RESULTS
LIVER

I- HISTOLOGICAL PICTURE:

1- Haematoxylin and eosin:

Group I (control group):

The classical hepatic lobule was composed of a central vein and masses of liver cells arranged in the form of cords radiating from the central vein. The hepatocytes were polyhedral with eosinophilic cytoplasm. Their nuclei were mostly large, open face, with prominent one or more nucleoli. The liver cords were separated from each other by blood sinusoids. (Fig. 1).

The portal tracts were found at the angles of hepatic lobules and each one was formed of four tubular structures which were portal venule, hepatic artery, bile duct and lymphatic vessels. (Fig. 2).

Group II (injected with tienam 90 mg/kg body weight/day for 4 days):

In this group the histological changes appeared both in cells and blood sinusoids. The hepatocytes showed mild vacuolation in their cytoplasm and blood sinusoids showed mild dilation (Fig. 3), with minimal cellular infiltration at portal tracts. (Fig.4).

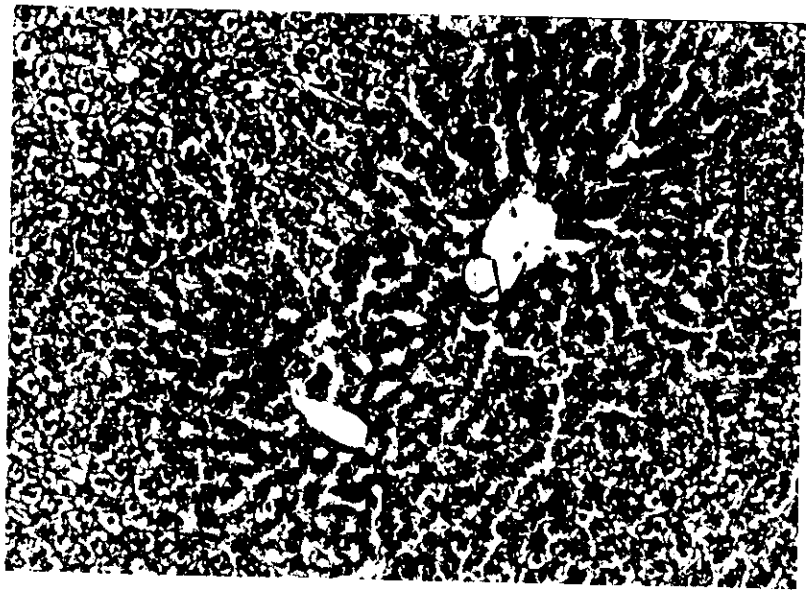

Fig. (1): A photomicrograph of a section in the liver of a control rat showing slit like spaces representing the liver sinusoids (S) intervening with hepatic cords of hepatocytes (H) and a central vein (CV).

(Hx & E Objective 10 X Projective 10)

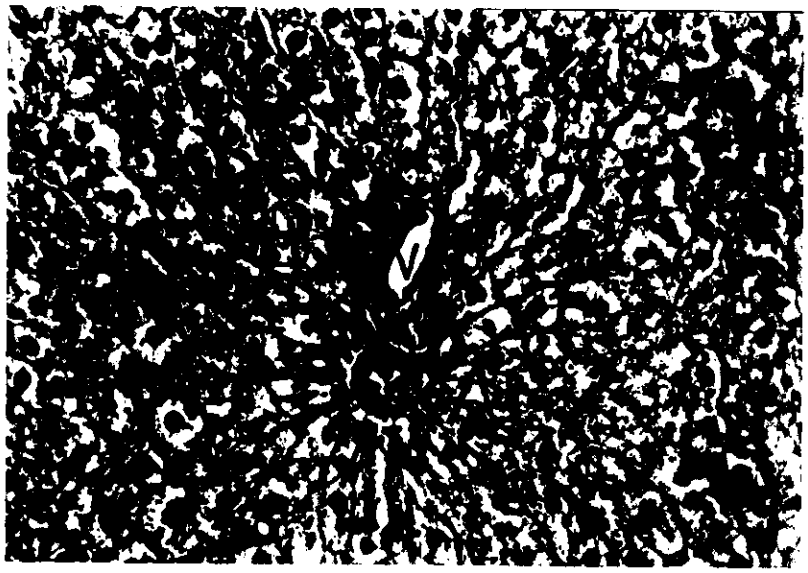

Fig. (2): A photomicrograph of a section in the liver of control rat showing portal tracts with an artery (A) a vein (V) and a bile duct (B) and surrounded by connective tissue (CT).
(Hx & E Objective 40 X Projective 10)

Fig. (3): A photomicrograph of a section in liver of a rat injected with tienam for 4 days showing dilation of blood sinusoids (S) some hepatocytes show vacuolated cytoplasm (arrow).
(Hx & E Objective 40 X Projective 10)

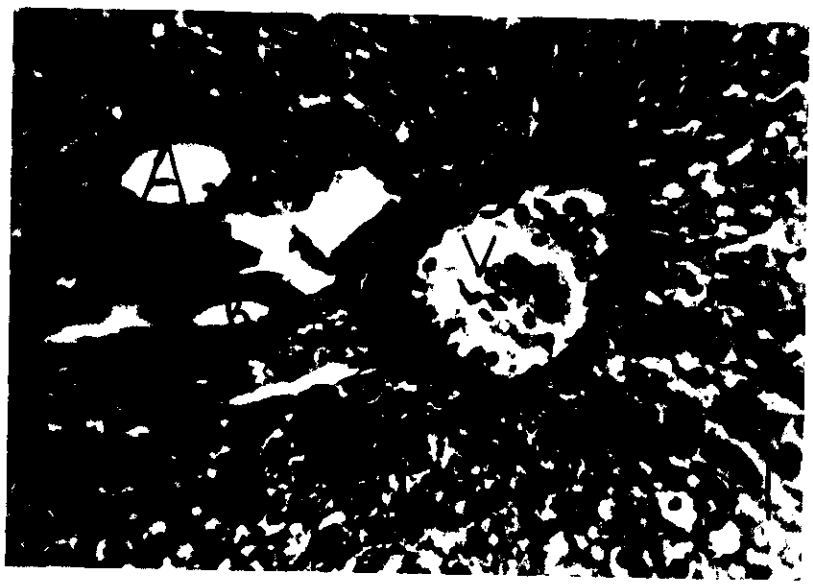

Fig. (4): A photomicrograph of a section in the liver of a rat injected with tienam for 4 days showing few inflammatory cells (arrow) but normal bile ductules (B), branch of portal vein (V) and of hepatic artery (A), some hepatocytes (H) are vacuolated.
(Hx & E Objective 40 X Projective 10)

Group III (injected with tienam for 7 days):

In this group the central veins were dilated and congested, the hepatocytes showed more vacuolation in their cytoplasm and blood sinusoids showed more dilation with dense cellular infiltration (Fig. 5).

- Portal vein was dilated and congested with mild cellular infiltration (Fig. 6).

Group IV (injected with tienam for 14 days).

In this group there was more dilation and congestion of central vein and blood sinusoids, the hepatocytes showed marked vacuolation in their cytoplasm, some haptocytes had pyknotic nuclei, others had nuclei which showed karyloysis and karyorrhexis (Fig. 7).

- There was also obvious dilation and engorgement of the veins of portal tracts with marked cellular infiltration and dilation of bile duct (Fig. 8).

Group V (14 days after stopping of injection of tienam).

Hepatocytes and blood sinusoids appeared more or less normal. Inflammatory cellular infiltrate in the portal tract disappeared.

Fig.(5): A photomicrograph of a liver section of a rat injected with tienam for 7 days showing dilated congested central vein (V), mild dilation of blood sinusoids (S), dense cellular infiltration (arrow), some hepatocytes show vacuolated cytoplasm (H).
(Hx & E Objective 40 X Projective 10)

Fig. (6): A photomicrograph of a section in liver of a rat injected with tienam for 7 days showing portal area with mild cellular infiltration (arrow), dilated congested portal vein (V), vacuolated cytoplasm of many hepatocytes (H).
(Hx & E Objective 40 X Projective 10)

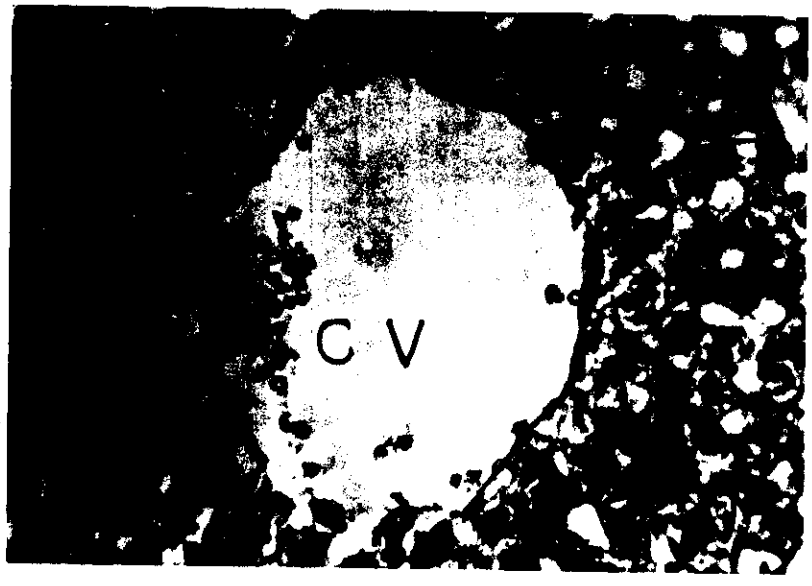

Fig. (7): A photomicrograph of a section in the liver of a rat injected with tienam for 14 days showing, marked dilation of the central vein (CV), most of the hepatocytes are vacuolated (H), some hepatocytes have pyknotic nuclei (P) and others have even nuclei showing karyolysis and karyorrhexis (arrows)
(Hx & E Objective 40 X Projective 10)

Fig. (8): A photomicrgoraph of a section in liver of a rat injected with tienam for 14 days showing marked cellular infiltration (arrow) in the portal area, dilated bile duct (V).
(Hx & E Objective 40 X Projective 10)

2- Masson's trichrome stain:

Group I (control group):

The liver possessed very little connective tissue. The outer surface was covered by a thin connecive tissue capsule (Glisson's capsule) that extended into the liver substance at the porta hepatis. Here it became continuous with a small amount of connective tissue of portal canals, which formed a common sheath for the branches of the hepatic artery, portal vein, bile duct and lymphatic capillaries. This connective tissue within the liver lobule was formed of reticular and collagen fibers that lay outside sinusoids and were continuous with connective tissue in the portal canals, very thin collagenous fibers around central vein (Fig. 9).

Trabeculae were fine indistinct tissue similar to capsule dividing liver into four lobes and lobules.

Group II (injected with tienam 90mg/kg body weight for 4 days):

No change in the amount or distribution of connective tissue was detected.

Group III (injected with tienam for 7 days):

There was an increase in amount of collagen fibers in portal tract (Fig. 10).

Group IV (injected with tienam for 14 days):

There was marked increase of collagen fibers in portal tract (Fig. 11).

Group V (14 days after stopping injection of tienam):

No change in the amount of distribution of connective tissue in comparison to previous group.

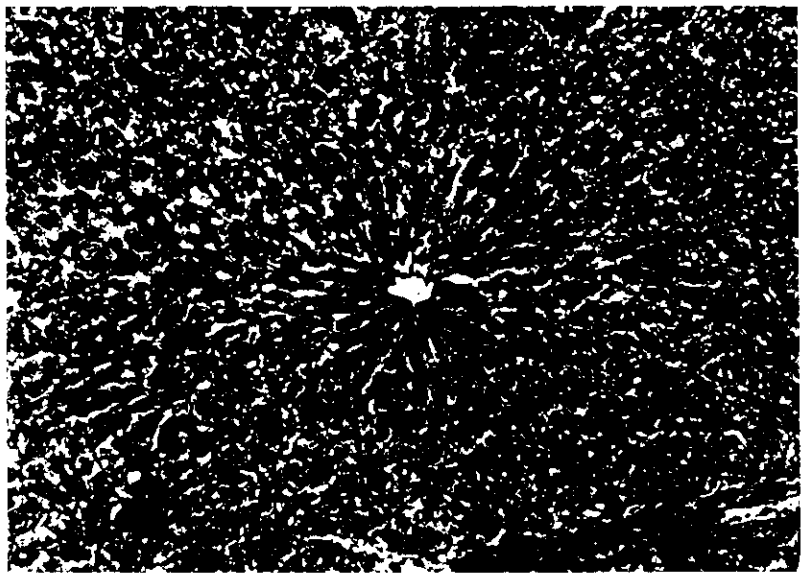

Fig. (9): A photomicrograph of section in the liver of control rat showing classical hepatic lobule. Portal area with connective tissue(arrow) (Masson's trichrome stain Objective 20 X Projective 10)

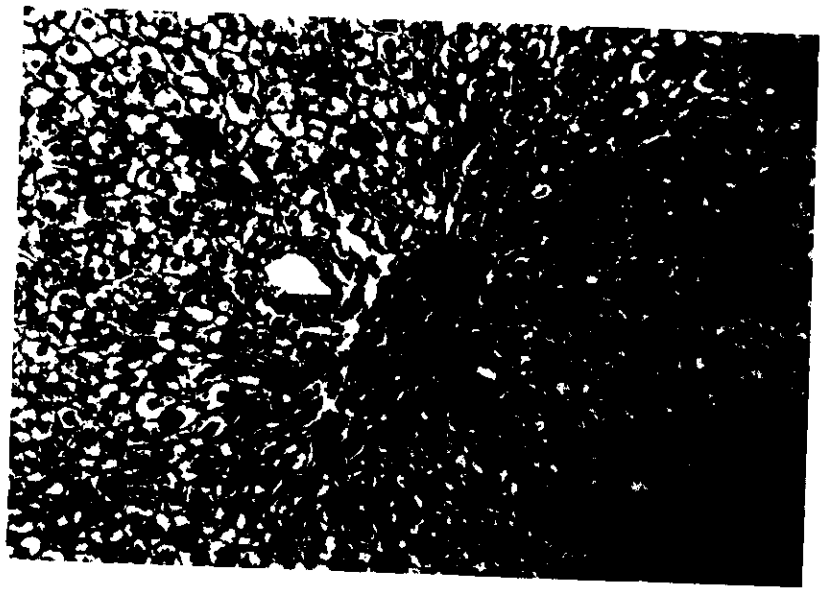

Fig. (10): A photomicrograph of a section in the liver of a rat injected with tienam for 7 days showing increase in the collagenous fibers surrounding congested blood vessels in the portal tract and strands of fibrous tissue can be seen between swollen hepatocytes(arrows)
(Masson's trichrome stain Objective 20 X Projective 10)

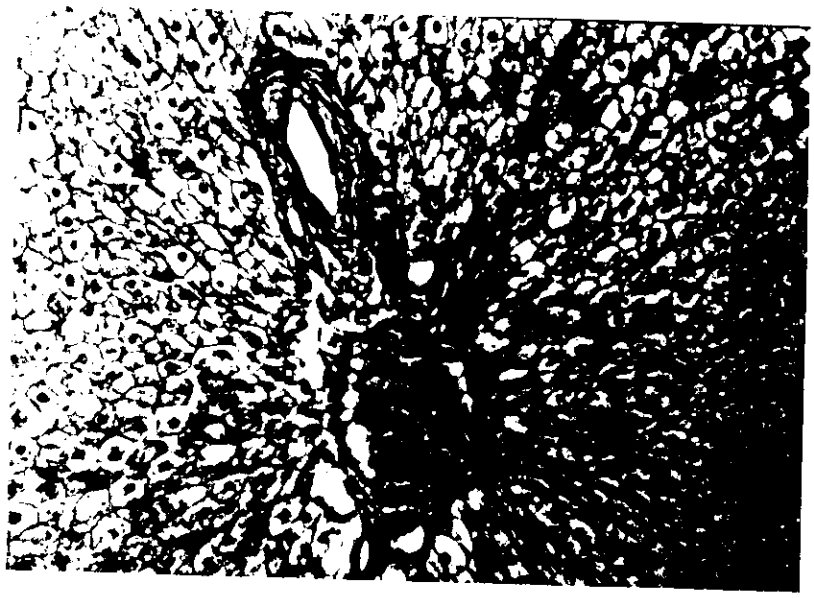

Fig. (11): A photomicrograph of a section in the liver of a rat injected with tienam for 14 days showing marked increase in collagenous fibers around dilated congested blood vessels in the portal tract(arrow) (Masson's trichrome stain Objective 20 X Projective 10)

II- HISTOCHEMICAL PICTURE

1- Periodic Acid, Schiff's reaction (P.A.S)

Group I (control rats):

By using periodic Acid Schiff technique, the liver of control rats showed strong reaction all over cells of hepatic lobules (Fig. 12).

Group II (injected with tienam 90mg/kg body weight day for 4 days):

In this group no change in the intensity of the PAS reaction was observed.

Group III (injected with tienam for 7 days):

In this group, the reaction for the PAS decreased and the hepatocytes showed moderate reaction (Fig. 13).

Group IV (injected with tienam for 14 days):

In this group, PAS reaction decreased and became weak in the hepatocytes (Fig. 14).

Group V (14 days after stopping injection of tienam):

In this group, the PAS reaction was similar to that of control group.

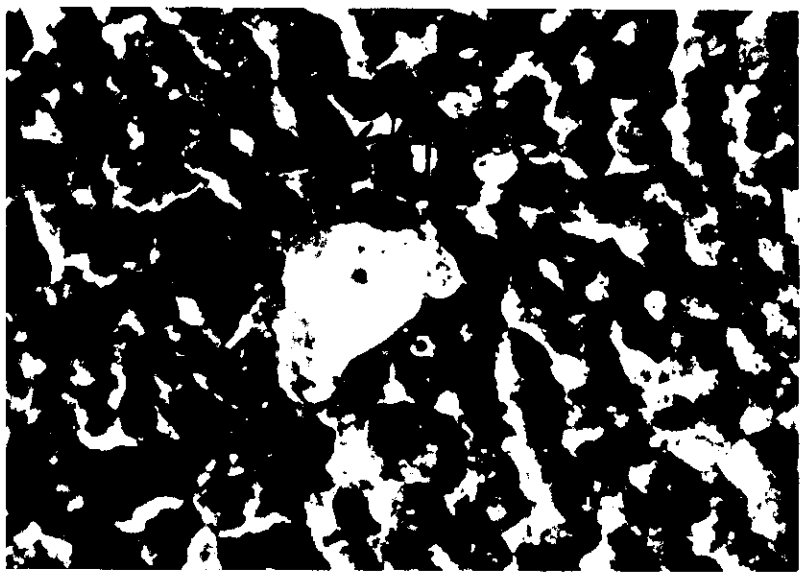

Fig. (12): A photomicrograph of section in the liver of a control rat showing strong positive reaction of PAS all over the cytoplasm of hepatocytes (H).
(PAS technique Objective 40 X Projective 10)

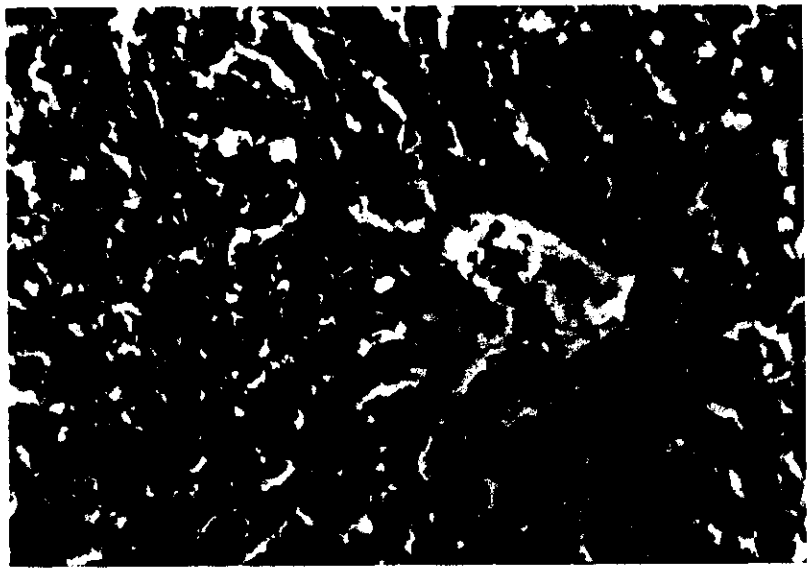

Fig. (13): A photomicrograph of a section in the liver of a rat injected with tienam for 7 days showing moderate reaction of PAS all over the cytoplasm of hepatocytes (H).
(PAS technique Objective 40 X Projective 10)

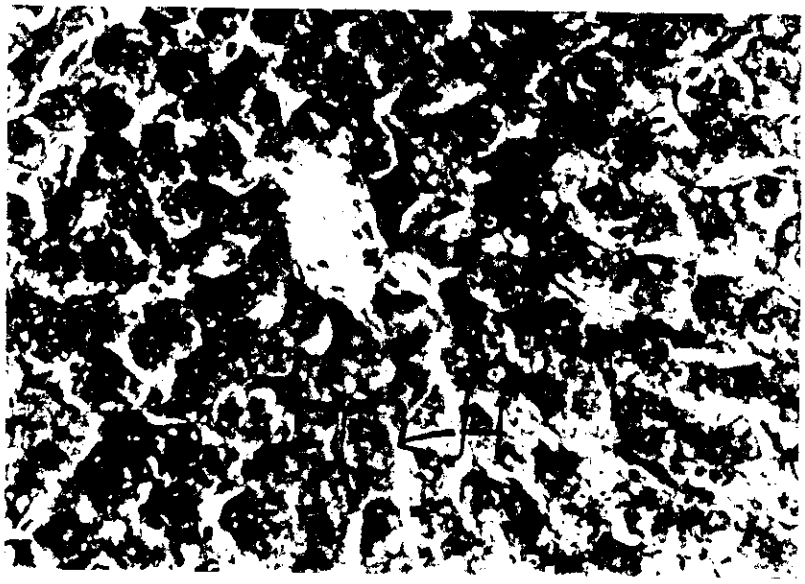

Fig. (14): A photomicrograph of a section in the liver of a rat injected with tienam for 14 days showing weak reaction of PAS scattered all over the cytoplasm of hepatocytes (H).
(PAS technique Objective 40 X Projective 10)

2- Sudan Black B:

Group I (control group):

There was a few fat globules in the cytoplasm of the hepatocytes as demonstrated by Sudan black stain (Fig. 15).

Group II (injected with tienam 90 mg/kg-body weight day for 4 days):

There was an increase in fat content in periportal and central cells. (Fig. 16).

Group III (injected with tienam for 7 days):

This group showed more increase in fat content in the hepatic cells (Fig. 17).

Group IV (injected with tienam for 14 days):

This group showed marked changes in the fatty content in the hepatocytes and increase in fat and fat storing cells (Fig. 18).

Group V (14 days after stopping injection of tienam):

This group showed decreased fat content.

Fig. (15): A photomicrograph of a section in the liver of a control rat showing few fat droplets in the hepatic cells (H).
(Sudan black Objective 40 X Projective 10)

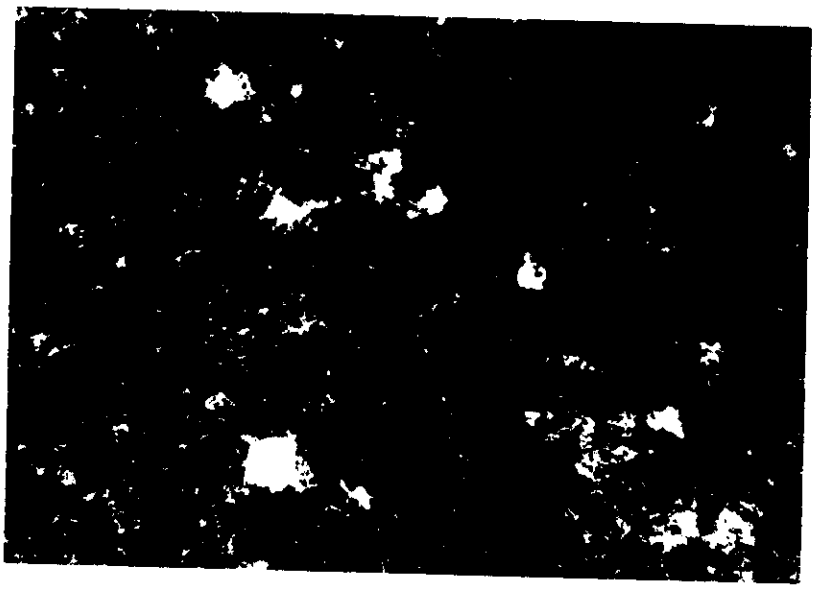

Fig. (16): A photomicrograph of liver section of a rat injected with tienam for 4 days showing lipid droplets and fat globules in hepatocytes (H).
(Sudan black Objective 40 X Projective 10)