல் துறை

அன்பு என்பதற்கு ஆங்கில அகராதியிலே பார்த்தோமேயாயின் "Love" என்ற ஒரு சொல்லே இருப்பதாகத் தெரிகிறது. ஆனால் அன்பு என்றபொருளுடைத்துவரும் சொற்கள் அளவில. காதல், பாசம், நேசம் இன்னும்பிற. அவற்றுள் "ஆன்மநேயம்" என்ற சொல் மற்ற எல்லா சொற்களையும் உள்ளடக்கிய ஒரு சொல்லாம்.

அன்பு என்பதை போதிக்காத எந்த ஒரு மத மும்மில்லை. அன்பு மனதில் ஒரு துளிகூடயில் லாத மனிதனுமில்லை. எல்லா மதங்களுமே இறைவனை அன்புருவாகவே படைக்கிறது. இதைத்தான் நமது பாரதியார் பகைவனுக் கருள்வாய் என்னும் பாடலில்

> ''பகை நடுவினில் அன்புருவான நம்
> பரமன் வாழ்கின்றான் நன்னெஞ்சே
> பரமன் வாழ்கின்றான்'' என்கிறார்.

"ஆன்மநேயம்" "ஆன்மநேய ஒருமைப்பாடு" என்ற கோஷங்களை எழுப்பியவர் அருட் பிரகாச வள்ளலார் ஆவர். இராமலிங்க அடிகளார் வடலூரிலே தோன்றி, நாட்டு ஒற்றுமைக்காய்—ஏன் உலக ஒற்றுமைக்காய்—வாழ்ந்த இவர், ஆன்மநேய ஒருமைப்பாடு என்ற கொள்கையின்மூலம் புல், பூண்டு ஆயினவும் ஏழை-பணக்காரன் யாரிலும் பாகுபாடு ஒன்றுமில்லை என்ற உயர்ந்த கோட்பாடு கொண்டவர்.

அன்பைப்பற்றி வள்ளுவர் கூறுங்கால்,

> "அன்பிலார் எல்லாந் தமக்குரியர்—
> அன்புடையார்
> என்பும் உரியர் பிறர்க்கு"

என்கிறார். நன்மொழி நானூறு அன்பைப் பற்றிப் பகரும்போது "உணர்ச்சித் தூண்டு தல்கள் கடவுள் பக்தி ஆகாது; பக்தி என்பது தூய அன்பேயாகும்" என்கிறது.

அன்பு செய்தலைப்பற்றி பாரதி பாடும் போது

> ".....
> ஊனுடலை வருத்தாதீர்,
> உணவியற்கை கொடுக்கும்;
> உங்களுக்கு தொழிலிங்கே
> அன்புசெய்தல் கண்டீர்" என்கிறார்

மனிதன், மிருகம், பறவை, ஊர்வன, தாவரம் ஆகிய உயிருள்ளவை பரமாத்மாவினால் படைக்கப்பட்டஜீவாத்மாக்கள் தாமாதலால் அந்த உயிரிடையே ஆன்மநேயத்தைக் காண்ப தனை முதற்கடனாக கொண்டார் வள்ளலார் இது பற்றி அவர், 'ஜீவகாருண்ய ஒழுக்கம்' என்ற நூலில் தரும் விளக்கம் வருமாறு:

"சீவர்கள் எல்லாம் ஒரு தன்மையாகிய கடவுள் இயற்கை உண்மை ஏகதேசங்களா கிக் கடவுள் அருட் சக்தியால் பூதகாரிய தேகங்களில் வருவிக்கப்பட்டபடியால் இச் சீவர்களெல்லாம் ஒருநிமை இனத்தவர்களே யாகும்"

ஆன்மநேய ஒருமைப்பாடு என்பதன் தெள் ளியகருத்துவள்ளலாரின் ஒருபாடலில்வெளிப் படுகிறது. அதாவது கடவுள் வேற்றுமை, சாதி, சமய வேற்றுமை முதலிய எல்லாம் அழிந்து, மொழி, நிற வேற்றுமைகளையும் கடந்து வருவது ஆன்மநேய ஒருமைப்பாடு என்பதை மறைமுகமாக விளக்குகிறார்.

"கள்ளவா தனையை களைந்தருள் நெறியைக் காதலித்து ஒருமையில் கலந்தே

உள்ளவாறு இந்த உலகெலாம் களிப்புற்று
ஓங்குதல் என்று வந்து உறுமோ
வள்ளலே அதுகண்டு அடியனேன்
உள்ளம் மகிழ்தல் என்றோ!

அன்பே சிவம் என்பதனை நமது திருமூலர் அவர்கள் கூறுங்கால்

"ஆசை அறுமின்கள் ஆசை அறுமின்கள்
ஈசனோடாயினும் ஆசை அறுமின்கள்
ஆசைப் படபட ஆய்வருந்துன்பங்கள்
ஆசை விடவிட ஆனந்தம் அகுமே",
என்றும்

அன்பும் சிவமும் இரண்டென்பர் அறிவிலார்
அன்பே சிவமாவ தாரும் அறிகிலார்
அன்பே சிவமாவ தாரும் அறிந்தபின்
அன்பே சிவமாய் அமர்ந்திருப்பாரே!
என்கிறார்.

எம்மதமும் சம்மதம் என்ற ஒரு நிலையை எட்டினால் ஒழிய நாம் மதவேற்றுமையை நம்மிலிருந்து ஒழிக்கமுடியாது. இதைதான் வள்ளலாரும் தெளிவாக விளக்குகிறார்.

உலகில் ஒரு சகோதரத்துவத்தை உருவாக்க விழைகிறார். ஆகையினால் சகோதரர்களே கண்ணப்பநாயனார் இறைவன் மீது கொண்டது காதலாயிருக்கும் போது, பெரிய புராணம் ஆசிரியர் சேக்கிழாரும் அப்பரின் தொண்டு அன்பு பணியே எனும் போது நாமும் நம்மில் ஆன்மநேய ஒருமைப்பாடு உடையவராயிருப்போம். வள்ளலார் நமக்கு அள்ளித்தந்த இந்த மந்திரத்தை உயிருள்ள வரை காப்போம். வாடும் உயிர்களை உயர்த்திடுவோம். 'வாடிய பயிரைக் கண்டபோ தெலாம் வாடினேன்' என்று வாடிய வள்ளலாரின் வாட்டத்தை ஓட்டி ஆன்மநேயம் வளர நம்மால் இயன்ற சிறு பணியை செய்திடுவோம். அருட்பெருஞ் சோதியின் தனிப் பெருங்கருணை நம்மீதுவிழ பிரார்த்திப்போம்

வாழ்க வள்ளலாரின் புகழ்!

வளர்க ஆன்மநேய ஒருமைப்பாடு

சகோதரத்துவம் உலகெலாம் மிளிரட்டும்!

பலாச் சுளை

K, Sridharan,
II M.Sc. Chemistry.

"பலாவின் சுவையறிய வேண்டுதிரேல் ஆங்கு
சிறுமுள்ளுக் காம்பரு கெண்ணி வருவதை
ஆறிற் பெருக்கியே ஐந்தனுக் கீந்திடவே
வேறெண்ண வேண்டாஞ் சுளை."

விளக்கம் :

காம்பைச் சுற்றியுள்ள முள்ளுறுப்பை, எண்ண வேண்டும். அது நூறு இருந்தால், அதை ஆறால் பெருக்க வேண்டும். அதாவது. $100 \times 6 = 600$ வருவதை ஐந்தால் வகுத்தால், கிடைப்பது 120. இதுதான், பலாப்பழத்தில் உள்ள சுளைகளின் எண்ணிக்கையாகும். பலாத் தோலை உரிக்காமல், பலாச் சுளையை மிகஎளிதாகச் சொல்வ தற்கு இது ஒரு பாடல் கருத்து.

சித்த மருத்துவம் - ஒரு கண்ணோட்டம்

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மருத்துவத் துறையில் மிகப் பழமையானதும் சிறந்த பலனை அளிக்கக் கூடியதும் சித்தமருத்துவமேயாகும். மூலிகைகளைமருந்தாகப் பயன் படுத்தும் முறை பல நாடுகளில் இருந்தாலும். தமிழர்களே இதன் முன்னோடியாகத் திகழ்ந்தனர். இதனை சித்தர்கள் அறிமுகப்படுத்தியமையால் சித்தமருத்துவம் எனப் பெயர்பெற்றது. நவீன மருந்துகளால் குணமாகாதவை இந்த மூவிகை மருந்துகளால் பூர்ண குணமடைவதை நாம் கண்கூடாகக் காணலாம். நவீன மருத்துவத்தால் உடனடி பலன் கிடைத்தாலும் பூர்ண குணம் கிடைப்பதில்லை. வேறு பல பின்விளைவுகளும் (Side effect) வர ஏதுவாகிறது, ஆனால் சித்த மருத்துவ முறையில் எவ்வித பின் விளைவுகளும் நிகழ்வதில்லை, படிப்படியாக பலன் அளித்தாலும், பூரண குணம் அளிக்க வல்லது.

இவ்வளவு சிறப்புமிக்க இம்மருத்துவத்தை ஒரு சில முதியோர்கள் மட்டுமே பயன் படுத்துகின்றனர். இளைய சமுதாயத்தினர் இதனை நினைப்பது கூட இல்லை; அதற்கு சில காரணங்கள் உள்ளன.

1) உணவு கட்டுப்பாடு (பத்தியம்)
2) எண்ணெய், உப்பு, புளிப்பு, காரம், போன்றவற்றைக் குறைக்க வேண்டியுள்ளது. மேற்கூறியவற்றை கடைபிடிப்பது. சற்று கடினமானாலும் நமக்கு நோய்களிலிருந்து பூரண விடுதலை கிடைப்பதை நினைக்கும் போது இதனை கடைபிடிப்பது அவ்வளவு சிரமமாக தோன்றா.

எளிதில் கிடைக்கக் கூடியதும், உட்கொள்ள உகந்ததுமாகிய சில மூலிகைகளையும் அவற்றின் நோய் தீர்க்கும் தன்மையையும் காண்போம்.

சர்ப்பகந்தி :-

கவலை நீக்கும், மனநோய் போக்கும் அருமருந்து.

இதன் வேரிலிருந்து 107 வகை மருந்துச் சத்துக்களை விஞ்ஞானிகள் பிரித்தெடுத்து உள்ளனர்.

பயன்படுத்தும் முறை :-

இதன் முழுவேரையும் காயவைத்து, இடித்து, சலித்து, சூரணமாக்கி சிறிது சிறிதாக உட்கொள்ள கீழ்க்கண்ட நோய்கள் நீங்கும்.

இரத்தகொதிப்பு, பைத்தியம் (hysteria), வலிப்பு (epilepsy)

ஊமத்தை :-

சர்மரோக சஞ்சீவி
புறமருந்தாக மட்டும் பயன்படுத்தப்படுகிறது

பயன்படுத்தும் முறை :-

இதன் இலையை வதக்கி வீக்கமுள்ள இடங்களில் வைத்துக்கட்ட வீக்கம் கரையும் குழந்தைகளின் முழங்காலுக்குக் கீழே வரும் கரப்பானுக்கு இதனைப் போட ஊறல் அடங்கும்

எருக்கு :-

ஆஸ்துமா நிவாரணி

பயன்படுத்தும் முறை :-

வெள்ளெருக்குப் பூ, மிளகு, சமபங்கு வெள்ளெருக்கு இலை ஆகியவற்றை அரைத்து மாத்திரைகளாக உருட்டி, நிழலில் உலர்த்தி ஒன்று அல்லது இரண்டு தினமும் உட்கொள்ள கீழ்க்கண்ட நோய்கள் நீங்கும்.

ஆஸ்துமா திணறல், அஜீரணம், ஜுரம்.

துளசி :-

சர்வ சஞ்ஜீவி

இதனை நோயாளிகளைப் பார்க்கச் செல்லும் போது நுகர்ந்து சென்றால் தொற்று நோய்களிலிருந்து தப்பலாம் மேலும் தலைவலி, தலைசுற்றல், வெண்புள்ளி (லூகோடெர்மா) விஷஜ்வரம் (இன்புளுயன்சா) ஆகியவற்றிற்கு நல்லது

பயன் படுத்தும் முறை :-

துளசிச்சாறு,, கிராம்புத்தூள், கற்பூரம் கலந்து சொத்தைப் பல்லிலும், ஈறு வீக்க முள்ள இடத்திலும் வைக்க பல்வலி குறையும்

வெள்ளைப் பூண்டு :-

சிறந்த கிருமிநாசினி

இது வைரஸ்கிருமிகளை அழிக்கும் ஆற்றல் படைத்தது.

பயன்படுத்தும் முறை :-

15 முதல் 30 பூண்டுப்பல்லினை ஒரு டம்ளர் பாலில் வேகவைத்து இரவு உண விற்குப்பிறகு சாப்பிட கீழ்கண்ட நோய்கள் தீரும். கபம், இரத்தக்கொதிப்பு, வாயு, நெஞ்சுச்சளி (ஈசினோபைல்), உடல்பருமன், மூட்டுவலி, கக்குவான்.

வேம்பு :-

ஆராய்ச்சியாளர்கள் இம்மரம் அசுத்தக் காற்றை வடிகட்டுவதற்கும் சாலை வாகனங் களின் பேரிரைச்சலை தடுப்பதற்கும் பயன் படுவதாக கண்டுள்ளனர்.

வேப்பங்குச்சியால் பல்துலக்க பயோரியா போன்ற பல்நோய்கள் வருவதில்லை.

வயிற்றுப் பூச்சிக்கு :-

இலைகொழுந்து, மிளகு, சிறிது உப்பு அரைத்து உட்கொள்ள வயிற்றுப்பூச்சி நீங்கும்.

முகப்பரு :—

வேப்பிலைச்சாறு தினந்தோறும் இரண்டு டீஸ்பூன் சாப்பிட குணமாகும்.

வெங்காயம் :-

இனிமையான குரல் வளத்துக்கு தினமும் வெங்காயம் சாப்பிட்டு வர லாம் பூச்சி, பாம்பு, தேள் போன்ற நச்சுப்பிராணி கடிக்கு இது ஒரு நல்ல மருந்தாகும். இதனை செங் கலில் தேய்த்து நெற்றியில் பற்றுப் போட தலைவலி நீங்கும்.

பாகல் :-

நீரிழிவினைப் போக்கும் ஒரு சிறந்த மருந்து இதன் காய்களை நிழலில் உலர்த்தி, இடித்து, சூரணம் செய்து காலையும் மாலை யும் நீருடன் உட்கொள்ள இந்நோய் போகும் இதன் இலைச்சாறை உட்கொள்ள வயிற்றுக் கிருமிகள் நீங்கும்.

வல்லாரை:-

காசநோய் நிவாரணி

இதனை பசும்பால் விட்டு அரைத்து பக்குவப்படுத்தி குறைந்தது ஆறுமாதம் உட் கொண்டால் நரை, திரை நீங்கி, இளமைத் தோற்றம் தரும் இதன் இலையை வைத்துக் கட்டினால் யானைக்கால் நோய் குணமாகும்

மிளகாய் :-

உணவையே மருந்தாக அமைத்த பெரு மை சித்தர்களுக்கு உண்டு அந்த வகையில் மிளகாயும் ஒன்று. மிளகாயை நீரில் அரைத்து தொண்டைக்கு வெளிப்புறம் பற்றுபோட தொண்டைக் கட்டு நீங்கும் குடல் பாதிப்பை மிளகாய் கசாயம் போக்கும்.

எலுமிச்சை :-

இதன் சாறு வயிற்றுப்பொறுமல், வாயு மலச்சிக்கல், அஜீரணம் போன்றவற்றை நீக்கும் இதன் சாறுடன், சமபங்கு வெங்காய சாறு சேர்த்து உட்கொள்ள மஞ்சள் காமாலை, மூலம், இரத்தஒழுக்கு முதலியவை நீங்கும்.

சித்தமருத்துவம் கடலளவு பெரிது அதில் ஒருசில துளிகள்தான் இங்கு தரப்பட்டுள்ளது நாம் ஆங்கிலமுறை மருத்துவ நாட்டத்தை விட்டு, நமது நாட்டு மருத்துவமாகிய சித்த மருத்துவத்தின் பால் கவனம் கொண்டு அதன் முழுப்பயனையும் பெறுவோமாக!

சிறுகதை

"இவங்களெல்லாம் மனுசங்களா . . . ."

இரா. அருணன்
விலங்கியல் இரண்டாம் ஆண்டு

''சார் தந்தி'' என்ற குரல் கேட்டு வீட்டிற்குள் இருந்து வெளியே வந்தான் குமார். தபால்காரர் கொடுத்த தந்தியை வாங்கிப் படிக்கும் முன்,

''என்னடா தந்தியா? யார் அனுப்பியிருக்கா'' அலறிக்கொண்டு வந்தாள் குமாரின் அம்மா.

''பொறுங்கம்மா' என்று கூறியபடி தந்தியைப் பார்த்தான். ''அய்யோ அம்மா! நம்ம மீனா ரொம்ப சீரியஸா இருக்காளாம். உடனேபுறப்பட்டு வரும்படி அவளுடைய கணவன் சென்னையில் இருந்து தந்தி அடித்திருக்கிறான்

''அய்யோ என் கண்மணியே போன தடவை வந்துட்டுப் போகும் பொழுது நல்லாத்தான போனா; அதுக்குள்ள உனக்கு என்னவாச்சு'' என்று புலம்பினாள்.

மீனா, குமாரின் ஒரே தங்கை. பல மாப்பிள்ளை வீட்டுக்காரர்கள் வந்து பெண் கேட்டு வந்தபொழுது நல்ல உத்தியோக மாப்பிள்ளை வேண்டுமென்று விரும்பினார். இறுதியாக பேங்கில் மேனேஜராக வேலை பார்க்கும் தங்கராசுக்கு மணம்முடித்துக் கொடுத்தனர்.

ஆரவாரம் நிறைந்த சென்னை மாநகரை அடைந்த பொழுது சூரியன் தனது கதிர்களைக் கிழக்கில் இருந்து பரப்பிக் கொண்டிருந்தான். நேராக மீனாவின் வீட்டை அடைந்தார்கள், குமாரும் அவனுடைய அம்மாவும். வீடு அடைக்கப்பட்டு இருந்தது. அக்கம் பக்கத்தினரிடம் விசாரித்து மீனாவைச் சேர்த்திருக்கும் சங்கர் நர்ஸிங் ஹோமை அடைந்தார்கள்.

நர்ஸிங் ஹோமின் வாயிலை அடைந்த பொழுது குமார் தனது கடிகாரத்தைப் பார்த்தான். அது பத்து முப்பதை தாண்டியிருந்தது

மீனாவின் கணவன் தங்கராசு ஒரு சொட்டுக் கண்ணீரோடு அவர்களை வரவேற்றான், குமார் அவனை நோக்கி ஒரு பார்வையை உதிர்த்து விட்டு டாக்டரின் அறையை நெருங்கினான்.

ஓர் அறையில் மீனாவின் மாமியார் நாங்க ஒன்னும் செய்யலீங்க; அவளாகத்தான் தன்னாலா மண்ணெண்ணெய் ஊத்தி, தன்னுடைய உடம்பை தீயிற்கு இரையாக்கிட்டாங்க நாங்க ஒன்னும் செய்யலை' என்று ஒழுங்காக பொய் சொல்லிக் கொண்டிருந்தாள், போலீஸ் இன்ஸ்பெக்டரிடம்;

''இந்த பாரும்மா, நீ உண்மையை ஒழுங்காச் சொன்னால் உனக்கு தண்டனை குறையும். உங்க வீட்டுக்குப் பக்கத்து வீட்டுக்காரன் அமல் சொல்லப் போய்தான் நான் உங்க மேலே நடவடிக்கை எடுத்திருக்கிறேன். மேலும் அக்கம் பக்கத்து வீட்டில் உள்ள வங்களெல்லாம் மீனாவை நீங்க ரொம்ப கொடுமைப் படுத்தினதா சொல்றாங்க'' இவ்வாறு போலீஸ் இன்ஸ்பெக்டர் சொல்லிக் கொண்டிருக்கும் பொழுது,

மீனாவின் உடல் இவ்வுலகத்தை விட்டு நீங்கியிருந்தது. டாக்டர்கள் எவ்வளவோ முயன்று பார்த்தும் மரணத்தின் பிடியில் இருந்து மீனாவை மீட்க முடியவில்லை.

'சார், சார்!' இவங்க வீட்டை சோதனை போட்ட பொழுது ஒரு புத்தகத்தினுள் இந்த கடிதம் இருந்துச்சு சார் இது மீனா எழுதிய கடிதம் சார் என்று கூறியபடி அந்தக் கடிதத்தை இன்ஸ்பெக்டரிடம் கொடுத்தார். இன்ஸ்பெக்டர் அக்கடிதத்தைப் படிக்கும்

பொழுது மாமியாரின் இதயம் ரேஸ் குதிரை யை போல் ஒடிக் கொண்டிருந்தது.

இன்ஸ்பெக்டரின் கண்கள் கொஞ்சம் கொஞ் சமாக ஒளியை அதிகரித்துக் கொடுக்கும் சோடியம் விளக்கைப் போல கடிதத்தின் ஒவ் வொரு வரியையும் படிக்கும் பொழுது அவருடைய கண்கள் சிவக்க ஆரம்பித்தன. கூப்பிடுங்க அந்த தங்கராச, என்று பக்கத்தில் இருந்த போலிஸ்காரரை நோக்கி கூறினார் அந்தப் போலிஸ்காரர் அவனை இழுத்து கொண்டு வந்தார்.

என்னய்யா இதெல்லாம்' என்று கூறியபடி கடிதத்தைக் கொடுத்து வாசிக்கச் சென்னார் ஒவ்வொரு வரியையும் வாசிக்கும் பொழுது சிறைக்கம்பிகள் அவனுக்குத் தெரிந்தன இருந்தாலும்

'அவசும்மா... என்று கூறும்பொழுது இன்ஸ் பெக்டரின் லத்திக் கம்பு அவனுடைய முதுத, கால், என்று பார்க்காமல் சகஜமாக உறவாடியது

'உண்மையைச் சொல்லுடா நாயே' என்று கூறியபடி மறுபடியும் லத்திக்கம்பு உயர்ந்த பொழுது, அவனுடைய அம்மா, அவனை ஒன்னும் செய்யாதீங்க மீனாவை நாங்க தாங்க கொன்னோம் இவனுக்கு வேறு இடத்தில் அதிகமான வரதட்சணையில் பெண் கொடுக்கிறதா ஒருத்தர் சொன்னாரு அதனால் தான் நாங்க மீனாவை மண் ணெண்ணெய் ஊத்தி கொன்னோம்', என்று விசும்பியபடி தலையைக் குனிந்து கொண்டு கூறினாள்.

இதைக் கேள்விப்பட்ட மீனாவின் அம்மா, 'அடப்பாவிகளா நீங்க உருப்படுவீங்களா என் கண்மணியைக் கொன்னுட்டிங்களா என்று கூறியபடி மீனாவின் மாமியார் மேல் காரித் துப்பினாள்.

போலிஸ் இன்ஸ்பெக்டர் மீனாவின் அம்மா வை நோக்கி நாங்க சட்டப்படி இவங்களுக்குத் தண்டனை கொடுத்திடுறோம் நீங்க....

'என் மகளைக் கொன்ன இவங்களெல்லாம் மனுசங்களா' என்று சொல்லிய பொழுது அருவரையில் ஒன்றும் பேசாமல் இருந்த குமார் மனதிற்குள்,

'ஆமாம், இவங்க மனுசங்களே இல்லை. மீனாவின் அண்ணி சுபாவை இத மாதிரி கொன்னு கொலையை மறைத்த நீயும் நானும்தான் இந்த உலகத்திலேயே மனு சங்க!'

ஊழல் மாதம்

K. Sridharan
Final M. Sc. Chemistry

கொடுமை மாதம்	—	சித்திரை
புண்ணிய மாதம்	—	வைகாசி
வாயைப் பிளக்கும் மாதங்கள்	—	ஆனி, ஆடி, ஆவணி.
ஊழல் மாதம்	—	புரட்டு ஆசி
வறுமை மாதம்	—	ஐப்பசி
விரைவு மாதம்	—	கார்த்திகை
கூட்டல் இல்லாத மாதம்	—	மார்கழி
நாட்டியமாடும் மாதம்	—	தை
முக்கனியில் முதல் கனி மாதம்	—	மாசி
கூட்டு மாதம்	—	பங்குனி.

தெ(பு)ரிந்து கொள்ளுங்கள்

எஸ். பாண்டித்துரை,
இளம் அறிவியல் மூன்றாம் ஆண்டு (கணிதம்)
மாணவர் பேரவைத் துணைத் தலைவர்

காப்பவர்களே உங்களைக்
காணாமல் ஆக்கிவிடுகிறார்கள்
புரிந்து கொள்ளுங்கள்
வாயில்லா ஜீவன்[ஆடு மாடு கோழி]களே!

'Tax-Free' வேண்டுமென்னும்
உங்களுக்கு ஓட்டு போட
'Taxi-Free' என
அழைப்பர் அரசியல் வாதிகள்
புரிந்து கொள்ளுங்கள்
வாக்காளர்களே!

சம உரிமை தந்தாலும்
பாரம் சுமப்பவர் நீங்கள்தான்
புரிந்து கொள்ளுங்கள்
பெண்களே!

வெள்ளைப் பணத்தைக் கறுப்பாக
கொடுப்பதும்
கறுப்புப் பணத்தை வெள்ளையாய்
வாங்குவதும் தான் லஞ்சம்!
புரிந்து கொள்ளுங்கள்
தரகர்களே!

இல்லாதன வற்றைத்தான்
பொல்லாதன வாகக் காட்டுவர்
புரிந்து கொள்ளுங்கள்
மனிதர்களே!

நட்சத்திரக் கூட்டமாம்
மாணவர் சமுதாயத்தில்
சந்திரனாக என்னை
சேர்க்க மறுத்து
சூரியனாக ஒதுக்கினர்!

சந்திரனுக்காவது
வளர், தேய் பிறைகளோடு
ஒய்வும் உண்டு!
சூரியன் அவ்வாறில்லை
என்பதை மட்டும் மறந்தது ஏனோ?

பள்ளி ஏட்டைத் தவிர
வேறேடுத்துப் பாராத நான்
''ஏறெடுத்து என்னைப் பாராததேனோ?''
எனக்கூறும் வீட்டுக் கிளிகளாம்
பெண்கள் சமுதாயத்தில்
ஒரு படிக்காதவன்!

பிறர்க்கென
ஒளிவீசி இன்பம் தந்து
தன்னையே அழித்துக் கொள்ளும்
மெழுகுவர்த்தியாம் என்னோடு
தென்றலாய் துணைபுரிய
வேண்டிய சமுதாயக்காற்று
புயலாய் வீசி அணைப்பது ஏனோ?

''அணையப் போகிற விளக்கு
பிரகாசமாய் எரியும்''
என்பதை மறந்தது ஏனோ?

கல்விப் பணியில் ஆசிரியர்

இரா. அருணன்
விலங்கியல் இரண்டாம் ஆண்டு

என்

இதய வீணையின்
நரம்புகளை

மீட்டும் பொழுது
வெளி வரும்
ராகம் இது
புதுராகம் இது.

இளைய பாரதத்தை
வழி நடத்திச் செல்லும்
பார்த்தசாரதிகள்.

சமுதாயத்தை
சீர்திருத்த
வழி வகுக்கும்
செம்மல்கள்!

புத்தி மதிகளை
தாராளமாக வழங்கும்
புண்ணியவாளர்கள்

யார் இவர்கள்?
இவர்கள் இந்நாட்டின்
மன்னர்கள்.

கல்விப்பயிர்
செழித்து
வளர உதவும்
அடியுரங்கள்.

கல்விக்காகவே
உயிரை விடும்
உத்தமர்கள்.

இவர்கள்
கல்வி மரத்தின்
ஆணி வேர்கள்.
வண்ணமலர்கள் போல்
தங்கள் எண்ண
மலர்கள் போல்
மாணவர்களை
மகிழ வைக்கும்
பூஞ் செடிகள்.

எண்ணென்ப ஏனை
எழுத்தென்ப
இவ்விரண்டும்
கண்ணென்ப வாழும் உயிர்க்கு

எனும் வள்ளுவரின்
வாசகத்தை
நிறைவேற்றும்
வள்ளுவத் தொண்டர்கள்

தூங்கிக் கொண்டிருக்கும்
சமுதாயத்தை
தட்டி எழுப்ப
கல்வி எனும்
போர்வாள் ஏந்தியவர்கள்!

அறியாமை எனும்
இருள் நீங்கி
அறிவொளி வீசச் செய்யும்
செங்கதிரோன்கள்.

சமுதாயக் கொடுமைகளை
தகர்த்தெறிய
தலைமை தாங்கும்
தளபதிகள்.

சிந்தனைகள் செய்து
சீரிய கருத்துக்கள்
வழங்கும்
செம்மாந்த புலவர்கள்.

''கல்வி எனும்''
மந்திரத்தால்
பித்தளையை
வைரமாக மாற்றும்
மந்திரக்காரர்கள்

இவர்கள்
இந் நாட்டின்
நடமாடும்
பல்கலைக் கழகங்கள்

பல கல்வி தந்து
இந்தப் பாரதத்தை
உயர்த்திட வைக்கும்
பண்பாளர்கள்

இவர்கள்
சமுதாயக் கட்டிடத்தின்
அஸ்திவாரங்கள்

இளந் தீபங்கள்
அறிவுச்சுடர் விட்டு
எரிய உதவும்
எண்ணெய்

வாழ்க்கைப் படகில்
மாணவச் சமுதாயம்
வழி தவறிச்
செல்லும் பொழுது
அவர்களுக்கு
வழி காட்டும்
கலங்கரை விளக்குகள்

வறுமைக்
கோட்டிற்கு கீழ்
தான் இருந்தாலும்
கல்விச் செல்வத்தை
மாணவர்களுக்கு
வாரி வழங்கும்
வள்ளல்கள்

அறிவை
எடுக்க எடுக்க
குறையாத
அமுத சுரபிகள்.

The Lord on His Chariot

D. HARIHARAN,
(Professor of English)

The Lord on His chariot
Seated gaily, gazed the people gathered
To pull His chariot; to fulfil a vow.
Rich and poor, high and low, masters and servants,
Polity and the public—assembled with one aim
Of pulling the chariot round, and getting credits;
So when they go from here, that would stand them.
Some simple souls touched the rope with piety
And placed their hands on eyes—a mark of respect,
An act which gained them the virtue of
Pulling the chariot, without making a single move.
The Lord was happy with them, with their intelligence
That cut short the route and gave them the fruit.
Suddenly the drum-beats rose;
And the people hurriedly chose places from where to pose
To God—their Lord, and to their fellowmen;
To show their will, their power and skill,
"Ho,Ho!" and "Ho,Ho!" - the shouts rent the sky,
And the chariot started with an enthusiasm high,
Men, leaning and dragging and tucking the rope
Round their waist,
Making visible effort, gasping and sweating,
Pushing and pulling,
Crushing the neighbours' feet and toes.
"It is because of these that the Earth revolves;
And the Sun rises in the East" - the Lord declared
To His Lady on the left.
The Divine Mother laughed and showed some men

Who seemed to be fretting and fuming;
And the people were assuming
That those men were moving heaven and earth
To keep the chariot going.
The Master had a pleasing smile and a ready reply:
"Those are the leaders of minds and matters;
They move others, themselves unmoved;
For, it is a joy to them. They enjoy
To press others into work, while they do shirk;
As in a giant establishment or in a grand function
Where men appear busy, though they do nothing.
Yet, we find a good number that are not afraid
To shoulder the boulder of responsibility.
When things are over, all earn a name;
Those that pretend get a bigger dividend,
Folks who forge success
Remain mostly sunk like an icy - float,
Unknown and unseen but steady like a sturdy boat.
I confess : "I tried and failed
To set things right. Now I despair
They are gone beyond repair."
Lord sat still in abject dejection,
And His chariot halted with an Interjection.

DO YOU KNOW?

R. KASIRAMAN
I M.Sc., Physics

1 Why at higher altitudes water boils below 100°c ?

The boiling point of water is directly proportional to the pressure on its surface. At higher altitudes the atmospheric pressure is low compared to plains and therefore water boils below 100°c

2 Why is a person in moving vehicle thrown forward when the vehicle stops suddenly?

when the vehicle stops suddenly, the feet of the person also come to rest but the upper portion of the body continues to be in a state of motion. Hence the person is thrown forward.

3 Why do two eyes give better vision than one?

Because two eyes do not form exactly similar images and the fusion of these two dissimilar images in the brain gives the three dimensional or the stereoscopic vision.

4 Photographic films get spoiled on exposure to light. Explain?

A photographic film is essentially a layer of an emulsion of a silver halide in gelatine and water applied to a glass or a celluloid sheet. Silver salts used in preparing the film are very sensitive to light. The exposure of the film to light therefore results in the decomposition of silver halide coated on the film and hence it gets spoiled.

5 In summer a cloudy night is hotter than a starlit night. Why?

Clouds are poor conductors of heat and therefore prevent radiation of heat from land and air. Hence in summer a cloudy night in hotter than a starlit night

6 Why does a ship rise as it enters the sea from a river?

The density of sea water is high as compared to river water. Consequently the upthrust produced by the sea water on the ship is greater as compared to the river water. This explains the reason for the rise of ship as it enters sea from a river.

7 During a storm the flash of lightning is seen before thunder is heard. Explain? Lightning flash and thunderbolt occur at one and the same time. But the velocity of light is much greater than that of sound. Hence flash of light is observed instantaneouly whereas sound is heard much later.

8 The mercury column in the barometer falls rapidly betore a severe storm. why?

The mercury column in the barometer falls rapidly before a severe storm due to fall in the atmospheric pressure which results on account of increased humidity in the air.

9 Ice floats on water. Why?

Ice floats on water because the weight of whole ice block is equal to the weight

of the liquid displaced by the immersed portion of ice block This is in accordance with the law of buoyancy which states that a body floats in a liquid when the weight of the whole body is equal to the weight of the liqued displaced by the immersed portion of the body.

10 Explain why the moisture gathers on the outside of a glass tumbler containing cold water?

Because the water vapours present in air get cooled and appear as droplets of water on coming in contact with the cold surface of the glass tumbler.

BEST THOUGHT

K. SRIDHARAN
Final M.Sc. Chemsitry

Best	Teacher	Experience
Best	Student	Attempt
Best	Book	Life
Best	Lesson	Patience
Best	Friend	Praise
Best	Sport	Duty
Best	Food	Thought
Best	Dress	Smile
Best	Shelter	Truth
Best	Medicine	Laugh
Best	Hobby	Service
Best	Relation	Dove

Karna, the Son of Kunthi

('Vishnu Shankar Dharamkumar')

"Oh, Krishna, my dear! Welcome, very hearty
Welcome to you, to my Place," ran Karna, hands stretched
Towards the Lord; embraced him and took him in.
"What is the purpose of your visit?—and
Whatever be it, please accept these," he offered
Fruits and drinks, and puddings of beaten grain,
Krishna's joy knew no bounds; and he was
Keen on eating and drinking all he got,
If only to please Karna - Karna, the Great -
To whom nobody had ever been
A match in archery and in valour;
None would ever be.

A flash appeared before Krishna's eyes, lightning like,
Of what happened years back, in the court of
The King of Panchal, who had
Arranged the marriage of his daughter;
The picture of Draupadi, standing with a garland,
While each and every king in the hall
Walking in, looking at the bows and arrows,
And the target to be hit; then backing out
Silently, without even touching the bow.
Stood there the King and his son, miserable,
Frustrated; feeling that they wouldn't get
A husband for the girl. Karna rushed
Gaily and light-footed, took the bow
And charged it with arrows; a second,
A fraction of a second, he lifted his eyes
Towards the crowd; and saw Krishna
Sitting and smiling in the front row.
The arrows whirred, one past the other
Through the hole in the revolving wheel
Missing the target by a hair's breadth.
Unlucky. By a hair's breadth
Was the princess lost to him. The master
Moved out with a muffled surprise,

As if he saw through Krishna's mind
Karna began : "you'll excuse me, Krishna,
For inciting Duryodhan to order

Dragging and derobing Drupada's daughter,
I'm obsessed by the thought of her, her body and form;
And couldn't check uttering my wish
To see the princess naked and nude"
Krishna laughed one of his biggest laughs
And said: "My dear Karna, you are my cousin
By birth and by blood - born to Kunthi
As her eldest and the first. When she chanted
The hymn that Durvasa gave her and prayed
To the Sun God, he came down and was
With her and gave you to her. The child
Floated her child in a basket, to be found
By the graceful couple, Radha and her lord;
Karna became the charioteer's son.
You are after all, a son of Kunthi
And have a right over the princess
Simply by that fact. No wonder
You had an instinct for her and
Yearned to have her. you never took
My calling you 'cousin'
Serious; but as just a courtesy
Extended to you, when with Duryodhan.
Now to the point for which I've come:
If you allow, I will declare who you are
And shall see that you are crowned
To both the kingdoms-
Of Hastinapur and Inderprasth.
You are the eldest and no one will object;
Duryodhan, our friend, will yield and
Yudhishtir will be happy too. We avoid
A war and the bloodshed."
Karna stood up startled and held Krishna by hand:
"Never, never, my cousin, do so, please.
I won't agree to pull down the Kaurav prince;
Him, who saved me from blue blood's insults
And derisive laughters. I stand by him,
By his crown. I go to hell or heaven with him;
In that there shall be no change,"

The Lord rose up and bade a farewell
With tears in his eyes;
Tears of joy and of sorrow.

Biotechnology and its application to human welfare

P. M. Satheesh Seshaiya, Final M. Sc. (Microbiology)
(old boy of S. P. K. College)
P. S. G. College of Arts and Science, Coimbatore-14

The Science of Biotechnology is of recent origin, but it has made giant strides; the advances in biotechnology have had far-reaching effects on human society and human welfare. In this short article I would like to high-light some of the developments in this promising field.

Any one who is familiar with the basic tenets of biology will know that **genes** are responsible for the traits of animals and plants and that these are transmitted from parents to offspring. During the formation of the sex cells (the sperms and eggs in animals, for instance) the genes undergo structural changes called **mutations**, which are rare phenomena; mutations result in changes in the traits of the organisms (which inherit such mutated genes); most of the mutations, if not all, result in defective functioning of the gene (s). The gene is composed of macromolecules called DNA (deoxyribonucleic acid); hence, the mutation in a gene is, indeed, a change in the structure of the DNA molecule.

Taking a specific example, insulin (which is a proteinaceous hormone) secretion is genetically controlled. Due to genetic defect (mutation), the secretion of this important hormone is affected and it results in the excretion of glucose in urine which is known as diabetes mellitus. If diabetes is due to insufficient production of insulin, it is supplemented by regular injection of the required quantity of insulin. Insulin for such therapy is obtained from the pancreas of slaughtered mammals such as pig, cattle, etc. But, the porcine or bovine insulin is different from the human insulin in its composition.

Hence, allergic reactions occur in a sizeable percentage of individuals when insulin from these sources is used in the treatment of the diabetic patients. **Further continuous use of such insulin results in the rejection of the drug.** Because, insulin, being a protein, acts like an antigen and induces the patient's immune system to produce antibody to it.

(The immune system of an animal recognizes a 'foreign' protein and destroys it by producing an antibody for the particular protein.) In due course, there will be enough antibody in the blood of the diabetic patient which will destroy the therapeutic insulin (which is obtained from any animal other than man); obtaining insulin in quantities required for treatment from cadavers is not feasible; that is why human insulin is not available for therapy.

Biotechnology has solved this problem admirably. The human gene for insulin synthesis is put into some microbe, say a bacterium. The bacterium reproduces at a rapid pace and soon there will be enough number of bacteria with the introduced gene. The bacteria synthesise human insulin (under the control of the human gene) which will be **identical in chemical composition** to the human insulin (i. e. containing the same sequence of aminoacids present in human insulin) when the bacteria are provided with the amino acids. The insulin thus obtained will not produce any allergic reaction or

induce production of any antibody. One has to simply extract the insulin synthesised by the bacteria which contain the human gene.

Biotechnology comes to our rescue in another way too in solving the insulin problem. It is possible to fuse some cancer cells with normal synthesising, but leaky, cells; a cell obtained by such fusion is called a hybridoma. If a hybridoma is constructed in such a way that it contains the gene controlling the synthesis of human insulin, two things happen now; there is cell multiplication as in cancerous growth so that a large number of cells is produced; at the same time, there is synthesis of human insulin from the amino acids supplied to the hybridoma. Because the cells are leaky, insulin escapes into the medium in which the hybridoma grows; one has to simply harvest the insulin secreted by the hybridoma and use it for therapy.

The role of biotechnology in agriculture has been very significant. For instane, let us see how the crop plants can be improved by manipulating their genes to get better yield.

All plants, including the cereals and pulses cultivated for food, require nitrogen (N_2) to synthesise proteins. (Proteins, unlike carbohydrates, contain nitrogen, besides carbon, hydrogen and oxygen present in both.) Although about 80% of the atmospheric air is N_2, higher plants are incapable of utilising it directly; certain groups of bacteria, like **Rhizobium** have been known for long to 'fix' the atmospheric N_2 and convert it into assimilable form for the use of the higher plants; the leguminous plants (like black gram, green gram, bean, etc.) contain these nitrogen-fixing bacteria in their root nodules.

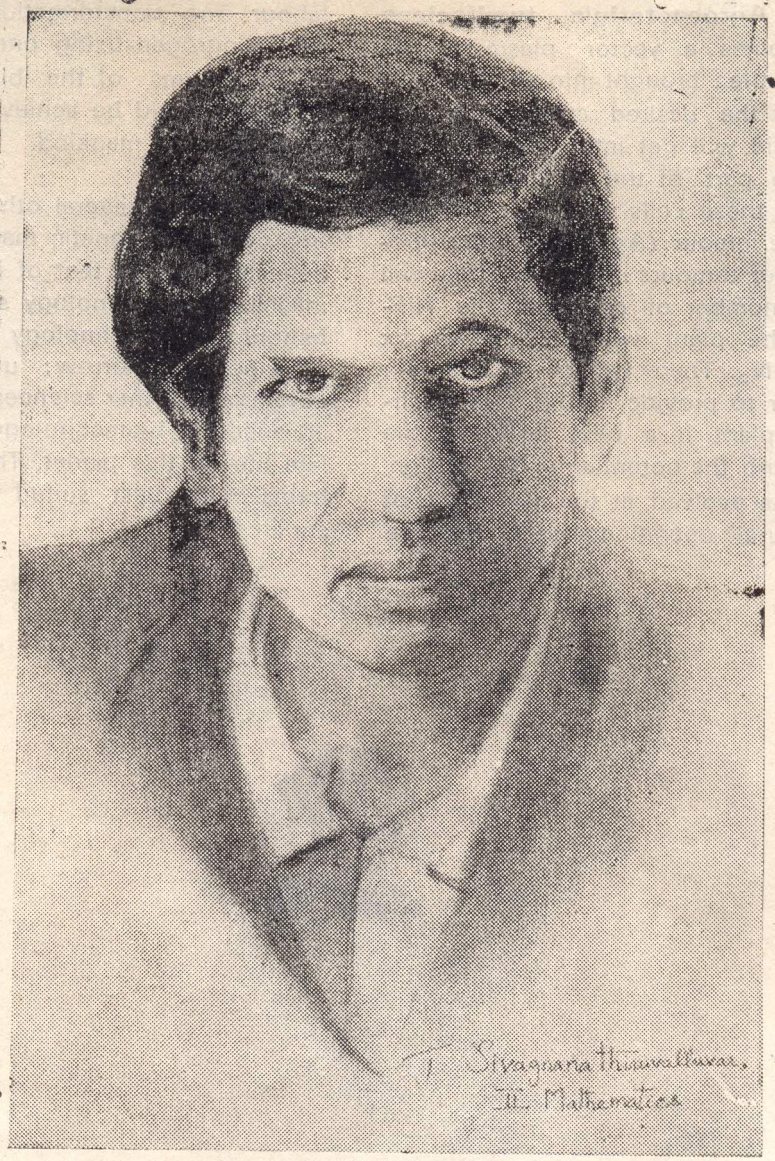
Just because the crop plants, like paddy or sugar cane, are not able to fix N_2, we provide N_2 in the form of manure. If we can make the paddy plant or wheat fix the N_2 **directly** from the atmosphere, there will be no need at all for adding farm manure or chemical fertilizers containing N_2. One attempt of the scientists is to induce formation of root nodules in those which normally do not produce nodules, so that N_2- fixing bacteria can dwell in them as symbionts.

The biotechnologists have a wonderful aim; they want to make it possible for the crop plant to directly fix atmospheric N_2, Bacteria, such as **Rhizobium**, are able to fix N_2 bacause they have a gene (NiF) for it; like any gene that functions, the NiF-gene will have the operator, promoter, the structural gene etc. This is then the operon for N_2-fixation. If the whole operon for N_2-fixation could be introduced into the crop plant from the bacterium so that the NiF-gene is incorporated as part of the plant's own genome, the NiF-gene will capacitate it to utilise the atmospheric N_2 and it need not depend on the nitrogenous fertilizers ; neither the symbiotic bacterium nor man needs to provide N_2 as salt. But, this is a Herculean task ! The attempts to isolate the NiF-gene and make it functional in the higher plant have been futile. This is perhaps due to our inability to isolate the complete operon of the NiF-gene; may be, the operator and other regulatory mechanisms are located in unknown regions of the bacterial genome of the N_2-fixing organism and cannot be isoloted as a functional unit. If the biotcehnologists overcome this difficulty and are able to transfer the complete NiF-operon, it should be possible to transform any plant, the paddy plant in our example, into a N_2-fixing plant.

This leads us to the problem of finding a suitable vector for transmitting the NiF-operon into the higher plant. The vector can be constructed from the plasmids of certain Gram-negative bacteria of the genus **Agrobacterium**, for example These bacteria

can be employed for introducing any desirable gene(s) into higher plants. The NiF-operon can be attached to the Ti plasmid of **Agrobacterium tumifaciens** and it becomes a vector plasmids. The bacterium is then brought into contact with the cells of the desired crop plant; the vector plasmid will get into the crop plant and become part of the genome of the latter. When these cells with the NiF-gene multiply as a tumour (**Agrobacterium** produces gall-like tumours in plants), there will be enough number of cells with the NiF-gene and the plant will be able to fix atmospheric N_2. There will be no need for the cultivator to provide nitrogenous fertilizers to the plant. If a new strain of the crop plant, with the potential for N_2-fixation, could thus be evolved, at the magnitude of the agricultural operations, there will be enormus saving in expenditure which would otherwise have been incurred towards the cost of the nitrogenous manure as well as labour. The transformation of a crop plant into a nitrogen-fixing one remains as one of the dreams of the biotechnologists. If only this could be achieved, it should be a great boon to mankind.

There are several other possibilities for improving the genetic make up of plants and animals and also that of human beings by means of biotechnology so that mankind is benefited. Biotechnology aims at providing us a better tomorrow; unlike some of the advances in other sciences, let us hope, the advances in biotechnology will not annihilate life on this planet. There will be better forms of the best suited to inhabit it and enrich it.



கணித மேதை இராமானுஜம்

RAMANUJAN - The Mathematical Wizard

Srinivasa Ramanujan, an Indian mathematical genius, born on 22nd December, 1887, whose father was Srinivasa Iyengar, a clerk in cloth-merchant's office earning Rs. 20 per month. He was aksharabiyated on 29th May, 1892 and it was the first attempt on writing for Ramanujan. In the same year on October, he was enrolled in a 'thinnaipalli' in Kanchipuram. His first teacher was Subbarama Iyer.

In 1894 he returned to Kumbakonam and continued his studies in 'Kankeyan primary School'. In the final examinations of that school Ramanujan stood first. He got 42 marks out of 45 in maths. But his friend Sarangapani got 43. From the beginning Ramanujan could not digest the idea of anybody excelling him and this incident made him concentrate more on mathematics and onwards his interest in mathematics grew. In his school life he got lot of awards and was capable of telling prime nos. upto a crore quickly.

Finishing his primary school studies he joined the Kumbakonam 'Town High School'. The next year he was generally uneventful, barring the odd prizes and merit certificates he got. In the seventh standard he got first prize in a competition and got a book 'Wallace and Bruce' written by Mary Cochrane as a gift. He easily mastered in pure mathematics. He could solve all the problems of Loney's trignomentry.

He worked out all the Carr's Synopsis of pure mathematics, algebra, trignometry & calculus. He derived a result for squaring a circle-a world mathematical puzzle among three-when he was in school level.

His family was in a very poor condition. Earning of his father was so meagre that he has to write theorems and work out problems only in a 'slate' with a chalk. what a pity on a mathematics genius? He rarely used papers and pencil for his work. After solving problems or theorems in slate, he used to write the main results and theorems in papers and preserve them. It is why no papers are not available now for many of the theorems he had proved.

One day as there was no food in his house, he drank a few glasses of water and left the house with some books on mathematics and with a slate. As there was no sign of return, his friend and parents were in search on him. Anandu saw Ramanujan in Sarangapani temple mandapam. Ramanujam was fast asleep with his head resting on his book. The mandapam floor was full of mathematical writings around him When Anandu shook Ramanujan. Ramanujan burst out and asked why he woke him up. In his dream he saw a mathematical problem and before solving it, he was disturbed. Ramanujan then recalled the problem and noted it down. By the version of 'Namagiri thayar' he had such mathematical dreams involving interesting critical problems and solutions.

When he was in 9th standard he won a competition and 'poems of England' was awarded as the second prize. He was the recipient of the Sri K. Ranganatha Rao prize in mathematics. At the end of his high school life he was awarded with critical and historical essays for his extraordinary power in mathematics. Also he was given political works of Willium Wordsworth', for having stood first in mathematics.

When he was a high school student he used to take tuition for college students in mathematics. He used to solve their problems easily & quickly in shortcut methods. He passed matriculation examination with first division. He joined First Arts in Kumbakonam Government College in 1909 when he was 17. His mathematical abilities once again attracted attention. He wrote the Junior Subramanyam Scholarship examination and got cent per cent marks in mathematics. As he failed to get good marks in English, did not get the scholarship.

Ramanujan got 100 per cent marks in mathematics in F. A. examinations in 1905, but as he had not done well in one subject he failed. He left the house with a sorrowful mind. After a few days he returned home.

He was encouraged by P. V. Seshu Iyer and with the help of him he went to Madras from Kumbakonam There he joined Pachayappa College in F. A. in 1905. Principal J. A. Yadas appreciated Ramanujan's efficiency and arranged 'half-scholarship' for his studies. He used to tell his friends that the problems given in text books of geometry, algebra and trignometry are all mental sums. He was encouraged by professor Singarvelu and others. But due to ill health, he returned to Kumbakonam not doing the F A. examination. In the next year he appeared for F. A. examination as a private candidate. But he was unable to secure pass mark in one subject.

On 14th July 1909, Ramanujan married Janaki under persuation of his mother. In his early days he was traught with problems of poverty, lack of support and recognition. But his marriage compelled him to seek a job. He wanted to get employed as a tutor in mathematics. He went out every morning with his friends and met various mathematicians. As his results were quite off beat and were not deduced systematically, his attempts proved futile.

Luckily he got an introduction to Ramachandra Rao, the Collector of Nellur. He was also the secretary of the Indian Mathematical Society. Through him on Jan 12, 1912, Ramanujan joined as a clerk in the Accountant General's Office, Madras, on a salary of Rs. 20. Then he got a job in Madras Port Trust on a salary of Rs. 30.

Whenever he got some leisure he used to do mathematical research, One day he was sighted by the Chairman of Port Trust when he was in his mathematical work. He got angry and snatched all the papers from him. When he came across the work of Ramanujan, he was wonder struck.

In his early days he attempted to publish his works in the Journal of the Indian Mathematical Society was in the form of questions. His first article on 'Some Properties of Bernoullis Numbers' was published in JIMS. Narayana Iyer was the assistant secretary and treasurer of the Indian Mathematical Society. He had a keen interest on Ramanujan's work and kept close contact with him. They used to work every night for a long time with slates and chalks. Ramanujan got up suddenly from his sleep and workdown mathematical problems in slates. He said that he worked out mathematics in his dreams and he was writing the results after dream by the version of Namagiri thayar.

As his salary was not enough even to maintain his family. He could not spend money on papers and notebooks. He collected papers from the waste of the port trust and the packing papers from the harbour. He wrote in red-ink on these papers to distinguish his ideas on mathematics from the writings that were already in these papers

Unfortunately English climate did not suit him He fell ill in 1917. He was attacked by cerlolis. Even with the best medical aid in England, he could not recover. Once for an unknown reason he a attempted to kill himself laying on railway track. Unexpectedly the train was not on the way. London police caught him and took him to the station. Hardy hearing this met the officials and freed Ramanujan from legal action.

He was admitted to Matluck nursing home, He contirued his mathematical pursuits in bed. During one of his visits to the hospital, Hardy told him that he came by a car with no 1729 and remarked that the no. seemed to be a dull one. But Ramanujan replied 'No', 'it is a very interesting number, which is the smallest number expressible as the sum of two cubes in two different ways. Thus $1729 = 1^3+12^3 = 10^3+9^3$. Hardy amazed and inquired : 'Do you know the answer to the corresponding problem for the Fourth power?'

I can see no obvious example. But I think that the First such number must be very large and that is $635318657 = 158^4 + 59^4 = 134^4+133^4$' It was an incident showing his versality in mathematics.

Ramanujan's health was becoming worse. He left England and returned to Madras in 1919. He was not recovered even at his home, but the zeal for his mathematical quests went on. He told his mother. wife and friends on reading his horoscope and Palm that he could not live beyond 32 years and 5 months. On the morning of 26th. April 1920 the genius Srinivasa Ramanujam passed away. The world mourned his death

Prof. Hardy said he had lost his 'Priceless treasure; His loss is irreparable. and I will compare Ramanujan with great mathematicians like Euler and Jacobi. Hardy on his percentage of mark awards on the geniosity of the mathematic genius on his period he gave 100% to Ramanujan. but had not gave any such marks to others.

Prof. Renganathan calls Ramanujan a 'Mathematical meteor' He recalls 'Great men came and go like meteors. They shine and consume themselves prematurely. They blaze a new trial? His birth his superior-activity in Madras and Cambridge and his deathall seemed to have happened in a flash.

(Collected events)

evidence :-
Ramanujan - by Hardy
Indian Express
The Hindu
Srinivasa Ramanujan - Suresh Ram

In Ramanujan's First letter to Hardy, he wrote,

Dear Sir,

I beg to introduce myself to you as a clerk in the Accounts Department of the Port Trust office at Madras on a salary of only £ 20 per annum I am now about 23 years of age. I have had no university education, but I have undergore the ordinary school course. After leaving school I have been emplying the spare time at my disposal to work at mathematics. I have not trodden through the conventional regular course but I am striking out a new path for myself. I have made a special Investigation of divergent series in general and the results I get are termed by the local mathematicians as 'startling'.

Just as in elementary mathematics you give a meaning to a^n when is negative and fractional to conform to the law which holds when n is a positive integer, similarly the

Griffith and Bourne knowing Ramanujan's work appreciated him and were interested in helping him with cool and devoted mind. Ramanujan went on with his work. His well wishers and elders like prof. P. V. Seshuiyer urged him to communicate his mathematical findings to prof. G. H. Hardy, fellow of Trinity college, and Cayley lecturer in Mathematics at Cambridge. He was not inclined to do so in the begining. But however pressure mounted on him made him write to Hardy.

In a mathematical journal Hardy had published a set of problems for which he required solutions. Ramaujan came across the problems solved them and sent the results and solutions to Hardy in 1913. Along with his discoveries to Hardy, he also sent details about him. That was the first beginning of a most celebrated association between Ramanujan and Western universities.

Hardy was astonished with the results and solutions of Ramanujan's genius and he discussed the solution with his friend in London. Thus Ramanujan got a chance of exposing his genius and he was specially invited to London. E. H. Nevil, Hardy's friend, in Madras tended the invitation of Hardy. Hardy also sent a letter to the chairman of the Port Trust in connection with Ramanujan. At the time of Nevil's meeting with Ramanujan, Ramanujan joined Madras University Registrar as a research scholar.

With the permission of his perents and Namagirithayar' he started his voyage to England in the ship S S Nevasa on March 17, 1914. Seeing Ramanujan's Interest in going to England for Mathematical research Sir. F. Spring granted Rs 10000 to Ramanujan.

On, 14th April he reached England and was received by Hardy, Neville and his friends. Ramanujan was enroled as a research student in 'Trinity College' associated with Cambridge university. He was affectionately called as 'Dear Jam', was liked by teachers and students. Ramanujan showed his work to Rogers and did combined work with him. Prof. Hardy got them published as the 'Rogers-Ramanujan identities' and send them to all mathematics genius in London.

Prof. Hardy and Wood then arranged tution to Ramanujan in Latin, French, German and also in mathematical classics. The London Mathematical Society appreciated Ramanujan's work. In London Ramanujan stayed in an apart. As he was strictly vegetarian he cooked his food himself. In London he was honoured with B. A. degree.

Hardy was the close friend of Ramanujan Ramanujan worked for most of his life, and published papers make a volume of 400 pages which had never been analysed properly till few years back.

The great bulk of Ramanujan's published work was done in England. During his stay in England he was not particularly interested in his health or life but he was a mathamatician anoxious to get on with the job. He used to show Hardy half a dozen of almost new ideas every day.

In England over 30 papers were published in research Journals by Ramanujan. He was elected as 'Fellow of the Royal Society' and honoured him with FRS. He was the First Indian to be honoured with FRS in 1918. In the same year he was elected as 'Fellow of Trinity College' with a prize Fellowship of about 250 pounds per year. Mr. Wood, friend and mathematician of Cambridge University remarks every positive integer was one of his personal Friends.

But Ramanujan had no aspirations for acquiring such titles, power, praises and position. He worked on mathematics for the sake of mathematics only.

whole of my investigations proceed on giving a nearing to Eulorian Second integral for all values of n. My friends who have gone through the regular course of university education tell me that

$$\int_0^{\infty} x^{n-1} e^{-x} dx = \sqrt{(n)}$$

is true only when n is positive. They say that this integral relation is not true when n is regative. Supposing this true only for positive values of n negative and fractional My whole investigations are based upon this and I have been developing this to a remarkable extent so much so that the local mathematicians are not able to understand me in my higher flights.

Very recenty I came across a tract published by you styled "orders of infinity" in page 36 of which I find a statement that no definite expression has been as yet found for the number of prime numbers less than any given number I have found an expression very nearly approximate real result, the error being negligible. I would request you to go through the enclosed papers. Being poor if you are convinced that there is anything of value, I would like to have my theorems published. I have not given the actual investigations nor the expression that I get but I have indicated the lines on which I proceed Being inexperienced, I would very highly value any advice you give me. Requestng to be excused for the trouble I give you,

I remain, dear Sir,
Yours truly
S. Ramanujan.

In his second letter to Hardy in Feb 27, 1913. I have found a friend in you who views my labours sympathetically. This is already some encouragement to me to proceed. I Find in many a place in your letter rigorous proofs are required and you ask me to Communicate the method of proof, the sum of an infinite number of terms of the series $1+2+3\ldots = -1/12$ under my theory If I tell you this, you will at once point out to me the lunatic asylum as my goal.... what I tell you is this, verity the results I give and if they agree with your results.... you should at least grant that there may be some truth in my fundamental basis.

To pressure my brains, I want food and this is now my first consideration. Any sympethetic letter from you will be helpful to me here to get a scholarship either from the university or from Government....

In his letter to registrar, thanking him,

Sir

I beg to acknowledge the receipt of your letter of 9th December, 1918 and gratefully accept the very generous help which the univrsity offers me.

I feel, however, that after my return to India which I expect to happen as soon as arrangements can be made, the total amount of money to which I shall be entitled will be much more than I shall require. I should hope that after my expenses in England have been paid £ 60 a year will be paid to my parents and that the surplus, after my necessary expenses are met, should be used for some educational purposes, such in particular as the reduction of school fees for poor boys and orphans and provision of books in schools. No doubt it will be possible to make an arrangement about this after my return.

I feel very sorry that as I have not been well, I have not been able to do as much mathematics during the last two years as before. I hope that I shall soon be able to deserve the help that has been given me.

I beg to remain, Sir,
your most obedient servant,
S Ramanujan.

This letter shows Ramanujan's humility, his solicitude for his parents and his concern for the poor and the resourceless. Above all it demonstrate his devotion to mathematics and his highly considerations mature. O

Sir C. V. RAMAN

A. CHRISTOPHER ARUL JOTHI
Final Year M. Sc. (Physics)

A voyage to Europe in the Summer of 1921 gave him the first opportunity of observing the wonderful opalescence of the Mediterranean sea. It seemed not unlikely that the phenomenon owed its origin to the scattering of Sunlight by molecules of the water. To test this explanation, it appeared desirable to ascertain the laws governing the diffusion of light in liquids and experiments with this object were started immediately on his return to Calcutta in September 1921. He is no one else but a great Scientist Sir. C. V. Raman.

The Current year marks the birth Centenary of this great Indian Sir. C. V. Raman, who won the world's most prestigious Nobel prize (for Physics) in 1930. It is also the diamond jubilee of the discovery of the Raman effect.

CHANDRASEKHARA VENKAT RAMAN, was born on November 7, 1888 in Tiruchirappali, where his father was a teacher in a local college In 1902, Raman joined the Presidency College. Madras, from where he took his B.A degree in 1904 securing the first rank. Even as an under-graduate in the College, Raman exhibited his sparkling brilliance. In 1907, Raman got M. A. degree and stood first in the history of the university of Madras.

Raman effect :-

When a beam of monochromatic light was passed through organic liquids such as benezene, toluene etc,, the scattered light continued other frequencies in addition to that of the incident light. The arrangement used by him was simple in design. A round bottomed glass flask was filled with dust-free benzene and the liquid was strongly illuminated by the 4358 Å line from a mercury arc suitably filtered and concentrated by lens. The scattered light was examined by means of spectrascope placed transversely (i.e.) in a direction at light angles to that of the incident radiation. In the spectrum of the scattered light a number of new lines observed on both sides of the main line. Those on the low frequency side were numerous and more intense those on the high frequency side ; the spacing between the lines was symmetrical about the main line; most of them were strongly polarised. the observed spectrum is now generally referred to as Raman Spectrum and those on the low frequency side as Stokes' lines and those on the high frequency as anti-stokes' lines.

Uses :-

The Raman effect has a wide range of applications. It has proved extremely useful in the study of molecular structure. The constitution of a large number of molecules of different chemical composition has been studied using this technique and thousands of research papers have been published from all parts of the world. After the discovery of laser beam, Raman spectroscopy has acquired a new dimension with the use of lasers. Some of the recent applications of Laser Raman spectroscopy include the detection of air pockets in very fine glassware, temperature and density measurements of gases, air and water pollution measurements, environmental analysis of metals and minerals, study of large size biological molecules, study of blood flow in veins, mechanism of human vision etc. Many chemical and pharmaceutical industries use this type of spectroscopy for remote sensing operations. For example, a Japanese pharmaceutical firm uses Raman scattering to estimate how much air is left in certain types of drug capsules. More than 40,000 research papers have been published so far on various studies using Raman effect. The number of publications issuing out of the various laboratries of world continues to increase.

Receiving the Chief Guest

Students' Union Inauguration

Chief Guest:

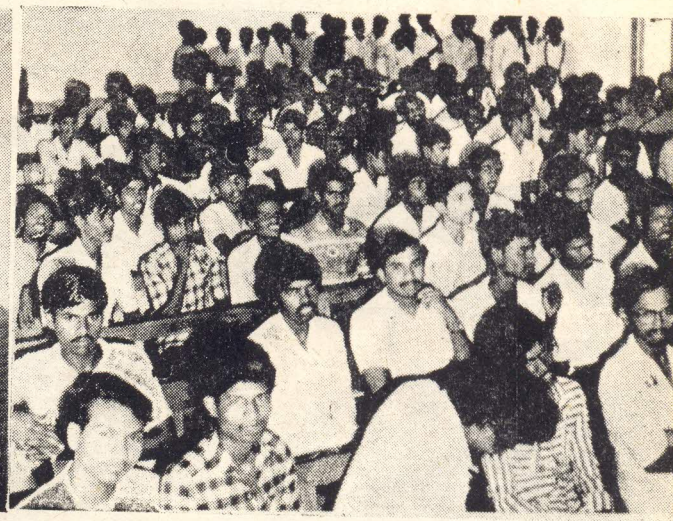
Selvi S. BAGIRATHI, M.A., M.Litt.

Principal and Secretary

SRI PARASAKTHI COLLEGE, COURTALLAM

9--10--87

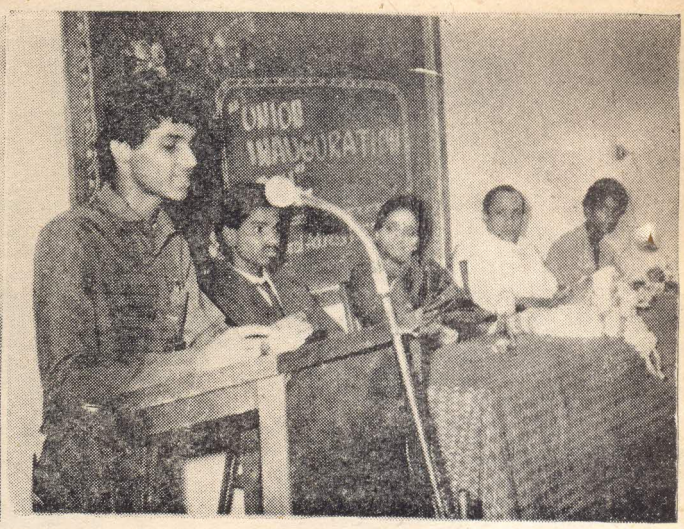
Dr. Sm. Pechimuthu Speaks



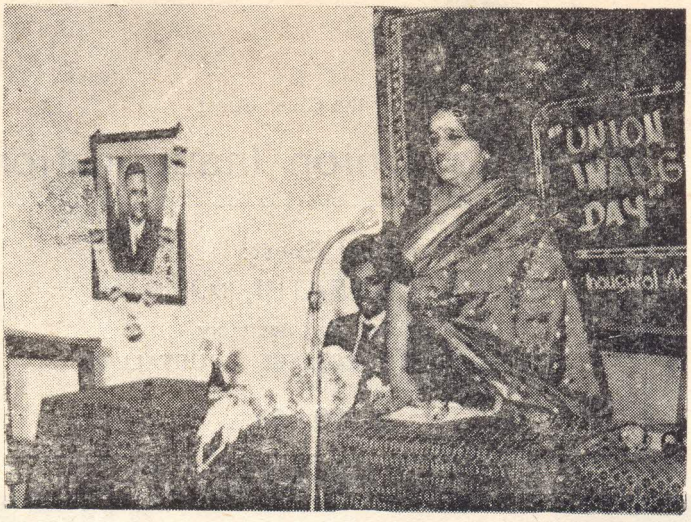
A Section of the audience

Scenes from College Student's Union Inauguaration

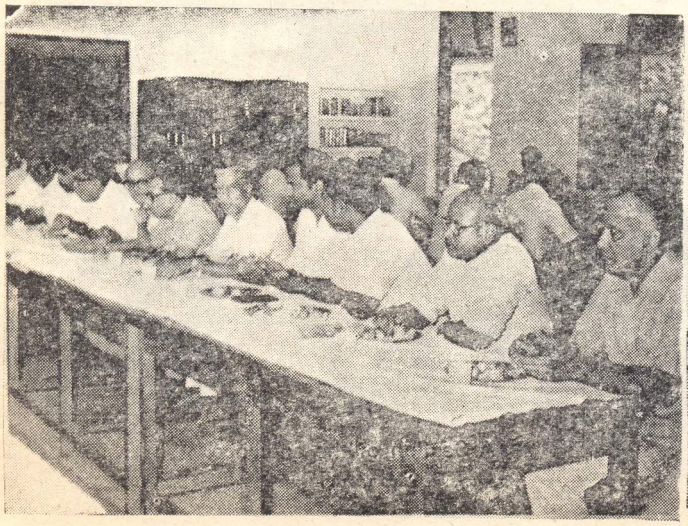
Union Chairman Speaks



Students' Secretary Speaks



Chief Guest delivering the Inaugural Address



SRI PARAMAKALYANI COLLEGE, ALWARKURICHI

College Day – 19th March '88

[The College Day was celebrated on 19-3-88. Hon'ble Shri M. Arunachalam, M.A., B.L Minister of State for Industrial Development Government of India, presided and delivered the College Day Address.]

Annual Report for the Year: 1987 – 88

Hon'ble Minister, Distinguished guests, Dear Colleagues and Dear Students,

I have great pleasure in presenting to you the report of the activities of the college during the academic year 1987-88.

The most eagerly awaited event at the beginning of the year was of course the publication of the results of the university examinations of April 1987. As usual, there was much cause for satisfaction in the results of the various classes in spite of little disappointments here and there.

In the final B. Sc. examinations we had 24 passes out of 26 sent up in physics Major, with 23 of them getting a first class and two of them get ting places in the university rank list which gives the rank for the first 20 students. In Zoology Major, 20 passed, 19 of them in first class out of 27 sent up. In Chemistry Major, we did not have the customary high pass percentage. 18 students passed out of 30 sent up. However, there was good justification for rejoicing not only because all the 18 passes were in the first class but also one of them, M. Kulanthaivelu, has obtained the UNIVERSITY FIRST RANK. Another has obtained the University fifth rank and a third the University sixth rank. In the Mathematics Major, out of 26 students sent up 15 passed, 13 of them in First class.

In the final year B. Com., out of 56 students sent up 23 passed, 7 of them in first class. The Achilles Heel was auditing.

In the first and second year classes the pass percentages in the individual subjects have been quite high Special mention may however be made of the cent per cent passes in second year ancillary physics and 99.2 % passes in first year B.Sc. Tamil.

In the final year M. Sc., Physics, we have five full passes out of 9 sent up; all the five have got first Class. S. Ravi got the ninth rank in the university.

In M. Sc. Chemistry, we had one first class. The performances in individual papers however, have been quite good.

Special mention may be made of the cent percent passes in First M.Sc Applied Mechanics and almost 90 % passes in Quantum Mechanics, Solid State Physics II, Applied Electronics II and Molecular Spectroscopy.

Our congratulations to the students for their good performance and to the concerned staff.

Admissions in the Current Year

As usual, the number of applications far exceeded the number of seats in the various courses. But we have the phenomenon of a large number of students admitted in the first year leaving us at various times to join the professional colleges. In first year B.Sc as many as 52 students left in this way. However, we were quick to fill the vacancies so that out of 128 authorized seats in the various courses only one seat was ultimately vacant. In B. Com. and M. Sc. courses, we took advantage of the permission to make additional admissions. The total strength of the college at present is 594.

Staff Changes

In the physics Department, Dr. Sheik Saleem, M. Sc., Ph. D., was appointed in a permanent vacancy. In the Zoology Department, Mr L. M, Narayanan, has been duputed to do M. Phil under the Faculty Improvement programme at Madurai Kamaraj University and Mr A. G. Murugesan has been appointed in the temporary vacancy.

In the Commerce Department Prof. P. T. Oommen who was Head of the Department retired after 16 years service and Dr. M. Rajamani, M. Com., M. Phil., Ph. D. was promoted as Head of the Department. A consequential vacancy in the Assistant Professor cadre was filled by Mr A. Sisubalan, M. Com.

In this connection, I must express my thankfulness to the Management for having permitted the appointment at their own expense, of a temporary teacher in commerce to safeguard the interest of students, till formal appointments could be made.

VISITORS :-

Among the distinguished personages who visited us in the year and addressed the students, mention must be made of a team of Australians who were travelling under a Rotary Exchange Programme, Mr. S. Sankaran, Deputy Chief of the University Employment Information and Guidance Bureau and Selvi S. Baghirathi Principal of Sri Parasakthi College for women, Courtallam

On the 17th July 87, Prof. N. Ananthapadmanaban, Director of Collegiate Education, Madras visited the college and addressed the students along with Prof. A. Govinda Pillai, Deputy Director of Collegiate Education. The Director wrote in the visitor's book "I am very much impressed with the Progress made by this college and the excellent atmosphere for academic work of serious nature".

Extra Curricular Activities:

Games :

Our college teams participated in Inter Collegiate matches in Table Tennis, Volley Ball, Cricket, Kabaddi and Ball Badminton. In every case victory was very near our grasp. The Inter Collegiate matches in Badminton were organized by us in our campus on behalf of the university.

N. C. C.

There are 90 cadets on the rolls of our N.C.C. under the charge of Capt. J. S. Francis.

One second year attended a trekking camp at the Goa.

3 cadets of our college successfully participated in a cycle trekking programme covering a distance of 700 kilo meters in 10 days in January 1988.

In the B Certificate examination held recently we were the only college getting cent percent passes. All the 15 cadets from our college were declared passed.

National Service Scheme :

We have 2 units of N. S. S. functioning under the charge of Mr S. Suria narayanan, Librarian, and Dr. P. Nagen ra Prasad Asst., Prof of Botany. Several one day camps have been conducted in nearby villages besides the regular work of looking after Adult Literacy Programme and helping Children of neighbouring elementary Schools.

Development Plans :

With the closing of the academic year in a few weeks the college will be completing 25 years of service in providing higher education facilities in this rural area.

From the letters received from a few old boys and the sentiments expressed by so many others, we have reason to believe that but for this college many a bright young boy would have stopped his education at school level and let his brightness fade away. One is reminded of the Elegy where Gray refers to "Mute Inglorious Miltons", roses wasting their fragrance in the desert air and "gems of purest ray serene lying in the dark unfathomed caves of ocean".

We wish to make this college an institution of excellence while at the same time providing some preferential opportunities to the students of this part of the state.

For the immediate future, we are taking steps to start the M. Sc. course in Micro Biology in July 1988. Other disciplines will be taken up in due course.

We have applied to the University Grants Commission seeking matching grant for providing physical facilities like staff quarters, improved equipment for the laboratories etc.

We have always firmly believed that the teacher is the most important

factor while striving for excellence, we have taken full advantage of the faculty improvement programmes offered by the university grants commission so that we have one Ph. D each on the staff of five of the seven departments of the college. Further, most of our staff members have acquired the M. Phil qualification.

We have always tried to make this college, a little different in its culture. The principles that govern our admission policy, the principles on which appointments are made to the faculty, and the way we react to problem situations are all parts of this culture.

We have the infrastructure facilities and qualities to achieve some-thing great in the coming years.

We offer our prayerful thanks at the feet of Lord Sailapathy and Goddess Paramakalyani for all graces received.

(K. H NARAYANAN)
19-3-88 Principal and Secretary

Congratulations for Achievements

Courses undergone by the Staff

Name	Designation	Period	Details of the Course
Sri. S. Surianarayanan	Librarian	Frcm 30-6-87 to 11-7-87	Attended orientation course for Non Trained N.S.S.P.Os. at Sri Avinashilingam Home Science College, Coimbatore.
Sri. L. M. Narayanan	Assistant Professor of Zoology	1987 - 88	Studied M. Phil Degree course at Madurai Kamaraj University, Madurai
Dr. Sm. Pehcimuthu	Head of the Department of Biology	From 9-2-88 to 16-2-88	Participated as the Resource person 'Manipulating fish in the work shop of Chromosomes' at Madurai Kamaraj University, Madurai.
,,	,,	From 16-5-88 to 20-5-88	Attended Seminar on statistics for Biologists

Non-Teaching Staff

Name	Designation	Details of the Course
Sri. K. Ganesan	Assistant	Passed the Account Test for Subordinate Officers Part I.

Academic Prize Winners for 1986-87

Name of the Memorial Prize	Course	Name of the Winner
Sri S. Anantharamakrishnan Memorial Prize	B. Sc., All Parts	M. Kulanthaivelu
Sri M. V. Venkataraman Memorial Prize	B. Sc , Mathematics Major	R. Raman
Sri N. Sankaranarayanan ,, ,,	B. Sc., Physics Major	S. Ramasamipandian
Mr. W. W. Ladden Memorial Prize	B. Sc., Chemistry Major	M. Kulanthaivelu
Mrs. Marie Buck Memorial Prize	B. Sc., Zoology Major	K. Sankarapapavinasam
Sri S Narayana Iyer Memorial Prize	B. Com.,	S. Vaidhyanathan
Srimathi Valli Aanatharamakrishnan Memorial Prize	M. Sc., Physics	S. Ravi
Kalyan Mahal Merit Prize	M. Sc., Chemistry	R. Michaelraj

Academic Prize Winners

Course	Subject	First Place	Second Place
III B. Sc.,	Mathematics		G. Muthurajan
	Physics		S. Gokul
	Chemistry		R. Lakshmanan
	Zoology		K. Murugan
	B. Com.		P. Jeeva
II M. Sc.,	Physics		J. Winston Jeeva Prakash
II B. Sc.,	Part I Tamil	M. Sankaralingam	M. Peer Mohammed
	Part II English	C. Sankarasubramanian	S. Jegannathan
		M. Sankaralingam	
	Part III Mathematics	R. M. Alagappan	S Govindaraj
	Chemistry	D. Thiruvengadathan	R. Ramasubramanian
	Physics	M. Sankaralingam	S. Jegannathan
	Zoology	U. Ganesan	A. Buhari Meera Sahib
II B. Com.,		A. Raghuraman	M. Sivasubramanian
I B. Sc.,	Part I Tamil	N. Sankaranarayanan	S. Esakkimuthu
	Part II English	S. Sankararaman	S. Sriram
	Part III Mathematics	N Venkatasubramanian	N. Sankaranarayanan
	Chemistry	V. Ramamoorthy	K. S. Hariharakrishnan
	Physics	S. Sankararaman	K. G. Shanmugam
	Zoology	S. Stephen	A. Vincent Paul
I B. Com.,		G. Kumar	B. Shenbagaraman Ganesan
I M. Sc.,	Physics	N. S. Venkatanarayanan	D. Johnraj David
	Chemistry	L. Ananthanarayanan	S. Harikengaram
	Best user of the Library for 1987–88	R. Shivkumar, III B. Sc., (Zoology)	

Congratulations for Achievements

Name of the Student	Course studied	University Rank Secured
S. Ravi	M. Sc., (Physics)	9th Rank
M. Kulanthaivelu	B. Sc., (Chemistry)	1st Rank
R. Lakshmanan	B. Sc., ,,	5th Rank
S. Ramasami Pandian	B. Sc., (Physics)	13th Rank
S. Gokul	B. Sc., ,,	16th Rank

IX Youth Festival (Zonal Level) held at M. D. T. Hindu College, Tirunelveli on 24th & 25th October 1987

Name of the Prize Winners		Name of the Event	Prize Secured
C. Sankarasubramanian	III B. Sc.,	Elocution - Tamil (U. G.)	II Prize
S. Hariharaputhiran	I B. Com.	Elocution - English (U. G)	II Prize
,,	,,	Essay writing - English (U. G)	III Prize
R. Kasiraman	I M. Sc..	Essay writing - Tamil (P G.)	I Prize
S. Merriton	I M. Sc.,	Instrumental - Solo (Western)	II Prize
V. Thiagarajan & Party	III B. Sc.,	Kathakalakshebam	II Prize
S. Ramasubramanian & Party	II B. Com.,	Ad–Mad	I Prize
P. Mahesh	III B. Sc.,	Dump-Charads	I Prize
S. Sethuraman	II B. Sc.,	Mono-acting	III Prize
P. Thiruvarimuthu	III B. Sc.,	Mimicry	II Prize
M. Ilango & Party	III B. Sc ,	Radio-Drama	II Prize

IX Youth Festival (Final) held at Sri Parasakthi College for Women at Courtallam on 31-10-87 to 3-11-87

Name of the Winner		Name of the Event	Prize Secured
P. Thiruvarimuthu	III B. Sc.,	Mimicry	III Prize

ROTARACT CLUB OF
Sri Paramakalyani College, Alwarkurichi

ACTIVITIES FOR *1987-88*

Chairman	:	Rtn. Prof. K. H. NARAYANAN
President	:	Rtr. L. VIJAYASEKAR
Secretary	:	Rtr. S. PIRAMAKUMAR
Staff Advisor	:	Rtn. PP Prof. M. NATARAJAN
Sponsors	:	ROTARY CLUB OF AMBASAMUDRAM

R. I. DIST. 321.

Our Rotaract Club which was chartered on 21-11-1974 admits members in the age group 18-29 years. Bimonthly meetings are conducted in Hall No 27 at 4-30 p. m. on 1st and 3rd Tuesdays.

Important Activities :

1 Rtr. President L. Vijayasekar and Rtr. Secretary S. Piramakumar attended the Rotaract District Assembly held at Trivandrum.

2 Rotaract Information & Guidelines were given by our staff Advisor, Rtn. PP. Prof. M. Natarajan at regular meetings.

3 Visit to the Rotary Home for the Aged and cleaning its surroundings.

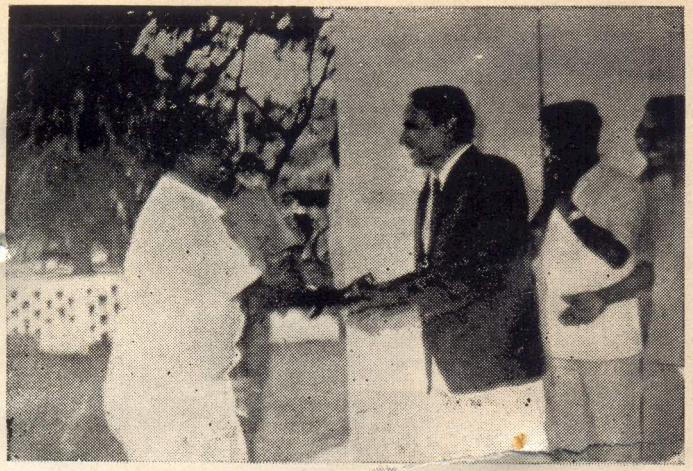
4 Nail-cutting campaign and hygiene awareness to the students of local Primary Schools.

5 Arranged a Book-FAIR on 14th & 15th November 1987 with the help of our parent Rotary Club of Ambasamudram at the campus of Ambai S. M. S. English School. M/s. Arnald Publishers India Ltd., and Kailash Sales Agencies, Madras jointly exhibited a large number of books, charts, maps and art-pieces which were very useful to students, teachers and the public.

6 Rotaractors served as volunteers in the Health camps and community projects organised the sponsoring Rotary Club.

7 Our Staff Advisor, Rtn. PP. Prof. M. Natarajan was nominated by the Rotary District Governor, Rtn. P. C. Palaniyandi Pillai as a Regional Director of the Rotaract District Committee for 1987-88.

Rtr. L. VIJAYASEKAR,
(President)



Principal & Secretary welcomes the Hon'ble Minister.

Hon'ble Minister and our College Governing Body Membe are welcomed by Union Office-bearers.

College Day cum College Union Valedictory

Chief Guest :

Hon'ble Shri M. ARUNACHALAM, M.A., B.L.

Minister of State for Industrial Development
Government of India

19--3--1988

Hon'ble Minister visiting the Hospital

Tree Planting

Sri. A. Krishnamurthi welcomes the gathering

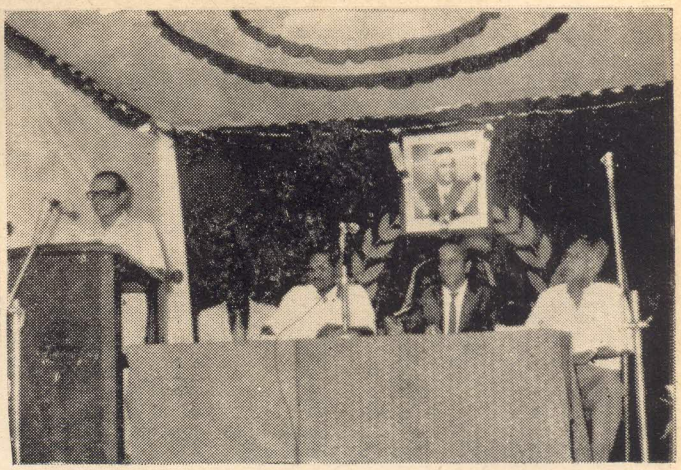
Scenes from the College Day cum Union Valedictory

Garlanding

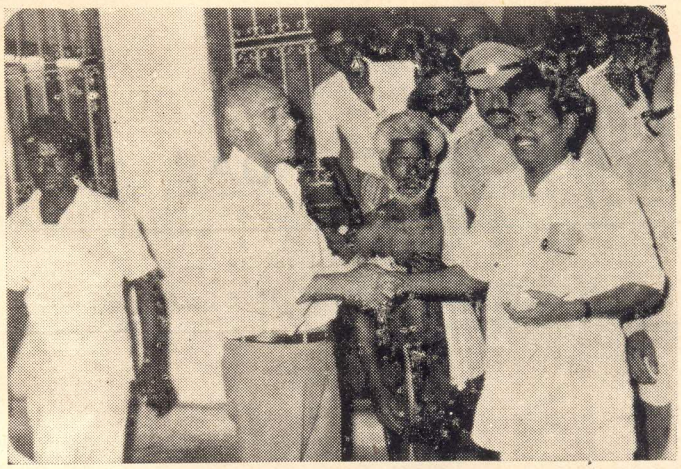
A parent receives the silver medal

Student is honoured for his academic achievement

Section of the audience

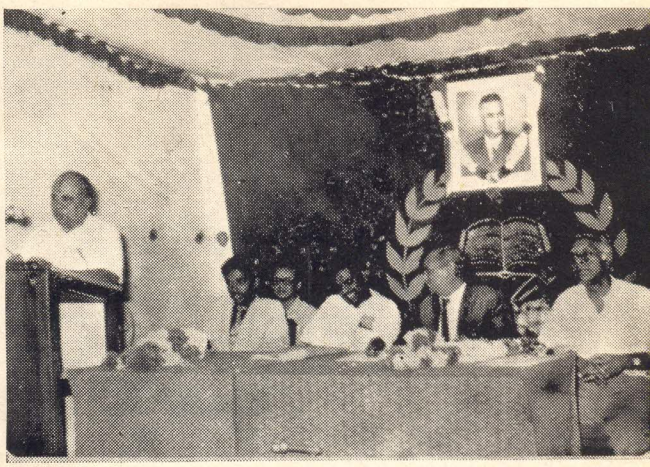


Prof. L. Janakiraman speaks



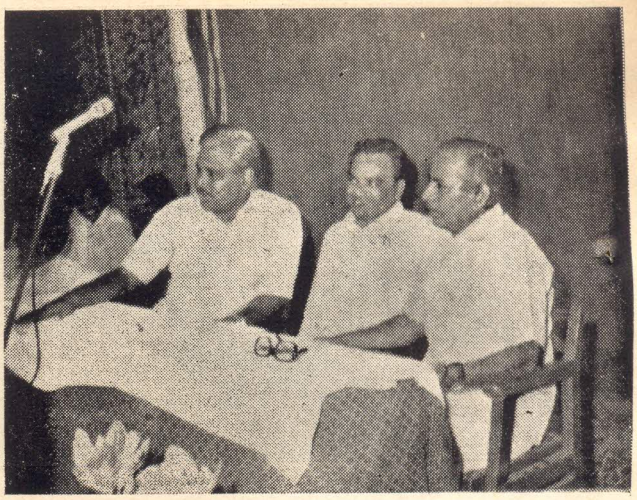
Hon'ble Minister with our
College Governing Body Member

Student's Union Chairman speaking about his achievements



Prof. S. Lakshminarayanan proposing Vote of Thanks

Event for handicapped students



Dignitaries watching the Events

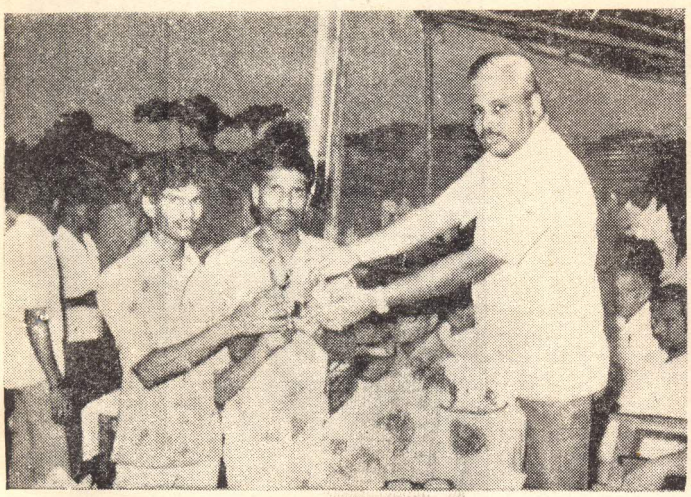
SPORTS DAY

Chief Guest :
Dr. K. S. KRISHNAMURTHI, B.Sc.,M.B.,B.S..D.C.H

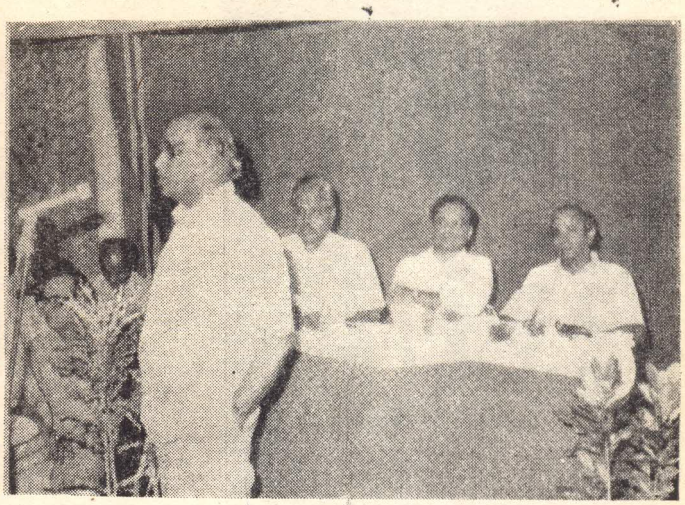
PRIZES

STUDENT WINNERS

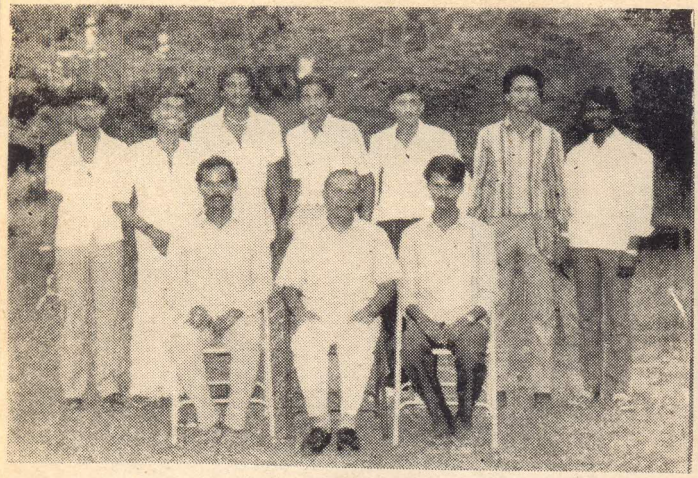
Scenes from the Sports Day



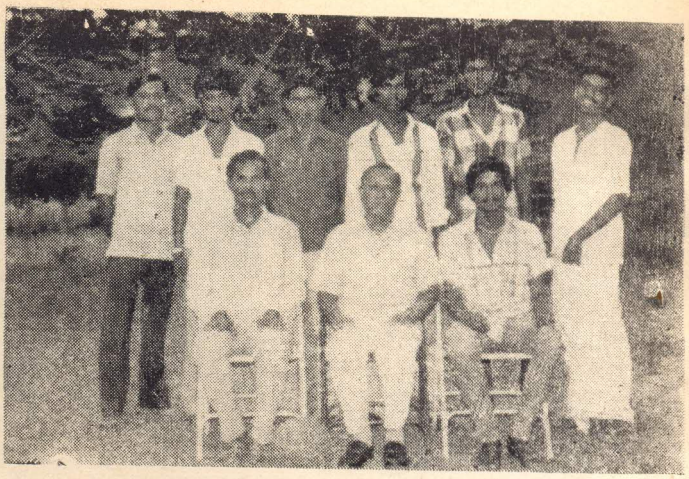
Dr. K S. Krishnamurthi gives the prizes.



Prof S. Venkataraman proposes Vote of Thanks



Ball-Badminton Team



Basket-Ball Team

Games Teames

with our Principal

Volley-Ball Team

Table-Tennis Team

House-Captains

Sri Paramakalyani College, Alwarkurichi-627412

Department of Physical Education

Report for the year *1987 - 1988*

We are proud of this year as we have improved in our achievements and we have done satisfactory work.

Our students participated actively in outdoor and indoor games in the evenings throughout the year.

During the first semester our boys who had the previlege of representing our college in the Inter-Collegiate tournaments. They all attended practices regularly and the captains took keen interest in arranging practice matches.

We participated in the Madurai Kamaraj University Inter Collegiate Tournaments in Volley - Ball, Basket Ball, Ball Badminton, Cricket, Table Tennis, Chess.

We started our Intramural matches in January last and finished them by the end of Feburary. Our students took part in large numbers in the Intramural tournaments.

To-day we are celebrating the Annual Sports and more than two hundred students have been taking part in it.

I thank Dr. K. S. Krishnamoorthy, Ambasamudram for presiding over this function.

Our thanks are due to the members of the staff who helped me in conducting successfully the Intramural matches and the sports. I thank our Principal, the Management and the members of the Games Committee for their encouragement, suggesstions and guidance.

My thanks also go to Mr Sudalaiandi and Mr Sankaran, Physical Education Teachers of our Higher Secondary School.

My special thanks go in abundance to our students for their willing co-operation.

22–3–88

V. PERUMAL,
Asst. Prof of Physical Education

SRI PARAMAKALYANI COLLEGE, ALWARKURICHI.

National Cadet Corps

4/5 Coy - Tamil Nadu Batallion

Report for the year 1987-88

There were 90 cadets on rolls. Training in foot drill, arms drill, field craft, weapon training and map reading were given to the cadets.

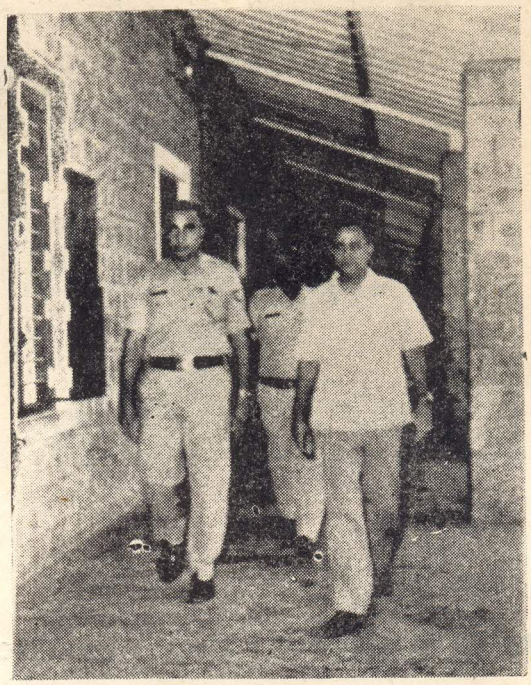
One second year cadet attended a trekking camp at Goa. Twenty six cadets attended a combined senior division Training camp held in the premises of our school. The camp was conducted in our school area. The school buildings and grounds were put at their disposal. The NCC authorities were highly appreciative of the facilities provided by us.

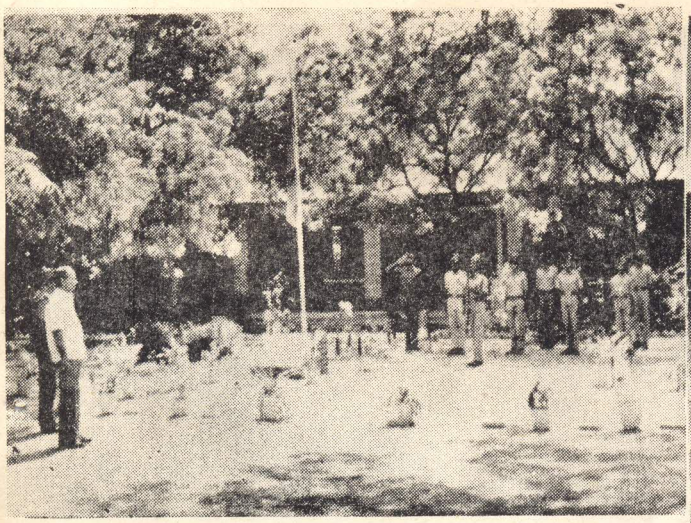
Three cadets of our college successfully participated in a cycle trekking programme covering a distance of 700 kilometres in ten days.

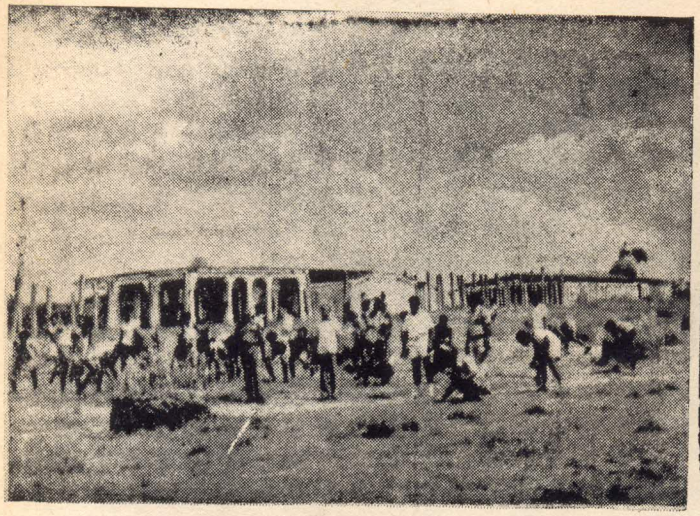
Yet another successful year passed with the valuable guidance of our Principal cum Secretary and the kind patronage of our management.

Capt. J. S. Francis
NCC OFFICER

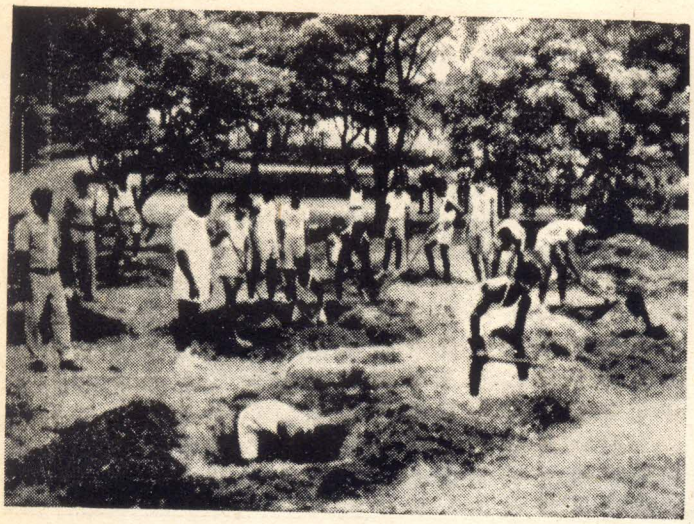
N C C SPECIAL CAMP ACTIVITIES

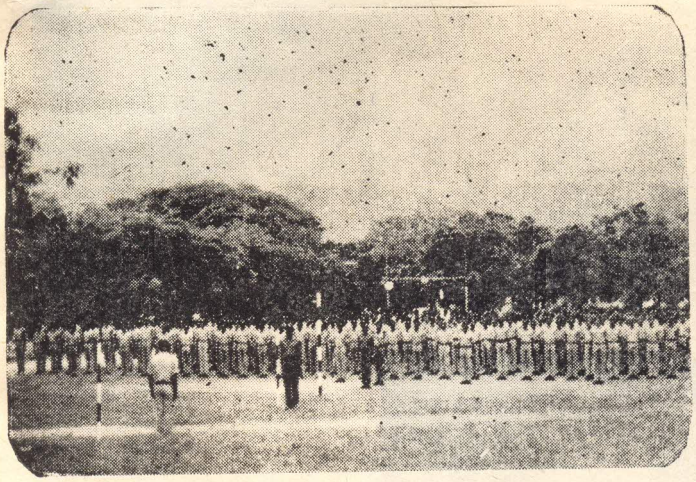


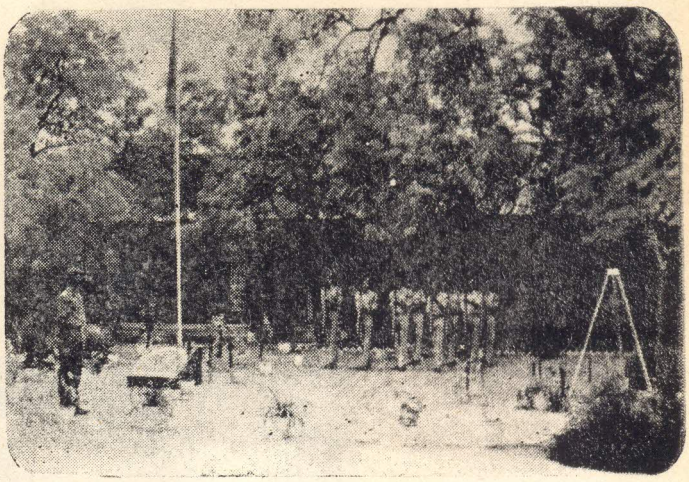


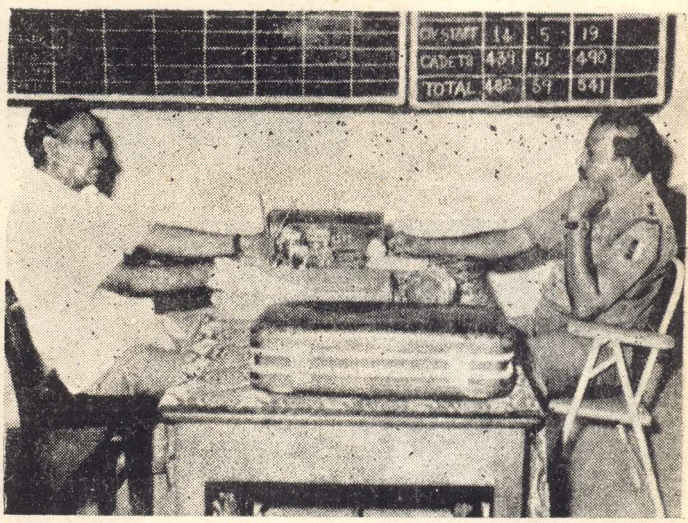


N. C. C. Special Camp Activities





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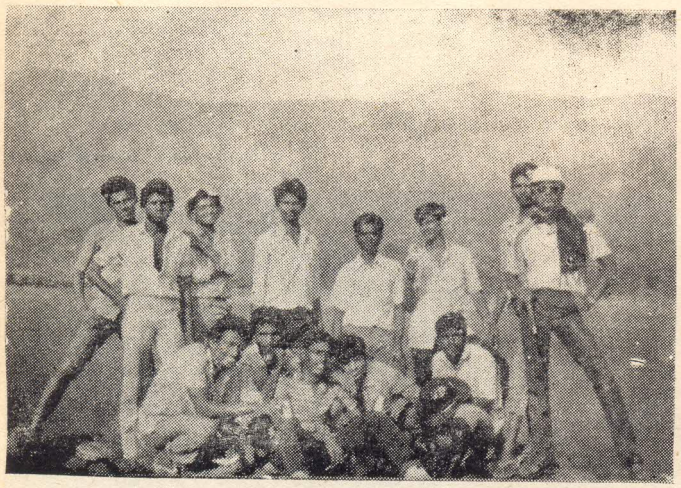
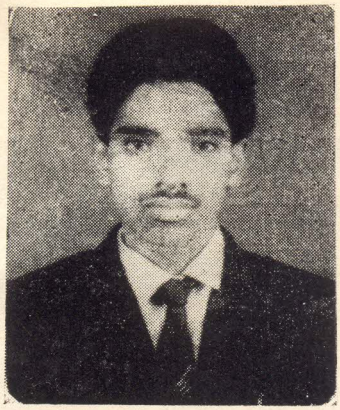
CADETS 439 51 490
TOTAL 462 57 541



TREKKING ADVENTURE

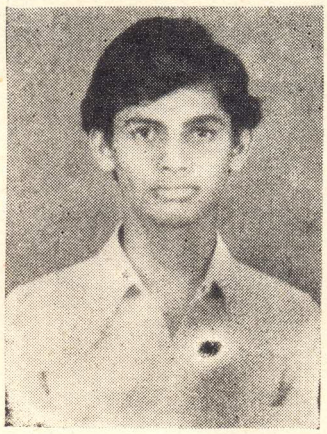
from Kadana
to Courtallam Hills
1--4--1988



S. SUBRAMANIAN, III B.Sc. (Zoo.)
Union Chairman

COLLEGE STUDENTS' UNION

S. PANDI DURAI, III B.Sc.
Union Vice-Chairman



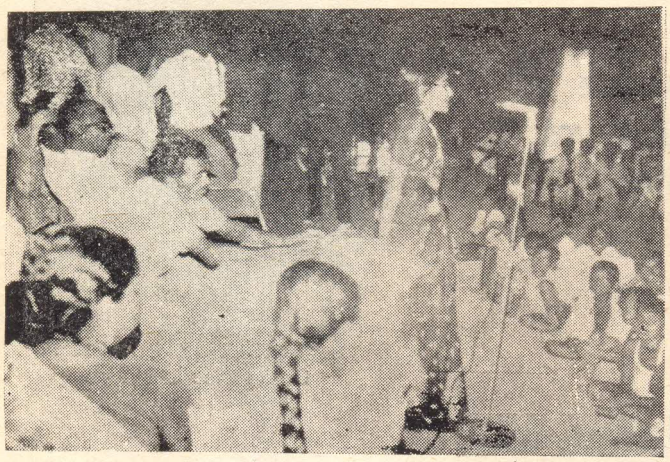
K. S. VISWANATHAN, II B.Com.
Union Secretary

S/U. O. R. KRISHNASAMY, III B.Sc,

NATIONAL CADET CORPS

U/O T. SANKARAPANDIAN, III B.Sc.

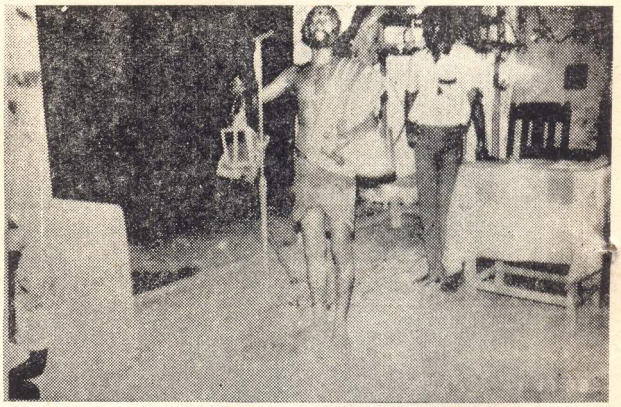
N. S. S. Regular Activities



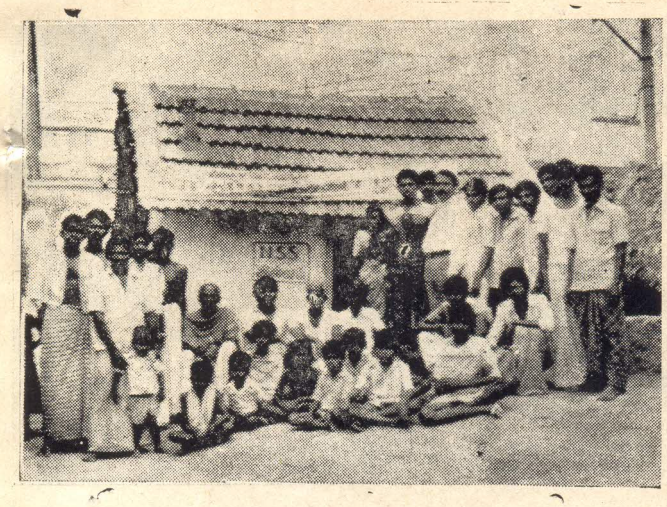
Family Welfare Campaign at Vagaikulam

Population Education Seminar

Competition for the children



National Youth Day Celebrations at Vembadi



Roof for Roofless Scheme
House constructed by volunteers at Manthiyoor

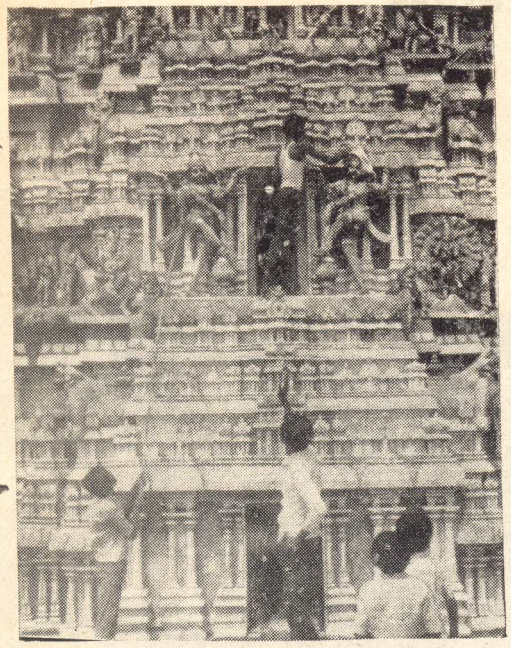
Digging Bio-Gas Plant Pits
at Meenakshipuram

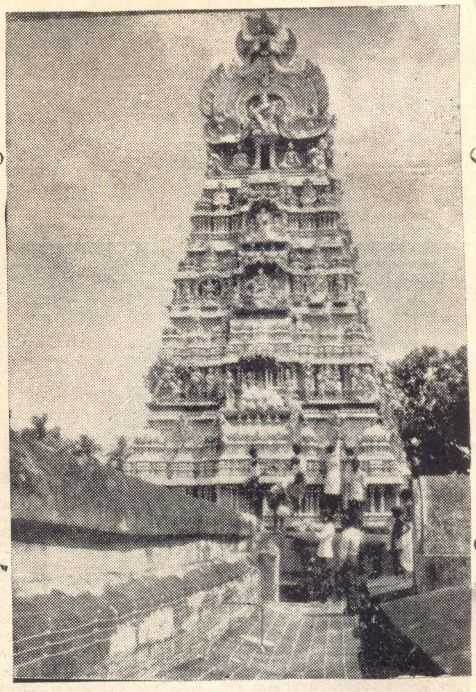
N. S. S. Special Camp Activities

Tree Planting

Road repairing at Manjapulicherry

DEEPENING THE CHANEL AT CHETTIKULAM





TEMPLE CLEANING WORK AT SIVASAILAM

SRI PARAMAKALYANI COLLEGE, ALWARKURICHI.

N. S. S. UNIT Nos. 13 & 129.

Annual Report For The Year 1987–1988

PRESENTED ON THE N. S. S. DAY

Respected Principal,

Members of Faculty,

Student Friends and Dear Invitees

We are happy to present the com bind Annual Report of the N. S. S. Units 13 & 129 of our college for the year 1987–88.

112 Students from First Year Degree Classes were admitted to make the strength of N. S. S. Units of our college to 226. 10 volunteers left the college during the middle of the year as they got admission in professional colleges.

Grant

We received Rs. 4500/- for each unit towards the first instalment of the regular grant and Rs. 7500/- towards the special camp grant.

Dr. P. NAGENDRA PRASAD, M. Sc, Ph. D. Assistant Professor of Botony took up charge as N. S. S. Programme Officer of unit No. 13 from Sri. L. M. Narayanan, M. Sc. M. A. D. H. Ed, who left for higher studies (M. Phil) at Madurai Kamaraj University.

Activities

Activities for the year 1987-88 were

A) A Special camping programme of 10 days Y. R. R. Camp.

B) Regular Activities

Special Camping Programme

10 Days Y. R. R Camp at MANTHIYOOR VILLAGE

We organised a 10 day Y R R camp at Manthiyoor from 19-5-87 to 28-5-87

Some of the Activities Were

1. Under the auspicious of the Interanational year for Shelter, we constructed a house with the help of C. D. C. of Madura Coats Ltd, Ambasamudram for a poor girl.

2. Under the Backyard area Tree plants development scheme, our volunteers planted 100 coconut seedlings and other environmental tree saplings in 50 houses.

3. 12 Gobar Gas plant pits were dug at Meenakshipuram.

4. Installed one Smokeless Chula in a house which was constructed by our students.

5. Socio-Economic survey was conducted at Manthiyoor.

6. Free Medical Camp, Immunization to cattle and poultry.

7. Seminar on 'POLLUTION CONTROL, Quiz programme on 'POPULATION EDUCATION' Lectures on 'ADULT LITERACY PROGRAMME' 'WOMEN'S LIBERATION' etc.

8. Rat Eradication Campaign

Regular Activities

I Activities outside the campus

II Activities inside the campus

I Activities outside the campus.

Functional Literacy Programme

70 of our N. S. S. Volunteers were involved in this scheme and literacy kits were distributed to the student-teachers.

Children's day

Children's day was celebrated on 14.11 87 at N. M. Primary School. Chettikulam and Avvai Ashram, Sivasailam. Drawing, Vocalmusic, Oratorial Reading Essay, and Dance competitions were conducted to the children. Students of Avvai Ashram and NSS Volunteers performed cultural programmes.

Our NSS Volunteers planted nearly 50 free seedlings in the N M Primary School campus and Avvai Ashram.

Work at the Home for the Aged

Our Volunteers visited the home for the Aged People and rendered the necessary services. They cleaned the surrounding area and made it tidy.

Caaching Classes for School Children

N S S Volunteers Mr Christober, II B Sc, Mr. S. Sanyatsen I B Sc, Mr. S. Mahadevan I B Sc, conducted the coaching classes to the students of N M Primary School, Chettikulam. 100 students attended the class.

Keeping the CMNMP Centres Clean and Tidy

Our N S S Volunteers cleaned the Chief Minister's Noon Meals Programme Centre at N M Primary School Chettikulam and the CMNMP centre at Indra Memorial Colony, Manjapuli cherry. They helped the organisers serving the meals to the children.

National Youth day

Under the auspicious of the National Youth Week celebrations from 12.1.88 to 19.1.1988, we celebrated the National Youth Day on 17.1.1988 at Vembadi. Various sports events were conducted to the youths. Mr C. RAMAKRISHNAN (Commercial Tax Office, Tenkasi) Mr. A. SISUBALAN, Asst. Prof of Commerce delivered special lectures. N S S Volunteers performed the cultural programmes.

Nail Dressing Campaign

Our volunteers conducted the Nail Dressing Campaign in the following places.

N M Primary School, Chettikulam

S. T. C. Branch Primary School. Alwarkurichi

Sailpathi Middle School, Alwarkurichi

Eye Camp at Kadayam

Our volunteers participated in the Eye Camp at Kadayam organised by Vivekananda Kendra and Adhi Parasakthi Mandram on 31.1.1988 and rendered a very good Service.

Family Welfare Campaign

Our N. S. S. Units and District Welfare Department jointly conducted a family welfare campaign at Vagaikulam on 23.1.1988 Sri Sailappan. Vice-President of Manthiyoor Panc-

hayat presided over the function. Sri Piramanayagam (External Educator) Sri George jeyaraj (Health Inspector) Mr Maria Terasammal (Health Visitor) Mrs R. Saraswathi (Health Visitor) Mrs. N Selvamani (Health Inspector)

Sri. Ramakrishnan (commercial Tax office, Tenkasi) delivered their speeches. Our N S S Volunteers performed the cultural programmes.

One day Camp at Manjapulicherry

Our Volunteers organised the one day camp at Manjapulicherry Village on 9.1.1988. They cleaned the playground of Sri Meenakshi Middle School at Kila Ambur. They repaired the road leading from Kila Ambur to Manjapulicherry which was damaged during the rainy season.

We organised an immunization camp to the cattles with the help of the veterinary Dispensary, Alwarkurichi

Temple Cleaning Works :

At the request of the local people, cur volunteers cleaned the Angala Parameswari Amman Temple, Muppidathi Amman Temple, and the Amman Temple in front of our college.

Volunteers removed the bushes and weeds in the piraharams and formed the path ways to enable the devotees to go round the Piraharams.

One Day Camp at Sivasailam.

Temple Cleaning Camp :

Our N. S. S. conducted the cleaning work of Sri Sailappanathar Temple at Sivasailam on 27.2.1988. They cleaned the Algal depositon and the various weeds grown over the Temple Tower and on the Mandapam. They removed the weeds and thorny bushes grown in the Yaga Sala. Volunteers wipped of the dust inside the tower and in the temple piraharams. They also cleaned the roads surrounding the Temple, the way leading to Water tank, Motor room etc.

Siddha Medical Camp

Our N S S organised a Siddha Medical Camp at A v v a i Ashram, Sivasailam.

Dr. I Robert Singh, B. S. M. S. Medical Officer of Siddha, A y a n Thiruvaleeswaram came with his team and examined the children. Later Dr. I Robert Singh delivered a lecture on "Development of Siddha and its importance in the 20th century"

Post Camp Evaluation Work :

Our N S S Volunteers carried out the post camp evaluation work at Manthiyoor and Meenakshipuram on 3.2.1988. They visited all the houses at Manthiyoor, where they supplied the coconut seedlings and other economical important tree saplings during the Y R R camp. They made a survey of t h e existing plants and encouraged the villagers to grow trees and plants in the backyard area.

At Meenakshipuram our volunteers visited the houses where they had helped people to install the Gobar Gas plants and enquired about the performance and advantages of the Gabar gas unit.

One day Camp at Chettikulam

Oneday damp at Chettikulam was conducted on 12.3.1988. Our volunteers made a deep chanal for the free flow of the rain water from the foot hill to the Kadana river in the eastern side of the village. They laid a path way by the side of the chanal for the public. It was very much useful and appreciated by the local people.

School Playground Cleaning Work

At the request of the correspondent of Sailapathi middle School, Alwarkurchi, our volunteers cleaned the school playground. They removed the thorny bushes and weeds and made the place as a Bucca playground.

Special Programmes for Volunteers

1. 20 of our N S S Volunteers attended the career Exhibition / Self employment Seminar, conducted by the University Employment Information and Guidance Bureau at Ambai Arts College, Ambasamudram. on 28.9.1987

2. Mr O. Sivanallaperumal III B. Com,
,, S. Saravanamuthukumar I B. Sc,
,, S. Murugan I B. Com,
,, S. Narayanan I B. Com,
attended the 'Seminar on Environment' at Adithanar College of Arts & Science Tiruchendur on 12.12.87.

3 The following N S S Students attended the Inter collegiate camp at Sucheendrum from 18 3.88 to 25.3.88.

1 P. Thirumalai Kolunthu I B Sc
2 T Thirunavukkarasu I B Com
3 C Thirumalaikumar I B Com
4 T Paramasivan I B Com
5 S Sivagurunathan II B Sc
6 M Thangaraj II B Sc
7 M Julius ceaser II B Com
8 S Ramasubramanian II B Com

4 Our N S S Volunteers participated in the IX Youth Festival (Zonal Level) at M D T Hindu College and won in the following items.

Mimicry P. Thiruvarimuthu III B Sc.
Monoacting S. Sethuraman II B Sc.
Dump-Charade O. Sivanallaperumal III B Com.
S. Ananthanainar III B Sc.
P. Mahesh III B Sc.
Kathakalashebam P. R Venkatakrishnan III B Com.
V. Thiagarajan III B Sc.
S Ananthanainar III B Sc.
N Ganesan III B Sc.
Ad-Mad E Kalaimaran III B Sc.
S Ramasubramanian II B Com.
S Sivagurunathan II B Sc.
C Suresh II B Com.
S Sethuraman II B Sc.

Our N S S Voluteer P. Thiruvarimuthu of III B Sc, won the III Prize in the mimicry in the IX Youth Festival (Final) held at Courtallam.

Meeting of N S S Programme Officers

1 "Seminar on population Education for College. Teachers" conducted by Distirct Family Welfare Bureau, Tirunelveli, at Tirunelveli Medical College, Palayamkottai on 11.4.87.

2 Annual conference of N S S POs at Kodaikanal on 25th and 26th April 1987.

3 District Level meeting of N S S POs at St. John's College, Palayamkottai on 1.8.87,

Mr. S Surianarayanan, N. S. S, Programme Officer of unit No. 129 attended the Orientation Training Course for N S S P Os at Training Centre of Sri Avinashilingam Home Science College, Coimbatore from 30.6.87. to 11.7.87.

II Activities inside the campus

Population Education Seminar

Under the auspicious of the Birth day celebrations of the Late Prime Minister of India Smt. INDRA GANDHI, Our N S S Units and District Family Welfare Department jointly organized a seminar on 'Population Education' on 20.1.88. Prof. K H Narayanan, Principal & Secretary presided over the function. Medical Officers Dr M Jeyakumar, M B B S and Dr (Mrs) S. Boopathi, M B B S and Extension Educator Mr S Piramanayagam, Public Relation Officer Sri S Velmurugan, Prof. S. Thothathri, M A B T and Sri A Sisublan M Com presented the papers. Various competitions like Oratorial Contest, Drawing competition and Family welfare slogans competition were conducted and Prof K H Narayanan gave away the prizes to the winners.

Our N S S Volunteers cleaned the path ways inside the college campus. They also cleaned in the Staff Quarters and in the Hostel. They removed the unwanted weeds and thorny bushes in the surrounding areas.

In the Hostel, they cleaned and leveled the Tennis Court.

During college functions, the seating arrangements and Distribution of refreshments were carried out by the N S S. College megazines were also distributed by our volunteers.

The Park inside the college campus was well maintained by our volunteers by making drenches around the trees for the stagnation of water and removed the litters and weeds. They brought 500 tree saplings from the Social Forestry Department. Our volunteers assisted the WUS to organise the Medical checkup programme.

Welcome to Eco-Marchers

Our N S S welcomed the Eco Marchers who were on the way from Kanyakumari to Goa Padayatra. They planted nearly 50 tree saplings in our college campus. Later a public meeting was held. Prof K H Narayanan Principal & Secretary presided over the function. Eco-Marchers explained their motto of saving the Evergreen westernghates from the deforestation and from the agrarian of the modern agriculture cash crop development. Our N. S. S. Volunteers helped the Marchers in all the ways to fulfil their motto of the South Peninsular India from deforestation and pasted wall Posters throughout the villages.

CONCLUSION

We have crossed another year of useful service with the help and cooperation of our Management, our

Principal & Secretary Prof. K H Narayanan, Our N. S. S. Volunteers, Members of Faculty, Government Officials and the Public.

Our N S S Volunteers have pledged and stood up to protect the reputation of this great institution and thereby to protect their own.

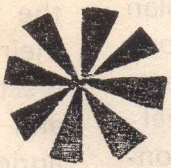
Let us conclude that under the valuable guidance of Our Principal, Members of Faculty and with the Blessings of the Lord Sailapathi and Goddess Paramakalyani, Our N S S Volunteers are getting trained to the motto of N. S. S,

',NOT ME BUT YOU''

Thanking You

S. SURIANARAYANAN.
N. S. S. Programme Officer.
Unit No 129

P. NAGENDRA PRASAD
N. S. S. Programme Officer,
Unit No 13



Research work done at the Department of Biology during 1987-'88.

The Department of Biology has been engaged in research work during the year 1987-'88 also. The scholars from various research institutions visited the department to learn the techniques and to carry on their research work for their theses and research publications; they sought the help of the department on account of the excellent facilities available and to get trained under Dr. Sm. Pechimuthu, Professor of Zoology & Head of the Department of Biology.

	Name	Guide	Institution	Nature of work
1.	Prof. S. Madaswamy.	Dr. S. Mathavan	Madurai Kamaraj University	M. Phil. dissertation: Histopathology & histochemistry of oogenesis in Nepa treated with pesticides.
2.	Mr. David Premkumar.	-do-	-do-	Doctoral thesis: Histopathology & histochemistry of ovary and oogenesis in Nepa treated with pesticides - on two different occasions.
3.	Miss P. M. Sudha.	-do-	-do-	Doctorol work: Histology, histopathology & histochemistry of midgut of silkworm treated with the bacteria. **Bacillus thuringiensis israelensis**, and **Bacillus sphacricus** two visits.
4.	-do-	-do-	-do-	For publishing paper: cytology, cytopathology & cytochemistry of the oocytes and oogenesis in Nepa treated with **Bacillus sphacricus** - third visit
5.	Mr. G. Shankar.	Dr. K. Bhaskaran	Agriculture Department of Annamalai University	Doctoral thesis:Histology, histopathology and histochemistry of the brown leaf hopper pest of paddy and its symbiote.
6.	Mr. A. G. Murugesan.	Dr. M. A. Haniffa	St. Xavier's College Palayamkottai.	Doctoral thesis:Histopathology & histochemistry of a catfish exposed to textile-mill effluent-worked here for several months
7.	Mr. K. R. Narayanan	Dr. S. Ajmal-khan	Centre of Advanced Study (CAS) in Marine Biology, Porto Novo.	Doctoral thesis:Histopathology & histochemistry of a crab affected by pollution due to some metals, Hg, Cd, and Zn, - visited sevdral times.

8.	Mr. A. J. A. Ranjit Singh	Dr. M. A. Haniffa	Dept. of Biology of S. P. K. College.	Doctoral thesis : Biochemical and Physiological studies on the effect of selected pesticides on the snail, **Indoplanorbis**, (to be foolowed by histopathology & histochemistry).

Regarding the personal research activities of Dr. Pechimuthu, he was able to establish 'evolution in action' by investigating the III year population of the tettigonid grasshoper, **Elimaea securigera** from the college campus. The incredible fact of rapid evolution of new karyotypes (chromosome number and pattern) in this species was greatly appreciated by Dr. Peter Miller of Oxford University when Dr. Pechimuthu discussed with him about this at M. K. University. The evolution of the karyotypes may be summarised as follows.

Diploid number (2n) in male : $24+X \rightarrow 25+X \rightarrow 26+X$
,, (2n) in female : $24+XX \rightarrow 25+XX \rightarrow 26+XX$

All the six categories of chromosome groups (**karyotypes**) have been photographically recorded.

The findings have been reported in the following research papers :

1. Evidence for the 'dissociation hypothesis' of M. J. D. White. Current Science, 59 (19) : 1013—1015 (1987)

2. Karyotypic evolution in a tettigonid grasshopper, **Elimaea securigera.** Cytologia (Tokyo), 53 (3) : 591–599. (1988)

3. Evolution of new karyotypes in a long-horned grasshopper, **Elimaea securigera**. (communicated to Evolution (Kansas))

4. Two new karyotypes in **Elimaea securigera** (Orthoptera Tettigoniidae) (communicated to Proceedings of the Indian Academy of Sciences.) :

A paper on a freak larval histology in a silkworm was published, based on the work of his daughter in collaboration with him.

Sudha, P. M., and Muthu, Sm. P. Damage to the midgut epithelium caused by food in the absence of peritrophic membrane. Current Science, 57 (II) : 624-625 (1988)

Another paper based on collaborative work on pollution published is as follows :

Narayanan, K. R., Pechimuthu, Sm., Alfred Mohandoss, and Ajmalkhan, S. Effect of sulphur on the gills of **Lepidocephalichthyes thermalis** (Bleeker) (Pisces : Cyprinidae). Proc. Natl. Symp. Ecotoxic. PP. 151 – 153. (1987)

A paper on the cytopathological changes in the erythrocytes of the catfish, **Hetcropneustes fossilis**, exposed to textile-mill effluents, based on the collaborative work with **A. G. Murugesan** has been accepted for publication in Current Science.

Three papers based on collaborative works with Sudha have been communicated for publication in the United states and France; of these one has been already accepted for publication in the Journal of Invertebrate Pathology.

Dr. Pechimuthu was invited to teach techniques to Sixteen participants, selected from all over India (most of whom were doctorates). of the "workshop on Research Methods for Chromosome Manipulation in Fish," organized by Prof. T. J. Pandian at the School of Biological Sciences, M. K. University. The workshop was held from 8th to 21st of February, 1988 and Dr. Pechimuthu acted as the Resource Person. It was sponsored by the Dept, of Biotechnology of the Govt. of India.

At the invitation of the Centre for Biology Education (Biological Curriculum Development Centre, sponsored by the UGC) at M. K. U., Dr. Pechimuthu has contributed two articles on his specialise of research, mitochondria and Golgi complex. His lectures on these two topics will be recorded at the Centre in cassettes to be sent to colleges all over the country as teaching aide. As these contributions contain research methodology also, they will be useful to reserchers in the Universities too.

Three papers by Mr. K. R. Narayanan and Dr. Pechimuthu (and Dr. Ajmalkhan) have been accepted for presentation at Mexico, Canada and England. A paper on the histochemistry of mucocytes in a freshwater fish by Mr. Narayanan, Dr. Pechimuthu and their collaborators was presented at Mangalore by Mr. Narayanan.

Dr. Pechimuthu attended the seminar on Statistics for Biologists at M. K. University in May 88. The training will be useful in applying statistical methods in research as well as teaching. He has been selected to undergo the short-term course on "Experiments in **Pseudomonas** genetics" to be conducted by the Microbiology Department of the School of Biological Sciences of M. K. University.

The appreciation of the work done in the department and the encouragement given to the Professor by the Principal & Secretary, Prof. K. H. Narayanan, and by the Management have been mainly responsible for the achievements. The facilities available in the department surpass those of research laboratories in Universities and this fact is to be attributed to the vision of the Secretary and the munificence of the Management.

Sri Muruganan