Corrosion is the destructive attack of a metal by chemical or electrochemical reaction with its environment. Corrosion is a world-wide problem. The loss due to corrosion in India has been estimated at Rs. 154 crores annually.

The present investigation is confined to corrosion and its inhibition of 63/37 brass in solutions of acids like acetic, hydrochloric and nitric and by potable water. Inhibition in sodium hydroxide, potassium persulphate, artificial seawater and effect of hydrogen peroxide in oxidising media is also described.

Corrosion and its inhibition have been studied in the totally immersed condition. The specimens were immersed in beakers to a depth of 1.5 cm below the surface of the liquid. The volume of the liquid for all experiments was 250 ml. The beakers were kept in an insulated cupboard maintained at 32°C. Corrosion was assessed by loss in weight of the specimen. In some cases, galvanostatic study was undertaken.

For studies, 0.1 and 0.5 M acetic acid solutions were taken. Specimens (3x6) cm were exposed for 5 and 10 days durations. The inhibitive power of following compounds was studied:
2-Mercaptobenzothiazole (2-MBT), benzimidazole, 2-benzimidazolethiol, sulphathiazole, benzylamine, dibenzylamine, phenylhydrazine, methyl aniline, cyclohexylamine, dicyclohexylamine, triethanolamine, benzaldehyde, cinnamaldehyde, heptaldehyde, m-nitrobenzaldehyde, 2-mercaptobenzoic acid, thiobenzoic acid, phenylthiourea, diphenylthiourea, 1:3 di-o-tolyli thiourea, thiosemicarbazide, thiophenol, p-thiocresol.

Of the above, only 2-mercaptobenzothiazole (2-MBT), phenylhydrazine, thiobenzoic acid and p-thiocresol gave excellent inhibition. In most of the cases, the inhibition is governed cathodically.

In hydrochloric acid, specimens were exposed to 0.5 and 1.0M solutions for 5 and 10 days durations. Following inhibitors were studied:

Thiourea, phenylthiourea, diphenylthiourea, m-chlorophenylthiourea, trimethylamine, triethanolamine, tributylamine, 2-mercaptobenzoic acid, thiobenzoic acid, 2-mercaptobenzothiazole, 2-benzimidazolethiol, sulphathiazole, thioacetamide, thiosemicarbazide, p-thiocresol and dithizone.
Of the above, only 2-mercaptobenzothiazole (2-MBT) gave excellent inhibition. Most of the compounds inhibited corrosion by polarizing cathode.

For studies in nitric acid, specimens were immersed for 5 and 10 days in 0.5 M acid and for 1 and 2 days in 1.0 M acid solution. Following compounds were studied as inhibitors:

Urea, thiourea, phenylthiourea, diphenylthiourea, m-chlorophenylthiourea, N-N-diethyl thiourea, N-N-dibutyl thiourea, thiobenzoic acid, 2-mercaptobenzoic acid, thiophenol, p-thiocresol, thiosemicarbazide, thioacetamide, sodium diethyl dithiocarbamate and dithizone.

Of the above, only thiobenzoic acid gave excellent inhibition. The inhibition is governed cathodically.

The results obtained have been discussed in light of various theories on inhibition.

For studies in sodium hydroxide, 0.5 and 1.0 M solutions were used. Specimens were exposed for 7 and 15 days. Following compounds were studied:

Benzimidazole, 2-benzimidazolethiol, 2-mercapto-benzothiazole (2-MBT), dithiodiglycollic acid, thiobenzoic
acid, 2-mercaptobenzoic acid, thiophenol, p-thiocresol, thiourea, carbon disulphide, dithizone, cinnamaldehyde, and hydrazine sulphate.

Of the above, 2-mercaptobenzothiazole, carbon disulphide and cinnamaldehyde gave excellent inhibition.

For studies in potassium persulphate, specimens were exposed to 0.1 M solution for 60 and 120 minutes at 30° and 40°C. Following compounds were studied as inhibitors:

- n-butylamine, di-n-butylamine, tri-n-butylamine,
- cyclohexylamine, dicyclohexylamine, nicotine, piperidine,
- morpholine, dimethylamine, diethylamine, o-cresol,
- p-thiocresol and thiophenol.

Of the above, n-butylamine, cyclohexylamine, morpholine, p-thiocresol and thiophenol gave excellent inhibition. The inhibition is governed by the cathodic control. The results are discussed in light of the theories on inhibition.

In artificial sea water, specimens were exposed for 30 and 60 days durations. Following compounds were studied:
2-aminothiophenol, sodium diethylidithiocarbamate, dithizone, benzimidazole, 2-mercaptobenzothiazole, 2-benzimidazolethiol and sulphathiazole.

Of the above, 2-mercaptobenzothiazole, benzimidazole, 2-benzimidazolethiol gave excellent inhibition. The results are discussed in light of existing theories on inhibition.

In local water supply of Gujarat University campus, the brass specimens were exposed for 7 and 15 days durations in stagnant condition. The effect of addition of various oxidizing agents on corrosion of brass in the local supply water was carried out. The compounds used were potassium permanganate, potassium persulphate, ammonium perchlorate, chlorine, bromine, iodine, potassium chlorate, potassium bromate, potassium iodate and potassium perchlorate.

Of the above, the first six compounds accelerated corrosion. Of the remaining only potassium iodate gave excellent inhibition.

Action of hydrogen peroxide on corrosion of brass in supply water to which potassium persulphate,